

INTERNATIONAL ENERGY AGENCY

SOLAR HEATING AND COOLING - TASK VIII

Passive and Hybrid Solar Low Energy Buildings Subtask "C": Design Methods

DESIGN TOOL SURVEY

by

P. Richard Rittelmann
S. Faruq Ahmed
Burt Hill Kosar Rittelmann Associates
400 Morgan Center
Butler, Pennsylvania 16001
United States of America

May 1985

This report was produced for the United States Department of Energy Washington, DC, under Contract No. DE-AC02-81CS30633.

DISTRIBUTION CLASSIFICATION: UNRESTRICTED

TABLE OF CONTENTS

	PAGE NO.
PREFACE	i
EXECUTIVE SUMMARY	. vi
1. INTRODUCTION	. 1
1.1 BACKGROUND	. 1 . 2 . 2 . 3
II. SURVEY METHODOLOGY	. 5
2.1 SURVEY ORGANIZATION	. 5
2.2.1 System or Machine Required	. 6 . 6 . 7 . 7 . 7 . 8 . 9
III. CATEGORIZATION OF DESIGN TOOLS	. 11
3.1.1 DESIGN TOOL CATEGORIZATION METHODOLOGY 3.1.1 Categorization by Equipment Type Required 3.1.2 Categorization by Intended Application . 3.1.3 Categorization by Input/Output Data	. 11
3.2 DESIGN TOOLS SELECTION METHODOLOGY	. 22
3.3 DETAILED LISTING OF DESIGN TOOL CATEGORIZATION .	. 24

		PAGE NO.
IV. RESULTS OF DESIGN	TOOL SURVEY	121
4.1 SUR	VEY RESULTS	121
4.1		
	Machine Type Required	121
4.1	.2 Design Tools by Intended Users and	
	Machine Type Required	122
4.1	.3 Design Tools by Application to Building	
	Energy Calculations and Machine Type	123
4.1.	.4 Design Tools by Application to Building	
	Energy Calculations and Building Category .	124
4.1	.5 Design Tools for Active Solar Energy	
	Systems	125
4.1	.6 Design Tools for Passive Solar Energy	
	Systems	126
4.1.	.7 Design Tools for the Calculation of	
	Underground Loads and Machine Required	127
4.1.	.8 Design Tools by Application to Phase	
	of Building Design	128
4.1.	.9 Design Tools by Building Category and	
	Machine Type	129
4.1.	.10 Design Tools by Units of Calculation	130
4.2 FINI	DINGS	131
4.3 UNA	VAILABLE INFORMATION	132
APPENDIX A - SAMPLE SUE ANALYSIS N	RVEY FORM FOR ENERGY DESIGN TOOLS AND MODELS	A-l to 16
COLLIMA	ND DESCRIPTION OF DESIGN TOOLS BY	B-1 to 46

LIS'	ТΟ	F '	TA	${f BL}$	ES
------	----	-----	----	----------	----

Table 3.1	Design Tool Categorization by Major Equipment: Mainframe Computers (MF)	25
Table 3.2	Design Tool Categorization by Major Equipment: Microcomputers (MC)	35
Table 3.3	Design Tool Categorization by Major Equipment: Programmable Calculators (PC)	49
Table 3.4	Design Tool Categorization by Major Equipment: Manual Method (MM)	57
Table 3.5	Design Tool Categorization by Intended Application [Residential/Small Commercial Buildings (R/SC)]	65
Table 3.6	Design Tool Categorization by Intended Application [Residential/Large Commercial Buildings (R/LC)]	85
Table 3.7	Design Tool Categorization by Input/Output Data [Residential/Small Commercial Buildings (R/SC)]	93
Table 3.8	Design Tool Categorization by Input/Output Data [Residential/Large Commercial Buildings (R/LC)]	113
Table 4.1	Design Tools by Country and Machine Type	121
Table 4.2	Design Tools by Intended Users and Machine Type	122
Table 4.3	Design Tools by Application to Building Energy Calculations and Machine Type	123
Table 4.4	Design Tools by Application to Building Energy Calculations and Building Category	124
Table 4.5	Design Tools for Active Solar Energy Systems by Machine Type and Calculation Method	125
Table 4.6	Design Tools for Passive Solar Energy Systems by Machine Type and Algorithm Used	126
Table 4.7	Design Tools for Underground Loads Calculation and Machine Type	127
Table 4.8	Design Tools for Underground Loads Calculation and the Building Category	127
Table 4.9	Design Tools by Application to the Phase of Building Design and Machine Required	128

TABLE OF CONTENTS (Continued)

		FAGE NO
Table 4.10	Design Tools by Application to the Phase of Building Design and the Building Category	129
Table 4.11	Design Tools by Building Category and Machine Type	129
Table 4.12	Design Tools by the Units of Calculation	130

PREFACE

INTRODUCTION TO THE INTERNATIONAL ENERGY AGENCY

BACKGROUND

The International Energy Agency was formed in November 1974 to establish cooperation among a number of industrialized countries in the vital area of energy policy. It is an autonomous body within the framework of the Organization for Economic Cooperation and Development (OEDC). Twenty-one countries are presently members, with the Commission of the European Communities also participating in the work of the IEA under a special arrangement.

One element of the IEA's program involves cooperation in the research and development of alternative energy resources in order to reduce excessive dependence on oil. A number of new and improved energy technologies which have the potential of making significant contribution to global energy needs were identified for collaborative efforts. The IEA Committee on Energy Research and Development (CRD), comprising representatives from each member country, supported by a small Secretariat staff, is the focus of IEA RD&D activities. Four Working Parties (in Conservation, Fossil Fuels, Renewable Energy, and Fusion) are charged with identifying new areas for cooperation and advising the CRD on policy matters in their respective technology areas.

SOLAR HEATING AND COOLING PROGRAM

Solar Heating and Cooling was one of the technologies selected for joint activities. During 1976-77, specific projects were identified in key areas of this field and a formal Implementing Agreement drawn up. The Agreement covers the obligations and rights of the Participants and outlines the scope of each project or "task" in annexes to the document. There are now eighteen signatories to the Agreement:

Australia	Federal Republic of Germany	Norway
Austria	Greece	Spain
Belgium	Italy	Sweden
Canada	Japan	Switzerland
Denmark	Netherlands	United Kingdom
Commission of the	New Zealand	United States

European Communities

The overall program is managed by an Executive Committee, while the management of the individual tasks is the responsibility of Operating Agents. The tasks of the IEA Solar Heating and Cooling Program, their respective Operating Agents, and current status (ongoing or completed) are as follows:

- Task I Investigation of the Performance of Solar Heating and Cooling Systems Technical University of Denmark (Completed).
- Task II Coordination of Research and Development on Solar Heating and Cooling
 Solar Research Laboratory Girin, Japan (Completed).
- Task III Performance Testing of Solar Collectors University College Cardiff, U.K. (Ongoing).
- Task IV Development of an Insulation Handbook and Instrument Package U.S. Department of Energy (Completed).
- Task V Use of Existing Meteorological Information for Solar Energy Application Swedish Meteorological and Hydrological Institute (Completed).
- Task VI Performance of Solar Heating, Cooling, and Hot Water Systems Using Evacuated Collectors U.S. Department of Energy (Ongoing).
- Task VII Central Solar Heating Plants with Seasonal Storage Swedish Council for Building Research (Ongoing).
- Task VIII Passive and Hybrid Solar Low-Energy Buildings U.S. Department of Energy (Ongoing).
- Task IX Solar Radiation and Pyranometry Studies Canadian Atmospheric Environment Service (Ongoing).

The participants in Task VIII are involved in research to study the design integration issues associated with using passive and hybrid solar and energy conservation techniques in new residential buildings. The overall objective of Task VIII is to accelerate the development and use of passive and hybrid heated and cooled low-energy buildings in the participants' countries. The results will be an improved understanding of the design and performance of buildings using active and passive solar and energy conservation techniques, the interaction of these techniques, and their effective combination in various climatic regions and verification that passive and hybrid solar low-energy

buildings can substantially reduce the building load and consumption of non-renewable energy over that of conventional buildings while maintaining acceptable levels of year-round comfort. The subtasks of this project are:

- O Technology Baseline Definition
- A Performance Measurements and Analysis
- B Modeling and Simulation
- C Design Methods
- D Building Design, Construction, and Evaluation

The participants in this Task are: Austria, Belgium, Canada, Denmark, Federal Republic of Germany, Italy, The Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United States, and United Kingdom. The United States serves as Operating Agent for this Task.

This report documents work carried out under Subtask C of this Task.



EXECUTIVE SUMMARY

This document presents the results of a survey of design tools conducted as part of Subtask C (Design Methods) of Task VIII of the IEA Solar Heating and Cooling Program.

At the start of the task, the participants agreed that it would be useful to identify and characterize the various design tools which existed for predicting the energy performance of passive and hybrid solar low energy buildings. A standard survey form was adopted, and Subtask C representatives from the member countries collected and submitted information on the design tools in use in each country. These responses were compiled into the present survey document.

The first draft of the survey, completed in November 1982, was originally intended as an internal task report, but it was subsequently decided that the material contained much information which could be of use to builders and designers. Moreover, a significant number of new tools had been developed which were not included in the first survey. Thus, it was decided to prepare an expanded survey document and to publish and disseminate the results widely.

The purpose of the survey was to compile information on a wide range of design tools which would assist design professionals in selecting the proper design tools for their particular needs. The report categorizes these tools in such a way as to facilitate the selection process.

The design tools identified in the survey are categorized according to the following:

- Machine Type or Equipment Required
- Intended Application
- Input/Output Data

The tools were then arrayed in tables which provided further information on these other important characteristics:

- · Initial Cost
- · Range of Energy Calculation Applications
- Intended User(s)
- · Building Design Phase Applicability
- System Compatibility
- Type and Number of Input Required
- Output Data Produced

Once a preliminary selection of a suitable tool has been made, the reader can refer to Appendix B where information on availability of each design tool is provided. The designer can order the tool or contact the listed address for more details.

Some interesting observations about the state-of-the-art of design tool development can be drawn from the survey results:

- Many design tools surveyed appear to have had little or no credible verification undertaken. This is a problem that Task VIII is attempting to address through a design tool evaluation activity.
- The number of design tools has been proliferating: In 1982 only 164 design tools were reported. When the survey was updated in 1984, the number increased to 230.
- An increasing number of tools are being developed for use with microcomputers.
- Ontil recently there were very few tools for calculating the performance of commercial buildings and those that existed required mainframe computers. During the past two years, a number of microcomputer-based design tools have been developed for commercial buildings. Some of these design tools are suitable for calculating the savings in lighting energy attributable to the use of daylighting.
- Most of the design tools for active solar energy systems use either the F-chart or the component-based simulation method. Most of the design tools for passive solar energy systems use the Solar Load Ratio or the Thermal Network Method.
- The survey has shown that the capabilities of microcomputer-based design tools are increasing at a rapid rate. More and more powerful design tools are being developed.
- When design tools are developed for simplicity and ease of use during the design process, they are generally incapable of evaluating the more sophisticated strategies that an energy-conscious designer is interested in investigating. Consequently, the desire for accuracy in analyzing unusual design features and the need for inexpensive, fast, and easy-to-use design tools have been incompatible features thus far.

The portability of design tools was a serious issue in the 1982 survey. However, the design tools developed during 1982-84 use CP/M and/or MS-DOS operating system and are therefore more portable.

The design tool survey forms were completed by a number of different individuals and some differences of interpretation may have arisen. It is, therefore, recommended that the contact person for individual design tools be contacted for the most accurate information. For some countries, the survey has not been updated since November 1982.

I. INTRODUCTION

1.1 BACKGROUND

This survey of design tools was undertaken as part of Subtask C, Design Methods, of IEA Task VIII, Passive and Hybrid Solar Low Energy Buildings. The goal of Subtask C is to provide improved and appropriate interactive design tools and methods for use by designers and builders in the design decision-making process. To develop improved and appropriate design tools, it is necessary to first understand what tools are currently available and what their application and characteristics are. The insight provided by the survey, and the analysis carried out using some of the tools in other subtasks, resulted in Task VIII participants being able to identify the kind of design tools that are needed.

A standard survey form was designed (Appendix A) which was used by the Subtask C representatives in 14 countries to gather the design tool information. The completed design tool surveys were sent to the Subtask C leader, who compiled the information into this Report.

The first series of survey forms were completed in 1982, and a draft Design Tool Survey was prepared in November 1982. Additional design tools were surveyed in 1983-84 and the present updated Design Tool Survey prepared in February 1985.

1.2 PURPOSE OF THIS REPORT

The purpose of this report is (1) to inform designers and builders about the availability of a wide variety of design tools for passive and hybrid solar buildings, (2) to present key information on the characteristics of these tools, and (3) to aid in the design tool selection process.

Although the information about design tools was originally collected as an internal IEA Task VIII, Subtask C working document, it was decided by the Task participants that the survey contained valuable information which could be of considerable benefit to the building industry.

The response of the building industry to the 1982 Design Tool Survey results, which were published in various solar conference proceedings, was very positive and many requests were received for the complete report.

In order to disseminate the information on the design tools to the largest group of people, a decision was made to publish the Design Tool Survey as a formal IEA technical report. It is hoped that this report will assist design professionals in selecting the proper design tools for their particular needs. The report also serves as a valuable historical reference for design tools developed prior to February 1985.

1.3 STRUCTURE OF THE REPORT

Section II explains the survey methodology and discusses the major characteristics of design tools which the survey was designed to elicit.

Section III presents the design tool categorization methodology and discusses the three sets of tables developed to present the information collected on the design tools. A sample design tool selection process is also provided. This section also contains the aforementioned table, on which all the surveyed tools are arrayed with their characteristics and capabilities clearly indicated.

Another series of tables is presented in Section IV in which the design tools have been tabulated by different classifications, giving a quantitative picture of design tool development to date. In addition, the major findings of the survey are contained in this section as well as an indication of information which could not be obtained.

The Appendix includes a sample survey form and a listing of design tools by country. This useful listing contains the name of the tool, a brief description, date developed and ordering information.

The detailed questionnaires for each design tool are listed in a separate document, Appendix 'C' to the Design Tool Survey, and is available for interested readers (see "Document Control Information" title page).

1.4 INTENDED AUDIENCE

The primary audience for the Design Tool Survey are those connected with the building industry - architects, engineers, builders, technicians, contractors, developers, manufacturers, etc. In addition, this report can be useful to universities, research laboratories, government agencies, code enforcement officials, etc.

1.5 ACKNOWLEDGEMENTS

This report was made possible by close cooperation between the IEA participating researchers and the government agencies which sponsored the work in the respective countries. The excellent cooperation extended by the authors/developers of design tools was a decisive factor in the completion of this report and is greatly appreciated. The individuals who provided comments and criticism on earlier drafts are thanked for their effort, without which this report could not have been completed.

1.6 LIST OF EXPERTS FROM PARTICIPATING COUNTRIES

Dr. Manfred Bruck
Austrian Solar and Space Agency
Garnison 7
A-1080 WIEN
AUSTRIA

Prof. A. DeHerde
Unite d'Architecture
Fac. Sciences Appl.
Place du Levant
B-1348 LOUVAIN-LA-NUEVE
BELGIUM

Mr. Michael Glover
Solar Research Program
National Research Council
Building 92
Montreal Road
OTTAWA, ONTARIO
CANADA

Mr. Ove Mørck
Thermal Insulation Laboratory
Technical University of Denmark
Building 118
DK-2800 LYNGBY
DENMARK

Prof. Hasso Schreck
Institut Fur Bau-,
Umwelt - Und
Solarforschung GmbH Berlin
Richard-Wagner-Str. 51
1000 BERLIN 10
FEDERAL REPUBLIC OF GERMANY

Mr. Sergio Los via B. Ferrancina 36 I-36061 BASSANO DEL GRAPPA (VI) ITALY

Mr. F. R. Stofberg Bouwcentrum Weena 700 ROTTERDAM NETHERLANDS

Mr. Michael Donn
Lecturer in Environmental Science
School of Architecture
Private Bag
WELLINGTON
NEW ZEALAND

Mr. Oyvid Aschehoug

SINTEF Architecture and Building

Technology
N-7034 TRONDHEIM - NTH

NORWAY

Mr. Jamie Lopez de Asiain Seminario de Arquitectura Biclimatica Associates Escuela Superior de Arquitectura, Arda Reina Mercedes S/N 41012 SEVILLA SPAIN

Mr. Lars Engstrom VBB AB P. O. Box 5038 S-10241 STOCKHOLM SWEDEN

Mr. M. Zimmermann EMPA-Bauphysik CH 8600 DUBENDORF SWITZERLAND Mr. David Bloomfield
Building Research Establishment
Department of the Environment
GARSTON, HERTFORDSHIRE
UNITED KINGDOM

Mr. Michael Holtz, A.I.A.
Architectural Energy Corporation
Suite 105
8753 Yates Drive
WESTMINSTER, CO 80030
UNITED STATES OF AMERICA

P. Richard Rittelmann
Burt Hill Kosar Rittelmann
Associates
400 Morgan Center
BUTLER, PA 16001
UNITED STATES OF AMERICA

II. SURVEY METHODOLOGY

2.1 SURVEY ORGANIZATION

The design tool survey was intended to produce information which would allow building design professionals to select the appropriate design tool for their needs, based on one or more key criteria. The survey form was therefore designed to obtain essential information on the design tool characteristics and availability. A sample survey form is found in Appendix A.

The survey forms were sent to design tool developers/authors by the Subtask C representatives in the participating countries. Some of the survey forms were completed and/or checked by telephone directly with the authors.

The information on the survey forms was then organized by Burt Hill Kosar Rittelmann Associates (U.S.) which categorized the design tools and developed the design tool selection procedure described in Section III.

Some of the information in the Design Tool Survey was not updated after 1982.

2.2 INFORMATION REQUIREMENTS

To determine the applicability or usefulness of various design tools for building design professionals, information on a number of important characteristics is required. Some of these are:

- · Machine or Equipment Required
- Building Type Applicability
- Phase of Building Design for Which the Tool is Suitable
- Initial Cost
- Operating Costs
- Ease of Use
- Range of Building Energy Calculation Applications (Flexibility)
- Calculation Method Used
- · Type and Number of Inputs Required
- Quality and Quantity of Output Produced
- Probable Effect on the Overall Project Cost

Each of the above criteria is discussed below.

2.2.1 System or Machine Required

Each design tool utilizes one of four types of equipment for its operation: mainframe computer, microcomputer, programmable calculator, or manual method. It is important to be able to select the tool appropriate to the equipment the user has available or prefers to use.

2.2.2 Building Type

It is important to know whether a tool is applicable to a particular type of building. Design tools tend to be suitable for either residential or small commercial buildings or large commercial buildings, the former being envelope-dominated and the latter being internal load-dominated buildings.

2.2.3 Phase of Building Design

A design tool may be applicable to one or more than one phase of the building design process. These phases are Pre-Design, Schematic, Design Development, Post-Design Services, and Research. Design professionals have different requirements during various phases of the building design and, therefore, need to match the design tool to the design phase for effective building energy performance estimation. During early design phases only a few details about the building may be known so that applicability of a tool to a certain phase of design is particularly important.

2.2.4 Initial Cost

The purchase price of the tool is the least part of the cost. The cost of the learning time may be many times the purchase price. Ancillary costs for some tools may not be obvious. For example, a microcomputer program which costs \$250 may also require the purchase of the compiler of a new language which in itself may cost more than \$250. Also, the program may require two days of setup and familiarization. Thus, \$250 may escalate to a true cost of well over \$1,000. Some factors to be considered in looking at the cost of the design tools are:

- · The purchase price of the tool.
- ° Cost of additional books, languages, and hardware.
- · The time required by a novice user to be able to operate the tool.
- · The time required by an expert user to be able to use the tool.
- The time required by novice/expert to become proficient in the use of the tool.

2.2.5 Operating Costs

Time and money are the critical concerns. Cash outlay for the operating costs may be zero or several hundred dollars. The time aspect of use will, of course, vary as experience is gained, and will also vary across the range of user sophistication and prior experience. There are other aspects to user involvement that affect time, and some of these issues are:

- The time required for the single use of the tool. The time required for subsequent uses of the tool (with the same problem). The influence of user background on the time required for use.
- Typical dollar cost per use, and variability with the problem and the environment.
- · Maintenance costs.

2.2.6 Ease of Use

The ease of use of a particular tool may depend upon the user's background, orientation, and personal preferences. Some aspects of a tool which will affect a potential user's interest in a design tool are:

- · Type of Design Tool:
 - Graphic, tabular, computer, etc.
 - Level of entry, design variable, or material characteristics.
- · Professional Background:
 - Architect
 - Engineer
 - Builder
 - Technician
 - Researcher
- ° Transportability of Tool:
 - Equipment required.
 - Time to use.

2.2.7 Range of Energy Calculation Applications (Flexibility)

Current energy design tools cover such a wide range of applications that both their generality and their focal points need to be explained. The limitations of the tools need to be known, especially the applicability of design tools for the following general categories:

· Applications for Energy Calculation:

- Heating:

Loads

HVAC Systems

Passive Solar

Active Solar

Underground Loads

- Cooling:

Loads

HVAC System

Passive Solar

Active Solar

Underground Loads

- Lighting:

Loads

Daylight

Artificial Lighting

- Domestic Hot Water (DHW):

Loads

Passive Solar

Active Solar

- Miscellaneous:

Fans

Pumps

Miscellaneous Electrical

Number of Building Zones That Can Be Handled

- Economics

2.2.8 Calculation Method Used

Most tools are developed using algorithms which model certain physical phenomena, for example: the dependence of convective heat transfer coefficient on wind speed. The algorithm used describes this physical phenomenon (confirmed by actual measurements). If the variation is extreme, the user should be made aware of the limitations of the method used, or should be referred to the technical literature if it applies. The user also must be informed about the validation efforts or the lack thereof.

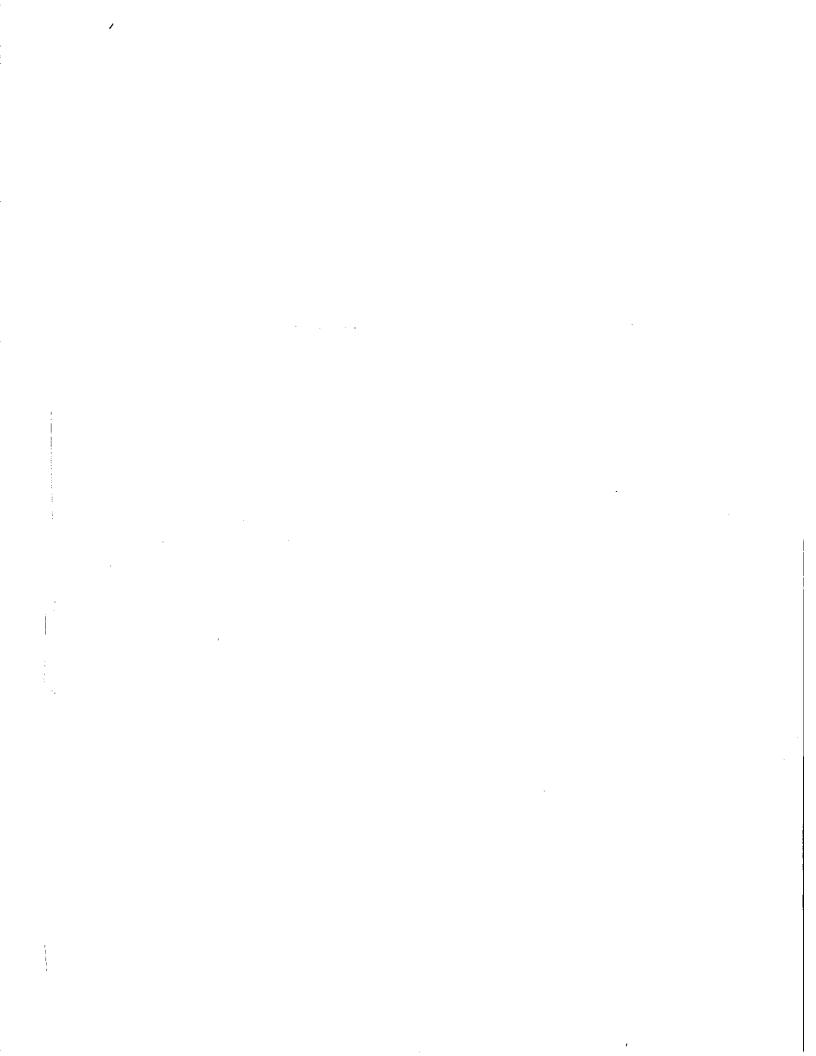
2.2.9 Type and Number of Inputs Required

The type and the number of inputs required has an important bearing on the use of a particular tool. Some input details are not available until late in the design process, and design tools which require these details, and cannot provide default values, may not be very useful. There are mainframe computer programs which may require a large number of inputs depending on the intended use in the building design phase. In some cases, appropriate default values may be used.

To adequately evaluate some design strategies, many designers will know which variables, as a minimum, must be considered. If a particular tool doesn't take those variables as input, the designer will know it is inappropriate for the particular evaluation.

2.2.10 Quality and Quantity of Output Produced

An important factor in determining usefulness of a design tool in a certain phase of the design is the quality and quantity of output produced. Some tools may give yearly output while others will give monthly output; still others may be able to show hourly results if necessary. Some design tools may have the economic calculations built into them and are capable of generating report quality output, while the others may give the results in the form of numbers and symbols without the mention of units. Many tools may calculate only the loads for equipment sizing and not the actual energy consumption for the building's systems.



III. CATEGORIZATION OF DESIGN TOOLS

3.1 DESIGN TOOL CATEGORIZATION METHODOLOGY

The information collected in the Design Tool Survey forms was organized in various ways in order to simplify the design tool selection for the design professionals. Each design tool reported in the survey was listed in three tables which categorize tools (1) by equipment required (Tables 3.1 - 3.4); (2) by intended energy calculation applications (Tables 3.5 and 3.6), and (3) by input/output data (Tables 3.7 and 3.8). Tables in categories 2 and 3 are further subdivided by building type. This categorization is shown in Figure 3.1

The categorization structure and the information contained in each table is discussed in more detail in the following sub-sections.

3.1.1 Categorization by Equipment Type Required

The design tools were first categorized according to the machine required to use the design tool. All tools were listed under one of four categories: mainframe computer, microcomputer, programmable calculator, and manual methods. Four different tables were developed according to machine type. The following common headings, shown in Figures 3.2 through 3.5, were utilized in each of these tables:

- · Country of origin.
- · Program code name.
- · Date of latest version.
- Intended Users such as Architects, Engineers, Technicians, Research Analyst, or Builders.
- Method of data entry and the units of calculation, such as interactive mode of inputs or file preparations, English units or SI units of calculation.
- · Application by Building Type. The building types have been defined as:
 - Residential/Small Commercial (R/SC)
 In these buildings, the envelope load is the significant portion of the total building load for heating and cooling. Typically, small

EQUIPMENT TYPE

Marin Franco	Paragram (1997)	Primary 1
(MC) Micro-Computer	(R/LC) Residential/ Large Commercial or san time containing the commercial or san time containing the commercial or san time or san time containing the commercial or san time containing the containing the commercial or san time containing the commercial or san time containing the contain	(R/LC) Residential/Large Commercial Particular Commercial W.C. Particular Law Commercial - ==
PC) Programmable Calculator	RASC) Residential/Small Commercial Research and Administration of the Commercial Research Small Commercial Com	(R/SC) Residential/Small Commercial Residential/Small Commercial Residential Commercial Commercial
Maruel Maruel	BUILDING TYPE APPLICATION	(R/SC) Re

FIGURE 3.1 - SUMMARY OF DESIGN TOOL CATEGORIZATION PROCEDURE

DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT - MAINFRAME COMPUTERS (MF)

(MF) Main Frame

Applications	Residential/ Large Commercial (Internal Loads-Dominate) R/LC
¥dd∀	Residential/ Small Commercial (Ervelope Loads Dominate) R/SC
	English G
Data Entry	eith easterft
	evitos/s/mi
6	Burlder
Intended Use	Research Analyst
ğ	กราวเกติวอโ
重	roemon Engineer
	Architect
	Users Mamal
bility	1992 Software Purchase Price (U.S. \$)
Availability	Time-Share Network
	System Compatibility
	Latest Version
	Program Code Name
	Country

FIGURE 3.2 - FIRST STAGE OF DESIGN TOOL CATEGORIZATION BY THE EQUIPMENT TYPE REQUIRED - MAIN FRAME COMPUTERS (MF)

DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT - MICROCOMPUTERS (MC)

(MC) Micro-Computer

				<	Avallability	#ty		Ĭ	ntended Use	Ç.		Data Entry		Applic	Applications
Country	Program Code Name	Latest Version	System Compatibility	Random Access Memory (RAM) Required (K)	alanericine	1982 Software Purchase Price (U.S. \$)	Users Manuel	Architect Trgineer	ragionatos)	tesearch Analyst Juider	Principle	end eusgert	D fisition	Residential/ Small Commercial (Envelope Loads Dominate)	Residential/ Large Commercial (Monal Loads Dominate)

FIGURE 3.3 - FIRST STAGE OF DESIGN TOOL CATEGORIZATION BY THE EQUIPMENT TYPE REQUIRED -MICROCOMPUTERS (MC)

DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT - PROGRAMMABLE CALCULATORS

(PC) Programmable Calculator

					Avallability	offity		Frte	ntended Use	Use		Data Entry		¥da∀	\pplications
Country	Program Code Name	Latest Version		Printer	٥٠					feyla			Umits		Residential/ Small Commercial Large Commercial
			System Compatibility	peanbag	lanoitq⊖	1982 Software Purchase Price (U.S. \$)	Usera	15eJirlosA Nesnign3	пвизнийзеТ	Research An Builder	evitossetine	eff esager9	SI English	(Envelope Loads Domnate) R/SC	(Internal Loads Dominate) R/LC

FIGURE 3.4 - FIRST STAGE OF DESIGN TOOL CATEGORIZATION BY THE EQUIPMENT TYPE REQUIRED - PROGRAMMABLE CALCULATORS (PC)

DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT - MANUAL METHOD (MN)

(MN) Manual

					Avaitability	bility		nte.	Intended Use	98	ת ם	Data Entry	Appl	Applications
Country	Program Code Name	Latest Version	·						45-464	12 Çişu /		Units		Residential/ Small Commercial Large Commercial
		٠		e de la company		1962 Purchase Price (U.S. \$)	Manuel	Architect	Technician	Pabling	seldsT sriges	Fnglish	(Envelope Loads Dominate)	(internal Loads Dommate) R/LC

FIGURE 3.5 - FIRST STAGE OF DESIGN TOOL CATEGORIZATION BY THE EQUIPMENT TYPE REQUIRED - MANUAL METHODS (MN)

commercial buildings with few zones (commercial facilities with very minor internal loads) and residences fall into this category. These buildings are very climate-sensitive.

- Residential/Large Commercial (R/LC)

These buildings are characterized by the dominance of internal loads (such as lights, appliances, people). The envelope load for these buildings is a relatively small part of the building heating and cooling requirements. Typically, large commercial buildings with a large number of zones fall into this category. These buildings tend to be relatively insensitive to climate. The word "residential" appears in this definition because it is possible to use the design tools for both large commercial buildings and single zone residential calculations. It may not, however, be a cost effective method for residential energy calculations.

• Availability - The information under this heading differs according to machine type:

- Mainframe Computers:

System compatability (such as the computer system required, IBM, VAX, etc.).

Time-sharing network (Is the program available for use on timesharing networks?).

Software purchase price in U.S. currency.

Availability of user's manual.

- Microcomputers

System compatability (the microcomputer or the operating system for which the design tool was developed).

Random Access Memory (RAM) required to use the design tool.

Peripherals (such as printers, plotters, etc.). The symbol "P" is used if a printer is required; "PL" is used if a plotter is required; and "OP" is used if the use of a printer is optional.

Software purchase price in U.S. currency.

Availability of user's manual.

- Programmable Calculators

System compatability (the type of programmable calculator such as TI-59, HP-41, etc.).

Printer requirements, given as "required" or "optional".

Software purchase price in U.S. currency.

Availability of user's manual.

- Manual Methods

Type of design tool - graphic, tabular, or both.

Software purchase price in U.S. currency.

The actual completed tables for the categorization by equipment type required are found on pp. , , and . A filled-in circle in these tables indicates that a tool is suitable for a particular application or denotes a positive answer.

3.1.2 Categorization by Intended Application

The design tools were further categorized by grouping according to their intended building energy calculation application. In this categorization, the design tools for Residential/Small Commercial buildings (R/SC) are combined. Design tools for Residential/Large Commercial buildings (R/LC) are also combined. The type of information listed in this categorization method is shown in Figure 3.6.

In this categorization, the following information is given:

- · Country of origin.
- · Program code name.
- Key words this identifies whether the design tool is intended for mainframe computers (MF), microcomputer (MC), programmable calculators (PC), or manual methods (MN).
- Phase of building design for which the tool is suitable (pre-design, schematic design, design development, post-design services, and research are listed).

Applications				Residential/ Small Commercial Large Commercial	(Envelope (Internal	R/SC R/LC			
Mejor Algorithm									
Mumber Of Bidu Zones Per Run									
l	į	E CONTIMICS							
ı		MISS	Misc Electrical						
ı		_	F	Si	وعاد وعاد				
	Applications	MHG	JRIOS PAISSED						
İ		լ որհետոյ	L	Slave.	(אור) (ינוכישן ר	11A			
i de		Leihit	Dayighting Dayighting FC(LUX) Lave)s						
Apple		Cirching	E	ວປ	22 26. 210				
ı			ACINE Solari						
			Space Temperatures HVAC Systems Passive Solar						
		ffeathra	E		SDE	^7 ^A			
			Shadhq Druderqround						
			Passive Solar Passive Solar Active Solar						
			Space Temperatures						
	Design Phase			Post Design Research					
				Schematic Design					
L				Pre-Design Schemans Design					
	Keyword								
	Program Code Name								
	Country								

FIGURE 3.6 - SECOND STAGE OF DESIGN TOOL CATEGORIZATION BY THE APPLICATIONS FOR BUILDING ENERGY CALCULATIONS

- Applications of the design tool for building energy calculation. The following general calculation categories are given:
 - Calculations for Heating. Includes load determination, space temperature, HVAC systems, passive solar energy systems, active solar energy systems, shading calculations, and the effects of mass.
 - Calculations for Cooling. Includes load determination, space temperatures, HVAC systems, passive solar energy systems, active solar energy systems, shading calculations, underground loads calculations, and the effects of mass.
 - Lighting Calculations. Includes lighting load determination, daylighting calculations, including footcandles (lux) levels of artificial lighting requirements.
 - Domestic/Service Hot Water. Includes the load determination, passive solar energy systems for hot water heating (such as "breadbox water" heaters), active solar energy systems.
 - Miscellaneous Energy Calculations. Includes energy for fans, pumps, blowers, electrical appliance, elevators and escalators, etc.
 - Economic Analysis.
 - Number of Building Zones Per Run. This information gives the number of zones that can be handled per run/calculation of the design tool. Typically, the design tools that calculate ten or fewer zones are classified as R/SC. This criterion of classification was used if the design tool developer did not specifically recommend the use of the design tool for either R/SC or R/LC.
- Algorithm Used. This gives the major calculation method used by the design tool. This information is approximate because one design tool may use several different algorithms.

The tables for the categorization by intended application are found on pp. 65 and 85. A darkened circle indicates positive capability or applicability of the design tool.

3.1.3 Categorization by Input/Output Data

The third method of the design tool categorization is by the Input/Output data, that is, the input required and the output produced. In this categorization, the design tools for Residential/Small Commercial buildings (R/SC) are combined

together. Similarly, the design tools for Residential/Large Commercial (R/LC) are combined. The type of information listed in this stage of categorization is shown in Figure 3.7.

The completed tables for categorization by input/output data are found from pp. 93 to 119. The symbols utilized in the tables have the following meaning:

- Darkened circle means required/given information.
- Hollow circle means that the design tool does not accommodate this information.

Blank - A blank space denotes that information was not provided.

This categorization provides the following information:

- · Country of origin.
- · Program code name.
- Key words MF, MC, PC, MN, denoting the machine type required by the design tool.
- Input data Indication is provided regarding the inputs required at various phases of buildings design process. The weather data requirements are also provided. The inputs that may be considered during the phases of building design are:
 - Pre-Design

Building type and schedule
Occupancy rates
Building floor area
Space temperatures
Local energy costs
Building shape and orientation
Lighting requirements
Code requirements (such as National Fire Protection Code, National Electrical Code, Basic Building Code, Basic Plumbing Code, etc.)

			J.	÷				
	Applications		Residential/ Large Comme	(Internal Loads Dominate)	R/LC			
•	#ddv		Residential/ Small Commercial Large Commercial	(Envelope Loads Dominate)	R/SC			
		Energy Systems Total Building Only						
		HOURLY PROTHE						
ll	Juel Use	Amusi Peak Demand 1stem Components						
	-	Ľ	nortomu neman		LANDA STOOPA			
Output Data	L	匚	norigmuz	nea vir	iluCy,			
5	30E	 			£1√2 QE3Đ			
olp)	=	匚			7.4			
٥	150	\vdash		Ų0	Ma, Stas			
	Š	Month						
	Ę	\vdash			NOM			
	For Load Output Tumps			би	ъγν			
	ŭ.	\vdash		1n9hCi	no5 and3			
	1	.6:2		9= A 1("				
1	Sul	\vdash	SHIC10	adsi √ (h6Ω i6.	NUSH Sigil			
		Alminole age 19-4						
J	Windling	ATHORN DEGREE DAYS AND A HITTON SAA						
	Wiral	Annia Degree Days						
ı	ē			A1-	1424			
J		\vdash		y Tape	,r:-			
ı	-		\$10:11	نځ زدی	6 -			
J	5 E	Erectivosi Controls Lighting Systems						
_	o Desem	Emetav& laboritoe 3						
ě	ضۂ	Mechanical Systems Mechanical Controls						
Input Data	5-2	Sted Costi &Daye, Trans. Frietrot Suriace Data						
٤	D. se	SIGO SEEV						
ŀ	-	_	els cheaules	S pois	Sigo Ober			
	Schematic		64	OPUS U	100R			
	iche.	Clasing Areas & Orients QuincS						
ļ	٧.	Sailace Aleas						
		Lighting Requirements Cade Requirements						
	ş	Cocal Energy Costs Bldg Shape & Orient						
	Pre Design	Space Temperatures						
J	ď		EsiéA	4 Due Gr				
		31	P Scueda		Spig			
		143		W) VOIII	JE 1			
Keywords								
Program Code Name								
Country								

FIGURE 3.7 - THIRD STAGE OF DESIGN TOOL CATEGORIZATION BY THE INPUT/OUTPUT REQUIREMENTS

- Schematic Design

Envelope surface areas
Glazing area and orientation
Zoning of the building
Room shapes
Building operating schedule

- Design Development

Building material characteristics Shading coefficient and daylighting transmission Interior surface data

- Engineering Design Development

Mechanical systems
Mechanical controls
Electrical systems
Electrical controls
Lighting system
Lighting controls

Weather Data - Information on temperature and solar radiation is required for effective design. The table indicates what kind of ambient temperature information a tool utilizes - hourly tape, typical day, monthly average, annual average, monthly degree days, annual degree days, average monthly maximum and minimum. The required type of solar radiation information, such as hourly tape, typical daily profile, monthly average daily total, is provided.

- Output data The type of output which the design tool can provide is indicated. The categories of outputs are as follows:
 - Load determination (for the building energy calculations)

Components Zone Building - Load output (the frequency at which the building energy requirements are calculated)

Hour Day Month Season Year

- Temperatures (building temperatures which are used for the energy calculation)

Air temperature
Surface temperature
Graphic plot of temperature

- Fuel use (the energy use in the form of fuel supply)

Monthly consumption
Annual consumption
Monthly peak demand
Annual peak demand
System components
Hourly profile
Energy systems
Total building only

3.2 DESIGN TOOLS SELECTION METHODOLOGY

A method of using the information in the design tool categorization tables for design tool selection is shown in Figure 3.8. This supposes that a design tool is required for use on a mainframe computer, for large commercial buildings (R/LC), has certain inputs and outputs, and handles heating and cooling energy calculations. The procedure to be followed starts at point "A", the table for "mainframe". In this table, in column "B", all the design tools which are suitable for R/LC applications are indicated. An appropriate design tool can then be selected and more information about it determined from Appendix B.

In the next step, the table for R/LC and categorization by energy calculation application can be used to determine energy calculation capabilities. In this table, at point "C", the key word denotes (MF) - mainframe computer. Again, the Appendix can be referenced for more information on promising design tool(s).

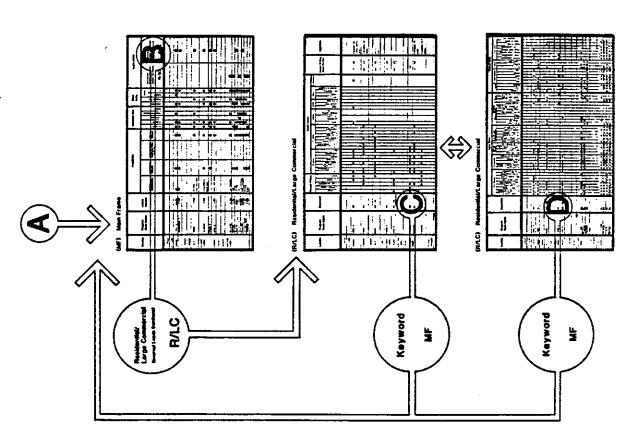


FIGURE 3.8 - A SAMPLE PROCESS OF DESIGN TOOL SELECTION

Similarly, the categorization table for Input/Output Data and R/LC can be examined for a particular design tool(s). The procedure can be started at any point in Figure 3.8. With this categorization procedure, a design tool can be selected on the basis of any number of requirements and the likelihood of identifying desirable and appropriate tools is very high.

3.3 DETAILED LISTING OF DESIGN TOOL CATEGORIZATION

The following tables list various categories of design tools in this organization methodology described above.

- Table 3.1 Design Tool Categorization by the equipment type required Mainframe Computers (MF)
- Table 3.2 Design Tool Categorization by the equipment type required Microcomputer (MC)
- Table 3.3 Design Tool Categorization by the equipment type required Programmable Calculators (PC)
- Table 3.4 Design Tool Categorization by the equipment type required Manual Methods (MN)
- Table 3.5 Categorization of Design Tools by Intended Application for Residential/Small Commercial Buildings (R/SC)
- Table 3.6 Categorization of Design Tools by Intended Application for Residential/Large Commercial Buildings (R/LC)
- Table 3.7 Design Tool Categorization by Input/Output Data for Residential/Small Commercial Buildings (R/SC)
- Table 3.8 Design Tool Categorization by Input/Output Data for Residential/Large Commercial Buildings (R/LC)

TABLE 3.1 DESIGN TOOL CATEGORIZATION BY EQUIPMENT TYPE REQUIRED: MAINFRAME COMPUTERS (MF)

	·		
		·	

TABLE 3.1 - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MAINFRAME COMPUTERS (MF)

(MF) Main Frame

				Availability	biity		ate .	epue	Intended Use	Ф		Data Entry		Appli	Applications
Country	Program Code Name	Latest Version					\vdash	<u> </u>	teyls	`	· · · · ·		Units	Residential/ Small Commercial	Residential/ Large Commercial
			System Compatibility	Time-Share Network	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect	Engineer Technician	Research An	Builder	Interactive	Prepare File	failigh∃ IS	(Envelope Loads Dominate) R/SC	
AUSTRIA															
BELGIUM	LPB1	/83	IBM	•			•	•			•	•	•		•
	SOLPA	/81	ан	•						•	•	_	•	•	
CANADA	CMHC-2	10/82	IBM	•		•	•		•		•	-	•	•	
	ENERPASS-1	4/82	IBM	•		•					•		•	•	
	нопе	3/82	IBM	•.		•	•	•	•						•
	REMAS	6/82	VAX	•		•	_	•			•		•		•
DENMARK													. :		
WEST GERMANY						:									

TABLE 3.1 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MAINFRAME COMPUTERS (MF)

(MF) Main Frame

				Availability	biiity		Intended Use	9d U	98		Data	Appli	Applications
Country	Program Code Name	Latest Version				-		12 (Je			Units	s Residential/ Small Commercial	Residential/
			System Compatibility	Time-Share Network	1982 Software Usc Purchase Price Mar (U.S. \$)	Users Manual Architect	Engineer	Technician Research Ar	19biiu8	Interactive	Prepare File English	(Envelope Loads Dominate)	(Internal Loads Dominate)
ITALY	MORE	2/82	UNIVAC VAX 11/780			Ť.	ŀ	·					
NETHER- LANDS	ALADIN	7/82	HONEYWELL BULL/66	•			•	-		10		•	•
NEW ZEALAND								-				,	
NORWAY	EFB-3	2/81	IBM, HP1000		•		•	-		•	-		•
SPAIN							_	+		+			
SWEDEN	BRIS	/82	CDC, PRIME 750				•	•	•	+	-	•	
	LTH DEROB	/82	IBM, CDC UNIVAC			•	•	•			•	•	
SWITZER- LAND	BAUDYN	1/81	CDC PRIME				•	•		+		•	
	DYWAN	1/81	IBM	•		•		 	Ľ	•		•	
	HELIOS 1	.1/82	CDC		•		•	•				•	

TABLE 3.1 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MAINFRAME COMPUTERS (MF)

(MF) Main Frame

				Avaitabiitty	xiity		inter	Intended Use	lse		Data Entry		Applik	Applications
Country	Program Code Name	Latest Version			·			*2.dst	101			Units	Residential/ Small Commercial	Residential/ Large Commercial
			System Compatibility	Time-Share Network	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect Tengineer	Technician	Research Ar Builder	Interactive	Prepare File	hailgn∃ IS	(Envelope Loads Dominate) R/SC	
SWITZER- LAND CID.	notsi	3/82	PRIME	•		•	•			•	•	•		•
	PASSIM	12/81	VAX 11/780			•	•	_		•	•	•		•
	SOLAR TRAP	1/81	PRIME	•		•	•			•	•	•	•	
	STEMOD	1/81	IBM	•		•	•			•		•	•	
UNITED KINGDOM	ESP	/84	VAX, PRIME,H.WELL		000°01≱	•	•			•		•	•	
	SEU 2	/83	CDC, GEC, HONEYWELL		\$5,000.00	•	•			•		•	•	
UNITED STATES	AXCESS VERSION 7	1/81	IBM	•	\$12,500.00	•	•				•			•
	BLAST	1/80	IBM, CDC	•		•	•			•	_			•
	BLDSIM						•							•
	BRIDG & PAXTON EN ANAL PROG		IBM, DEC				•.				•	•		•

TABLE 3.1 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MAINFRAME COMPUTERS (MF)

(MF) Main Frame

	·			Availability	bility		Inten	Intended Use	es	[©] 교	Data Entry	Applic	Applications
Country	Program Code Name	Latest Version	System Compatibility	Time-Share Network	1982 Software Purchase Price (U.S. \$)	Users	Architect Engineer	Technician Research Analyst	Builder	Interactive Prepare File	English Units	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Loads Dominate)
UNITED	CALPAS 1	1/81	IBM, DATA	•	\$ 55.00	•	•	•	•	•	•	•	
	CALPAS 3	5/84	IBM	•	\$ 695.00	•	•	•		•	•	•	
	DEROB	6//1	CDC		Į .	•	•			•	•		•
	DOE-2	1/80	IBM, CDC	•	\$ 400.00	•	•	•		•	•		
	ECP	1/78	UNIVAC		\$ 335.00	•	•		•	•	•		
	EMPS 2	1/82	IBM UNIVAC		1	•	•	•		•			
	ENERGY ANALYST			•					•				
	EPDS			•		•) :	
	ESAS		IBM, VAX PRIME, UNIVAC				•	•		•			
	ESP~2	1/78	IBM, CDC CFFARK 3000		\$6,000.00	•	•				•		•
										_			

TABLE 3.1 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MAINFRAME COMPUTERS (MF)

(MF) Main Frame

			?	Availability	bility		Intended Use	98/	Data Entry		Applic	Applications
Country	Program Code Name	Latest Version	System Compatibility	Time-Share Network	1982 Software U Purchase Price M (U.S. \$)	Users Manual	Architect Engineer Technician	Research Analyst Builder	Interactive Prepare File	English Chits	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Loads Dominate) R/LC
UNITED	F-CHART	1/80	IBM, CDC, UNIVAC	•	\$ 800.00	•	•	•		•	•	
	F-LOAD BLDG LOAD CALC	2/81	IBM, UNIVAC		\$ 800.00	•	•		•	•	•	
,	HACE			•		•	•		•		•	
	HOUSE	1/82	CDC		\$ 200.00	•	•		•		•	
	HUD-RSVP/2	1/79	CDC, UNIVAC	•	\$ 175.00	•	•	•	•	•	•	
	LPMTZ	1/82	CDC, UNIVAC	•	\$15,000.00	•	•				•	
	MEDSI ANN ENER CONS			•	\$ 20.00 - \$150.00/RUN		•		•			•
	MQAUDIT			•			•	. "				•
	NECAP	1/75	cnc		\$ 1,605.00	•	•		•			•
	PACE	1/80	CDC, UNIVAC		\$ 100.00		•	•	•		•	

TABLE 3.1 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MAINFRAME COMPUTERS (MF)

(MF) Main Frame

				Availability	bility		Inten	Intended Use	36		Data Entry		Appli	Applications
Country	Program Code Name	Latest Version						tsvle				Units	Residential/ Small Commercial	Residential/
			System Compatibility	Time-Share Network	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect Fingineer	Technician Research An	19bliu8	Prietactive	Prepare File	SI English	(Envelope Loads Dominate)	(Internal Loads Dominate)
UNITED	PASOLE		IBM. CDC			•	•	ľ			1.			
	PASS-ONE			•		•	•	-		•	+-	•		
	QUIKEE		CDC	•		•	•	-	<u> </u>					•
	SCM(OH)			•		•	•	•	•	•	+			
	SEE					•	•	+	•		-			
	SESOP		UNIVAC		\$650.00	•	•				-		•	
	SHCOST	1/79	UNIVAC		\$580.00	•	•	•	•	+-	•		•	
	SOL-300						•	╁-		•	•		•	
	NOOTOS			•		•	•	•	•	•	-		•	
	SOLCOST	1/79	IBM, CDC	•	\$300.00	•	•	•	•	•	•	•	•	
										1	1			

TABLE 3.1 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MAINFRAME COMPUTERS (MF)

(MF) Main Frame

				Availability	oiitty		Inte	Intended Use	Use		Data Entry		Applk	Applications
Country	Program Code Name	Latest Version	System Compatibility	Time-Share Network	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect Engineer	Technician	Research Analyst Builder	Interactive	Prepare File	S IS	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Loads Dommate) R/LC
	SOLTES	1/79	CDC		\$ 175.00	•			•		•		•	
	SUNCODE	7.82	CDC, VAX 11/780, PRIME	•	\$1,700.00	•	•	•	•	•	•	•	•	
	SYRSOL	1/78	HBM				•	•	•				•	
	TRACESOLAR	1/80	IBM	•			•		•		•			•
	TSD		Mai				•				•			•

1					
					•
		·			

TABLE 3.2 DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT: MICROCOMPUTERS (MC)

•				
;				
ļ				

TABLE 3.2 - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MICROCOMPUTERS (MC)

(MC) Micro-Computer

				,	Availability	oiity	-=	tende	Intended Use		Data Entry		Applications	ations
Country	Program Code Name	Latest Version		(MA					taylan		Units	1	Residential/ Small Commercial	Residential/ Large Commercial
			System Compatibility	Random Ac Memory (R) Required (K	Peripherals	1982 Software Users Purchase Price Manual (U.S. \$)	∾ <u>a</u> toetidonA	Engineer	Research A Builder	Interactive	Prepare File English	IS	(Envelope Loads Dominate) R/SC	(Internal Loads Dominate) R/LC
AUSTRIA	EBIWAN	12/84	IBM	128			•	•		•		•	•	
BELGIUM	LPB4	/82	HP	64	P		•	•		•	•	•		•
CANADA	HOTCAN	5/82	APPLE II	48	P	•	•	•	•	•	•	•	•	
	HOUSING E	3/82	WANG 2200	5	đ	•	•	•	•	•		•	•	
	PASWING	12/81	WANG 2200	7-5	đ	•	•	•	•	•		•	•	
DENMARK	PAMA	5/82	LUXOR	16				•	•	٠		•		•
	METHOD 5000	10/84	APPLE IIe, HP	87		00.0098	•	•		•		•	•	
WEST GERMANY														
ITALY	MORE	2/82	нР 9845/В	140	ę.	•	•	•	•		•	•		•
NETHER- LANDS	ENERGIEBALANS		нР 85				•	•		•		•	•	•

P: Printer OP: Optional Printer PL: Plotter

TABLE 3.2 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MICROCOMPUTERS (MC)

P: Printer OP: Optional Printer PL: Plotter

TABLE 3.2 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MICROCOMPUTERS (MC)

(MC) Micro-Computer

					Availabiiity	biity		Inte		Intended Use	ø.		Data Entry		Applic	Applications
Country	Program Code Name	Latest Version		(M) (eta					<u> </u>	tayler			Units	 	Residential/ Small Commercial	Residential/
			System Compatibility	Random Acc Memory (RA Required (K	Peripherals	1982 Software L Purchase Price N (U.S. \$)	Users Manual	Architect	Technician	Research An	Builder	evitosteini	Prepare File English	IS	(Envelope Loads Dominate) R/SC	(Internal Loads Dominate)
SWITZER- LAND	MODPAS	6/82	нР 9845/В	100	7I.		•	ľ	<u> </u>	•	1	Ť		┢		
	SORANE							•	<u> </u>			+-		•	•	
UNITED KINGDOM	BREADMIT	/83	PET		P4	±4 100	•	•	•	•		•		•	•	
	SEU DESIGN METHOD	/83	BBC PET	32	ě	\$100.00	•	•	-	1_		•		•	•	
UNITED	AC LOAD		CP/M SYST FORT COMP	84	ď	\$500.00	•	•	ļ. <u>.</u>			+	•	•	•	
	AC PROGI/ENERGY	08/	WANG 2200 B-5, VP-8		<u>a</u>	WANG \$2,500.00 OTHERS \$500.00	•	•	ļ			•	•	+-		•
	ADM-2	/83	16 BIT MACH & FORT COMP	79	8		•	•	•		1	•	•	+-		•
	ADM-3	/83	CP/M OR MS-DOS SYS	79	B		•	•	•		•	•	•		•	
	ARTIF LTG LOADS ANAL PROG	/81	нР 9831А		a	\$500.00	•	•	•		+	•	•	 		•
	BAS. LOAD	/83	CP/M & MS-DOS SYS	56	<u>م</u>	\$495.00	•	•	•		•	•	•	 		•

P: Printer OP: Optional Printer PL: Plotter

TABLE 3.2 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MICROCOMPUTERS (MC)

(MC) Micro-Computer

				•	Availability	oliity		Inte	Intended Use	Use		Data Entry	æ ≥	Applik	Applications
Country	Program Code Name	Latest Version	System Compatibility	Reduked (K) Reduked (K)	Peripherals	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect Englineer	Technician	Research Analyst Builder	Interactive	Prepare File	Childrah Childrah si	Residential/ Small Correctial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Loads Dominate) R/LC
UNITED	BILL		APPLE II,	87	ď	\$ 295.00	•	•	•	†	÷		+	•	
	BUEHRER METHOD	/83	ELEC. SPR. SHT. W/COMP.	64	å		•	•	•	<u> </u>	•		•		•
	CADLIGHT	/83	IBM-PC WITH MS-DOS 2.0	128	E4	\$ 500.00	•	•	•		•		•		•
	CALPAS 3	/84	IBM PC	256	Q.	\$ 795.00	•	•		•		•	•	•	
	CARRIER E20-2	/83	CP/M SYSTEM	64	д	\$ 700.00	•	•	•		•		•		•
	CEAC						•	•	•		•		•		•
	CIRA				OP		•	•	•		•		•	•	
	СТ4М		TRS, I, II III, CPM	87	P	\$1,495.00	•	•			•		•		•
	COMM BLDGS EN ANAL PROG	/83	J	56 CP/M 128 MS-D	O.P	\$ 695.00	•	•	•		•		•		•
	COMM HVAC LOAD PROG	/83	CP/M SYST OR MS-DOS	56 CP/M 128 MS-D	OP	\$ 595.00	•	•	•		•		•		•

P: Printer OP: Optional Printer PL: Plotter

TABLE 3.2 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MICROCOMPUTERS (MC)

(MC) Micro-Computer

					Availability	oiity		Inte	Intended Use	รักร	Φ	<u> </u>	Data		Applic	Applications
Country	Program Code Name	Latest Version		(M) (M)						isylsi			ר	Units	Residential/ Small Commercial	Residential/
			System Compatibility	Random Acc Memory (RA Required (K	Peripherals	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect Engineer	Technician	Research Ar	Builder	Interactive	Prepare File English	IS	(Envelope Loads Dominate) R/SC	(unternal Loads Dominate) R/LC
UNITED	COMM LOAD	/83	CP/M SYST & FORT COMP	99	OP	\$350.00	•		<u> </u>		•		Ľ	Ŀ		
	DAYLITE	/83	APPLE II, III, IBM PC	84	£,	\$750.00	•	•	•			•	<u> </u>		•	
	E20-II PROG		TRS 80		OP			•	•		İ		-		•	
	ECAL	/83	CP/M SYST & FORT COMP	32	Δ.	\$395.00	•	•	•		•	•	•		•	
	ECAP	/83	CP/M OR IBM PC	64	а	NOMINAL	•	•	•		•	•	•		•	
	EEDO	5/84	IBM PC OR XT W/MS-DOS 2.0	128	Ω.	\$495.00	•	•	•		•	•	 •	•	•	
,	ELSOL		CP/M SYST		£4	\$300.00	•	•	•		•	•	•		•	
	EN2M		TRS 80 I, II, III	84	P4	\$350.00	•	•	_			•	•	•	•	
	EN4M		TRS 80 I, II, III	48	P 4.	\$995.00	•		_			•	•	•	•	
	ENCON 2	/83	TI 99/4	48	ы	\$ 50.00	•	•			•	•			•	

P: Printer OP: Optional Printer PL: Plotter

TABLE 3.2 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MICROCOMPUTERS (MC)

(MC) Micro-Computer

				*	Avaitability	iity		inte	intended Use	Ďρ	99		Data Entry		Applic	Applications
Country	Program Code Name	Latest Version		ese (M						12 ylsı				Units	Residential/ Small Commercial	Residential/ Large Commercial
			System Compatibility	Random Acc Memory (RA Required (K)	Peripherals	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect	Engineer	Research Ar	Builder	Interactive	Prepare File	Hailgn3 IS	(Envelope Loads Dominate) R/SC	(internal Loads Dominate) R/LC
UNITED STATES	ENECO	/84	CP/M SYST		Ъ		•		•		•	•			•	
	ENERGY \$AVE	/83	CP/M SYST IBM PC APPLE	79	Ъ	\$ 295.00	•	•	•		•	•			•	
	ENERGY ANALYST				д	\$2,000.00	•				•	•		•	•	
	ENERGY BILL ANALYSIS	/83	APPLE II PLUS	99	ρı	\$ 500.00	•	•	•	_	•	•			-	•
	ENERGY - I	/83	RAD. SHACK I, II, III	48	Ъ	\$ 650.00	•	•	•	<u> </u>	•	•			•	
	ENERGY - II	/83	CP/M SYST	99	e.	\$ 450.00	•	•	•		•	•				•
	EWIREAS	/83	APPLE II PLUS	87	A B		•	•	•		•	•	<u> </u>		•	
	EWIT	88/6	IBM OR WANG PC	79	д	\$ 250.00	•	•	_			•	-	_	•	
	F-CHART PLUS	1/82	TRS 80 III APPLE II	48	ч	\$ 400.00	•	•	•	_		•		•	•	
	F-CHART SOL SYST. DESIGN		CP/M SYST		дı	\$ 300.00	•	•	-		•	•			•	

P: Printer OP: Optional Printer PL: Plotter

TABLE 3.2 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MICROCOMPUTERS (MC)

,	7
3	צ
7	₹
7	₹
Ş	≝
ì	_
Ī	5
~	₹
•	- 1
C	J
	ر ا
)
	ノーつう
Ainro	ノーつうこ
Minroll	
Nioro_C	
O VIOL	ソーつ TOTAL ?
COUNTY CO	
CICACIPA COP	

ı					Availability	biity		Inte	ndec	Intended Use			Data Entry		Applic	Applications
Country	Program Code Name	Latest Version) /W) cezs						taylar		 	Units	s Residential/ Small Commercial	Percial	Residential/
			System Compatibility	Rendom Acc Memory (RA Required (K	Peripherals	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect	Technician	Везеатсь Ат	Builder	Interactive Prepare File	English	(Envelope Loads Dominate) δ	nate)	(internal Loads Dominate) R/LC
UNITED	F-LOAD BLDG LOAD CALC	2/81	APPLE II	87	Ъ.	\$ 425.00	•				┢		Ŀ	Ŀ		
	FASER	/82	CP/M SYSTW/ B-RUN MOD.	79	OP	i	•	•	•			+	•			•
	GAIN		WNAG 2200	32	Ъ	1 2	•	•	•		+-	-	•			•
	HCC III	/81	CP/M OR TRS-DOS W/FORT COMP	64	Д.	\$ 200.00	•	•	•	<u> </u>	•	-	•			•
	HEATING COOLING LOAD		CP/M SYST		ы		•	•	•		+		•	•		-
	HELIOS		NORTHSTAR	87	ољ	\$ 395.00	•	•	•		•	-	•	•		
	HUBER	/83	CP/M SYST	87	ďO	\$ 95.00	•	•	•	Ĺ		-	•	•		
	HVAC PACKAGE	/83	HP9845B	64	do	\$5,000.00	•	•	•	Ľ	+		•			•
	IMPSLR	6/80	APFLE, TRS 80, COMMADORE	32	40	\$ 250.00		•			+	-		•		
	INSULATE		APPLE II	48	06	\$ 195.00	•	•	•	L		<u> </u>	•	•		

P: Printer OP: Optional Printer PL: Plotter

TABLE 3.2 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MICROCOMPUTERS (MC)

(MC) Micro-Computer

					Availability	bility		Inte	ndec	Intended Use		ப்	Data Entry	Appli	Applications
Country	Program Code Name	Latest Version		(W						taylar			Units	Residential/ Small Commercial	Residential/ Large Commercial
			System Compatibility	Random Acc AR) YouneM Required (K)	Peripherals	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect Frgineer	Technician	тА потвезея	Builder	Interactive Prepare File	fieilgn∃ IS	(Envelope Loads Dominate) R/SC	(Internal Loads Dominate) R/LC
UNITED	ISDP	1/81	DIGITAL	75	OP			•			Ë		•	•	
	LASL 81		TRS 80 III	32				•			-	•	•	•	
	LOAD GRAPHICS	/83	ANY CP/M BASED MACH	79	OP	\$ 75.00	•	•	•				•	•	
	MEPA		TRS 80 III ABC-80 & 800	79	0P	\$400.00	•	•			•		•	•	
	MICROFIX	1/81	APPLE HP85 COMMADORE	16	OP	\$150.00	•	•			-	•	•	•	
	MICROLITE 1.0	/83	APPLE II IBM PC	48 AP 128 TBM	g.	\$ 25.00	•	•	•			•	•	•	
	MICROPAS	/83	CP/M & MS-DOS SYST 64&96	64896	e.	\$795.00	•	•	•				•	•	
	NEATWORK	/81	COMMADORE	16	OP	\$250.00	•	• •				•	•	•	
	PASODE	1/81	APPLE II	48	OP	\$295.00	•	•	•			_	•	•	
	PASSOL		DIGITAL	7.5	OP			•	•				•	•	

P: Printer OP: Optional Printer PL: Plotter

TABLE 3.2 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MICROCOMPUTERS (MC)

(MC) Micro-Computer

			:	7	Availability	nlity		<u> </u>	Intended Use	₽ P	8		Data Entry	<u>a</u> 5	Appli	Applications
Country	Program Code Name	Latest Version		(W)						tavis	10.6=			Units	Residential/ Small Commercial	Residential/
			System Compatibility	Random Acc Memory (RA Required (K)	Peripherals	1982 Software Purchase Price (U.S. \$)	Users Manual	toetifforA	Engineer	Technician Research An	Builder	Interactive	Prepare File	rigii§n∃ 12	(Envelope Loads Dominate)	(Internal Loads Dominate) R/LC
UNITED STATES	SEEC1 F-CHART	1/82	TRS 80 I, II, III		QP OP	\$200.00	•	•	•			Ŀ	·	Ė		
	SERI-SLR SEEC-VI							•	•	-			•	•	•	
	SOL-300	1/83	CP/M OR IBM PC				•	•	-	•	 	•		•	•	
	SOLITE 1	1/82	APPLE II	48	90 B	\$175.00	•	•	•		<u> </u>	•		•	•	
	SOLPATH-COMM		HP 85 OR 87		Q.		•	•	•	 		•		•		•
	STENET		НР 85				•	•	•	-	<u> </u>	•		•		•
	SUNCODE	7/82	CORVUS	100		\$125.00	•	•	•	•	_	•		•	•	
	SUNDAY	7/82	CORVUS APPLE II	64		\$245.00	•	•	•	-		•		•	•	
	SUNEST		APPLE II	32	Q.			•	-		-	•	•	•	•	
	SUNHEAT 1	7/81	APPLE II, IEM PC, TRS 80	16		\$ 29.00	•	•			ļ	•		•	•	

P: Printer OP: Optional Printer PL: Plotter

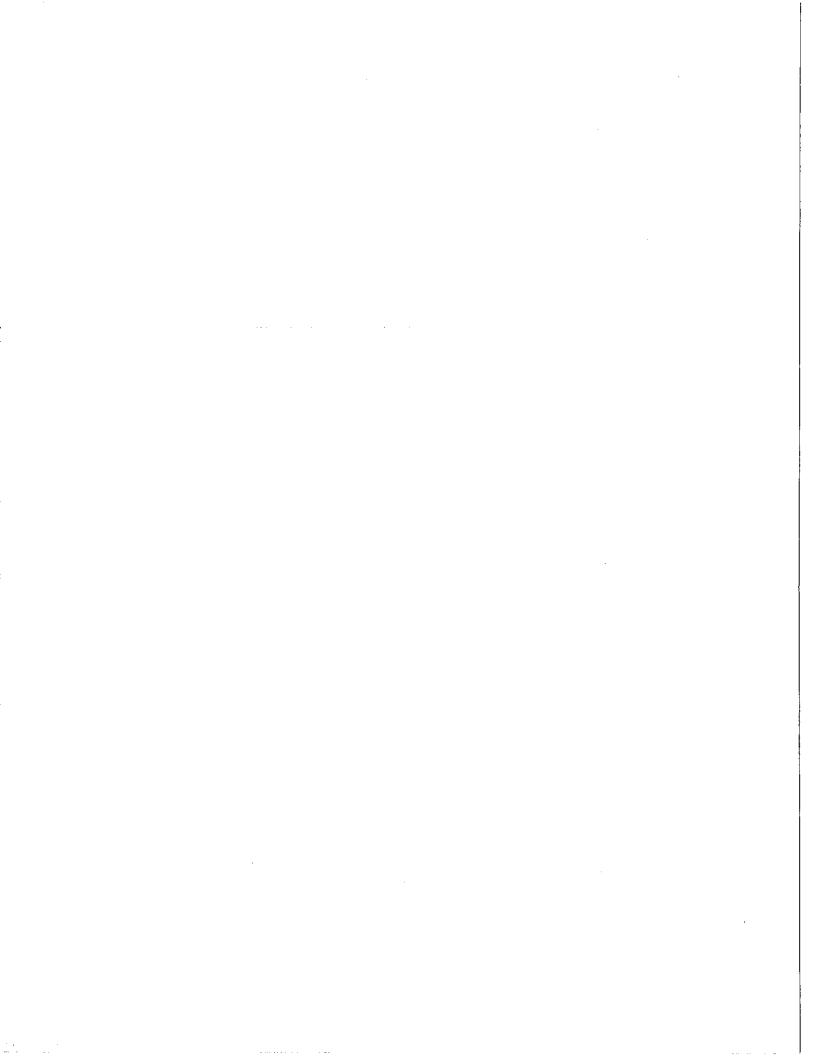


TABLE 3.3 DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT: PROGRAMMABLE CALCULATORS (PC)

	e e		

TABLE 3.3 - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT PROGRAMMABLE CALCULATORS

(PC) Programmable Calculator

				•	Availability	iiity	·	Inten	Intended Use	36	ش۵	Data Entry	Appli	Applications
Country	Program Code Name	Latest Version		Printer	34				fsylsi			Units	Residential/ Small Commercial	Residential/ Large Commercial
			System Compatibility	Required	IsnoitqO	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect Engineer	Technician Research An	Builder	avitostatini elil atsqatq	English	(Envelope Loads Dominate) 57 B/SC	(Internal Loads Domnate) R/LC
AUSTRIA														
BELGIUM														
CANADA														
DENMARK	1843	2/80	TI-59	•			•	•			_	-	•	
WEST GERMANY		·												
ITALY														
NETHER- LANDS														
NEW ZEALAND											-	-		-
NORWAY	TREC	1/81	HP41CV	•			•	•	•		•		•	

TABLE 3.3 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT PROGRAMMABLE CALCULATORS

(PC) Programmable Calculator

				Av	Availability		inte	Intended Use	Use	_ -	Data Entry		Applik	Applications
Country	Program Code Name	Latest Version		Printer				Ė	alyst		Ď	Units	Residential/ Small Commercial	Residential/
			System Compatibility	Required	1982 Software Purchase Price (U.S. \$)	Users	Architect Teanineer	Technician	Research An Builder	Interactive	Prepare File Asilgna	IS	(Envelope Loads Dominate) R/SC	(internal Loads Dominate) R/LC
SPAIN														
SWEDEN											_			
SWITZER- LAND	ARAS		HP41CV	•		•	•				<u> </u>		•	
	нвг-етнг		HP41CV	•		•	•					•	•	
	LTA EPFL		HP41CV	•		•	•						•	
	SORANE		HP41CV				•	•					•	
	TREC-EPFL		HP41CV	•		•	•			•	ļ	•	•	
UNITED KINGDOM											ļ			
UNITED STATES	ACG-80 AARDVARK	1/80	TI-59	•	\$85.00	•	•	•		•	•	•	•	
	AHL-80 AARDVARK	1/80	TI-59	•	\$55.00	•	•	•		•	•	•	•	

TABLE 3.3 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT PROGRAMMABLE CALCULATORS

(PC) Programmable Calculator

				· 	Availability	olity		late.	Intended Use	Use		Data Entry	m >-	Appli	Applications
Country	Program Code Name	Latest Version		Printer	ji o					tevil			Units	Residential/	Residential/
			System Compatibility	Required	IsnoitqO	1982 Software Purchase Price (U.S. \$)	Users Manual	Architect Tengineer	Technician	Research Ana Builder	Interactive	Prepare File	English SI	Small Commercial (Envelope Loads Dominate) R/SC	Large Commercial (Internal Loads Dominate) R/LC
UNITED	CL4		TI-59	•		\$595.00	•	•			·				
	PEGFIX/PEGFLOAT	8//6	TI-59, HP41C HP67/97		•	\$ 75.00	•	-		+			•		
	QUICKLITE 1		TI-59	•		FREE		•		-		\pm			
	RL5		TI-59 HP41C	•		\$100.00	•	-	•	-	•	+	•	•	
	SEEC II REL AREAS	1/78	HP67/97		•	\$ 95.00	•	-		-		1	•	•	
	SEEC III REL AREAS	8/78	HP67/97		•		•			-	<u> </u>				
	SEEC VIII SWIM POOLS	8/80	TI-59		•	\$125.00	•			+					
	SEEC1 F-CHART		TI-59, HP41C HP67/97		•	\$125.00	•	-		-	•				
	SERI-SIR SEEC-VI		TI-59 HP41C		•	\$125.00	•	•			1				
	SOLAR ENERGY PROGRAM		TI-59 HP-41		•	\$ 50.00	•	•	•	•		•	•	•	

TABLE 3.3 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT PROGRAMMABLE CALCULATORS

(PC) Programmable Calculator

	/ mercial	inate)										
Applications	Residential/	(Internal Loads Dominate) R/LC										
Appli	Residential/ Small Commercial	(Envelope Loads Dominate) R/SC	•	•	•	•	•	•	•	•	•	•
	Units	English	•	•	•	•	•	•	•	•	•	•
Data Entry		Prepare File	•	•	•	•	•	•	•	•	•	•
		Interactive	•				ļ					
Jse	18KIR	Research An			ļ					<u> </u>		
Intended Use	,3,,10	Technician	•							 		
Inten		тээліри∃	•	•	•	•	•	•	•	•	•	•
	\vdash	= toefidotA	┡							_		•
		Users Manual	•	•	•	•	•	•	'●	•	•	•
oiity		1982 Software Purchase Price (U.S. \$)	\$250.00	\$145.00	\$138.00	\$ 95.00	\$127.00	\$142.00	\$188.00	\$138.00	\$100.00	\$ 90.00
Availability	ter	IsnoitqO						-	-		•	
	Printer	Веquired	•	•	•	•	•	•	•	•		•
		System Compatibility	TI-59 HP41C	TI-59 HP41C	TI-59 HP41C	TI-59 HP41C	TI-59 HP41C	TI-59 HP41C	TI-59 HP41C	TI-59 HP41C	TI-59	TI-59
	Latest Version											1/81
	Program Code Name		SOLAR ENGIN LIBRARY	SOLARCON 326P, 327P	SOLARCON 33	SOLARCON 34	SOLARCON 35, 36	SOLARCON 355, 365	SOLARCON 37, 371	SOLARCON- PASSOLAR	SUNPULSE II SOL. SIM.	TEANET III
	Country		UNITED									

TABLE 3.3 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT PROGRAMMABLE CALCULATORS

(PC) Programmable Calculator

				,		_		,	,	_	_
Applications	Residential/	(Internal Loads, Dominate) R/LC									
Appli	Residential/ Small Commercial	(Envelope Loads Dominate) R/SC	•				N		The Abrahaman		
	Units	18									
Data Entry	"	Prepare File ratign3	•		_						
		Interactive Prepare File		-							
<i>a</i>		Builder	•								
Intended Use	tayle	Research An									•
pep		Technician	•								
nten		Елдіпеег	•								
_		foetifonA	\vdash			 					
		Users Manual	•								
oliity		1982 Software Purchase Price (U.S. \$)				:					
Availability	er	IsnoitqO							_		
	Printer	Required				ĺ					
		System Compatibility	TI-59 HP-67								
	Latest Version										
	Program Code Name		VDD								
	Country		UNITED STATES								

TABLE 3.4 DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT: MANUAL METHOD (MN)

4			
	•		
	·		

TABLE 3.4 - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MANUAL METHOD (MN)

					Availa	Availability		Inter	Intended Use	Use		Data Entry	m >-	Applic	Applications
Country	Program Code Name	Latest Version								tayla			Units	Residential/	Residential/
			Graphic	Manual	Both	1982 Purchase Price (U.S. \$)	Users Manual	foetir 1990	nsician	earch An			ųsi	(Envelope Loads Dominate)	(Internal Loads Dominate)
								_		eseR Suilo	ldsT	Grap	Engli	R/SC	R/LC
CANADA	HOUSING E	3/82		•			•	• •	•	•	•		•	•	
	PASWING	12/81		•				•	•	•		•	•	•	
	UTILIZATION FACTOR METHOD	5/82	•	•				•	_		•	•	•	•	
WEST GERMANY	KEFF-METHOD	/83		•				•	•					•	
ITALY	ENERGY CONTROL	1/81	•				-	•				•	•	•	
	GRAPHIC SOLAR PERSPECTIVE	1/80		•				•			•			•	

olincludes EP Chart and EW Chart

TABLE 3.4 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MANUAL METHOD (MN)

•	(•		
		5		
4			2	
				֓֞֝֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜
×	•	•	-	÷

					Availability	Mity		Ę	Ş	Intended Use		Data	펿	Appli	Applications	
į											-	i				
Čenik)	Code Name	Latest Verston			· · · · · · · · · · · · · · · · · · ·					fayla			Units	Residential/	Residential/	_
			Graphic	Menual	Both	1982 Purchase Price (U.S. \$)	Users Manual	Architect Engineer	Technician	Research An	Suilder seldaT	énqané	(Silgn)	(Envelope Loads Dominate)	Large Consmercial (Internat Loads Dominate)	r 2
ITALY	SHECC	1/81		•							-8-					4
	E	1/81		•				•		1.	•			•		
NETHER- LANDS	DEGN. AIDS ENERGY BEW.ONTH		•		 		•	•		1	+ •	•		•		_
HORMAY	MN. MTD. CALC. BLDG. EM. CONS.		•	•				•		•	•	•	•	•		_
SWEDEN	THE	1/82		•			•	-			+•	T	•	•		
SWITZER- LAND	AARPLAN		•		_			-		+-	•			•		
	ARAS			•	-			•		+	•			•		-
	GRES-EPFL		•					•		-		•	•	•		
								l			Į				-	4

olincludes EP Chart and EW Chart

TABLE 3.4 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MANUAL METHOD (MN)

	(į	
		•			
4					
į					
ı	ı		ı		

	:				Availability	ıbility		Inten	Intended Use	. 00	ШÖ	Data Entry	Applic	Applications
Country	Program Code Name	Latest Version	Graphic	Manuai	Both	1982 Purchase Price (U.S. \$)	Users Manual	Architect	Technician Research Analyst	Builder	Tables	nation3	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (internat Loads Dominate) R/LC
SWITZER- LAND CTD.	HBF-ETHZ			•				•			•	•	•	
	LTA-EPFL		•					•			•	•	•	
,	SORANE		•					•			•	•	•	
	TREC-EPFL		·	•				•			•	•	•	
	UELI SCHAFER		•					•			•	•	•	*
UNITED KINGDOM	BREDEM 1	/83		•				•	•		•	•	•	
UNITED STATES	ASHRAE BIN			•				•			•	•	•	
	ASHRAE DEGREE DAYS			•		FREE		•			•	•	•	
	CA ENER COMM PASS SOL HBK	1/80		•		\$7.45		•		•	•	•	•	
	CARRIER MAN OF A.C.			•				•	•		•	•		•

o Includes EP Chart and EW Chart

TABLE 3.4 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MANUAL METHOD (MN)

(MN) Manual

					Availability	biity		Intend	Intended Use	0	Data Entry	<u> </u>	Applic	Applications
Country	Program Code Name	Latest Version							isyisi			Units	Residential/ Small Commercial	Residential/
			Graphic	Manual	Both	1982 Purchase Use Price (U.S. \$) Mar	Users Manual Manual Manual Architect	Engineer	Technician	Builder Tables	Graphs	English IS	(Envelope Loads Dominaje) R/SC	(Internal Loads Dominate)
UNITED	CDA SUN-CHART		•			FREE		•	_	H	•			
	DG ADMIT MODEL		•			FREE		•	-	•	•	•	•	
	ENERGY GRAPHICS		•			\$ 8.00		•		•	•	•	•	
	ENERGY NOMOGRAPHS	٧	•								•	•		•
	EP-CHART°		•			\$150.00°		•		•	•	•	•	
	EW-CHART°		•			\$150.00°		•			•	•	•	
	G-CHART		•			\$ 50.00		•	•	•		•	•	
	MOD. DEGREE DAY		•				•	•		•		•	•	
	P-CHART			•		\$ 50.00		•					•	
	PASS SOL DSGN HNDBK VOL II			•		\$ 31.50		•	•	•		•	•	

olncludes EP Chart and EW Chart

TABLE 3.4 (cont.) - DESIGN TOOL CATEGORIZATION BY MAJOR EQUIPMENT MANUAL METHOD (MN)

(MN) Manual										F		· ' [
				Availability	difty		Inte	Intended Use	Use		Data Entry	a .y	Appli	Applications
	Latest Version	· · · · · ·							teyler			Units	Residential/ Small Commercial	Residential/ Large Commercial
		Graphic	Manual	Both	1982 Purchase Price (U.S. \$)	Users Manual	Architect	Engineer Technician	Research Ar	*ebliu8 seldsT	Graphs	English SI	(Envelope Loads Dominate) R/SC	(internal Loads Dominate) R/LC
	1/79		•		\$14.95		•	•		├ ÷	•	•	•	
			•			•	•	•		•	•	•	•	
			•		\$ 2.50		•	•		•		•	•	
			•		\$ 8.00		•	•		•		•	•	
			. •					•		•	•	•	•	
	.'	•			\$50.00		•	•		•	•	•	•	
			•				•	•		•	•	•	•	
			-		-									
				,										
										۱				

o Includes EP Chart and EW Chart

	•		
	-		

TABLE 3.5 DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION [RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)]

				•	
•					
			•		
	·				
		•			

TABLE 3.5 - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			ļ			ļ									I									
			Des	Desion Phase	hase					l	1		₹	oplici	Applications								3	
				,		Ц	Ť	Healing		Н		Cooling		Н	Lighting	g.	MHQ	Н	Misc	Есонотися			Apple	Applications
Country	Process	Kommond			_	_	59				50					L		Е				Major		
	Code Name	5		, влејовше Овејови			nuteradina smale,		pun		iulaiegms siems	1610 50lar							ineal Escalati		Number Of Bidg	Algorithm	Residential/ Small Commercial	בי
			izaū-ai4		Post Des Research	rosas	HANC S	Persone Se	Snading Undergro	sseM Loads	Space Te	Passive So	Shading Undergro	essM	Paylightin (YILI)	FC(LUX) Artificial L FC(LUX)	Loads Passive S	Fans Fans	Pumps Misc Elec Elevator &				(Envelope Loads Dominate) R/SC	(Internal Luads Dominate) R/LC
AUSTRIA	EBIWAN	ЖC	•					-									•			·	2-10	STEADY		
BELGIUM SOLPA	SOLPA	ΜP	•	•				•	_						<u></u>						1	STEADY- STATE	•	
CANADA	CMHC-2	ΝF			•	•			-	_							•			•	2-10	ASHRAE DECREE DAYS	•	
	ENERPASS-1	MF		•	_	-														•	2-10		•	
	HOTCAN	ЖС	•	•	•	<u> </u>	-	•	•	•						-	•		•		2-10	OTHER*	•	
	HOUSING E	MC	•	•	•	•			•	•											H	ASTRAE DE- REE DAY, SER	•	
	HOUSING E	WIN	•	•		-			•						ļ <u></u>					<u> </u>		ASTRAE DE-	•	
	PASWING	MC	•	•	•					•											1		•	
	PASWING	MIN	•	•	•	_	-			•											F		•	
	UTILIZATION FAC. METHOD	WN	era a elle	•	•				•	-	•	The state of						-			1	RESPONSE FACTOR	•	

* Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

													١			ı										
			٥	Daeim Dhaea	, act	_								A	pplic	Applications					١.				•	
-			Š	;		۲		Heal	g E		Ц	ن	Cooling		П	Lighting	٤	å	DH.W	Misc		Есопотись			Apple	Applications
Country	Program Code Name	Keyword	Pre-Design	Schematic Design	Post Design	Research	Space Temperatures	HAVE Systems	Active Solar Shidang	Underground	Mass	Space Temperatures emalzy2 DAVH	Passive Solar Active Solar	Shading	sseM	Spinghting Daylighting	FC(LUX) Levels Artilicial Lighting	FC(LUX) Levels	Passive Solar Active Solar	Fans Sumus	Misc Electrical Elevator & Escalator		Number Of Bldg Zones Per Run	Major Algorithm	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Loads Cominate) R/LC
DENMARK EFB1	EFB1	PC	•	•	•	┝┺										.	.						2–10		•	
	METHOD 5000	MC	•	•		-	<u> </u>	•	-														2–10		•	
WEST CERMANY	KEFF-METHOD	MN	•		•			•						-		<u> </u>	<u> </u>								•	
ITALY	ENERGY CONTROL	WIN	•	•											ļ	<u> </u>							1		•	
	GRAPHIC SOLAR PERSPECTIVE	WN		•	•				_					•			ļ								•	
	SMECC	MN		•	•			•		•	•	•	L		•	<u> </u>	_	-		<u> </u>			-		•	
	TTL	MA	•	•		-	1	•	_	•	•	•			•	ļ <u>.</u>	_			<u> </u>			1		•	
NETHER-	ALADIN .	MF		•		_		•								<u> </u>				:			204		•	
	DSCN AIDS ENE BEW. ONTW.	MN	•	•	-	-	9	•	<u> </u>			 			<u> </u>		 	ļ		†					•	
	ENERGIEBALANS	MC	i	•	•	-																	-		•	
	PSDM-1	MC	•	•		-	•	•		•													2–10		•	

* Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			Desi	Design Phase	tas.	4	i						 		bbic	Applications									Acc.	Arolications
			_ }	ļ	ŀ	+	Ē	1	٤ [ł	_	۲	Cooling	ŀ	┪	Cohimo	ġ.	┦	<u>₹</u>		Misc	Economics			and dic	dirain.
Country	Program	Keyword				_	462					ça.	_	_			 .				201		2	Major		
	Code Name			mqolav	uč			1610	110	pü	,			- Pr			Gutub	SA612					Zones Per Run		Residential/ Small Commercial	Residential/ Large Commercial
			Pre-Design	Desidu De	Post Desk	2080J	Space Te	S SYISSE9	Active Sol	Undergrou	speon	HAVE 24	Passive Sol	Shading Undergrou	sseM	Daylghing	FC(LUX) L	FC(FOX) F	Passive Sol	sus-	Pumps Misc Elect Elevator &				(Envelope Loads Dominate) R/SC	(hternal Loads Dominate) R/LC
NORWAY	MN.MTD.CALC. BLDG.EN.CONS	NW	•	. •		•		•								!	!	-					-			
	SOLGOR	ЖС		•	•			•	•		1	•						<u> </u>		•			1		•	
	TREC	PC							•				H			 	1			1			-		•	
SWEDEN	BKL	¥.	•	•	 	•	<u> </u>	•			ļ				†	 	-	+-		1					•	
	BRIS	MF	•	•	•		3	•	•		1	Ž					ļ						2-10		•	
	LTH DEROB	Ж	-	•	-	<u> </u>				•					-			 					2-10		•	
	LTH DEROB	N.F.	•	•	-			•	-					•	J	_				ļ.,			2-10		•	
	MEPA	MC	•	•		•		•	•	•				<u> </u>									1		•	

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			2	Ŝ		_			1	1					App	Applications	SEG										Special Control of the Control of th	Aminotino
			ŝ	Design Filase		Ц	_	Healing	ē		Н		Cooling	Ę.		Ы	Lighting	٩	DHW	š	Misc	ų	Economics	8				900
Country	Program Code Name	Keyword	Pre-Design Agric Design	Deziðu Develobæeut	npiesū izod npiesesī	speon	Space Temperatures Space Temperatures	Passive Solar	Active Solar Shading	Underground	226M 2050J	Space Temperatures	HVAC Systems Passive Solat	Active Solar Shading	Underground	sesM Loads	Daylighting FC(LUX) Levels	Antiliciai Lighting PC(LUX) Levels	speoj	Passive Solar Active Solar	Fans Pumps	Misc Electrical Elevator & Escalator		Nutz	Number Of Bidg Zones Per Run	Major Algorithm	Residential/ Small Commercial (Enrelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Loads Dominate) R/LC
SWITZER- LAND	AARPLAN	NW			-																						•	
	ARAS	NW	•																								•	
	ARAS	PC	•																								•	
	BAUDYN	MF		•	•	•	• .	•			•	•				•									1		•	
	DYWAN	MF	•			•	•				•	•													1		•	
	ELCO	MC	•	•		•		•																			•	
	GRES-EPFL	W	•			•		•																	1		•	
	HBF-ETHZ	MN				•	_	•																	1		•	
	HBF-ETHZ	PC	•			•		•																	1		•	
	HELIOS-1	MF		•	-	•	9	•			•	•													1		•	

* Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			Dosiv	Osetho Obsect	H						1	pplic	Applications	I					\vdash				
				ğ		표	Healing		Ц	Cooling	₹.	П	Lighting	Gu _e	MHQ	ş	Misc	Economics	nics				Appacations
Country	Program Code Name	Keyword	ngizaD otismado2	Design Development Post Design	Research	Space Temperatures HVAC Systems	Passwe Solar Active Solar Shading	Underground	Posce Temperatures	HVAC Systems Passive Solat	Active Solar Shading	Underground Mass	Daylighting Daylighting	FC(LUX) Levels Artificial Lighting FC(LUX) Levels	Passive Solar	tslog gvitch	Fans Pumps Misc Electrical	Elevator & Escalator	No 20	Number Of Bldg Zones Per Run	Major Algorithm	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (thernat Luads Dominate) R/LC
SWITZER- LAND CID.	LMC-EPFL	MC	•				-								•	•						•	
	LTA-EPFL	MC																				•	
	LTA-EPFL	MIN	•		•		_													-		•	
	LTA-EPFL	PC	•	•	•		•								•	•				1		•	
	SOLAR TRAP	MF		•	•			•												-	THERMAL	•	
	SORANE	MC	•		•										•	•				1		•	
	SORANE	WN	•		•		•								•	•				1		•	
	SORANE	PC	•		•		•								•	•				1		•	
	STEMOD	MF	•	•	ě				•											1		•	
	TREC-EPFL	MN	•		•										•	•					SLR	•	

* Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			Design Phase	9 6							Appli	Applications	Si .					H	ĺ			
			i i i i i i i i i i i i i i i i i i i	200		Heating		<u> </u>	Cooling	buil	▍፟፟፟፟፟፟፟፟፟፟	2	Lighting	å	NHQ	Misc	Economics	ncs.		, de la composition della comp	Apple	Applications
Country	Program Code Name	Keyword	Design Development	Post Design Research Loads	Space Temperatures HVAC Systems	Passive Solar Active Solar	Shading Underground	Mass Loads	Space Temperature: Passive Solar	Active Solar Shading	Underground	peyling Loads	FC(LUX) Levels	Artificial Lighting FC(LUX) Levels Loads	Passive Solar Active Solar Fans	Pumps Misc Electrical	Elevator & Escalator	Num. Zon	Number Of Bldg Zones Per Run	Algorithm	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (nienal Ludis Dominate) R/LC
SWITZER- LAND CID.	TREC-EPFL	PC	•			•							-	•	•				_	SLR	•	
	UELI SCHAFER	MN	•	•	· · · · · · · · · · · · · · · · · · ·	•															•	
UNITED	BREADMIT	MC	•					ě			•				<u> </u>				-	ADMIT- TANCE.	•	
	BREDEM 1	NA	•											•		•		."	1	STEADY STATE	•	
	ESP	MF		•	•		_	į	•	•	•	•		•					2-10	THERMAL NETWORK	•	
	SEU 2	MF	•	•	•	•				·				•	•				2-10	THERMAL NETWORK	•	
	SEU DESIGN METHOD	MC	•	•		•								•	•		•		1	OTHER*	•	
UNITED	AC LOAD	МС	•	•	•			•	•			•		•		•			2-10	OTHER*	•	
	ACG-80 AARDVARK	PC	•	•	.	•							-	•	•		•		1	F-CHART	•	μ
	ADM-3	MC	•	•				•				•	<u>-</u> -	•	•				2-10	RESPONSE FACTOR	•	

* Incomplete Information

TABLE 3.5.(cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

Approaches Dura	Cooling Lighting DHW Misc Economics	Mac Electrical Pumps Pumps Passive Solar Coads Putilicial Lighting PC(LUX) Levels Coads Passive Solar Coads Passive Solar Coads Passive Solar Passive Solar Passive Solar Passive Solar Passive Solar Passive Solar Passive Solar Passive Solar Passive Solar Passive Solar Passive Solar Passive Solar Poads Passive Solar Poads Passive Solar Poads Passive Solar Poads Passive Solar Poads Passive Solar Poads Passive Solar Poads Passive Solar Poads Passive Solar Passive Solar Poads Passive Solar Poads Passive Solar Poads Passive Solar Pass	A SHRAE 1 DEGREE DAYS	ASHRAE ASHRAE	ASHRAE	*AGENTACO	OTHER PARTY OF THE	THERMAL I NETWORK	THERMAL 2 NETWORK	THERMAL 2 NETWORK	Ī	*Gant-C
	Number Of Blag Zones Per Run		ļ '		-				2	2		
Fans Pumps Pumps Misc Electrical Misc Electrical Flevator & Escalator	Active Solar Fans Pumps Misc Electrical							•	•	•		
EC(LUX) Leveis Artificial Lighting FC(LUX) Leveis FC(LUX) Leveis	Logyliphing FC(LUX) Levels Arithcial Lighting FC(LUX) Levels	•									•	
HVAC Systems Passive Solar Shading Mass Mass	HVAC Systems Passive Solar Active Solar Shading Underground Underground						•	•	•	•		•
Sam	10	Active Solar Shading Underground Masss Loads		•		•	6	•	•	•	•	•
	_	Post Design Research Loads Space Temperature HVAC Systems Passive Solar	•	•	•		•	8	•	•	•	•
	μ -	Pre-Design Schemato Seponomen	•	•	•		•	•	•	•	•	•
	3	Keyword	PC	Æ	W	ЖС	W	MF	MC	MF	W	S A
	-	Program Code Name	AHL-80 AARDVARK	ASHRAE BIN	ASHRAE DEGREE DAYS	BILL	CA ENER COM PASS SOL HEK	CALPAS 1	CALPAS 3	CALPAS 3	CDA SUN-CHART	CIRA
	į	Country	UNITED									

* Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

		rcial										
o di con	Apprecations	Residential/ Large Commercial (internal Ludds Dommate) R/LC										
3004	addy.	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	•	•	•	•	•	•	•	•	•	•
		Major Agorithm	OTHER*	OTHER*	OTHER*	ASHRAE TC4.7	BIN METHOD	MODIFIED DECREE DAY		THERMAL	ASHRAE DECREE DAYS	ASHRAE
		Number Of Blag Zones Per Run	2–10	ı	2–10	2-10	<12	1		2-10	ı	
	Есопотися				•		•	•		•		
		Elevator & Escalator								•		
	Musc	Fans Pumps Misc Electrical			•	<u> </u>				•		
	мно	Passive Solar Active Solar						•		Ĭ		
	Ē	LC(LUX) Levels			•		•	•		•	•	•
	gi.	FC(LUX) Levels Antificial Lighting	<u> </u>				•			_		
Applications	Lighting	Loads Sylighting	•		•		•			•	•	
pplic	П	Underground Mass		•			_	•	_	•		
٩	ا ۽ ا	Active Solar Shading					•	•		ě		
	Cooling	ISIOS SVIZERS Passive Solai			•	•	•	•		•	•	•
		Loads Space Temperatures		•	3	•	•	•		•	•	•
Design Phase	П	Underground 825M		•				•		•		
	ξ	Active Solar prilosri2					•	•		ě		
	Healing	HVAC Systems Passive Solat		•		٥		ě		•	•	
		Loads Space Temperatures		•	3	•	8	•		•		•
		Неѕевісћ										
		Design Development	•		•	•	•	•	•	•	•	•
Desi		Pre-Design Schematic Design	•	•	•	•	•		•	•	•	
		Keyword	ЭЖ	MN	МС	MC	MC	МС	MC	MF	MC	ЖĊ
		Program Code Name	DAYLITE	DG ADMIT. MODEL	E20-II PROG.	ECAL	ECAP	EEDO	ELSOL	EMPS 2	EN2M	FN/W
		Country	UNITED STATES									

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			Design Phase	Phas									Apr	Applications	Suoi						\vdash				
			,		Н		Heating	اءِا			ડે	Cooling		Н	Lighting	ᅙ	мно	-	Misc	Economics	ncs			Applie	Applications
Country	Program	Keyword)ua		591				501		-		_	L	L		E		10			Major		
	Code Name		Pre-Design Schematic Design	Design Developme	Posds Research	Space Temperatu	Passive Solar	Active Solar Shading	Nass Underground	Loads Space Temperatur	NAVE Systems	Active Solar	Shading	sseM sbsoJ	Daykghting FC(LUX) Levels	Artificial Lighting FC(LUX) Levels	Passive Solar	Active Solar	Pumps Misc Electrical	Elevator & Escalar	20 Z	Number Of Bldg Zones Per Run	<u> </u>	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Luads Dominate)
UNITED	ENCON 2	MC	•							10		1	1								╀		DEGREE	•	
	ENECO	MC	•										1				<u> </u>			•	1 -	I ONEI	DECREE	•	
	ENERGY \$AVE	MC	•					‡		•			1	\vdash						-	1	T ONLY	HOUR ASHRAE	•	
	ENERGY ANALYST	MC		•		•					•	+	#	•			•		•	•	-	F	STEADY STAIR STEADY	•	
	ENERGY ANALYST	Æ		•	•	•	<u> </u>	<u> </u>		-	-	<u> </u>	1_	•			•		-	•	-	٠ ،	STEADY	•	
	ENERGY GRAPHICS	W.	•	-				1_		-	<u> </u>	 		—						-		- -	STATE	•	
	ENERGY-I	ЖС	•		•		<u> </u>	<u> </u>			<u> </u>		<u> </u>							-	-		ASHRAE STEADY STATE	•	
	EP-CHART	Æ	•				•			-								+		•	-		61.0	•	
·	EPDS	MF	•		•			•				•										-	O THE PARTY OF THE	•	
	EW-CHART	MN	•												T			•				-	F-CHART PLUS OTHER*	•	

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			Desi	Design Phase	98.60		j							Appl	Applications	ž										ations
			ŝ		969	Ц	ř	Healing	1 H	H	1	Caoling	5			Lighting		MHO	×	Misc	П	Economics		;	Add V	Appearons
Country	Program Code Name	Keyword	Pre-Design Schemalic Design	Schematic Design	Rese Design	rosas .	Space Temperalures HVAC Systems	Passive Solat Talo2 Svt7A	gmbsr2 bnuospiabnU	225M	Space Temperatures	HVAC Systems Passive Solat	Active Solar Shading	Underground Mass	speog	Daylighting FC(LUX) Levets	Attificial Lighting FC(LUX) Levels	Loads Passave Solar	Active Solar	Fans Pumps Miss Electrical	Misc Electrica: Elevator & Escalator		Number OI Blag Zones Per Run	Major Algorithm	Residential/ Snall Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Loads Dominate) R/LC
UNITED	EWIREAS	MC				•	Ĭ																2–10	STEADY STATE	•	
	EWIT	MC	•			i			•	1	•		•		•			•			_		1		•	
	F-CHART	MF		•				•											•			•	1	F-CHART	•	
	F-CHART PLUS	MC	•			•		•	•	•		•	•		_			•	•			•	1	F-CHART UNUTIL.	•	
	F-CHART SOL SYST. DESIGN	MC	•	•				•			-					1			•					F-CHART	•	
	F-LOAD BLDG LOAD CALC	MC	i			•			•	•			•					•					2-10	RESPONSE FACTOR	•	
	F-LOAD BLDG LOAD CALC	MF	i		,	•			•	•	_	-	•		_			•					2–10	RESPONSE FACTOR	•	
	G-CHART	M	•			•	•	•											•	-			1	F-CHART PLUS OTHER*	•	
	HACE	MF		•		•	•	•				•	•	•	•			•	ŏ	•		•	2-10	RESPONSE FACTOR	•	
	HEATING COOLING LOAD	МС	•			•																	1 ONLY	STEADY STATE	•	

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

4-		=		z,				100				سيين	
	Applications		Residential/ Large Commercial (internal Luads Dominate)										
	Apple		Residential/ Small Commercial (Envelope Loads Dominate) R/SC		٠	•	•		•		•	•	•
		Major	Agorithm	STEADY STATE, SLR	THERMAL	F-CHART	STEADY STATE STD	OTHER*	7444	ST. STATE	out, r-char	STEADY	RES. FACTOR STHER. NET.
			Number OI Bldg Zones Per Run	-	2-10	_	-	2-10	2 10	01-7		1	2-10
	Economics			•			•		•	•			•
	MISC .Ec	10	Misc Electrical Elevator & Escalat										
	┡	E	rsio2 Svita Rosa Puma						-		-	+	
	DHW	E	Loads Passive Solar				•			•	•		
શ	t ighting		FC(LUX) Levels FC(LUX) Levels	-		_		-	ļ <u>.</u>	<u> </u>	 	 	
Applications	DI)	E	Loads		•	•			<u> </u>				-
Appl		L	Underground Mass	<u> </u>			-				•	+	•
ľ	ę		Active Solar proberic			+		 					-
	Cooling		HVAC Systems					 			ļ	1	
		sai	Space Temperatu							<u> </u>			0
	Н		755M		•			•		 	-	-	3
		_	Shading	•									2
	Неамо		Passive Solat		_	Ε_	•			1	_		
	Ĭ		Space Temperatury AVAC Systems		Š	•				1			
	Щ	,401	speed remortant		1		•	•	•				-
ase			дэгвэвэн										•
Ę	ļ	eut	Design Developm		•		•	•		•		<u> </u>	
Design Phase	'		Schematic Design	•	Š		Ť	ě	Š	•	•	•	
-	_	_	Pre-Design				•		_	•		•	
		Keyword	•	MC	Æ	MC	MF	MC	Ж	MC	ÄC	MC	MF
		Program	Code Name	HELIOS	HOUSE	HUBER	HUD-RSVP/2	IMPSLR	INSULATE	ISDP	LASL 81	LOAD GRAPHICS	LPMTZ
		Country		UNITED									

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			d		App	Applications				H		Apolic	Apolications
		•	Design Phase	Heating	Cooling	Lighting	WHO	Misc Econ	Economics		, i e i		
Country	Program Code Name	Keyword	Pre-Design Schematic Design Post Design Post Design	Hesearch Loads Space Temperalures Passive Solar Active Solar Shading Shading	Masss Loads Pace Temperatures Passive Solar Passive Solar	FC(FNX) Fevels FC(FNX) Fevels Daylighting Coads	Loads Passive Solar Active Solar Fans	Fans Pumps Misc Electrical Elevator & Escalator	Number Of Bidg Zones Per Run		Algorithm	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Loads Dominate) R/L.C
UNITED	MEDA	ЭW	•	•	•	•				0	OTHER*	•	
	MICROFIX	MC	•	•					1	HZ	THERMAL NETWORK	•	
	MICROLITE	, Q	•			•				Ţ	LBL/CIE	•	
	MICROPAS	MC	•	•	•	•			2-10		THERMAL NETWORK	•	
	MOD. DEGREE DAY	W	•	•					1	A IO	ASHRAE Decree days	•	
	NEATWORK	MC	•	•	•	•		•	2-10		THERMAL NETWORK	•	
	P-CHART	W	•	•					-	us j	SLR	•	
	PACE	MF	•	•			•		1	H 03	F-CHART, SLR	•	
	· PASODE	MC	•	•					-1	37	SLR	•	
	PASOLE	MF	•	•	•				1	SA	THERMAL NETWORK	•	

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

) Jee	Doeion Dhaca	900									Apr	Applications	ions						厂				
			Š S		200	Ц	Ĭ	trating	١	П		Ссизии	7		H	Luphing	7	OHW	Ţ	Misc	Erun	Er.unomir.s			Appli	Applications
Country	Process	Kowword					62				sə				L		L	E			,10			Major		
	Code Name		hematic Design	sign Developme	st Design	506	ace Temperature SASIEms	SSIVE SOLAT	gang	derground 22	ads ace Temperatur	AC Systems	16102 Svil	gergreund	SDE SS	(FAX) Fevels Applying	gnirigid teisifi zisvad (XUJ)	SDE	nelog avi	nps c Electrica:	IBIBOSE & 1016v		Number Of Bidg Zones Per Run	Algorithm	Residential/ Small Commercial (Envelope Loads Domnate)	Residential/ Large Commercial (Internal Luada Dommate)
				Pα		01	٨н	βq	4 \$			ΛH	ΣĀ	νn		₽Ğ.	11A	רסי		ng SiM					R/SC	R/LC
UNITED	PASS SCL DSCN HUER VOL II	NX		•		•				•											Ľ		-	SLR	•	
	PASS SOLAR ENERGY BOOK	MAN	•	•				•	•	•				<u> </u>									-	OTHER*	•	
	PASSOL)HC	•	•		•				L													-	STEADY STATE, SLR	•	
	PEGFIX/ PEGFLOAT	PC	•			Ž			•	•							ļ						-	THERMAL	•	
	PEGSOL	MC	•		-			•	•	•	•							-	<u> </u>				2	THERMAL	•	
	QUICKLITE 1	PC	•												•	•	•								•	
	REAC	MC	•	•			Ŏ		9		•	•											1	STEADY	•	
	RES. ENERGY MAN (REM)	NA.	•	•						0	•			1									-		•	
	RES LOAD CALC PROG	МС	•	•		•			i	•	•	•		į	•			•					2-10	ASHRAE GRP-158	•	
	RLS	PC	•				•	 -}			-												2-10	STEADY	•	

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

,				,	,				,		,	-
4	Applications	Residential/ Large Commercial (tuternal Loads Dominate) F/LC										
.j.~~ \	ddy	Residential/ Small Commercial Envelope Loads Dominate) R/SC	•	•	•	•	•	•	•	•	•	•
		Major Algorithm	STEADY STATE	STEADY STATE	ASHRAE BIN DATA	OTHER*	OTHER*	F-CHART	ASHRAE TC4.7	F-CHART		
		Number Of Bidg Zones Per Run	2-10	2-10	1	1	1	1	2–10	1	1	
	Economics						•		•	•	•	rg.
	Ect	Elevator & Escalator								<u> </u>		HOOL HTG.
	Misc	Pumps Pumps Misc Electrical							•	 		鴼
	₃	isloS svitoA ans3						•	_	•	•	
	мно	Loads Passive Solar						•	•	•	•	
	g.	Artificial Lighting FC(LUX) Levels										
tions	Lighting	Daylighting FC(LUX) Levels							_	<u> </u>		
Applications	H	sseM sbeod										
Ϋ́		pnibari2 bnuorgrabnU										
	Cooling	Passive Solar Active Solar					-					
	ű	Space Temperatures AVAITEMS	•	•	•				ļ <u>.</u>	 	<u> </u>	
	Н	SDEOJ	•	•	•	•			•			
		Underground										
	6ç;	talog svitsA pnibari2				•		•	<u> </u>	•	•	
	Heating	HVAC Systems Passive Solai				•						
		Space Temperatures					•		•	_		
إسا	-	Research			-			_		-		
l g	<u> </u>	Post Design				•	•					
Decion Phase	į.	Dezidu Dekepobweul Zchematic Dezidu	-	-	•	•	•	•			-	
<u>۽ </u>	Š	Pre-Design	ě	•	•	•	•	•	•			
		Keyword	Ж	MC	MC	MC	MF	МС	MC	BC	PC	PC
		Program Code Name	RLSM	ROOMCALC	SASEP	SCM(CO)	SCM(OH)	SEIM	SEA	SEEC II REL AREAS	SEEC III REL AREAS	SEEC VIII SWIM POOLS
		Country	UNITED STATES									

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			٥	Design Dhase	9 6	لِـــا							ł	₹	P. S.	Applications		ľ								
						Ļļ	ľ	Heating	٩		Ц	ű	Cooling		П	Lig.	Lighting	H	МНО	Misc		Economics			Applik	Applications
Country	Program	Kevword					sə.					sa.				<u> </u>		-			30			Major		
	Code Name		nesign Matic Design	n Developme	Design	,	e Temperatu Systems	18102 9v		punoxi		Systems Systems	ve Solar Solar			ջո յկ	elsved (X	X) Cevels	e Sotar		Flectrical or & Escalat		Number Of Bidg. Zones Per Run	Algorithm	Residential/ Small Commercial (Envelope	Residential/ Large Commercial (grenal
				Desid	Post I	peol	Space	Passa	ibs42		Loads			Spade	SSBM	Speol Loads	Artifici	Losds Losds		₹nå3 24mu9					Loads Dorninate) R/SC	Livads Dominate) R/LC
UNITED	SEEC1 F-CHART	Ж				•			-	<u> </u>							ļ	•				•	-	THE PARTY OF	•	
	SEEC1 F-CHART	P.C	•		<u> </u>					<u> </u>	!	-				-	-		•		-	•		Turno-	•	
	SERI-SIR SEEC-VI	Ж	•	•	-			•		 .• -			 			_	-				+		-	r-CHAKT	•	
	SERI-SLR SEEC-VI		•	•		•		•		•		<u> </u>	-				-	-			<u> </u>		-	1	•	
	SESOP	MF	•	•	-	Ĭ				┼—		•	+	<u> </u>	T		-						-	RESPONSE FACTOR	•	
	SHCOST	MF	•	•		•				 		-				 		•		<u> </u>	-	•	-	F-CHART,	•	
	SOL-300	MC	•	•	 	•			ě	-	•	- -	•	-			<u> </u>							THERMAL NETWORK	•	
	SOL-300	MF	•	•		•		_	Ŏ		•		•	3	•		<u> </u>						-	THERMAL NETWORK	•	
	SOLAR ENGY PROCRAM	PC	•	•		•		3										•	•			•	-	ASHRAE DEG.	•	
-	SOLAR ENGIN LIBRARY	PC	•	•		•		-							1		 	•					4	OTHER*	•	

*Incomplete Information

į,

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

,			Oesion Phase	Phas	H			1			•	₹	Applications	ğ									Signary	Applications
			2000	š.	Ц	Hoa	eating		Н	ပ	Coating		H	Lighting	٥	DHW	<u> </u>	Misc	Ecor	Economics				2 5 5 5
Country	Program Code Name	Keyword	Pre-Design ngizaD Design	Design Development Post Design	Acted specific	Space Temperatures Smatzy2 DAVH	Passave Solar Active Solar	pmbari2 DruorgrapariU	SSEM SDEOJ	Space Temperalures empley& DAVH	Passive Solar Active Solar	Shading Underground	Mass Poeds	Daylghting FC(LUX) Levels	Artificial Lighting FC(LUX) Levels	Loads Passive Solat	Active Solar Engi	Pumps Misc Electrical	tolelesed & tolevela		Number Of Bldg Zones Per Run	Major Agorithm	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (internal Loads Dominate) R/LC
UNITED	SOL HTG SYST DSGN MAN	NH												.	.		•				1	ASTRAE DEG. DAYS, SLR		
	SOLARCON 326P, 327P	PC	•		•		•														1	SLR	•	
	SOLARCON 33	PC	•		ð		•		•					ļ								THERMAL	•	
	SOLARCON 34	PC	•		ě		•		•							•	•				-	THERMAL	•	
	SOLARCON 35, 36	Dd	•		•		•							<u></u>	ļ							F-CHART	•	
	SOLARCON 355, 365	PC	•				•							<u> </u>		•	•				-	F-CHART SLR	•	
	SOLARCON	PC	•				•								ļ	•	•			·	1	OTHER*	•	:
	SOLARCON- PASSOLAR	PC	•		•		•														_	SLR	•	
	SOLCOM	MF	•	•	•		•				•	•		_		•	3	•		•	1	OTHER*	•	
	SOLCOST	MF			•											•	•			•	-	OTHER*	•	

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

	:		٢	Daeim Dhasn	1									App	Applications	Suo								-		- Arch	Andications
			6		2	Ц	Ĭ	Healmy		H		Санвиц	Į,		Ц	Laphter	ا ج ا	DHAW	3	Misc	П	Economics					
Country	Program Code Name	Keyword	ngizaO ayamadag	Schematic Design	Post Design Post Design	50503	Scace Temperatures HVAC Systems	Passive Solar	Dungerg Dungerg	SSEM	Scace Temperatures	HVAC Systems Passive Solat	Active Solar	Underground	SEE,Y	Dayighing FC(LUX) Levels	Politigia Isiahing slevea (XUJ)DR	spech	Passive Solar	2ns3 2dmu9	Misc Electrical Elevator & Escalator		Number Of Bidy Zones Per Run	Bidy	Major Algorithm	Residential Small Commercial (Envelope Loads Domnate) R/SC	Residential/ Large Commercial (internal toads Dominate) R/LC
UNITED	SOLCOST BY (SOLEC)	NIA		•														•	•			•		ů	OTHER*	•	
	SOLITE 1	S SE		•							,				•	•	•					•	2-10		OTHER*	•	
	SOLTES	Ä			•	•	•				-			_				•	•			•	2-10		RESPONSE FACTOR	•	
	SUNCODE	MC		•	•	Š	•		•	ě	•	8								•			2~10		THERMAL NETWORK	•	
	SUNCODE	Ą		•	•	Ĭ			•	ě	•	•	3							•			2-10		THERMAL NETWORK	•	
	SUNDAY	MC		•				•		4	-													- 2	THERMAL NETWORK	•	
	SUNEST	¥C		•				•	•	Ŏ	•		•					•	•				-	٥	OTHER*	•	
	SUNHEAT 1	MC																•	•				-1	μL	F-CHART	•	
	SUNOP	MC				•	_			•												•	-	03	SLR	•	
	SUNPAS	MC				4		•															-1	3,	SLR	•	

*Incomplete Information

TABLE 3.5 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

Applications		Residential/ Large Commercial (Internal Loads Commate)			,							
×jad¥		Residential/ Small Commercial (Envest Bomenate) R/SC	•	•	•	•	•	•	•	•		
	-	Major Algorithm	SLR F-CHART	OTHER*	THERMAL NETWORK	OTHER*	THERMAL NETWORK	MODIFIED DECREE DAYS	F-CHART	ASHRAE DECREE DAYS		
		Number Of Bldg Zones Per Run			2-7		1	-1	1	1		
	Economics			•					•			
:	Misc	Flevator & Escalator Pumps Pumps				-				`	-	
	мна	Loads Passive Solat Active Solat	•	•					•			
-suc	Lighting	Daylighting FC(LUX) Levels Artificial Lighting FC(LUX) Levels								1		
Applications	1	Shading Underground Loads		•	•							
	Cooling	Space Temperatures HVAC Systems Sassive Solar Islos sivilya		•	•						-	
	61	Active Solar gmbart2 Underground AzeM absol		•	•		•					
	Healing	Loads Space Temperatures HVAC Systems Passive Solar	•	•	•	•	•	•	-			
1	Design Priase	Schematic Design Post Development Post Design	•	•			•	•	•	-		
	nes	Pre-Oesign				•		•	•	•		
		Keyword	PC	Æ	, S	NA	MC	PG	W	, SE		
		Program Code Name	SUNPULSE II SOL. SIM	SYRSO1.	TEANET III	TRANE A.C.	DNIMSL	VDD	W-CHART	YORK RES AC ESTIM		-
		Country	UNITED									

*Incomplete Information

TABLE 3.6 DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION [RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)]

. . . .

TABLE 3.6 - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/Large Commercial

900		Residential/ Large Commercial (Internal Loads Dominate) R/LC	•	•	•	•	•	•	•	•	•	•	•	•
		Residentia/ Smell Commercial (Envisional Loads Dominate) R/SC												
		Algorithm	RESPONSE	THERMAL			THERMAL NETWORK		RESPONSE FACTOR				THERMAL NETWORK	THERMAL NETWORK
		Number Of Bidg Zones Per Run	25	10-25			10–25	10-25	10-25	10–25	10-25	25	2-10	
	Economics													
	Econ													
	٦	MIRC EMOTICAL												
	š	Fans				•								
		Active Solar												
	MHG.	PEOS SAISSER				•								
	П	Amiticial Lighting FC(LUX) Levels].					
整	Lupling	EC(FOX) Fevels												
Applications	[-	SDEOJ GUJUŠKEG												
da	П	Mass	-	-		-	•	•	├ ●				•	
*		buspeus						•	•				•	
İ	Coulting	Passave Soler	•	•			•	•	•					
	٦	Space Temperatures HVAC Systems	•	•					-3				•	
1	Ц	sseM Loads	•	2		-			-			-	2	
	l	Underground	j	•		•	3							
l	٤	Shading Active Solar	•		-			•	-			-		
	Healmg	Passive Solar	•	•	•	•	•		•		ļ	•	•	-
1		Loads Space Temperatures	•	9	1	2	2	•	1			-1		
		Research			- 	•	•	•	•					•
	Ē	Post Design		•	_		•		I	•	•	_		
	Design Frase	Schematic Design Inempolevel ngized	\vdash	•	•	•	•		1	•		•	•	
يا	Š	Pre-Design	ě	ě		•				•	•	9		
		Keyword	AP.	<u> </u>	Ě	ATA	¥)MC	¥	¥	Ä	ě.	¥	10.
		Program Code Name	LPBI	LPRA	HQUE	REMAS	PAKA	MORE	HORE	EFB-3	EFB-3	161.00		PASSIM
		Country	BELGIUM		CANADA		DENMARK	LTALY		HORWAY		SWITZER- LAND		

* Incomplete Information

TABLE 3.6 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/Large Commercial

		7			_	,				_		_
o i o	Applications	Residential/ Large Commercial (menal Loads Dominate) R/LC	•	•	•	•	•	•	•	•	•	•
3 a d	Apple	Residential/ Small Commercial (Envelope Loads Dominale) R/SC										
		Major	ASHRAE STEADY STATE	OTHER*	OTHER*	RESPONSE FACTOR	ASHRAE STEADY STATE	OTHER*	RESPONSE FACTOR	OTHER*	STEADY STATE	OTHER*
		Number OI Blag Zones Per Run	>25	>25	>25	>25	>25	>25	10-25	>25	10-25	>25
	Есонотіся							•	•	•		
	Eço	Elevator & Escalator						_		_		
	Misc	Pumps Misc Electricat		•	<u> </u>	•		•		·		
	_	2ns 7				•		•	•			
	ě H	Passive Solar Active Solar		•								
	H	LC(LUX) Levels		•		•		•	•	•		
<i>"</i>	ğ	FC(LUX) Levels		-		ļ		·		-		
Applications Lighting		Dayighting		•				•		•		-
		sseM sbeoJ		i			•					
Ą		Shading	•	•			•	•				
	Cooling	Passive Solar Active Solar						•				
	ડે	HVAC Systems		•		•			•		•	
i		Losds Temperatures	•	i			•	•	•	•	•	
		Underground Mass		0		•	•	•		•		
	إ	Active Solar	•	3			•	•		Ž		
	Heating	Passive Solar		•				Ĭ				
	[Space Temperatures HVAC Systems		*				÷	•	•	•	
Щ	Ц	speog	•	•		•	•	•		•	•	
have d		Post Design Research		•				•				
8	<u>,</u>	Design Development	•	i	•		•			•		
Design Phase		Pre-Design Schematic Design	•	•	•	•	•	•	•	•	•	•
	. 1	Keyword	MC	ЖС	MC	MF	MC	MF	MF	MF	MC	MC
		Program Code Name	AC PROG1/ ENERGY	ADM-2	ARTIF LIG LOADS ANAL PROG	AXCESS VER. 7	BAS, LOAD	BLAST	BLDSIM	BRIDG & PAXION EN ANAL PROG	BUEHRER METHOD	CADLIGHT
		Country	UNITED									

* Incomplete Information

TABLE 3.6 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/Large Commercial

		Residential/ Large Commercial Internal Loads Dominate) R/LC		•	•	•		•	•	•	•	•
Annications												
¥		Residential/ Small Commercial (Envelope Loads Dominate) R/SC							F-3			
		Major Algorithm	ASHRAE BIN METHOD	STEADY STATE	STEADY STATE	STEADY STATE	RESPONSE FACTOR	RESPONSE FACTOR	ASHRAE STEADY STATE	ASHRAE GRP-158	RESPONSE FACTOR	OTHER*
	-	Number Of Bldg Zones Per Run	>25		10-25	10-25	>25	>25	>25	>25	10-25	>25
	Economics		•					•		į		•
	Misc	Pumps Misc Electrical Elevator & Escalator	•		•			0		•		•
	МНО	Loads Passive Solar Active Solar Rans						•		•		•
υ	Lighting	FC(LUX) Levels FC(LUX) Levels										•
Applications	(L.)	Daylghing Mass	*		•		•	•		•	•	•
Ā	Cooling	Passive Solar Active Solar Shading Underground	•		•			•		•	•	•
	۲	Mass Space Temperatures Coads		•	•	•	•	•	•	•	•	•
	Bur	Active Solat Shading Underground	•		•			•		•	•	•
	Heating	Loads Space Temperatures HVAC Systems Passive Solar			•	•	•	•	•	•	•	•
	Design Phase	Post Development	i					•	0		•	•
	Design	Pre-Design Schematic Design	ė	•	•	•	•	•	•	•	•	•
		Keyword	MC	¥	Ş	Ç G	2 5	<u> </u>		S S	ΑŖ	MF
		Program Code Name	CARRIER	CARRIER MAN OF A C	Jean To Mari	OEAC OT A	CI 4M	COMM BLDGS EN ANAL PROG	COMM HVAC	COMM LOAD	DEROB	DOR-2
		Country	UNITED	+		112		w.				

* Incomplete Information

TABLE 3.6 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/Large Commercial

			Design Phase	ase						Αp	Applications	ions								11 - 1	
			,		HG	Healing			Cooling		\mathbb{H}	Cighling		мна	Σ	Misc	Economics			Applications	ations
Country	Program Code Name	Keyword	Pre-Design Schematic Design Design Development Post Design	Research	Space Temperatures HVAC Systems	Passive Solar Active Solar Anading	Underground Aass	Space Temperatures	HVAC Systems Passive Solar Active Solar	Shading Underground	sssM sbsoJ	PC(LUX) Levels	Artificial Lighting FC(LUX) Levels	Loads Passive Solar Active Solar	Fans Pumps	Misc Electrical Elevator & Escalator		Number OI Bldg Zones Per Run	Major Algorithm	Residential/ Small Commercial (Envelope Loads Dominate) R/SC	Residential/ Large Commercial (Internal Loads Dominate) R/LC
UNITED STATES	ECP	MF	•	•	-					•	•		Ť	Ļ		•	·	10-25	RESPONSE FACTOR		•
	ENERGY BILL ANALYSIS	MC	•		•	<u> </u>								 				>25	OTHER*		•
	ENERGY NOMOGRAPHS	W	•	•	2			•			•	•	•		•	•	•	10-25	STEADY		•
:	ENERGY II	MC	•	•	•			•										>25	ASHRAE SIFADY STATE		•
	ESAS	MF	•	•	•	•	•		•	•	•		•		•	•	•	>25	OTHER*		•
	ESP-2	MF	•	•		•	•			•	•		•	•		•		>25	OTHER*		•
	FASER	ЖС	•	•	•	•		-		•	•					•		>25	OTHER*		•
_	GAIN	MC	•	•							•			-				>25	STEADY STATE		•
	HCC III	ЖС	•	•	•	•	•	•		•	•							>25	RESPONSE FACTOR		•
	HVAC PKG	MC	•			•												>25	ASHRAE STEADY STATE		•

*Incomplete Information

TABLE 3.6 (cont.) - DESIGN TOOL CATEGORIZATION BY INTENDED APPLICATION RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/Large Commercial

* Incomplete Information

:				
•				
•				
•				
		ı		
	4			
•		*		
•				
:				
•				
		•		
		•		
•		•	•	
	,	•		
·		•	•	
N.	•	•		
•				
· ·			*	
0				
	. **			
	14 41			
	17 43			

				•
			3.	•
			\$	•
			* * * * * * * * * * * * * * * * * * *	•
			\$	•
				•
				•
				•
				•
				•

TABLE 3.7 DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA [RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)]

.

•

TABLE 3.7 - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

I			Inout Data		PO	Output Data		
						L	Applic	Applications
			Pre-Design Schemalk Devikament cause alore	Solar	For: Load Oulput	Temps Fuel Use		
			51					
Country	Program	Keywords	saunt sinos si	41		nortgm nortge name0 brisme sinence		Residential/
	Code Name		A See See See See See See See See See Se	4 Ap		nuen nuen j ass G as oqmo	- Burg	(Injernal
			yne yn ei yn yn ar	V 90 Tap EQ 18		1) 41- 10 A1- 11 Per 11 Per 10 A1- 10 A1-		Loads Dominate)
			See of the control of	Avera rinori rinori rinori rinori	IDINB IDINB ARO IDINB	ISOOM ISOOM	ੂੰ R/SC	R/LC
ATISTRIA	PRIUAN	Ž		2	•			
		!		C	0000		•	
BELGIUM	SOLPA	MF						
CANADA	C-MHC	£K.		•	•	•	•	
COLUMN	NIE COL							
	ENERPASS-1	MF		•	•	•	•	
				•	•	•	•	
	HOTCAN	HC.						
	HOUSING E	ЭЖ	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	•	•		•	
	a containe	3		•	•	•	•	· -
	T CONTROLL			•			•	
	PASWING	Æ						
	PASWING	ž	•	•			•	
	UTILIZATION			3		•	•	
	FAC. METHOD	NJ.						

Blank: Missing Information o: Does Not Accommodate • : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

		\$		Residential/		(Internal Loads Dominate)	W/C								į		į						
		Applications		Residential/			H/SC		•	•		•		•	•			•	-		•	•	•
		Fuel Use		Demain onents onents a c	ABG DAG SIGNO SIGN	nual Co nual Pea slem Co urly Pro srgy Sy at Build	No Ke												• • • • • • • • • • • • • • • • • • •	0			0
Others Date	Output Data	Load Output Temps		Jordun	nsuc	ason sphic Pl tace sphic Pl	Se Ye Sur			***				•		•	•					•	000000000000000000000000000000000000000
ŀ		Solar For: Loa			ላ6 (ያዛእ	A ylittoo A ylittoo sonoqm sonoqm sonobli 'itt	LV Co		•	•				•		•					2	•	
		Weather	S	Wirc &	Pay Pay Pay Pay Pay Pay Pay Pay Pay Pay	pical Cypical	A A A A A A A A A A A A A A A A A A A		D.	•	-	•				•)))))	0 0 0 0 0	0
mout Data		Eng Design Development	S	metey louno; emete sious eme	S (6 Sys Cor Cor iysi	lerior S echanic echical ectrical ghling S goling S	17 13 13 13 14		2000		+						•		00000			000000	000000000000000000000000000000000000000
nouj		ematic De	S:	S & O & S	spei spei sieria si	poing A point peraling base Da point	8 0 8 7 S		П	•		•				•	•			0	1	00	0 0 0 0
		Pre-Design	29 201 201 201 201	realur V Cost & Orieme ureme	or A emp erg) erg)	idg. Tyl sace T sace T sag Sha sag Sha			}	***************************************		•			•	•	•						
	1			wile		POCSTION		Š	2	¥C		N.		NA.	Æ	WN	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		MF	25		MC	ЖC
			Program	Code Name					TOJA	METHOD 5000		KEFF-METHOD	ENERGY	CONTROL	GRAPHIC SOLAR PERSPECTIVE	SMECC	TTT		ALADIN	DSCN AIDS, ENER REW ON THE	5	ENERGIEBALANS	PSDM-1
			Country					THENTHAN DEV			WEST	GERMANY		LTALY				NETHER-	LANDS				

Blank: Missing Information Does Not Accommodate • : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

											ľ						
					Input Data						٦	Output Date				7	Anolinations
:			Pre-Design	Schematic	Desagn Desagn	Eng Design	Weather	her Coler	For.	: Load Output		Тетря		Fuel Use			ace incree
				╄	╁┈			× e	Ē		E	E		<u>_</u>	E		
Campro	Program	Keywords	euts 112 112 110 110 110 110 110 110 110 110		E15	ş		M &	٠					pueu weux	-	_	_
Ì	Code Name	•	Sches ea ea Cos Cos Tem	γ _j aι	Azie G e	mai; lon ems		Whi Ord				_		eG y	éwa E	Small Commercial	
			N H	201 201 201 201 201 201 201 201 201 201	ANTE	Con Con	SĞt.	App. App. App. App. App. App. App. App.		-			100	484 189 ₆	#101	(Envelope	(Internal
	•		ype fool Tene Shat Heq Heq	ilen Guis eus	19 I	1631 2 Pi 3 Pi 3 Pi	0 Ai Ai 0 IP	1 90 1 90 1 10) ÁK	4 AL	d v		Loads Dominate)
			Locali Sidg 7 Space Spac	nizelo nizelo nicosi nicosi esego golg	Mechi Interio Shad Shad	Electrications of the control of the	DIQYT SUMA SUMA MONTH		auoz dwog	HOM HOLY YeQ	Nonte	NA Shu∂	Graph InoM Mont	InoM umA	System Houri Energ	R/SC	R/LC
t	O 110 Came 101								E		E		Ë				
NORWAY	BLDG. EN. CON	N.	•	•	•		•										
	SOLGOR	Ŋ.			0	0000				•	•	•	_			•	
	200000				+	1	+	+			ŧ	Ŧ	Ŧ	ŧ	F		
	TREC	PC	•	•	•		•									•	
	-						•	_								•	
SUPPER	HKT.	Ş.	9	<u> </u>			•		╛		-	\exists	+	7	7	,	
	-		9	•	•	_		•		•	-	•				•	
	PKLS	316			† 	+	+	+	‡		+	F	Ŧ	F	F		
	LTH DEROB	MC		0 0 0 0	0			•	_	9	•	•				•	
	a constant	5			9			•		9	•	Š				•	-
	LIH DEKUB	36				'			#		+	\exists	7	7	+		
	MEPA	MC	•	•	•		0	\$			•					•	

O: Does Not Accommodate Blank: Missing Information • : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			hercial										
	Applications		Residential/ Large Commercial (Internal Loads Dominate) R/LC										
	Apolic		Residential/ Small Commercial (Envelope Loads Dominate) R/SC		•	•	•	•	•	•	•	•	
Г	T		Enetgy Systems (otal Building Only		-		_						ļ
	ı	Şe	System Components Hourly Protie			1		-			_	1	丰
	ı	Fuel Use	Monthly Peak Demand	•	ļ		ļ						#
æ	Ī	_	Annual Consumption		<u> </u>	_			1				$^{+}$
Dat	ŀ	×	Sraphic Plot Monthly Consumption			<u> </u>				<u> </u>		\pm	+-
Output Data	1	Тетрѕ	An Surface			-	-		+	 			Ŧ
ő	Γ	į	Season Year			•		•			•	•	Ŧ
	ľ	Load Output	VSO Nonth		<u> </u>	•	ļ					•	#
	Ŀ	2	нон				•						\perp
	Į,	Ë	ano 2 gnibliud			-		\vdash	<u> </u>	-	•	•	£
┡	t	Т	Monthly Ave Day & Total					_	 			_	F
	l	Solar	Hourly Tape Typical Daily Profile				•		 	!			Ė
		Н	Average Monthly	1									L
	Weather	иe	ZveO eegree Days Ase Monihiy Min & Max			$oxed{oxed}$							+
	Š	emperal	Annual Monthly Degree Days										F
	I	lel.	Monthly Typical Day		•				ļ .		-		F
	L	Ц	Hourly Tape	_			Ľ.	<u> </u>			<u> </u>		ļ
ł	8	اق	Lighting Systems								-		†
	Des	Development	Electrical Systems Electrical Controls							<u> </u>		<u></u>	┢
Input Data	Fnc	å						<u></u>					
8	Š	· 25	Shad Coeff. Boys. Trans. Interior Surface Data			-	•						
-	Design	å	Blag Materials Mass Data								 -	<u> </u>	Ë
	,	١	Operating Schedules										
	Schomat		SagenS mook		•								
	Š	اُ	searA gastrud Glasng Areas & Orents			_	•	•			_		
	•	-	Code Requiements				•	•					
	5	,	Local Energy Costs Bldg Shape & Orient						ļ		<u> </u>		
	Pro-Design	<u> </u>	Bidg Floor Area Space Temperalures				•	•					1
	۱	1	Blog Type & Schedule										ď
μ	L		Location (Weether Date)				•	ě					1
			Keywords	N.	MIN	Od	MF	ЗW	MC	W	MIN	PC	
			Program Code Name	AARPLAN	ARAS	ARAS	BAUDYN	DYWAN	ELCO	GRES-EPFL	HBF-ETHZ	HBF-ETHZ	
			Country	SWITZER- LAND A	A	Ą	æi	D	Ħ	Ö	H	田	

Blank: Missing Information • : Required/Given Information O: Does Not Accommodate

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

					Induj	Input Data						Output Data	Data				
			Pre-Design	Schematic	ic Design Devel.	Eng Design Development	Tem	Wealher	Solar	FØ	Load Output	1 Temps	s	Fuel Use		Applik	Applications
			əli		8118.				1510					-			
Country	Program Code Name	Keywords	iles sa salure: steoO	Sjuðu	aT. Abye	smets and sme sion		Says In & I	9li101					puema(Residential/	Residential/
			Postion (Week & Supe & Super Record Party	ophing Requirence Reguirence Areas Surface Areas Surfaces Areas Surfaces Areas Surfaces Surfa	Decaing Schi has Malecals has Dala had Coeff&Da	nterior Surface fechanical Systemical Co- lecting Systemical Contra lecting Systemical Contra ighting Systemical Systemic	ighting Confro ypical Day fonthly	nnual Ionthly Degree Ve Monthly M Vetage Month	ourly Tape ypical Daily P loniniy Ave D	oue ouboueu)	our ay onth nozse	ear ir urlace	raphic Plof onthly Consum naust Consum	onihiy Peak De nusi Peak De ognoù maiay	ourly Profile melsys Yerem otel Building C	Envelope Loads Dominate) R/SC	Large Commercial (Internal Loads Dominate) R/I C
SMITZER- LAND CID.	LMC-EPFL	MC	•			3 N	N L 1	7 7 V	1	B ● Z	S	V	N	N	3	•	
	LTA-EPFL	MC								•	•				1,	•	
	LTA-EPFL	Æ					•			•		•				•	
	LTA-EPFL	PC								•	•	•				•	
	SOLAR TRAP	MP					•		•	•	•	•				•	
	SORANE	MC	0	0000	0	000000	ŏ			•	•	•				•	
	SORANE	¥								ļ						•	
***	SORANE	PC								-						•	
	STEMOD	불	•	•	•						•					•	
	TREC-EPFL	MN	•						•		•					•	

Blank: Missing Information Does Not Accommodate • : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

1 1 1 1 1 1 1 1 1 1							1	Pourt Data				ľ			Output Data	cte cte		t		
No. No.							*	No Care								Cara				
December 2012 December 2013 December 2014 December 201				Pre-	Design	Schemat	┝	Н	ubisa,	۸	Weather		⊢	oad Outpu			uel Use		Apple	Applications
Control Cont				E	Γ-	21		✝			4	112	_		E	F		E		
Control Cont	Country	Program		elub:	ing Ing			Sita Sita		301	λZ					Ü	ρu			
Control Cont		Code Name		ss ites Sche	riQ Oti		,	e Di Sien	slo: em	.,, -	sO nih				_	ווסנים	Ema	(InO	Residential/ Small Commercial	Hesidential/
Control Cont				8 % 8 % 81A	y a 8 a 6.	692 692	uslen Sch	1 Sy 1 Sy	Sont Sont Sontro	Λı	aly h Jree	ty P				nsuc	dw V	6ui		Taige Common chair
C				JOOL JUC Abe	ey G dey au	iA s	916! 616(ng Boin) P:	201	Dei Juo	60 I				50 Y	Pea Co		(Envelope Loads Dominate)	(internal Loads Dominate)
Name				Sidg F	Local Blog Cocal	Suriaci gniseli gninoS	Operal A pblB StsbM	Interior Mecha Mecha	ՏՈԵՅ (ՀՀ Նահեքով Նույեքով	soiqyT IdtnoM IsunnA	ISUUUA M 9vA PEIBVA	Monthi	Sone pribliu8	Nonth	Aır Surtacı	IdinoM IsuniA	Annual Syslen		R/SC	R/LC
ESP MF COO	SWITZER-																		•	
UELI CHAPER MN COOCO CO	LAND CTD.	TREC-EPFL	PC									•							• :	
SCHAFER MN COOCO		UELI																	•	
BREDINIT MC COOO <		SCHAFER	W						-										•	
BREDEM 1 MR POCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOC	UNITED	9	,	9		•	•			•			•	90	0				•	
ESP MF OO	KINGDOM	BKEADMLT	MC			,	<u>}</u>						旦	1					,	
ESP MF CO CO CO CO CO CO CO CO CO CO CO CO CO C		BREDEM 1	MN	•		•	-	0		●	00	000		0000		•	000	0	•	
SEU 2 MF COO COO <td></td> <td>ESP</td> <td>MF</td> <td>0</td> <td></td> <td></td> <td>*</td> <td>3000</td> <td></td> <td>) OOO</td> <td>0000</td> <td></td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> <td></td> <td></td> <td>•</td> <td></td>		ESP	MF	0			*	300 0) OOO	0000		•	•	•	•			•	
SEU DESIGN MC COO C		SEU 2	MF	•	0		8	•	0	0	000			8	8	0			•	
AC 1.0AD MC		SEU DESIGN METHOD	ЖС	0	Ŏ Q	0000	8	0	0	0000	0	8							•	
	UNITED	AC LOAD		0	Ŏ Q		•		0	•		•	•	•	•	•	8	•	•	
		ACG-80 AARDVARK	PC	000	Ŏ O	•	•		000	•	•	•	•	•					•	
		ADM-3	МС	8	0	•	•	•	ě				•	00	•				•	

• : Required/Given Information O: Does Not Accommodate Blank: Missing Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

	Applications		Residential/ Small Commercial Large Commercial	(Envelope (thiernal Loads Dominate)	-	•	•	•	•	•	•	•		•
Output Data	For: Load Oulput Temps Fuel Use	ľ	umption Demand ponents gms	omponenti ones of seasons ones ones of seasons ones	9 H H S S S S S S S S S S S S S S S S S	•	•	•	•	•			•	•
Input Data	Pre-Design Schemalic De	S S S S S S S S S S S S S S S S S S S	Alter Annual Ann	Scotland Type Cocal Energy Graph Ploor Space Tem Cocal Energy Graph Ploor Space Tem Cocal Energy Space Tem Cocal Energy Space Tem Cocal Energy Space Tem Cocal Energy Space Tem Cocal Energy Space Tem Cocal Energy Space Tem Cocal Energy Space Tem Cocal Energy Space Tem Cocal Energy Space Tem Cocal Energy Space Tem Space Tem Cocal Energy Space Tem Space Te										
	·	Kouwords	500		PC	NW	MN	MC	MN	MF	MC	MF	NW	МС
		Droorage	Code Name		AHL-80 AARDVARK	ASHRAE BIN	ASHRAE DEGREE DAYS	BILL	CA ENER COMM PASS SOL HBK	CALPAS 1	CALPAS 3	CALPAS 3	CDA SUN-CHART	CIRA
		Change			UNITED									

O: Does Not Accommodate Blank: Missing Information : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

		ľ	I≎ F							П	Apolic	Apolications
	Pre-Design	ematic	Design Eng Design Devel Development	Weather Temperature		FQ:	Load Output	Темря	Fuet Use			
•	Schedule rea rea Costs Costs & Orient	s Onents S Onents S	ce Data ystems controls stems stems	rols ee Days	Min & Max Virit Protile				Demand Demand Demand stnanog	swi	Residential/ Small Commercial	Residential/ Large Commercial
	Location (Wes Bidg Type & Bidg Floor A Space Temp Local Energy Bidg Shape Lighting Regi	Surface Area Glazing Area Zoning Room Shape: Operating Sc Bldg Materia	Shed Coeffield Coeffield Coeffield Coeffield Coeffield Coeffield Coeffield Coefficel C	Lighting Conf Hourly Tape Typical Day Monthly Degr Monthly Degr		Component Sone	Building Hour Month	Year Air Surface Graphic Plot	Monthly Consulational Consulation Monthly Peak Annual Peak Sure Com	Energy Syste Total Building	(Envelope Loads Dominate) R/SC	(internal Loads Dominate) R/LC
ξ		•		9		0		0000	0000000	000	•	
¥			00000	00	•		•				•	
2				0			•		•		•	
ЖC				00	•	Ö	0000	0	000	0	•	
MC		•••••	•	•			0 0 0	0		0	•	
MC	•	•	•				•		•		•	
멎	00000000000	0	00000000	000000000000	00000	0	000000	000	0000000	0	•	
ΚF			•	•	•		•	•	•	•	•	
Ę,		000	0000000	0	•						•	
MC		00000		00							•	

Blank: Missing Information o: Does Not Accommodate • : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

				Input Data			Out	Output Data			
			ŀ	ŀ				ŀ			
			Pre-Design Schematic	Devel Development	Wealher Solar	For:	Load Oulput T	Temps	Fuel Use	Apple Apple	Applications
		;	S Jua S Jua	ŧ	×EM				P		
Country	Program Code Name	Keywords	Sched sies sies costs cos costs costs costs costs costs costs costs costs costs costs cost	T. Trys. Ti 3. To 12. Ti 3. To 12. Ti 3. To 12. Ti 4. Ti 5.	Days Ain & iii Vir			nortam	nortqr nemeC bneme stneme	Residential/	Residential/
			ergy dures dures dures feque fees fees fees fees fees fees fees fe	a KAD. yster System Sy	egree gree hiy N Aonth Aonth Pe	μ			Disum 1 Ass 1 Ass 2 As 2 A	Small Commercial	Large Commercial
			Bldg Flor Space 7. Cocal En Bldg Sha Lighting P Code Re Surface A Surface A Sonng Room Sh	Bidg Mai Mass Dai Shad Coo Interior S Mechanic Electrical Electrical Electrical Electrical	Moniniy Moniniy Danasi Moniniy Danasi Di Moniniy Danasi Di Moniniy Danasi Moniniy Tage Moniniy Tage Moniniy Tage Moniniy Tage Moniniy	Componer Zone Building	Hour Day Month Season Year	Surface Graphic Pi Monthly C	Annual Co Monthly Pro System Co Hourly Pro Energy Sy Total Build	Loads Dominate) R/SC	Loads Dominate) R/LC
UNITED	ENCON 2	ЭЖ		0000000		0	0 0			•	
	ENECO	MC		00000000		8	0 0		00000	•	
	ENERGY \$AVE	MC		00000		0	0000	000	00000	•	
	ENERGY ANALYST	MC			•		•			•	
	ENERGY ANALYST	ЯN			•		•			•	
	ENERGY GRAPHICS	WIN		•	•		•			•	
	ENERGY-I	Ж		000000000000000000000000000000000000000		•				•	
	EP-CHART	NW								•	
	EPDS	MF	•	•			•	•		•	
	EW-CHART	MN								•	

Blank: Missing Information : Does Not Accommodate Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			hout Data	Output Data	
					and it coil on a
			Pre-Design Schemalic Design Eng Design Vigingeralitie Solar For:	r: Load Oulput Temps Fuel Use	Approaching
			S 10-	р	
Country	Program Code Name	Keywords	esasionessessessessessessessessessessessessess	noitqi nemaC bnsmi zinani	Residential/ Grad Commodial
	cood raine		8 S S S S S S S S S S S S S S S S S S S	nsum Sak (Ik De Mile Mile Siem	<u> </u>
			popularity of the control of the con	nos nos	le) Control
			2000 8100 8100 8100 8100 8100 8100 8100	BUS Sort Sort Sort Mos And And And And And And And And	R/SC R/LC
UNITED					•
STATES	EWIREAS	MC			
					•
	EWIT	ЖC			
				•	•
	F-CHART	MF			
•	F-CHART PLUS	ЖС		•	•
`	F-CHART SOL				
	SYST, DESIGN	WC WC			
	F-LOAD BLDG LOAD CALC	MC		•	•
	F-LOAD BLDG	ΞX		•	•
	מינים הציחים				
	G-CHART	WIN	000000000000000000000000000000000000000		
	HACE	MF		•	•
	HEATING	Ŋ		000000000	•
	COOPERS FORD	CIT.			

Blank: Missing Information o: Does Not Accommodate • : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

	Applications	Residential/ crial Large Commercial (internal Loada Domnate) B/LC										
		Residential/ Small Commercial (Envelope Loads Dominate)	•	•	•	•	•	•	•		•	•
		Hourly Profile Energy Systems Total Building Only			00000	-					-	•
	Fuel Use	System Components			8							
	Fig	Annual Consumption Monthly Peak Demand			ğ						 	
ata		Monthly Consumption			•	•						ě
Output Data	Temps.	Surface Graphic Plot				-						_
Q ţ		Year Au	•		0	•	•	•	•	_	•	
	Load Output	Season Season					_		•	_	•	
	road +	Lea .			000						•	Ž
	Н	Building Hour			•	•	•	•	•	•	•	
	For	Component Sone			Ô						8	•
	ia	Monthly Ave Day & Total			•	•	•		•	•		Ē
	Sola	Hourly Tape Typical Daily Profile		•	- :							•
	ا اِدِ	Ave Monthly Min & Max VirinoM agatavA				•	ļ			•		ļ
	Neathe	Monthly Degree Days										_
	w	leunnA										<u> </u>
	٤	Typical Day			L							_
	Н	Lighting Controls Hourly Tape	0	0	0	0	0	0	0	0	0	8
	S S	Electrical Controls Lighting Systems	0000	000	000	000000	00000	00000	0	0	0	000000
	Eng. Design Developmen	Electrical Systems	ŏ		ŏ	Ž	ŏ	Ř		ŏ	ğ	ĕ
Oata	200	Mechanical Systems Mechanical Controls	000	000	0	Ö		0	0	0	ğ	9
Input Data	E S	Shed Coeff&Dayfi, Trans, Interior Surface Data	0	0	-	0	000	000	9	0	0000	0
드	Design Devet	Bidg Materials Mass Data	0	Ž	<u> </u>		Ť	ğ	•	Ž	Ŏ	•
	ij	Selubertal Schedules	ō	•	•	Ö	0	8	0	8	•	
	Schematic	gonoS Pagadê mooR	0	•	-	00	0	0	0	0	8	8
	Şç	Surface Areas & Orients Gleang Areas & Orients	•		•		•		•		-	•
	П	Lighting Requiements Code Requirements		ŏ	<u>o</u>	0	Ö	000	ğ	8	8	_
	s,	Bidg Shape & Orient	•	Ŏ	<u></u>	•	0000	ğ	000	ğ_	8	
	Pre-Design	Space Temperatures Local Energy Costs		0	Ö	-	0			0		
	P.e	Occupancy Rates Bidg Floor Area	•			•		•	•	•		
		Bidg Type & Schedule Location (Weether Dela)		•	•	•	00			0	•	
		Keywords	MC	MF	MC	MF	MC	MC	MC	MC	Ç.	Ş
┡		<u> </u>										<u></u>
		9				,/2					ا	
		Program Code Name	တ္တ	, ,	ابہ	HUD-RSVP/2	4	INSULATE		81	LOAD GRAPHICS	
		Cod	HELIOS	HOUSE	HUBER	DR	IMPSIR	ISI	aasi	LASL 81	4 A	
<u> </u>				HO	H	HU	픱	Z H	IS	I.A	겨용	
		rdi	TED									
		Country	UNITED									

Blank: Missing Information • : Required/Given Information O: Does Not Accommodate

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

ś			hput Data	Output Data	
			Pre-Design Schemalic Development Temperalure Solar	For: Load Outpul Temps Fuel Use	Applications
i		e promise y	91000 S S S S S S S S S S S S S S S S S S	t L	
S S S S S S S S S S S S S S S S S S S	Code Name	en o a se	Scheelalur (Cost of Cost nption Dema Jonent Sm	Residential/ Small Commercial Large Commercial	
			To Secretary (We should year of the foot o	onsi Building onty Promotore onty Promotore onty Prome onty Prome onty Prome onty Prome onty onty onty onty onty onty onty onty	
UNITED	МЕРА	J _M		H H H H H H H H H H H H H H H H H H H	1
	MICROFIX	MC		•	•
	MICROLITE T.0	MC		000000000000000000000000000000000000000	•
	MICROPAS	MC			
	MOD. DEGREE DAY	¥		•	•
	NEATWORK	MC		•	•
	P-CHART	W			•
	PACE	MF			•
	PASODE	MC		•	•
	PASOLE	MF		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	•

Blank: Missing Information o: Does Not Accommodate • : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

Indiat Data	Output Data	Pre-Design Schematic Division For Development Temps For Load Output Temps Fuel Use Applications	String St	Secretary Strong	Control Cont	Telephone	Occopy Space Sp	HSV VNO DSS VASS VN VN VN VN VN VN VN VN VN VN VN VN VN													
		_	Store Store	Checker 291 6- 6- 6- 6- 6- 2120 2120 2120 2120 2120 2120 2120 212	y Ray Are moer Tgy (B ec equir equir equir equir	Type Floor Tene Fne Phet Phet Phet Phet Phet Phet Phet Phe	Bidg igan Space Space Local Local Local Local Local Local Local Local Code		• 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										0		
				Code Name Reywords				PASS ON DOM	HNDEK VOL II MN		ENERGY BOOK MN	PASSOL MC	PEGFIX/	PEGFLOAT PC	PEGSOL, MC	\d	COLOMBILE 1 FC	REAC	RES ENERGY MAN (REM) MN	RES LOAD CALC PROG MC	
				County				TINITED D		A 6	7	7 <u>4</u>	Į.	P	P1		Y	R	W.	2 70	

Blank: Missing Information o: Does Not Accommodate • : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			Input Data				Output Data	ata	1	
			Pre-Dasing Schumalic Cosson Eng Design Wealther		For	Load Output	Tomos	Fuo! Use	App	Applications
			Devel. Development concerning	Sola			_			
Country	Program Code Name	Keywords	A Cocasa A Coca					ems Demson Demson Demson Sumblico	Residential/ Small Commercial	Residential/ Large Commercial
		ì	4 A Young's A Yo	ge Mon Tape H Daily			ac	ا Cons ال Pea ا Peak	(Envelope Loads Dominate)	(Internal Loads Dominale)
			Bidg i Soning State of the stat	Averas Hourly Spick	GmoD Sook	Hour Month Seaso	Year NA Surfac	Moorth sunna dinoM sunna sizy2 sizy2 choorth	R/SC	R/LC
UNITED	RL5M	ЭК							•	
	ROOMCALC	MC			0				•	
	SASEP	MC			•	•	•	•	•	
	SCM(CO)	ЭX			•	•	•		•	
	см(он)	MF	0						•	-
	SEIM	MC		•	•	•	•		•	-
	SEA	MC			•	•	•	•	•	
	SEEC II REL AREAS	PC	000000000000000000000000000000000000000				•	•	•	
	SEEC III REL AREAS	PC			•		•	•	•	
	SEEC VIII	Dd		•		•	•	•	•	

Blank: Missing Information : Does Not Accommodate : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			Input Data	Output Data	
			Pre-Design Schematic Design Eng Design Weather Solar Fo	For: Load Output Temps Fuel Use	Applications
			2 100 2 100 2 100 2 100	P	
Country	Program Code Name	Keywords	Schedischer Sc	notiga nemaG bnema stnano zn	Residential/ Small Commercial Larce Commercial
			g Requirement of the service of the	Peak U	
			GOODS GO	Monthly Isund System YhuoH Ygiengy	
UNITED	SEEC1 F-CHART	ЭW		•	•
	SEEC1 F-CHART	PC		•	•
	SERI-SLR SEEC-VI	MC		•	•
	SERI-SLR SEEC-VI	Dď		•	•
	SESOP	MF		•	•
	SHCOST	MF			
	Sor-300	MC		0	•
	SOL-300	MF		0	•
	SOLAR ENERGY PROGRAM	PC		•	•
	SOLAR ENGIN LIBRARY	PC			•

• : Required/Given Information O: Does Not Accommodate Blank: Missing Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			Input Data	Output Data	
			Pre-Design Schematic Design Eng Design Weather Solar	For: Load Output Temps Fuel Use	Applications
			Sto	ρ	
Country	Program Code Name	Keywords	Schedules Costs Costs Content Conte	Deman Demand Sonenis Ms	Residential/ Small Commercial Large Commercial
			oe & & oe oe oe oe oe oe oe oe oe oe oe oe oe	Plot peak system peak fystem formp	
			Electrical Electrical	Moninly Annual Moninly Houna System Houth Freesy Total Bu	Loads Dominate) Loads Dominate) R/SC R/LC
UNITED	SOL HIG SYST DSGN MAN	M		•	•
	SOLARCON 326P, 327P	PC		•	•
	SOLARCON 33	PC		•	•
	SOLARCON 34	PC		•	•
	SOLARCON	PC			•
	SOLARCON 355, 365	PC			•
	SOLARCON 37, 371	22			•
	SOLARCON- PASSOLAR	PC		•	•
	SOLCOM	MF		•	•
	SOLCOST	MF		•	•

Blank: Missing Information : Does Not Accommodate : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			Input Data	Output Data	
			Pre-Design Schemalic Design Eng Design Weather Solar	For: Load Output Temps Fuel Use Applications	ations
			Sins	- 6	
Country	Program Code Name	Keywords	Schedules (Schedules (notion Demand onents are	Residential/
			Shapese Schrifting Sci Shapese Shapese Sci	on on one of the one o	(internal Loads Dominate)
			Typic Mooning Mass Sand Code Sand Co	Month Month	R/LC
UNITED	SOLCOST BY (SOLEC)	N.			
	SOLITE 1	MC		•	
v	SOLTES	MF		•	
	SUNCODE	MC			
	SUNCODE	MF			
	SUNDAY	MC		•	
	SUNEST	MC			
	SUNHEAT 1	ЖС			
	SUNOP	ЖС			
	SUNPAS	MC		•	

Blank: Missing Information : Does Not Accommodate : Required/Given Information

TABLE 3.7 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/SMALL COMMERCIAL BUILDINGS (R/SC)

(R/SC) Residential/Small Commercial

			٧,					_				Ą		ø	بسند		ų,	Ė,			¥		
	envitor	Арржсвиопа		Residential/	Large Commercial	(Internal	Loads Dominate)	R/LC															
	- A notice	*ddv		Residential/	Small Commercial	(Envelope	Loads Dominate)	R/SC	•	•	•		•		•	•		•		•			
Г	1						ing It			_		\exists		Į			\dashv						·
			-				5 KB.							t			\pm				╛		
ł	ı	Fuel Use					iei mə					\dashv		Ŧ			\dashv	-		-	\dashv		
	ı	Fuel		ugшą	7 0 4	(B9 ^Q	i yini	uoşy :			_	⇉		‡			\exists						
В	. J		H				nal C		H	-	-	4	-	+		-	+			 	_		
Output Data		š) DIUC	Grát			_			ţ			1				\exists		
fout		Temps	<u> </u>				906	NA Nu2	\vdash			,	-	+		•	+				\exists		
Õ	}		匚					Yea			_			Ţ	•	•	ゴ			_	\exists		
		Q Q Q	Ľ		_			P95	-			-		+		-	4			ě	\dashv		
		Load Oulput			_			Day	Ľ		ğ	耳	•	‡			4			F	\exists		
	ł	Н	L					Hour Hour	┝╌		-	4	-	╁		•	╡	_		-	\dashv		
		For:					ê	noZ			ě		_	‡			\rightrightarrows			-	\exists		
 	-	-	_				auod		۳,			-		┿		_	4	_		<u> </u>	-		
		檀	1510			4µ₽(G iso Viri	Typi	Ľ			\exists	•	#			\exists						
		ļβ	匚		Ap. 15.		1 VI	_	L	\exists		4		+			\dashv			\vdash	4		_
		Ę.	× ev	18 1			noM age	9vA	\vdash			7	•	†			t				╛		
		Wealt		275(3 9 9	ьібә) yidi O isa		_			4		Ŧ			4				\dashv		
		wea			.,		jer	JODA				╛		‡			コ		·		\exists		
			匚		_	Yec	165 161	Typ:	F	•	<u> </u>	\dashv		+		├—	\dashv			\vdash	\dashv		
		Ш				əde	! Ι Á}.	INOH .						1			コ						
			L_	- 5	101	UO O) 5uı	ųβi 7 uβi 7	-	00		\dashv	oc.	+	00	8	\dashv			 	-		
		Eng Design		91	Oiln	စ္	le Siri	Sel 3		Ŏ Q		\exists	Ŏ	‡	000	Ŏ	コ			\vdash	4		
,	,	9.0	L				orneri IE orni		H	8	- 3	-	8	+	-	0	\dashv	-	<u> </u>		-		
hout Data	į	ثَثَ	匚	\$m∂	isvē	5 IE:	Hank	Mec		0000		口	aaaaooo	#	•	Ŏ	\Box				\Box		
ind	5	Ş.					900 T			8	2	-	8	+	-	- 3	+	•		 	_		
٤	•	Design				e:	eg s	seM		•	Ž	\Box		Ŧ	1		口				\exists		·
	1	\vdash	\vdash	saint			onis:		H	0	-	,	0	+	0	0	+			\vdash	_		
	1	natic					uş u	Roon		Ĺ	Ž	╗	Ď.	‡	00	Ģ	4			1	_		
	J	Schemati	5 Ju	an Ó	9 5	691	φ Bu	Z SONI	H	-		\exists		+	-		\exists	•					
		Ľ			SE	5 9 1Å	908	Jing		<u> </u>		\Box	Ď	Ţ		<u> </u>	7	•		\vdash	\exists		
			5				PH a			<u>y</u> .	0		0 0 0	\pm		0	\exists						
		5)t 9 (1	3 C	901	n3 16	Biqô		Q.	Ç	Н	Š	Ŧ	<u> </u>	Ş	4			+	4		_
	1	Pre - Design	<u> </u>	e a iui	619	dwə) ac	Spa		<u>ŏ</u>	Ŏ		*	1	Ĭ	¥	\exists	•		1_	\Box		
		Pre	Ι-				nequ ool3			ဝဓဝဝဓဝ		\vdash	-	+	-	- 🚼	\dashv	•		├	_		
	1			peq	og '	ş ac	αyΤ	opie		Š	•		Ž	‡	Ţ	Į	コ			\vdash			
F		_	(et	-	400	W)	UOIJE	7007	۲	-	-	_		+	•	_₽	-			┿			
				Keywords						5C	,	МF	DG		W	ş	JE.	PC	æ		MN		
									Ţ	1	\vdash			Ť		_	٦			Ü	_		
				Program	Ē				TI AS III AL	,		Ì	111	: •	ပံ	1	-	'		YORK RES AC			
				E :	ž			ł	15	IM	١,	ادِ	TEANET III		TRANE A.C. MANUAL	ç	ا ي	'	R.	RE	_		
				Ö	충				101	SOL SIM	}	SYKSOL	NE		TRANE MANUAL	į	LSMING	ام	W-CHART	₩	ESTIM		
				₫,	Ç				Ü	SO	{	ž	T.E.	1	₹ ¥	Š	2	VDD] <u>;</u>	2	ES		ļ.
F				_		-						۲		t	_		7			1			
				Country					Į.	STATES]	Ì					١						
				ड					2	ST													
L		_												1			_			1		L	

Blank: Missing Information : Does Not Accommodate • : Required/Given Information

TABLE 3.8 DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA [RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)]

		,	
·			

TABLE 3.8 - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/ Large Commercial

				Input Data				Output Data			
			Pre-Design Schematic	atic Design Eng. Design.			For Load Output	J Temps.	Fuel Use	Applic	Applications
			5	****	emoer awar	isto		7	-		
Country	Program Code Name	Keywords	Location (Weether Day Surjace Areas Surjace Areas Surjace Thore Areas Surjace	Room Shapes Bldg Materials Mass Data Mass Data Mechanical Systems Mechanical Systems Mechanical Systems Mechanical Systems Mechanical Systems Electrical Systems	Lyhing Controls Hourly Tape Typical Day Annual Annual Monthly Degree Days Monthly Degree Days	Ave Monthly Min. & Naverage Monthly Tape Typical Daily Profile Monthly Ave. Day & To Component	Sond Building Hour Bay Month Season	Year Surface Surface Surface	Amnual Consumption Monthly Peak Demand System Components Hourly Profile Energy Systems Energy Systems Total Budding Only	Residential/Small Commercial (Envelope Loads Dominate)	Residential/ Large Commercial (Internal Loads Dominate) R/LC
BELGIUM	LPB1	MF	•	0000	000000		0000				•
	LPB4	ЖС		0 0 0	000000		0 0 0 0		0000		•
CANADA	HQUE	MF		0 0 0 0	•		•	•	•		•
	REMAS	MF	• • • • •	•	•	•	•	•	•		•
DENMARK	PAMA	МС	•	•	•	•	•	•			•
ITALY	MORE	MC	•	0 0	•	•	•	•	•		•
	MORE	MF	•	0 0 0	*	8	•	•	•		•
NORWAY	EFB-3	MC		00000000000	• 00		•	•			•
	EFB-3	MF		000000000	•		•	•			•
SWITZER	ICTON	ATA	•	•	•	•		•	•		•
	MODPAS	MC			•	•	•	•			•
	PASSIM	MP			•		•	•			

Blank: Missing Information O: Does Not Accommodate • : Required/Given Information

TABLE 3.8 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/ Large Commercial

	u/ nmercial mate)			T		Ţ	T	_	1	_	—	7		_				
		Applications			Residential/ t area Commercial		Coads Dominate) R/LC		•	•	•	•	•	•	•	•	•	•
		Applic			Residential/ Small Commercial	1	(Envelope Loads Dominate) R/SC											
I		Τ					nergy Sy Total Build			Q	ļ		ļ <u> </u>					
ı		I.	٥			9(1)	Jourly Pro	1		8		•		1 2	-	1		<u> </u>
ı		l	ruel Use	<u>"</u>	пБтэ	3 45	ystem Co		_	•		•		13	<u> </u>			
		ľ	٦				Annual Col Monthly Pe			•	 		+		-	 	+-	+-
	Output Data	ŀ	_	U	oridmu		Graphic Pt Nonthly Co			·		•		P	•			
ł	Ĭ		Sdwal				Surface		_	0	8		O O	•				
	ð		_				Year		_	-	10	-	.0		-	-		-
		Load Ordan				_	Nonth			ğ	1		ğ			ļ	•	Š
ı		760		:	•		YSC			Ž	•	Ť	•	1	1		ँ	Š
		H	4				gnibling not		-	•	8	•	-	-	-	┼	8	0
		Ę	1			11	Zoue Componer	0	_		8	•	0		•		0	8
ľ	_	h	Ţ			θA	A yldinoM			00			Ť		<u> </u>	<u> </u>		
ł			elos S		Protte		Hourly Tay Sypical Di	╂╹	-	0	-	•		•		 	+	
ı		'n	Т	Y PINI			noM avA		\Box	00						•		
ı		Weathe	S.	s	e Day	ə <i>1</i> 6	Annual De		╛	_ O_			_					
ı		\$	edoera	5/	60 99	иба	Annual Monthly D	-	\dashv	8	<u> </u>				1		l	
	ĺ		4			ΑE	Typical D		4	0000					ļ	-		
ı		Ц	4			ad	Hourly Ta	Ļ		ě				•	•	•		
ı		ء	Ę				5 ըույժը։ 2 ըույժը։	000	1	+	0	-	8			-	 8	0
ı	į	Eng. Design	퇅				Electrical Electrical	8	+	•	8	-	8				8	Ö.
	ara	Şug	غ ا				Mechanic	Q	4	•	0		Š		•	•	00000	000
	input Data	Ę.	1	(S	sQ 95	6 tru	Interior Si	Ŏ	1		8	Ĭ	0	-3	1		ğ	ĕ
1	2	Design		Srié 11			EG sseM	8	1	•	0		0	•	3		0	Ö
I		-	+	sa			Operating	H÷	┥	+	0	-	2	-	-	-	•	0
	ı	Schematic	þ				POOP POOP	Š	7	Ţ	Ě	1	<u> </u>	<u> </u>	1	1	Š	ě
		Sche	5	ւլեսի			A grissið	j	1	j	ě	3	•	ě	•	•	•	
ı		-	t	s			Surace Re	Ö	+	0	00000000	-	0	0	Q	Ô	0	
J		_	ŀ				SAZ QUIE PONTAQIJ	Ö	7	0	0	0	000	-	o O		0	0
		Pre-Design	F	S	sop A	619	Space T	Q	7	ğ	Š		Q	2	•	•	Š	ě
ı	1	Pre-	ļ.		E91/	A 10	BIGG FIO	Ĭ	#	Ť	ğ	1	Š	•	•	Ì	Š	
			þ		PUPS 1	9 əx		ij	#	•	<u>o</u>	1	•	•				9
F		<u> </u>	11			W	Location	۲	+	-	-		-	•	-	9	-	
Ĭ				ords	!													
				Kevwords	Ì			Ş	2	MC	Æ	景	Ę	镁		¥	Ω.	ЖC
L			_						1		.							
					2			_			arctf lig load: Anal Prog		_	,	,	TON	,	
ı.				Ē	Na E			, 15 7	1		TC 1	<u>,</u>	N		_	PAX C	æ .	HI
				roor	Code Name			AC PROGI	2	ADM-2	ARTIF LIC LI ANAL PROG	AXCESS VER. 7	BAS. LOAD	ST	BLDSIM	ERIDG & PAXTON EN ANAL PROG	BUEHRER METHOD	CADLIGHT
				٥	O		i	AC PART	2	ADI	ART	AXCES VER. 7	BAS	BLAST	BLI	E E	BUE	CAL
ſ	-	-		>				មិត	2									
ĺ				Country				UNITED		Ì								·
L				ď				56	'n									

• : Required/Given Information O: Does Not Accommodate Blank: Missing Information

TABLE 3.8 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/ Large Commercial

	I/ nmercial ninate)													
	Applications		Residential/ Large Commercial	(Internal Loads Dominate) R/LC	•	•	•	•	•	•	•	•	•	•
1	Mode		Residential/ Small Commercial	(Envelope Loads Dominate) R/SC				,	.					
	Fuel Use		c Deman Demand ponents e ems	Andral Consideration Monthly Peak Assume Peak Assume Common Monthly Profil Itory Vision Sergy System Total Buildin	0000		000000			0000		000000000		• • • •
Output Data	Temps		uordwns	Surface Graphic Plot Monthly Con	• 0 0		000		•	•		000	•	*
Onto	Load Output			Month Season Year	000		0		•		0 0 0	0000	•	9
	For: Los			Component Suiking Hous	• • •	-	0	•	8	8	0	•	-	9
Input Data	Pre-Dosign Schematic Design Eng Dosign Wushlier Solar	s too	Sortedines & Orecles	Cocasion (We Good Type & Gocusancy Ke Gocusancy Ke Gocusancy Ke Gocusancy Ke Gocusancy Ke Gocusancy Cond Good Ke Gocusancy Cond Good Ke Good K										
			Keywords		MC	Ŋ	MC	PC	MC	Ж	MC	MC	MF	MF
			Program Code Name	-	CARRIER E20-2		CEAC	CL4	CL4M	COMM BLDGS EN ANAL PROG	COMM HVAC	COMM LOAD	DEROB	DOE-2
			Country		UNITED								-	

Blank: Missing Information : Does Not Accommodate • : Required/Given Information

TABLE 3.8 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/ Large Commercial

,			Input Data			Output Data	ata		
_			Pre-Design Schematic Design Eng Design	Weather	For: Load	Load Output Tombe	Cont then	Applic	Applications
			SIL	Sola	╈	_	Jaca Case		
	Program Code Name	Keywords	Acredul Rates y Costs y Costs y Costs or control or control	ee Days Min & M Ihly Profile			notigmi Demad Sinanoc Sinanoc	Residential/ Small Confinercial	Residential/ Large Commercial
			Lugation (Ww. Bldg Types A Space Temps A Spa	Typical Day Monthly Monthly Annual Degre Ane Monthly Degre Ave Monthly Degre Ave Monthly Degre Ave Monthly Degre Ave Monthly Degre Ave Monthly Average Monthly	Component Suilding Hour	Month Season Aur Surtace Graphic Plot	Monthly Consumental Consuments of Consuments Peak I System Comprontly Profile Energy System Compressor System Compressor Systems of Compressor Systems of Compressor Systems of Consuments of Consumen	(Envelope Loads Dominate) R/SC	Unternal Loads Dominate) R/LC
	ECP	MF				:			•
	ENERGY BILL ANALYSIS	MC		000000000000000000000000000000000000000	0000	•	•		•
	ENERGY NOMOGRAPHS	WW		•	•	•	•		•
	ENERGY II	MC			•				•
	ESAS	MF		0000000000	0	0	0		•
	ESP-2	MF		•	•	•	0		•
	FASER	MC			0	0			•
L '	GAIN	MC			•	•			•
	ECC III	MC			•	000		-	•
	HVAC PKG	MC			000	000			•

Blank: Missing Information • : Required/Given Information O: Does Not Accommodate

TABLE 3.8 (cont.) - DESIGN TOOL CATEGORIZATION BY INPUT/OUTPUT DATA RESIDENTIAL/LARGE COMMERCIAL BUILDINGS (R/LC)

(R/LC) Residential/ Large Commercial

			Input Data	Output Data	1
			Pre-Design Schematic Design Eng Design Emperature Solar	For: Load Output Temps Fuel Use	Applications
Country	Program Code Name	Keywords	Moulhy Ave Bay & 101al Typical Degree Days Average Monthly Average Monthly Mouthly Degree Days Mouthly Degree Days Mouthly Degree Days Mouthly Degree Days Mouthly Degree Days Mouthly Degree Days Mouthly Degree Days Mouthly Degree Days Mouthly Degree Mouthly	Component Zone Bellding Day Month Month Month Peas Monthly Peas Monthly Peas Monthly Peas Monthly Peas Person Monthly Peas Person	Residential/ Small Commercial Large Commercial (Envelope (Internal Loads Dominate) Loads Dominate) R/SC R/LC
UNITED	MEDSI ANN ENER CONS	MF		0	•
	MQAUDIT	M.		•	•
	NECAP	MF		•	•
	PASS-ONE	MF			•
	QUIKEE	ĘĘ		•	•
	REAP	MC		•	•
	SEE	ΑF			•
	SOLPATH-COMM	MC		•	•
	STENET	МС		•	•
	TRACESOLAR	MF		•	•
	TSD	MF		•	•

Blank: Missing Information O: Does Not Accommodate ■ : Required/Given Information

IV. RESULTS OF DESIGN TOOL SURVEY

4.1 SURVEY RESULTS

The information obtained from the Design Tool Survey was compiled and classified in various ways. The result of this compilation process is presented in this section. The tables in this section give a statistical picture of the state of design tool development in IEA Task VIII, Subtask C participating countries.

4.1.1 Design Tools by Countries and Machine Type Required

Two hundred and thirty design tools were reported from participating countries, as shown in Table 4.1. The greatest number of design tools are for use with microcomputers, followed by mainframe computers.

TABLE 4.1	DESIGN	TOOLS	BY	COUNTRY*	AND	MACHINE	TYPE
-----------	--------	-------	----	----------	-----	---------	------

PARTICIPATING	MAINFRAME COMPUTERS (MF)	MICROCOMPUTERS (MC) NO. OF TOOLS	PROGRAMMABLE CALCULATORS (PC) NO. OF TOOLS	MANUAL METHODS (MN) NO. OF TOOLS
COUNTRIES	NO. OF TOOLS	NO. OF TOOLS	NO. OF TOOLS	RO. OF TOOLS
AUSTRIA	0	1	0	0
BELGIUM	2	1	0	0
CANADA	4	3	0	3
DENMARK	0	2	1	0
GERMANY, WEST	0	o	0	1
ITALY	1	1	0	4
NETHERLANDS	1	2	0	1
NORWAY	1	2	1	1
SWEDEN	2	2	0	1
SWITZERLAND	7	5	5	8
U.K.	2	2	0	1
U.S.A.	39	79	23	21
TOTAL	59	100	30	41

Total Number of Design Tools = 230

^{*} Only the countries participating in Subtask C of Task VIII, which have reported design tool information, are listed here.

4.1.2 Design Tools by Intended Users and Machine Type Required

Most of the design tools surveyed are intended for use by more than one group of users. Table 4.2 shows the design tools organized by intended users and machine type. There appears to be almost an equal number of design tools for architects and engineers. There are 57 microcomputer-based design tools which are suitable for use by technicians.

TABLE 4.2 DESIGN TOOLS BY INTENDED USERS AND MACHINE TYPE

INTENDED USERS	MAINFRAME COMPUTERS (MF) NO. OF TOOLS	MICROCOMPUTERS (MC) NO. OF TOOLS	PROGRAMMABLE CALCULATORS (PC) NO. OF TOOLS	MANUAL METHODS (MN) NO. OF TOOLS
ARCHITECTS	45	94	29	38
ENGINEERS	54	96	30	35
TECHNICIANS	14	57	8	19
BUILDERS	14	38	3	17

4.1.3 Design Tools by Application to Building Energy Calculation and Machine Type

The number of design tools suitable for various building energy calculations are shown in Table 4.3. Of the 230 design tools surveyed, 212 are suitable for heating energy calculations and 127 for cooling energy calculations. There are few design tools using manual methods which are suitable for cooling energy calculations.

TABLE 4.3 DESIGN TOOLS BY APPLICATION TO BUILDING ENERGY CALCULATION AND MACHINE TYPE

Total number of design tools = 230

MACHINE REQUIRED	HEATING (HTG) NO. OF TOOLS	COOLING (CLG) NO. OF TOOLS	LIGHTING (LTG) NO. OF TOOLS	SERVICE HOT WATER (DHW) NO. OF TOOLS	(MIS)
MAINFRAME COMPUTER	59	43	27	29	21
MICRO- COMPUTER	92	66	32	33	18
PROGRAM- MABLE CALCULATOR	27	5	2	14	0
MANUAL METHODS	34	13	2	10	2
TOTAL	212	127	63	86	41

4.1.4 Design Tools by Application to Building Energy Calculations and Building Category

The number of design tools for various building energy calculations tabulated by the building category is shown in Table 4.4. For building category R/SC, 162 design tools are suitable for heating and 80 for cooling energy calculations. There are 33 design tools for lighting calculations in building category R/SC. For building category R/LC, about the same number of design tools are available for heating and cooling energy calculations. For lighting calculations, 30 design tools are available in this building category.

TABLE 4.4 DESIGN TOOLS BY APPLICATION TO BUILDING ENERGY CALCULATIONS AND BUILDING CATEGORY

Total number of design tools = 230

BUILDING CATEGORY	EATI (HTG OF	()	COOLING (CLG) OF TOOLS	LIGHTIN (LTG) NO. OF TOO		(DHW)	(MIS)
RESIDEN- TIAL/SMALL COMMERCIAL (R/SC)	162		80	33:55 33:55	63 (2) (2) (2) (6)		18.
RESIDEN- TIAL/LARGE COMMERCIAL (R/LC)	50		46	30	23	•	x

4.1.5 Design Tools for Active Solar Energy Systems

Fifty-six of the 230 design tools surveyed are suitable for active solar energy system calculations. Table 4.5 shows the number of design tools for active solar energy system calculation organized by the method of calculation and the machine type required. There are 25 mainframe computer-based design tools for active solar energy system calculations. Most of the mainframe computer design tools use component-based simulation methods. Twenty design tools are available for microcomputers of which 10 use the F-Chart method. The greatest number of design tools use the F-Chart method of calculation followed by component-based simulation.

TABLE 4.5 DESIGN TOOLS FOR ACTIVE SOLAR ENERGY SYSTEMS BY MACHINE TYPE AND CALCULATION METHOD

Total Number of Design Tools for Active Solar Energy Systems = 56

ALGORITHMS FOR ACTIVE SOLAR ENERGY SYSTEMS	MAINFRAME COMPUTERS (MF) NO. OF TOOLS	MICROCOMPUTERS (MC) NO. OF TOOLS	PROGRAMMABLE CALCULATORS (PC) NO. OF TOOLS	MANUAL METHODS (MN) NO. OF TOOLS
F-CHART	4	10	5	- 2
COMPONENT BASED SIMULATION	14	1	0	0
AVERAGE DAY	0	1	. 0	0
OTHERS	7	8	2	2
TOTAL	25	20	7	4

4.1.6 Design Tools for Passive Solar Energy Systems

Table 4.6 shows that out of 230 design tools surveyed, 121 are suitable for passive solar energy calculations. Forty-six design tools are available for microcomputers, 13 of which use thermal network while 10 use the solar load ratio (SLR) method. Only two design tools for mainframe computers use the solar load ratio method. Considering the design tools for all machine types, 31 use the thermal network method, and 23 use the solar load ratio method.

TABLE 4.6 DESIGN TOOLS FOR PASSIVE SOLAR ENERGY SYSTEMS BY MACHINE TYPE AND ALGORITHM USED

Total Number of Design Tools for Passive Solar Energy Calculations = 121

ALGORITHMS FOR PASSIVE SOLAR ENERGY SYSTEMS	MAINFRAME COMPUTERS (MF) NO. OF TOOLS	MICROCOMPUTERS (MC) NO. OF TOOLS	PROGRAMMABLE CALCULATORS (PC) NO. OF TOOLS	MANUAL METHODS (MN) NO. OF TOOLS
SOLAR LOAD RATIO	2	10	7	4
THERMAL NETWORK	14	13	4	0
RESPONSE FACTOR	6	2	0	1
OTHERS	15	21	5	17
TOTAL	37	46	16	22

4.1.7 Design Tools for the Calculation of Underground Loads and Machine Required.

Table 4.7 shows that there are 33 design tools suitable for the calculation of underground loads, with about half intended for use with microcomputers and half for mainframe computers. Table 4.8 shows that 17 design tools are available for underground load calculation for R/SC and 16 design tools for underground load calculation for R/LC.

TABLE 4.7 DESIGN TOOLS FOR UNDERGROUND LOADS CALCULATION AND MACHINE TYPE

Total Number of Tools for Underground Calculations = 33

MAINFRAME	MICROCOMPUTERS (MC) NO. OF TOOLS	PROGRAMMABLE	MANUAL METHODS
COMPUTERS (MF)		CALCULATORS (PC)	(MN)
NO. OF TOOLS		NO. OF TOOLS	NO. OF TOOLS
13	15	0	5

TABLE 4.8 DESIGN TOOLS FOR UNDERGROUND LOADS CALCULATION AND THE BUILDING CATEGORY

Total Number of Tools for Underground Loads Calculation = 33

RESIDENTIAL AND SMALL COMMERCIAL BUILDINGS R/SC TOTAL NO. OF TOOLS	RESIDENTIAL AND LARGE COMMERCIAL BUILDINGS R/LC TOTAL NO. OF TOOLS
17	16

4.1.8 Design Tools by Application to Phase of Building Design

Table 4.9 shows the number of design tools suitable for use during various phases of building design and the machine required. The microcomputer-based design tools appear to have wide application to all phases of building design. The number of design tools by application to the phase of building design and the building category are shown in Table 4.10. For building category R/SC, there are 119 and 132 design tools suitable for pre-design and schematic design phases respectively. In the R/LC building category, fewer design tools are available for pre-design phase calculations.

TABLE 4.9 DESIGN TOOLS BY APPLICATION TO THE PHASE OF BUILDING DESIGN AND MACHINE REQUIRED

Total number of design tools = 230

TYPE OF MAJOR EQUIPMENT	PRE-DESIGN PHASE (PRDG) NO. OF TOOLS	SCHEMATICS PHASE (SCHM) NO. OF TOOLS	DESIGN DEVELOPMENT (DEDV) NO. OF TOOLS	POST DESIGN SERVICES (POSV) NO. OF TOOLS	RESEARCH (RSCH) NO. OF TOOLS
MAINFRAME COMPUTERS	· 24	36	45	. 22	22
MICRO- COMPUTER	69	81	61	29	9
PROGRAM- MABLE CALCULATOR	20	- 28	9	2	0
MANUAL METHODS	31	28	18	5	3

TABLE 4.10 DESIGN TOOLS BY APPLICATION TO THE PHASE OF BUILDING DESIGN AND THE BUILDING CATEGORY

Total number of design tools = 230

BUILDING CATEGORY	PRE-DESIGN PHASE (PRDG) NO. OF TOOLS	SCHEMATICS PHASE (SCHM) NO. OF TOOLS	DESIGN DEVELOPMENT (DEDV) NO. OF TOOLS	POST DESIGN SERVICES (POSV) NO. OF TOOLS	RESEARCH (RSCH) NO. OF TOOLS
RESIDENTIAL/ SMALL COMMERCIAL (R/SC)	119	132	89	39	23
RESIDENTIAL/ LARGE COMMERCIAL (R/LC)	25	41	44	19	11

4.1.9 Design Tools by Building Category and Machine Type

The total number of design tools suitable for small and large building types is shown in Table 4.11. For large buildings, about an equal number of design tools exist for use with mainframe and microcomputers. However, for small buildings about twice as many design tools are available for use on the microcomputer compared to mainframe-based design tools.

TABLE 4.11 DESIGN TOOLS BY BUILDING CATEGORY AND MACHINE TYPE

Total Number of Design Tools = 230

MACHINE REQUIRED	RESIDENTIAL AND SMALL COMMERCIAL BUILDINGS R/SC TOTAL NO. OF DESIGN TOOLS	RESIDENTIAL AND LARGE COMMERCIAL BUILDINGS R/LC TOTAL NO. OF DESIGN TOOLS
MAINFRAME COMPUTER	35	24
MICRO- COMPUTER	74	26
PROGRAMMABLE CALCULATOR	29	1
MANUAL METHODS	39	2

4.1.10 Design Tools by Units of Calculation

The total number of design tools capable of using English, SI, or both units are shown in Table 4.12. Most of the design tools suitable for use with microcomputers use English units. Only 45 microcomputer-based design tools use SI units, while 27 can use both units of calculation.

MACHINE REQUIRED	ENGLISH UNITS (ENG) NO. OF TOOLS	SI UNITS (SI) NO. OF TOOLS	BOTH UNITS (BOTH) NO. OF TOOLS
MAINFRAME COMPUTER	34	28	12
MICRO- COMPUTERS	74	45	27
PROGRAMMABLE CALCULATORS	21	25	20
MANUAL METHODS	18	20	3

4.2 FINDINGS

Based on the results of the Design Tool Survey presented above, a few general comments can be made.

- . There are few design tools available for use with programmable calculators.
- Since 1979, the development of design tools for programmable calculators has been very slow.
- There are a number of design tools available for calculating the savings due to the use of daylighting. Most of the design tools for daylighting calculations were developed between 1982-1984; some of the most recent activity is in this field.
- Fewer simplified design tools are available for calculating cooling energy requirements than heating. There are many design tools for cooling calculations which require micro or mainframe computers.
- Very few design tools are available for use on microcomputers or programmable calculators for the calculation of miscellaneous loads.
- One hundred and seventy-four design tools exist for calculating various energy requirements for small buildings. Fewer design tools are available for large buildings.
- The majority of design tools for active solar energy systems use the F-Chart method. A considerable number of design tools use the component-based simulation method.
- There is a need for simplified methods for active solar energy systems calculations for heating, cooling, and DHW for large commercial buildings.
- The solar load ratio (SLR) and thermal network method are the most commonly-used algorithms for passive solar energy systems.
- There is the need for simplified design tools for calculating the performance of passive solar systems for commercial buildings.
- The weather data required for the mainframe computer-based design tools in most cases is hourly data. During 1982-84, a few microcomputer-based design tools have been developed which use statistically processed condensed weather data. This condensed data is created from the hour-by-hour weather data by the design tool developers.

- During 1982-84, a few microcomputer-based design tools have been developed for commercial buildings. Some of these design tools perform hour-by-hour simulation for multi-zoned buildings with a variety of HVAC system types.
- The design tools developed prior to 1982 tended to use operating systems which restricted them to a few types of microcomputers. Very few design tools had been developed for CP/M operating system. Thus, the issue of design tool portability was a very serious one. However, during 1982-84, most of the new design tools were developed for use with CP/M and/or MS-DOS operating systems. These design tools can usually be used on a wide variety of computers which support these operating systems.
- While most microcomputer design tools were developed using BASIC language, a few were developed using USCD PASCAL, or FORTRAN 77.

4.3 UNAVAILABLE INFORMATION

The following information could not be obtained:

- Equipment cost: The cost varies considerably and was not provided in most survey responses.
- Time to input and debug: Most developers did not respond to this question. Some said it was minimal, others said that it depends upon the person using the design tool.
- Run cost/input set-up time: This was not answered on most survey forms. Some responded that it depends on the level of detail required and the experience of the user.
- Validation: Very little information was available except for some government-sponsored design tools. Some of these design tools have been validated against a simulation program, a few have been validated with actual building data. In most cases, validation of any scientific significance did not exist. Any validation information which did exist was very difficult to obtain unless it had been previously published.
- List of users: Most design tool developers either did not maintain a list of users or would not make it available.
- It appears that a large (but indeterminant) number of design tools do not have a significant users group outside the author or developer's own organization.

- There is a very apparent lack of consistency in approach, definition, algorithms, units, etc. The lack of standardization and/or consensus among authors and developers causes substantial confusion.
- An important paradox has emerged in design tool development: when a design tool is simple, cheap, and easy to use, it usually can't analyze with any discrimination the types of sophisticated solar or energy conservation strategies the energy-conscious designer is interested in investigating. There is a need to reconcile the desire for accuracy in analyzing unusual design features with the need for inexpensive, fast and easy to use design tools.

				·
				:
				•
	•	en en en en en en en en en en en en en e	1	
·				
	*			

APPENDIX A: SAMPLE SURVEY FORMS FOR ENERGY DESIGN TOOLS AND ANALYSIS MODELS





TASK VIII - PASSIVE AND HYBRID SOLAR RETURN TO:
LOW ENERGY DWELLING

SUBTASK B - MODELLING & SIMULATION

SUBTASK C - DESIGN METHODS

GENERAL: TOOL NAME:	AVAILABLE THROUGH:
DEVELOPED BY:	
	PHONE NO.:
	SUPPORTED BY:
DATE DEVELOPED:	
DATE OF LAST REVISION:	
	THE PARTY OF THE P
BRIEF DESCRIPTION:	PHONE NO.:
PLEASE ATTACH ANY VALIDATION OR TESTING REPORTS.	
TOOL HARDWARE & AVAILABLE F	ORMS:
☐ MAIN FRAME COMPUTER ☐ MICRO-COMPUTER	☐ HAND CALCULATOR ☐ GRAPHIC OR MANUAL
CARD DECK	
(COMPLETE SECTIONS 1, 2, 3) (COMPLETE SECTIONS 1, 2,	(COMPLETE SECTIONS 1, 2, 5) 4)



SECTION



INTEN	 	
INTENDED		

INTENDED FOR USE BY					•	
□ ARCHITECT □ ENGINEER □	□TECHNICIAN □RESE	EARCH ANALYSIST	O BUILDER			
PHASE FOR WHICH DESIGN TOOL V	WAS DEVELOPED					
□PRE-DESIGN □SCHEMATICS [□DESIGN DEVEL. □	POST DESIGN SERVICE	s 🔲 research			
BUILDING TYPE WHICH CAN BE AN	NALYZED					
☐RESIDENTIAL/SMALL COMMERCE						
MAJOR & MINOR I	ENERGY CO	MPONENTS	ADDRESS	ED BY	TOOL:	
☐ HEATING ☐ COO	OLING	LIGHTING	☐ DHW	<u> </u>	11SCELLANEOUS	
SPACE TEMPS.	LOADS SPACE TEMPS. HVAC SYSTEMS PASSIVE CLNG. SHADING SYSTEM DESIGN ECONOMICS UNDERGROUND LOADS SLOPED GLAZING MASS	☐ LOADS ☐ FC (LUX) LEVELS ☐ SYSTEM DESIGN ☐ ECONOMICS ☐ DAYLIGHTING ☐ FC (LUX) LEVELS ☐ ARTIFICIAL LTNG REDUCTION	SOLAR PAS ECONOMICS	IVE SIVE	D FANS D PUMPS MISC. ELECTRI ELEV. & ESCAL	
☐ MADS						
INPUT DATA REQU	JIRED:		DOES NOT	REPAIR T VALUE	INPUT REQUIRED	
PRE-DESIGN AND SITE ANALYSIS	DATA		ACCOMODATE	DEFAULT VALUES SUPPLIED	MPU! NECOMED	
LOCATION — ASSOCIATED WEAT BUILDING TYPE AND SCHEDULE OCCUPANCY RATES BUILDING AREA SPACE TEMPERATURES LOCAL ENERGY COSTS GENERIC BUILDING SHAPE DUE LOCAL CODE REQUIREMENTS (V	E E TO SITE RESTRICTION	as)	ووووووووو		وممومومه	
SCHEMATIC DESIGN DATA						
BUILDING SURFACE AREAS GLAZING AREAS & ORIENTATIO ZONING ROOM SHAPES OPERATING SCHEDULES & PROF			00 00			
ARCHITECTURAL DESIGN DEVELOPMENT	MENT DATA					
BUILDING MATERIALS & ASSOC BUILDING MASS DATA SHADING COEFFICIENTS & DAY INTERIOR SURFACE DATA		, ETC.)	000	0000	000	
ENGINEERING DESIGN DEVELOPMEN	NT DATA					
MECHANICAL SYSTEM DESIGN MECHANICAL SYSTEM CONTROL ELECTRICAL SYSTEM DESIGN ELECTRICAL SYSTEM CONTROL LIGHTING SYSTEM DESIGN LIGHTING SYSTEM CONTROL			00000	00000		





COMMENTS

en de la composition de la Martin de la Composition de la Composition de la composition de la Composition de l La composition de la composition de la composition de la composition de la composition de la composition de la

in the state of th

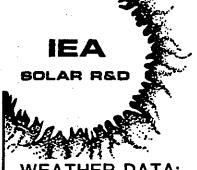
A COMPANIA CO COMPANIA COMPANIA COMPANIA COMPANIA COMPANIA COMPANIA COMPANIA COMPANIA COMPANIA COMPANIA COMPANIA COMPANIA CO COMPANIA COMP

en de la composition de la composition de la composition de la composition de la composition de la composition La composition de la composition de la composition de la composition de la composition de la composition de la La composition de la composition de la composition de la composition de la composition de la composition de la

A TOTAL CONTROL OF THE TOTAL

Andrews Andrews

All the second of the second o





	7.,					/	/ \		
WEATHER D	ATA:								
TEMPERATURE DATA:	HOURLY T	APE T EGREE DAYS	TYPICAL DAY	MONTH MIM YJHTN	LY DATA	ANNUAL D	ATA THLY TE	MONTHLY DEC	
SOLAR DATA:	HOURLY T	APE [TYPICAL DA	Y PROFILE		☐ MONTHLY	AVE. DA	LILY & TOTAL	
SOLAR ORIENS. CALC:	ANY ORIE	N. INCL. SI ACING SOUTH	OPED [ANY VER	T. & HORIZ.	□ H	ORIZ. 8	4 CARDINAL D	IREC.
DAYLIGHT CALC:	☐ HOUR-BY-☐ ANNUAL A		TYPICAL CL	EAR & CLO	UDY DAY/MON	гн С тү —	PICAL E	HTMOM\YA	
CALCULATIO	N PROC	CEDUR	ES:						
LANGUAGE: FORTR	AN 🗖 BAS	IC MA	CHINE LANGUA	GE 🗖 O	THER	□	GRAPHS,	CHARTS & SIM	PLE CALC.
USER TYPE: 🔲 I	NTERACTIVE	☐ INT	ERACTIVE GRA	PHIC	PREPARI	E FILE	☐ HAN	D CALCULATION	
UNITS OF CALCULATION	: □ s	I UNITS		☐ ENG	LISH			ютн	
CHECK ALL APPROPRIAT	E BOXES:								
HEAT TRANSFER:		☐ FINITE	DIFFERENCE		RESPONSI	E FACTOR		STEADY STATE	
SOLAR COMP. CALCU	LATED:	☐ DIFFUSE	/DIRECT/RE-R	ADIATED	DIFFUSE	DIRECT		TOTAL	
INTEGRATION:		☐ SIMPLE	EULER		☐ IMPLICI	r		OTHER	
SHADING:		ANY SOL	AR OBSTRUCTION	ON	OVERHAN	ONLY		NO SHADING	
MOVABLE SHADING:		☐ DAILY &	SEASONAL SW	ITCHING	SEASONA	L SWITCHING		NOT CALCULATE	D
MASS EFFECT IS CA	LCULATED:	☐ TRANSIE	NT HEAT FLOW		TIME CO	NSTANT FACTO	RS 🗖	ASSUME NO MASS	SAFFECT
ROOM TEMP. BASED	ON:	SURFACE	& AIR		AIR ONL	·		NOT CALCULATE	D
INSIDE TEMPERATUR	E:	☐ INPUT S	CHEDULE BY U	SER	☐ FIXED B	TOOL		VARIED BY TOO	Ĺ
U-VALUES:		☐ CHANGE	w/wind speed		☐ REMAIN	CONSTANT		MOVABLE INSUL	ATION
INFILTRATION:		☐ AIR CHA	NGE PER HOUR		CRACK M	ETHOD		VARIES W/WIND	SPEED
INTERNAL LOADS IN	CLUDE:	☐ SENSIBL	E & LATENT SI	EPARATE	SENS. &	LAT. TOTAL		SENSIBLE ONLY	
VENTILATION:		☐ SENSIBL	E		☐ LATENT		0	VARIES BY SCH OR COMMAND	EDULE
DAYLIGHT COEFFICE	ENTS:	SKY, RE	FL. & DIRECT		SKY & R	EFL.		SKY ONLY	
ZONES PER RUN:		D > 25	Ç	10 - 25		2 - 10		☐ 1 ONLY	
SYSTEM MODELING:		☐ SYSTEM	EFFIC. INPUT	٠.	SYSTEM	OPTIMIZING		COMPONENT SEN	SITIVITY
ECONOMIC ANALYSIS	:	ANNUAL	∞st		☐ SIMPLE	PAYBACK	. 🗖	LIFE CYCLE CO:	STING
OUTPUT:							٠		
LOAD DETERMINANTS:	☐ COMPONENT	r	ZONE		BUILDING		•		
LOADS OUTPUT BY:	☐ HOUR		□ DAY	•	□ монтн		☐ SEAS	ON	☐ YEAR
TEMPERATURES:	☐ AIR		SURFACE			PLOT			
FUEL USE BY:	MONTHLY MONTHLY OTHER				CONSUMPTION PEAK DEMAN		☐ ENER	TEM COMPONENTS RGY SYSTEMS AL BUILDING ON	



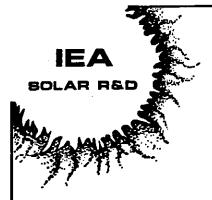
Section Section





FOR DESIGN TOOLS REQUIRING A MAIN FRAME COMPUTER

HARDWARE	-				
COMPUTER TYPE:	☐ IBM	□ CDC	☐ UNIVAC	OTHER	
CORE REQUIRED:	□ > 500K	□ 100 - 50	00 K 📑 2	5 - 100 K □ <	25 K
SUPPORT:	☐ USER'S GUIDE	□ DA	ATA MANUAL	OTHER	
EQUIPMENT:	☐ CRT	☐ PRINTER	☐ TEXTRONIX	OTHER	
COSTS:				-	
ASSUMING PURCHASE	OF SOFTWARE FOR USE	ON PRESENT TIME	E-SHARING:		
FIRST COST:					
IN-OFFICE EQUI	PMENT: CRT		PRINTER _		
SOFTWARE PURCH	ASE: CARD	DECK	TAPE	LISTI	NG
SUPPORT INFORM	ATION: USER	'S GUIDE	DATA MANU	ALOTHER	
TIME TO INPUT	AND DEBUG:	MAN-DAYS	MA	N-HOURS	
RUN COST/TIME:					
INPUT SET-UP T	IME:	MAN-DAYS	MA	N-HOURS	
TYPICAL* RUN T	1ME: □ > 1	ir. C	3 60 M - 30 M	□ 30 M - 10 M	□ < 10 M
TYPICAL* CPU T	IME: 🔲 > 10	00 SEC.	100 - 1000 SEC.	□ 5 - 100 SEC.	□ < 5 SEC.
*FOR THIS FORM, ASS SECTION 2.	SUME "TYPICAL" TO BE	A SINGLE-ZONED	100 SQUARE METER R	ESIDENCE WITH ALL OUTPUT	S CHECKED (/) IN
ASSUMING USE OF SO	OFTWARE ON PUBLIC TI	E-SHARING NETWO	ORKS:		
NAMES AND CONTACTHROUGH THEM).		SERVICES WHICH	HAVE THIS PROGRAM	AVAILABLE (EXACT COSTS C	AN BE OBTAINED
				**	
					·
			<u> </u>		



Section





FOR DESIGN TOOLS REQUIRING A MICRO-COMPUTER

HARDWAR					
MANUFACTURER AND	MODEL NUMBER: _			 	
RANDOM ACCESS ME	MORY (RAM) REQUI	RED:	К		
DOES THIS TOOL R	EQUIRE A PRINTER	? 🔲 YES	□ NO		
SUPPORT:	USER'S	TUIDE 🛄 I	DATA MANUAL	OTHER	
COSTS: FIRST COST:	D.				
		DISC		LISTING	·
		USER'S GUIDE			
TIME TO INPUT	AND DEBUG:	MAN-DAY	<u> </u>	MAN-HOURS	
RUN COST/TIME:					
TYPICAL* INPU	T SET-UP TIME:	MAN-DAY		_ MAN-HOURS	
TYPICAL* RUN	TIME:	HRS.		_ MIN.	
TYPICAL* PRIN	T TIME:	HRS.		MIN.	



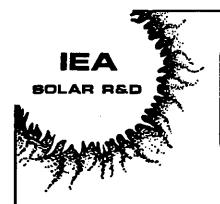
SECTION





FOR DESIGN TOOLS REQUIRING A HAND-HELD CALCULATOR

<u>=</u>			
MODEL NUMBER:			
QUIRE A PRINTER?	☐ YES ☐ N	0	
☐ USER'S GUIDE	DATA	MANUAL OTH	HER
CALCULATO:	R	PRINTER	
MAGNETIC	CARD	LISTING	OTHER
AATION: USER'S GU	IDE	DATA MANUAL	OTHER
SET-UP TIME:	HRS.	MIN.	
CIME:	HRS.	MIN.	
r TIME:	HRS.	MIN.	
	USER'S GUIDE CALCULATO MAGNETIC MATION: USER'S GU I SET-UP TIME:	CALCULATOR MAGNETIC CARD MATION: USER'S GUIDE FI SET-UP TIME: HRS.	CALCULATOR PRINTER



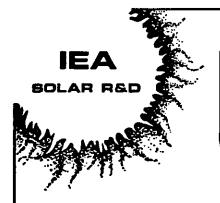
5 Section





FOR DESIGN TOOLS REQUIRING OTHER DEVICES

ITEM:					
SUPPORT:	USER'S	GUIDE	☐ DATA MANUAL	OTHER	
COSTS:					
FIRST COST:					
ITEM COST:					
SUPPORT INF	ORMATION:	USER'S GUID	E	DATA MANUAL	OTHER
RUN COST/TIME:					
TYPICAL* IN	PUT SET-UP TIME:		MAN-HOURS		
TYPICAL* CA	LCULATION TIME:		MAN-HOURS		



SECTION

APPENDIX B: LISTING AND DESCRIPTION OF DESIGN TOOLS BY COUNTRY

1				
				,

AUSTRIA

MANE: EBIWAN	AVAILABLE THROUGH: Fa. O. Folger
ets M. Bruck and G. Schaffar strian Solar and Space Agency and	A-1080 Wien, Austria
ndesinnung der Sanitar-und Heizungs- stallateure	
stallateure	PHONE NO.: (0222) 432639 SUPPORTED BY: Dr. G. Schaffar
neveroeen: Jan., 1984	
M TV21 KEA1210M: DGC * F 1304	Austria
	PRONE NO.: 02949/2311
DESCRIPTION: EBIWAN is to be used as a "cuilding: it calculates the seasonal her play gains, heat gains from occupants a	PRONE NO.: 02949/2311 quick" design tool in the early layout of a at balance (transmission and ventilation losses and from electric appliances) of - smaller -
uildings, the energy balance of the hea	ating system (sir/water heat pump, oil or gas cycle costs of the entire system. A base case rary number of variations can be analyzed with
rat	
MAME: QEFH	AVAILABLE THROUGH:
OPED BY: Austria - no other information	
known about design tool at	
time of printing	PHONE NO.: SUPPORTED BY:
	DUTFORTED DIT
DEVELOPED:	
	BROVE NO .
DESCRIPTION:	РНОНЕ NO.:
DESCRIPTION:	
ELGIUM	
rai	
	AVAILABLE THROUGH: Laboratoire de Physique du
NAME: LPB1 LOPED BY: Laboratoire de Physique du	Batiment, Université de Liège, Faculté
Retiment. Université de Liège	Batiment, Université de Liège, Faculté des Sciences, Appliquees 15, Avenue des Tilleuls - Bat Dl. 4000 Liege Belgique
Batiment Université de Liege Faculté des Sciences Appliquees 15 Avenue des Tilleuls - Bat Dl	Tilleuls - Bat DI. 4000 Liege Belgique
15, Avenue des Tilleuls - Bat DI	Tilleuls - Bar Jl. 4000 flegg belgique PHONE NO.: 041/520180, Ext. 367 SUPPORTED BY: The SPPS
15, Avenue des 1144 4000 Liège Belgique DEVELOPED: 1981	
OF LAST REVISION: 1983	1040 Bruxelles - Belgique
	PHONE NO.: 0272304100
F DESCRIPTION: LPB1 is a program designed to	PHONE NO.: 02/2304100 compute thermal loads and temperatures in a acity effects into account, thus in a dynamic
way.	
· · · · · · · · · · · · · · · · · · ·	
neral	_ , , , , , , , , , , , , , , , , , , ,
. NAME: LPB4	AVAILABLE THROUGH: Laboratoire de Physique Du
FIORED BY: Taboratoire de Physique du	Batiment, Universite de Liege, Faculte
Batiment, Universite de Liege, Faculte	des des Sciences Appliquees 15, Avenue des
Sciences Appliquees 13, Avenue des 1222	PHONE NO.: 041/520180. Ext. 367
Bat Dl. 4000 Liege Belgique	PHONE NO.: 041/520180, Ext. 367 SUPPORTED BY: The FEC and the SPPS
DEVELOPED: 1981	Rue de la Sciences No. o
OF LAST REVISION: 1982	1040 Bruxelles - Belgique
	PHONE NO.: 02/2304100
es peccesorion. LPRA is a static multi-zone	program The results that we are able to
obtain from this program are natural te	mperatures with or without heating, power the consumption for heating, the solar gain
required to maintain a given temperatur	e, the consumption for heating, the solar gain
neral	A N- W3-
L NAME: SOLPA	AVAILABLE THROUGH: A. De Herde
VELOFED BY: A. De Herde - E. Gratia	Unite d'architecture, Batiment Vinci Place du Levant, 1 - 1348 Louvain la Ne
Unite d'architecture	Belgique
Batiment Vinci Place du Levant, l	PHONE NO.: 010/43.21.39
1348 Louvain la Neuve Belgique	SUPPORTED BY: A. De Herde
1348 Louvain la Neuve Belgique re DEVELOPED: 1981	Same as above
TE OF LAST REVISION: 1981	Same as above
	PHONE NO.:
EF DESCRIPTION: This design tool calculates	the performances of a window with a "porch root a surface and the balance sheet.
If DESCRIPTION: This design tool calculates It calculates, hour by hour, the shade	d surface and the balance sheet.
	······································
	

CANADA

TOOL NAME: CMHC-2 AVAILABLE THROUGH: DEVELOPED BY: Wayne Webster Technical Research Division, CMHC Canada Mortgage Housing Corporation National Office, Montreal Road, Ottawa, Ontario KIA OP7 (613) 748-2308 SUPPORTED BY: BATE DEVELOPED: Available October 1982 PROBE NO.: The Computer Model for Heating Cost-effectivity (CMHC-2) provides an economic evaluation of the competing alternative energy conservation options for new residential construction. The program identifies the most cost-effective alternative for a given capital expenditure. The thermal analysis component is primarily developed from the DBR Hotcan program with passive solar capabilities treated in accordance with DBR-NRC correlation curves. General tool NAME: Enerpass-1 AVAILABLE THROUGH: DEVELOPED BY: Stephen Carpenter Enermodal Engineering Limited 421 King Street, North WATERLOO, Ontario. N2J 4E4 DATE DEVELOPED: April 1982 DATE OF LAST REVISION: Enermodal Engineering Limited (519) 884-6421 SUPPORTED BY: Enermodal Engineering Limited PHONE NO.: (519) 884-6421 BRIEF DESCRIPTION: The Enerpass-1 program estimates the monthly thermal performance of residential passive solar heating systems based on hour-by-hour simulation. The passive solar systems which can be simulated include direct gain, water wall. Trombe wall and sunspace. Each system can include the option of overhang, night time insulating shutter and thermal mass. The aim of the program is not to accurately model the heat loss from the building but to identify the change in energy consumption through adding solar components. General Hotcan TOOL NAME: AVAILABLE THROUGH: DEVELOPED BY: R.S. Dumont H.W. Orr Division of Building Research National Research Council of Canada SASKATOON (Saskatchewan) S7N OW9 PHONE HO.: (306) 665-4200 SUPPORTED BY: Same M.E. Lux Division of Building Research DATE DEVELOPED: DATE DEVELOPED: 1980 DATE OF LAST REVISION: May 1982 PHONE NO.: BRIEF DESCRIPTION: The Hotcan program which incorporates several user-friendly featurescalculates on a month-by-month basis, the annual space hearing consumption for residences and small buildings. The calculation procedure includes the effect of solar gain on all window orientations, south window shading, air infiltration, and differing thermal masses and internal heat gains. The passive solar gain calculation is based on the Barakat solar utilization method. General Housing E TOOL MAKE: AVAILABLE THROUGH: Okins, Leipciger, Cuplinskas, DEVELOPED BY: Okins, Leipciger, Cuplinskas, Kaminker and Associates Limited Kaminker and Associates Limited TORONTO, Ontario PHONE NO.: (416) 445-8255 SUPPORTED BY: DATE DEVELOPED: DATE OF LAST REVISION: March 1982 PRONE NO.: the basis. It is based on month-by-month degree day calculation with monthly effectiveness of solar gains determined by a solar/load ratio algorithm. To compensate for internal and solar gains, the base temperature for degree-day calculations is 18°C which is lower BRIEF DESCRIPTION: than common thermostat settings General TOOL MAME: HOUE (Hydro-Quebec Utilization of Energy) AVAILABLE THROUGH: DEVELOPED BY: Equipe Ressources techniques, Service Utilisation de l'energie-H.Q. Under Project "CALMERES" by Gerald Jutras, Roma Desjardins, Gilles Grou, Ouoc-Anh Ton-That and Alain PHONE NO.: (514) 289-3393 or 289-3385 Quebec 75 Dorchester West. Montreal (Quoc-Anh-Ton-That or Roma Desjardins) PHONE NO.: (514) 289-3393 or 289-3385 ROYET DATE DEVELOPED: May 1981 DATE OF LAST REVISION: March 1982 SUPPORTED BY: PHONE NO.: REIEF DESCRIPTION: The HOUE program calculates the annual space heating consumption for residences and small buildings based on an hour-by-hour calculation for a typical average day each month. The energy balance equation used by the program is a differential equation derived from the Fournier equation in one dimension that takes into account different heat transfer surfaces and the capacity of the heating system simultaneously.

General	
TOOL MANE: PASWING	AVAILABLE THROUGH:
Kaminker and Associates Limited	Okins, Leipciger, Cuplinskas, Kaminker and Associates Limited
For:	TORONTO, Ontario
Ontario Ministry of Energy	PHONE: NO.: (416) 445-8255 SUPPORTED BY:
DATE DEVELOPED: 1979	
DATE OF LAST REVISION: December 1981	
	PHONE MO.:
gain systems under typical sunny winter con account the number and type of surfaces end the effects of furniture and adjacent space	ditions. The calculation takes into
General .	Promiss Pud I dans Chair I ad
THE REMAS	53 Queen Street, Studio 21
Energy Building Group Ltd. 53 Oueen Street, Studio 21	OTTAWA, (Ontario), CANADA
OTTAWA (Ontario)	PHONE NO.: (613) 232-5393
CANADA	SUPPORTED BY:
MATE DEVELOPED: January 1982	
DATE OF LAST REVISION:	
	PHONE NO.: (613) 282-5393
heating consumption based on data describ	on a month-by-month basis, the annual space
weather data. Recorded fuel data can be	entered to assist in the analysis. The
REMAS program is associated with a data ha	ase which captures all entered data for any
number of buildings.	
General	•
	ATTERNATION OF THE ATTERNATION .
TOOL MAKE: Utilization Factor Method	Division of Building Research
Division of Building Research	National Research Council of Canada
National Research Council of Canada	PHONE NO.: (613) 746-0623
	SUPPORTED BY:
DATE DEVELOPED: May 1982	
DATE OF LAST REVISION:	
	PHONE NO.:
MIEF DESCRIPTION: The Utilization Factor Method	l is a simple graphical method which can be
used during the design process to find the storage mass that minimizes the purchased	combination of south window area and thermal
applicable to the wide range of different	types of house construction in Canada.
DENMARK	
General	
	AVAILABLE THROUGH: Ove Mörck
TOOL MAME: EFB1 DEVELOPED BY: Anker Nielsen	Thermal Insulation Laboratory
Thermal Insulation Laboratory	Toobside University of Hermotk
Tochologi University of Bermark	Building 118. DK-2800 Lynbgy, Denmark PHOWE NO.:(02) 88 35 11
Building 118 DK-2800 Lyngby, Denmark	SUPPORTED BY:
DATE DEVELOPED: FEDILIARY 1950	·
DATE OF LAST REVISION:	
	PNONE NO.:
BRIEF BESCRIPTION: EFBl is developed on the basi	s of a detailed simulation program, BA4. In
bouse and of a house without heat canacit	the heating load of an infinitely heavy The actual energy consumption for a given
house is found by interpolation between t	he two limits.
General	
TOOL NAME: PAMA	AVAILABLE THROUGH: Not Available
SEVELOPED ST: Ove Mörck Thermal Insulation Laboratory	
Thermal Insulation Laboratory	
Technical University of Denmark Building 118	PMORE NO.:
Building 118 DK - 2800 Lyngby, Denmark	SUPPORTED BY:
BATE DEVELOPED: Innuary 1982	,
BATE OF LAST REVISION: Hay, 1982	
MIET MESCRIPTION: This is a general network appr	PHONE NO.:
BRIEF DESCRIPTION: This is a general network appr	roach like rasult, where the dillerential
equations for the thermal nodes are solved	simultaneously at each (one hour) time trives are stored, one for the night situation day situation (one) shutters)
PERO DA MALETA THANKS MICHAEL THAN THANKS TOOL OF	dev eltuetion (open shutters).

TOOL NAME: METHOD 5000	AVAILABLE THROUGH: Dialogic
DEVELOPED BY: Dialogic	70 P4 de Manage
70 Bd. de Magenta	75010 Parie
75010 Paris	70 Bd. de Magenta 75010 Paris FRANCE
FRANCE	PHONE NO.:
	SUPPORTED BY:
DATE DEVELOPED: July 1982	Same as above
DATE OF LAST REVISION: October 1984	
	PHONE, NO. :
BRIEF DESCRIPTION: METHOD 5000 is a manual meth	od programmed for use on a microcomputer.
The method is based on 5 utilizability cu	rves for 5 different mass levels of the
building considered.	
IT A L V	
ITALY	
	•
<u>.</u> .	
Sone rat	
men mus. Propos Control Cucabia Mathed	*****
PROOL MAME: Energy Control Graphic Method DEVELOPED BY: S. Los, L. Agnoletto, N. Torbol	AVAILABLE THROUGH:
Istituto Universitario Architettura	
Tolentini 197-30125 Venezia	
	PHONE NO.:
· · · · · · · · · · · · · · · · · · ·	SUPPORTED BY:
DATE DEVELOPED: 1981	·
DATE OF LAST REVISION: 1981	
norm measurement. By manny of this tool the second	PNOHE NO.:
climatic area for a building to be heating	asonal energetic demand can be met in a giver
(Please find herewith enclosed paper).	ng when the first planning takes place.
tirease tind heterith enclosed paper).	
C.N.R. P.F.E Instituto Universi	CONSIGLIO NAZIONALE delle RICERCHE
C.N.R. P.F.E Instituto Universi Rio Di Architecttura Tolentini 197. 30125 Venezia Italia	CUNSIGLIO NAZIONALE delle RICERCHE PHONE NO.: SUPPORTED SY: Dr. Franco Vivona
118 DEVELOTED:	EUNSIGLIO NAZIONALE delle RICERCHE PROME NO.: SUPPORTED DT: Dr. Franco Vivona Direzione CNR/PFE
118 DEVELOTED:	CUNSIGLIO NAZIONALE delle RICERCHE PROME NO.: SUPPORTED BY: Direzione CNR/PFE VIA Nizza. 128
ATE OF LAST REVISION: 1980	via Nizza, 128
ATE OF LAST REVISION: 1980	via Nizza, 128
ATE OF LAST REVISION: 1980	via Nizza, 128
ATE OF LAST REVISION: 1980	via Nizza, 128
ATE OF LAST REVISION: 1980	via Nizza, 128
ATE OF LAST REVISION: 1980	via Nizza, 128
RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple	via Nizza, 128
RISP DESCRIPTION: 1980 The tool allows the graphic c of the building as seen by the sun. (Ple	via Nizza, 128
RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple	via Nizza, 128
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple	
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Fle Description of the buildi	
RIEF DESCRIPTION: The tool sllows the graphic c of the building as seen by the sun. (Ple	VIA MIZZA. 128 VIA MIZZA. 128 VIA MIZZA. 128 10198 Roma PROME NO.: 96-854383 ONSTRUCTION. through an axonometric drawing. age find enclosed paper). WALLABLE TREOUCH: CNR
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Fle Description of the buildi	PROPER NO.: Date 210ne CNR/PFR Via Nizza. 128 00198 Roma PROME NO.: 06-854383 Onstruction. through an axonometric drawing. Bee find enclosed paper). ENAMELE THROUGH: CNR
ARE OF LAST REVISION: 1980 REF DESCRIPTION: The tool allows the graphic cof the building as seen by the sun. (Ple Description: MORE REVLOTED W: B. Boni, M. Dalponte, R. Pozzi Fiat Engineering via Belfiore 23-TURINO-	PROOFE NO.: OUTPE CNR VIA NIZZA. 128 VIA NI
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple bunds of the building as seen by the sun. (Ple	PROFE NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple bunds of the building as seen by the sun. (Ple	PROPER NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple Denoral B. Boni, H. Dalponte, R. Fozzi Fist Engineering via Belliore 23-TORINO- MIT REVELOPED: 1976 MIT OF LAST MEVISION: February 1982	PROPER NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CRR/PFE via N1228. 128 128 128 128 128 128 128 128
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple sun.) Description: MORE REVELOPED WI: B. Boni, M. Dalponte, R. Pozzi Fist Engineering Via Belliore 23-TORINO- MITS OF LAST MEVISION: February 1982 RIEF MESCRIPTION: MORE is a sophisticated simul	PROPER NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CRR/PFE via N1228. 128 128 128 128 128 128 128 128
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple Denoral B. Boni, H. Dalponte, R. Fozzi Fist Engineering via Belliore 23-TORINO- MIT REVELOPED: 1976 MIT OF LAST MEVISION: February 1982	PROPERTY BY: Dr. Franco Vivona Direzione CNR/PFE via Nizza. 128 128 128 128 128 128 128 128 128 128
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool sllows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple building as seen by th	PROPERTY BY: Dr. Franco Vivona Direzione CNR/PFE via Nizza. 128 128 128 128 128 128 128 128 128 128
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple sun.) Description: MORE REVELOPED WI: B. Boni, M. Dalponte, R. Pozzi Fist Engineering Via Belliore 23-TORINO- MITS OF LAST MEVISION: February 1982 RIEF MESCRIPTION: MORE is a sophisticated simul	PROPER NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via Nizza. 128 128 128 128 128 128 128 128
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the	PROPER NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via Nizza. 128 128 128 128 128 128 128 128
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the	PROPER NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via Nizza. 128 128 128 128 128 128 128 128
ARE OF LAST REVISION: 1980 REF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Fle the building as seen by the su	PROPER NO.: VIA NIZZA. 128 00198 Roma PROME NO.: 06-854383 ONSTRUCTION. through an axonometric drawing. SEE find enclosed paper). ENAMIABLE TEMOUCH: CNR THOWY NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via N1ZZA 128 00198 ROMA ITALY PROME NO.: 06-854389 Lation tool to analyze transient loads using
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple sun.) BOOL NAME: MORE REVELOPED WI: B. Boni, M. Dalponte, R. Pozzi Fist Engineering Via Belliore 23-TORINO- MATE DEVELOPED: 1976 MATE OF LAST MEVISION: February 1982 RIEF MESCRIPTION: MORE is a mophisticated simultransfer functions. Reneral ROL NAME: SMECC	PROWE NO.: 06-854383 ONSTRUCTION. through an axonometric drawing. BRE FIND ENCLOSED PROPER WALLABLE THROUGH: CNR PROWE NO.: Dr. Franco Vivona Direzione CNR/PFE via N177A 178 O0198 ROMA 1TALY PROWE NO.: 06-854389 Lation tool to analyze transient loads using
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool sllows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple burners) BOOL NAME: MORE HOVELOPED W: B. Boni, M. Dalponte, R. Pozzi Fist Engineering via Belliore 23-TORINO- MITS DEVELOPED: 1976 MITS OF LAST MEVISION: February 1982 RIEF MESCRIPTION: MORE is a sophisticated sinustransfer functions. Reneral ROL NAME: SMECC REVELOPED BY: L. Agnoletto, P. Brunello.	PROPER NO.: O198 Roma PROME NO.: O6-854383 ONSTRUCTION. through an axonometric drawing age find enclosed paper). WALLABLE THROUGH: CNR THOWY NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via N12ZA 12R O198 ROMA ITALY PROME NO.: O6-854389 Lation tool to analyze transient loads using
ATE OF LAST REVISION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Fle the building as seen by the s	PROWE NO.: 06-854383 ONSTRUCTION. through an axonometric drawing. BRE FIND ENCLOSED PROPER WALLABLE THROUGH: CNR PROWE NO.: Dr. Franco Vivona Direzione CNR/PFE via N177A 128 O0198 ROMA 1TALY PROWE NO.: 06-854389 Lation tool to analyze transient loads using
RIEF RESCRIPTION: 1980 RIEF RESCRIPTION: The tool sllows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple sunseral seen by the sun.) RIEF ROOF TO BE BONG M. Dalponte, R. Pozzi Fiat Engineering via Belliore 23-TORINO- MIT REVILOTED: 1976 MITS OF LAST REVISION: February 1982 RIEF RESCRIPTION: MORE is a sophisticated simultransfer functions. ROOF BONG SMECC REVELOPED BY: L. Agnoletto, P. Brunello, R. Zecchin: Instituto di Fisica Tecnica	PROWE NO.: 06-854383 PROWE NO.: 06-854383 ONSTRUCTION. Through an exonometric drawing. SERVICE THROUGH: CNR PROWE NO.: EUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via N17.7A 128 00198 ROMA 1TALY PROWE NO.: 06-854389 lation tool to analyze transient loads using AVAILABLE THROUGH: C.N.R. Consiglio Nazionale delle Ricerche
RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple building as seen by	PHONE NO.: DITEZIONE CNR/PFR VIS NIZZS. 128 00198 Roms PROME NO.: OB-854383 AVAILABLE THROUGH: CNR CNR PROME NO.: SUPPORTED BT: Dr. Franco Vivona Direzione CNR/PFE vis N1Z7A 128 00198 ROMA 1TALY PROME NO.: 06-854389 Lation tool to analyze transient loads using AVAILABLE THROUGH: C.N.R. Consiglio Nazionale delle Ricerche PHONE NO.:
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the	PHOWE NO.: Of-854383 ONSTRUCTION. Through an axonometric drawing. SERVICE NO.: SUPPORTED BY: OLIVER NO.: CONSIGLIO Nazionale delle Ricerche PHOWE NO.: DIREZIONE CNR/PFE DIREZIONE CNR/PFE OLIVER NO.: OLI
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the	PHOWE NO.: Ob-854383 Onstruction. through an exonometric drawing. See Find enclosed paper). WALLABLE THROUGH: CNR PROWE NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via N127A 128 O0198 ROMA 1TALY PROWE NO.: O6-854389 lation tool to analyze transient loads using AVAILABLE THROUGH: Consiglio Nazionale delle Ricerche PHOWE NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool sllows the graphic c of the building as seen by the sun. (Ple of the	PHOWE NO.: Of-854383 ONSTRUCTION. Through an axonometric drawing. SERVICE NO.: SUPPORTED BY: OLIVER NO.: CONSIGLIO Nazionale delle Ricerche PHOWE NO.: DIREZIONE CNR/PFE DIREZIONE CNR/PFE OLIVER NO.: OLI
MORE MORE MYSLOPED ST: B. Boni, M. Dalponte, R. Pozzi Fiat Engineering via Belliore 23-TORINO- MITS OF LAST MEVISION: February 1982 MINE OF LAST MEVISION: MORE is a mophisticated minu transfer functions. MORE is a mophisticated minu transfer functions.	PHONE NO.: Ob-854383 Onstruction. through an exonometric drawing. BYALLABLE THROUGH: CNR PROVE NO.: SUPPORTED BY: Ob-854389 Lation tool to analyze transient loads using AVAILABLE THROUGH: CNR Consiglio Nazionale delle Ricerche PHONE NO.: SUPPORTED BY: Dr. Franco Vivona Ob-854389 Lation tool to analyze transient loads using PHONE NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via Nizza, 128 O0198 Roma PHONE NO.: SUPPORTED BY: Ob-854383
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool sllows the graphic c of the building as seen by the sun. (Ple of the building as seen by the sun. (Ple sunce of the building as seen by the sun. (Ple	PHONE NO.: Ob-854383 Onstruction. through an exonometric drawing. BYALLABLE THROUGH: CNR PROVE NO.: SUPPORTED BY: Ob-854389 Lation tool to analyze transient loads using AVAILABLE THROUGH: CNR Consiglio Nazionale delle Ricerche PHONE NO.: SUPPORTED BY: Dr. Franco Vivona Ob-854389 Lation tool to analyze transient loads using PHONE NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via Nizza, 128 O0198 Roma PHONE NO.: SUPPORTED BY: Ob-854383
RIEF DESCRIPTION: 1980 RIEF DESCRIPTION: The tool allows the graphic c of the building as seen by the sun. (Ple of the	PHONE NO.: Ob-854383 Onstruction. through an exonometric drawing. BYALLABLE THROUGH: CNR PROVE NO.: SUPPORTED BY: Ob-854389 Lation tool to analyze transient loads using AVAILABLE THROUGH: CNR Consiglio Nazionale delle Ricerche PHONE NO.: SUPPORTED BY: Dr. Franco Vivona Ob-854389 Lation tool to analyze transient loads using PHONE NO.: SUPPORTED BY: Dr. Franco Vivona Direzione CNR/PFE via Nizza, 128 O0198 Roma PHONE NO.: SUPPORTED BY: Ob-854383

General	
TOOL MANE: TTL	AVAILABLE THROUGH: CNR
R. Zecchin	
lstituto di Fisica Tecnica	PHONE NO.:
Universita di Padova	SUPPORTED BY: Dr. Franco Vivona
DATE DEVELOPED: 1979	Direzione CNR/PFE via Nizza 128
DATE OF LAST REVISION: 1981	00198 Roma
	PHONE NO.: (06) 854383
evaluation of inside temperature.	ation method which allows an accurate hourly
NETHER ANDO	
NETHERLANDS	
General	
TOOL NAME: Programma ALADIN	AVAILABLE THROUGH: DHV
DEVELOPED BY: DHV Raadgevend Ingenieursbureau	u BV
	PHONE NO.: 033-682358
	supported BY: M. Dieleman DHV A.v.d. Brewer DHV
DATE DEVELOPED: 1981 DATE OF LAST REVISION: 13.7.1982	A.V.d. Brewer Day
DATE OF LAST REFISION.	
P.l. incl. incl. otation:	PHONE NO.: 033-682358
and hear halance of houses and other s	ary calculation of the yearly energy demand imilar building (degree-hours method TH Eindhoyer
Also a calculation of the maximum heat	capacity per room (DIN 4701, 1979), the insulat:
quality of the building (NEN 1068, 198)	capacity per room (DIN 4701, 1979), the insulat:
structure types, the yearly solar radia	ation gains.
General	
	Newtowale Heatenand
TOOL NAME: Design Aids Energ. Bew. Ontw.	AVAILABLE THROUGH: Nationale Woningraad Markenlaan 1, Postbus 50051
DEVELOPED BY: Nationale Woningraad/	1305 AB ALMERE
Technische Hogeschool Eindhoven	
	PHONE NO.: 03240-91911
ness project on the barrier 1001	SUPPORTED BY: Ministerie van Volkshuisvesting en
DATE DEVELOPED: <u>oktober 1981</u> DATE OF LAST REVISION: <u>oktober 1981</u>	Ruimtelijke Ordening
•	MIAUR MO
serve assessmentally. By manny of a number of and	PHONE NO.:
decisions taken during a design process	can be evaluated. An important design tool
is a simple calculation of the annual h	s can be evaluated. An Important design tool neating demand. The graphs and tables represent
the results of calculations with the dy	namic computer programme kli.
General	
and war. Paradakalana	AVAILABLE THROUGH:
TOOL NAME: Energiebalans peveloped By: Adviesbureau voor Klimaat-	Adviesbureau voor Klimaatbeheersing
beheersing,	Halmos B.V., Wassenaarseweg 32
Ir. G.G.B. Halmos B.V.	2596 CJ 's-GRAVENHAGE
	PHONE NO.: 070-451121 SUPPORTED BY: Ir, G.G.B. Halmos
DATE DEVELOPED:	
DATE OF LAST REVISION:	
	PRONE NO.:
aging pescription: The energy consumption i	s calculated for each hour of 60 reference days.
The output is graphic and numeric.	
General	
nenu 1	AVAILABLE THROUGH: Bouwcentrum-Infraplan
TOOL MANE: PSDM-1 BEVELOPED BY: Bouncentrum-Infraplan	Weena 700, Postbus 299
BEVELOVED BY: BOUNCEMETURE-IIITADIAN	3000 AG ROTTERDAM
	
	PHONE NO.: 010 - 116181 supported BY: Energiecentrum Nederland
DATE DEVELOPED. June 1982	Petten
DATE OF LAST REVISION: Under development	
	PNONE NO.:
MRIEF DESCRIPTION: Standy state propramme to	calculate the energy consumption: the results
of the programme will be found betwee	calculate the energy consumption; the results in a maximum and a minimum energy consumption. programme of the thermal insulation laboratory,
The method has been developed from a	programme of the thermal insulation laboratory,
Lyngby, Denmark.	

NORWAY

PROLINATE: EFB 3	AVAILABLE THROUGH: Anker Nielsen
MYELOFED BY: Anker Nielsen	Norwegian Building Research Institute
Thermal Insulation Laboratory Technical University of Denmark Building 118	N 707/ WD OND HOLD IN AND A
Technical University of Denmark	Norway
	NOTWAY PHONE NO.: (075) 39 930 SUPPORTED BY:
DK-2800 Lyngby, Denmark MATE DEVELOPED: February 1981 PATE OF LAST REVISION:	SUPPORTED BY:
BATE OF LAST REVISION:	
	PHONE NO.:
MIEF DESCRIPTION: EFB 3 is developed on the basi	s of the simplified method FER 1. It is
designed for calculations of buildings wi	th rooms at different temperature level-
and/or room without neating. For each to	IOM. The energy consumption is calculated
In rooms without heating, the mean temper	ature is calculated.
Beneral	
Manual Method of Calculating	
HOOL MANE: Energy Consumption of Buildings	AVAITABLE THROUGH:
EVELOPED BY:	Norwegian Building
B. T. Larsen	Research Institute
Norwegian Building Research Institute Oslo, Norway WTE DEVELOPED: 1982	
Research Institute	PHORE NO.: (02) 469880
_ Uslo, Norway	SUPPORTED BY: Norwegian Ruilding Research Institute
ATE DEVELOPED: 1982	Research Institute
ATE OF LAST REVISION:	
RIGF DESCRIPTION:	PHONE NO.: (02) 469880
ieneral	
•	
OOL NAME: SOLGOR	AVAILABLE THROUGH:
EVELOPED BY: Sintef Div. 15/HVAC Group	
N-7034 Trondheim	
NORWAY	
	PHONE NO.:
	SUPPORTED BY:
ATE DEVELOPED: 1983/1984	
ATE OF LAST REVISION: May 1984	
•	
RIEF DESCRIPTION: SOLGOR is developed for prelimand systems in buildings and glazed spaces	
a function of outdoor temperature. The sinaverages) over a year. Normalized annual	minary analysis of temperature, energy, los
	minary analysis of temperature, energy, los
a function of outdoor temperature. The signerages) over a year. Normalized annual coneral	minary analysis of temperature, energy, los . The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used.
a function of outdoor temperature. The single averages) over a year. Normalized annual control	minary analysis of temperature, energy, los. The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used. AVAILABLE THROUGH: SINTEF division 62
a function of outdoor temperature. The single averages) over a year. Normalized annual control	minary analysis of temperature, energy, los. The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used. AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral TREC (Triangular Energy Calculation) WELOPED NY: Jon Borge Johnsen Sintef Division 62	minary analysis of temperature, energy, los . The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used.
A function of outdoor temperature. The six averages) over a year. Normalized annual seneral not make: TREC (Triangular Energy Calculation) represents: Jon Borge Johnsen Sinter Division 62	minary analysis of temperature, energy, los The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used. AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral continue: TREC (Triangular Energy Calculation) (VELOPED NY: Jon Borge Johnsen Sintef Division 62 Architecture and Building Technology N-7034 Trondheim-NTH	minary analysis of temperature, energy, los The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used. AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral must seneral sener	minary analysis of temperature, energy, los The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used. AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620
A function of outdoor temperature. The six averages) over a year. Normalized annual seneral solution of Division 62 Architecture and Ruilding Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981	minary analysis of temperature, energy, los The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used. AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral OLEMBE: TREC (Triangular Energy Calculation) (VELOPED NY: Jon Borge Johnsen Sintef Division 62 Architecture and Ruilding Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981	minary analysis of temperature, energy, los The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used. AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral solution and solution are six averages. Out make: TREC (Triangular Energy Calculation) veloped MY: Jon Borge Johnsen Sinter Division 62 Architecture and Ruilding Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981	AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 (from 1982-11-19) Supported BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research)
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral OL MAME: TREC (Triangular Energy Calculation) WELOPED MY: Jon Borge Johnsen Sinter Division 62 Architecture and Ruilding Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981 TE OF LAST REVISION:	minary analysis of temperature, energy, los. The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used. AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral OL MAME: TREC (Triangular Energy Calculation) WELOPED MY: Jon Borge Johnsen Sinter Division 62 Architecture and Ruilding Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981 TE OF LAST REVISION:	AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 (from 1982-11-19) Supported BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research)
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral OL MAME: TREC (Triangular Energy Calculation) WELOPED MY: Jon Borge Johnsen Sinter Division 62 Architecture and Ruilding Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981 TE OF LAST REVISION:	AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 (from 1982-11-19) Supported BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research)
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral OL MAME: TREC (Triangular Energy Calculation) WELOPED MY: Jon Borge Johnsen Sinter Division 62 Architecture and Ruilding Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981 TE OF LAST REVISION:	AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 (from 1982-11-19) Supported BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research)
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral solution of District Distric	AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 (from 1982-11-19) Supported BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research)
a function of outdoor temperature. The six averages) over a year. Normalized annual peneral mot make: TREC (Triangular Energy Calculation) Executed by John Borge Johnsen Sintef Division 62 Architecture and Building Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981 THE OF LAST REVISION:	AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 (from 1982-11-19) Supported BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research)
A function of outdoor temperature. The six averages) over a year. Normalized annual interest and some six averages over a year. Normalized annual interest and some six averages over a year. Normalized annual interest and some six average calculation of the six averages over a year. Normalized annual interest and some six average calculation of the six average calculation of the six average calculation of the six average calculation of the six average calculation of the six average calculation of the six average calculation of the six average calculation of the six average calculation of the six average calculation of the six average calculation of the six average calculation of the six averages calculation of the six average calculation of the six averages calculation of the six average calculat	AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 (from 1982-11-19) Supported BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research)
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral sol mame: TREC (Triangular Energy Calculation) sylvetoped by: Jon Borge Johnsen Sintef Division 62 Architecture and Building Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981 TE OF LAST REVISION: SWEDEN	AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 (from 1982-11-19) Supported BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research)
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral sol mame: TREC (Triangular Energy Calculation) sylvetoped by: Jon Borge Johnsen Sintef Division 62 Architecture and Building Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981 TE OF LAST REVISION: JEF DESCRIPTION: SWEDEN SINTER OF LAST REVISION:	minary analysis of temperature, energy, los. The average solar gains are described as mulations are done day-by-day (24 hour duration curves are used. AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 PHONE NO.: 7-592620 (from 1982-11-19) SUPPORTED BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research) PHONE NO.:
a function of outdoor temperature. The six averages) over a year. Normalized annual seneral sol mame: TREC (Triangular Energy Calculation) sylvetoped by: Jon Borge Johnsen Sintef Division 62 Architecture and Building Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: 1981 TE OF LAST REVISION: JEF DESCRIPTION: SWEDEN SOME DEN S	AVAILABLE THROUGH: SINTEF division 62 Architecture and Building Technology Phone: 75-92620 (from 1982-11-19) Supported BY: NTNF (Royal Norwegian Council for Scientific and Industrial Research)
a function of outdoor temperature. The six averages) over a year. Normalized annual section of outdoor temperature. The six averages) over a year. Normalized annual section of the six averages over a year. Normalized annual section of the six averages over a year. Normalized annual section of the six averages over a year. Normalized annual section of the six averages of the six averages over a year. Normalized annual section of the six averages of the six averages over a year. Normalized annual section of the six averages over a year. Normalized annual section of the six averages over a year. Normalized annual section of the six averages over a year. Normalized annual section of the six averages over a year. Normalized annual section of the six averages over a year. Normalized annual section of the six averages over a year. Normalized annual section of the six averages of the six averages over a year. Normalized annual section of the six averages of the six averages over a year. Normalized annual section of the six averages of the six averages of the six averages over a year. Normalized annual section of the six averages of the six averages of the six averages over a year. Normalized annual section of the six averages of the six averages of the six averages over a year. Normalized annual section of the six averages of the si	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH
A function of outdoor temperature. The six averages) over a year. Normalized annual seneral more made: TREC (Triangular Energy Calculation) eneral more made: TREC (Triangular Energy Calculation) eneral more more more more more more more more	AVAILABLE THROUGH: Arkitektur - Husbyggnad
A function of outdoor temperature. The six averages) over a year. Normalized annual interpretation of the six averages over a year. Normalized annual interpretation of the six averages over a year. Normalized annual interpretation of a year. Normalized annual interpretation of a year. Normalized annual interpretation of a year. Normalized annual interpretation of a year. Normalized annual interpretation of a year. Normalized annual interpretation of a year. Normalized annual in	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden PHONE NO.: 08-787 70 00
A function of outdoor temperature. The six averages) over a year. Normalized annual is averages) over a year. Normalized annual is averages) over a year. Normalized annual is averages) over a year. Normalized annual is averages. Over a year. Normalized annual is averages. Over a year. Normalized annual is averaged by: Jon Borge Johnsen Sintef Division 62 Architecture and Building Technology Norway TEDEVELOPED: 1981 THE OF LAST REVISION: JEF DESCRIPTION: SWEDEN OL NAME: BKL WELOPED BY: BYGGNADSKONSTRUKTIONSLARA LTH Arkitektur — Husbyggnad, KTH	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden
A function of outdoor temperature. The six averages) over a year. Normalized annual is averages) over a year. Normalized annual is averages) over a year. Normalized annual is averages) over a year. Normalized annual is averages. Over a year. Normalized annual is averages. The six averages of the six averages of the six averages. Sintef Division 62 Architecture and Ruilding Technology. Norway TE DEVELOPED: 1981 THE OF LAST REVISION: SWEDEN Peneral OL NAME: BKL VELOPED BY: BYGGNADSKONSTRUKTIONSLARA LTH Arkitektur — Husbyggnad, KTH	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden PHONE NO.: 08-787 70 00
A function of outdoor temperature. The six averages) over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages of the six of the s	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden PHONE NO.: 08-787 70 00
A function of outdoor temperature. The six averages) over a year. Normalized annual is averages) over a year. Normalized annual is averages) over a year. Normalized annual is averages) over a year. Normalized annual is averages. Over a year. Normalized annual is averages. The six averages of the six averages of the six averages. Sintef Division 62 Architecture and Ruilding Technology. Norway TE DEVELOPED: 1981 THE OF LAST REVISION: SWEDEN Peneral OL NAME: BKL VELOPED BY: BYGGNADSKONSTRUKTIONSLARA LTH Arkitektur — Husbyggnad, KTH	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden PHONE NO.: 08-787 70 00 MAVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden
A function of outdoor temperature. The six averages) over a year. Normalized annual interpretation of outdoor temperature. The six averages) over a year. Normalized annual interpretation over a year. Normalized annual interpretation of the six averages over a year. Normalized annual interpretation of the six averages of the six average of the six averag	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden
A function of outdoor temperature. The six averages) over a year. Normalized annual averages) over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual average of annual average	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden
A function of outdoor temperature. The six averages) over a year. Normalized annual seneral sol mame: TREC (Triangular Energy Calculation) eneral sol mame: TREC (Triangular Energy Calculation) eneral sol mame: John Borge Johnsen Sintef Division 62 Architecture and Building Technology N-7034 Trondheim-NTH Norway TE DEVELOPED: T981 TE OF LAST REVISION: Department of Last Revision: Department of Last Revision: Arkitektur - Husbyggnad, KTH TE DEVELOPED: 1982 TE OF LAST REVISION: 1982	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden
a function of outdoor temperature. The six averages) over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual average of the six average of t	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden
a function of outdoor temperature. The six averages) over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual averages over a year. Normalized annual average of the six average of t	AVAILABLE THROUGH: Arkitektur - Husbyggnad KTH 100 44 Stockholm, Sweden

General	
TOOL NAME: BRIS DEVELOPED BY: Royal Institute of Technology Fack S-10044 Stockholm, Sweden Gbstr Brown, Engelbrekt Isfalt, Axel Bring DATE DEVELOPED: 1960 DATE OF LAST REVISION: 1982	AVAILABLE THROUGH: BRIS DATA AB Verkstedsgatan 21 S-11236 Stockholm, Sweden PHONE NO.: 08-680955 SUPPORTED BY: Axel Bring BRIS DATA AB Teddy Rosenthal DALAB
stationary heat conduction in the structure and shortwave radiation) are treated in decontrolled in many ways, in sequences maint with a minimum use of energy. The choice of from single rooms or groups of coupled room	PHONE NO.: 08-680955 - 08-7305460 Finite difference method to calculate the non- The boundary conditions (convection, long rail. Available installed capacities can be raining the required indoor temperature range of objects being simulated is very flexible, as to whole buildings.
General	
TOOL NAME: LTH DEROB 1.Q DEVELOPED BY: Byggnadskonstr.lara Lunds Tekniska Hogskola Box 725 22007 Lund, Sweden	AVAILABLE THROUGH: Staffan Salo Byggnadskonstruktionslada Lunds Tekniska Hogskola Box 725, 22007 Lund, Sweden PHONE NO.: 0467109603 SUPPORTED BY: LTH
DATE OF LAST REVISION:	
BRIEF DESCRIPTION: System of Fortran programs cap thermal performance of buildings composed geometries.	PHONE NO.: able of dynamic simulation of hourly of multiple coupled spaces of arbitrary
General	
TOOL MAME: MEPA DEVELOPED BY: B. Andersson Royal Institute of Technology Architecture - Dept. of Building Design \$-100 44 Stockholm DATE DEVELOPED: 1982 DATE OF LAST REVISION: November 1982 BRIEF DESCRIPTION: A program that calculates build Used in the early stage of the building ph	AVAILABLE THROUGH: Royal Institute of Technology Architecture - Dept. of Building Design 5-100 44 Stockholm, Sweden PHONE NO.: (08) 787 7000 SUPPORTED BY: Swedish Council for Building Research PHONE NO.: (08) 54 06 40 ing heating and cooling loads (direct gain). ase, it makes it possible to evaluate different . Among changeable factors are: Different ntation, ventilation, internal heating loads, tandable, and cheap.
SWITZERLAND	
General	
TOOL MAME: AARPLAN DEVELOPED BY: M. Leibundgut Atelier fur Architektur und Planung Wildhainweg 19 3012 Berne Switzerland DATE DEVELOPED: DATE OF LAST REVISION:	PHONE NO.: SUPPORTED BY:
BLISH AT BURGE LIMITACIONS	PHONE MO.:
SRIEF DESCRIPTION:	FRUIT MA.

ON NAME: ARAS WALLARLE THROUGH: WALLARLE THROUGH: WALLARLE THROUGH: WALLARLE THROUGH: PHONE NO.: SUPPORTED BY: WALLARLE THROUGH: W	General	
PROBLEM NO.: Supported No.: Supporte	MOOL MANE: ARÁS	AVAILABLE THROUGH:
SUPPORTED BY: SUPPORTED BY	MEVELOPED BY: Mme F. Stuby	
SUPPORTED BY: SUPPORTED BY: ATE DEVELOPS: ATE OF LAST REVISION: PRINTE PRESCRIPTION: THE PRESCRIPTION: ATE PRESCRIPTION: THE PRESCRIPTION: PRINTE PRESCRIPTION: PRINTE PRESCRIPTION: PRINTE PRESCRIPTION: BUT OF LAST REVISION: PRINTE PRESCRIPTION: PRINTE	Arch d.e.s.a.	
NOTE WATCHERS NATE PROCESSIFICATION: NATE OF LAST REVISION: PROFE WO:: PRO		PHONE NO.:
AND EXECUTION: ARE PRESENTION: ARE PRESENTION: ARE PROBLEMAND. ARE PRO	SWILZELIANG	SUPPORTED BY:
PROFE DESCRIPTION: The program calculates the building loads and also calculates the performance of passive solar systems. Active solar energy systems cannot be consider Available for programmable calculators and manual calculations. The calculation method used for passive solar calculation is the solar load ratio method. PROFE DESCRIPTION: AVAILABLE THROUGH:	ATE DEVELOPED:	· · · · · · · · · · · · · · · · · · ·
RIEF DESCRIPTION: The program calculates the building loads, and also calculates the performance of passive solar systems. Active solar energy systems cannot be considered Available for programmable calculations and manual calculations. The calculation method used for passive solar calculation is the solar load ratio method. **Reference of passive solar calculation is the solar load ratio method. **Reference of passive solar calculation is the solar load ratio method. **Reference of passive solar calculation is the solar load ratio method. **Reference of passive solar calculation method. **Reference of passive solar calculation method. **Reference of passive solar calculation method. **Reference of passive solar calculation of performance of passive solar energy systems. **Reference of passive solar calculation of performance of passive solar energy systems. **Reference of passive solar of passive solar energy systems. **Reference of passive solar energy systems. **Reference of passive solar energy systems. **Reference of passive solar energy systems. **Reference of passive solar energy systems.** **Ref	ALE OF EAST REVISION.	
DETIOTRANCE OF DASSIVE SOLAR SYSTEMS. Active solar energy systems cannot be considered used for passive solar calculation and manual calculations. The calculation method used for passive solar calculation is the solar lund ratio method. **PROPERTY OF THE PROPERTY OF TH		PHONE NO.:
NATION MANE: BAUDYN NOTE OF LAST REVISION: STORY DESCRIPTION: PHONE MO.: (052) BIGIDED: PHONE MO.:	Available for programmable calculators a	ctive solar energy systems cannot be considered and manual calculations. The calculation method
PHONE NO.: SUPPORTED BY: SUPPORTED BY: POANOMAREPE THE OF LAST REVISION: PHONE NO.: PHONE NO.: SUPPORTED BY: POANOMAREPE PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: AVAILABLE THROUGH: U. Roth, Dipl. Arch. ETH BUT O 1, Raumplanung TURPERST 24 BUIO 2 LUTICH SUIT OF LAST REVISION: PHONE NO.:	eneral	
EVELOPED 97: Sulzer/Ponomareff PHONE NO.: SUPPORTED 97: PONOMAREFF SUPPORTED 97: PONOMAREFF AVAILABLE THROUGH: U. Roth, Dipl. Arch. ETH BUTO 1 Ur' Turnerstr 24 SUD 2 Urich Sulzerland Sulzerland Sulzerland Survey of LAST REVISION: PHONE NO.: SUPPORTED 87: PHONE NO.: PHONE NO.: PHONE NO.: SUPPORTED 87: PHONE NO.: PHONE NO.: PHONE NO.: SUPPORTED 87: SUP	DOZ. HAME: BAUDYN	AVAILABLE THROUGH:
PHONE NO.: 1981 SUPPORTED BY: POMOMAREFF SUPPORTED BY: POMOMAREFF SUPPORTED BY: POMOMAREFF SUPPORTED BY: POMOMAREFF SUPPORTED BY: POMOMAREFF AVAILABLE THROUGH: U. Roth, Dipl. Arch. ETH BUTCO 1. Raumplanung SUPPORTED BY: SUPPORTED BY: POMOMAREFF SUPPORTED BY: ARCH. SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY:	EVELOPED BY: Sulzer/Ponomareff	
THE DEVELOPED: 1981 THE OF LAST REVISION: SPHONE NO.: (052) \$14145 PHONE NO.: (052) \$14145 AVAILABLE THROUGH: U. Roth, Dipl. Arch. ETH BUTO f. Raumplanung TO LAST REVISION: PHONE NO.: SUPPORTED BY: (01301-33-2)		
THE DEVELOPED: 1981 THE OF LAST REVISION: SPHONE NO.: (052) \$14145 PHONE NO.: (052) \$14145 AVAILABLE THROUGH: U. Roth, Dipl. Arch. ETH BUTO f. Raumplanung TO LAST REVISION: PHONE NO.: SUPPORTED BY: (01301-33-2)		PUONE NO
THE OF LAST REVISION: PHONE NO.: (052) \$14/48. PHONE NO.: (052) \$14/48. PHONE NO.: (052) \$14/48. PHONE NO.: (052) \$14/48. PHONE NO.: (052) \$14/48. PHONE NO.: (052) \$14/48. PHONE NO.: (052) \$14/48. PHONE NO.: (052) \$14/48. PHONE NO.: (052) \$14/48. BÜRO C. MARE: DEVELOPED: TO LAST REVISION: PHONE NO.: (052) \$14/48. PH		SUPPORTED BY: POA 40 4 4 25555
PHONE MO.:	ITE DEVELOPED: 1981	PUNDMIAKEFF
PHONE MO.: (052) \$1414\$ PHONE MO.: (052) \$1414\$ PHONE MO.: (052) \$1414\$ SUBJECT OF COLUMN	TE OF LAST REVISION:	
### DESCRIPTION: Columnity		
### DESCRIPTION: Columnity	THE REPORTETION.	PHONE NO.: (052) 814148
OL NAME: DYWAN VALOPED BY: Bird 'ur' Burd 'ur' Burd 'ur' Burd Raumplanung Turnerstr 24 Burd Swizerland Swizerland Swizerland FHONE NO.: PHONE NO.: SUPPORTED BY: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED BY: TO DEVELOPED: TO DEVELOP	HEF DESCRIPTION:	
OL NAME: DYWAN VALOPED BY: Bird 'ur' Burd 'ur' Burd 'ur' Burd Raumplanung Turnerstr 24 Burd Swizerland Swizerland Swizerland FHONE NO.: PHONE NO.: SUPPORTED BY: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED BY: TO DEVELOPED: TO DEVELOP		·- · · · · · · · · · · · · · · · · · ·
OL NAME: DYWAN VALOPED BY: Bird 'ur' Burd 'ur' Burd 'ur' Burd Raumplanung Turnerstr 24 Burd Swizerland Swizerland Swizerland FHONE NO.: PHONE NO.: SUPPORTED BY: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED BY: TO DEVELOPED: TO DEVELOP		
OL NAME: DYWAN VALOPED BY: BUTC 'UT' BUTC CARNET SUT CARNET SUT CARNET SUT CARNET SUT CARNET ST. BUTC CARNET SUT CARNET ST. BUTC CARNET SUT CARNET ST. BUTC CARNET SUT CARNET ST. BUTC CARNET SUT CARNET ST. BUTC CARNE		
OL NAME: DYWAN VALOPED BY: Bird 'ur' Burd 'ur' Burd 'ur' Burd Raumplanung Turnerstr 24 Burd Swizerland Swizerland Swizerland FHONE NO.: PHONE NO.: SUPPORTED BY: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED BY: TO DEVELOPED: TO DEVELOP	eneral	
WELOFED BY: BUTO 'UT' TUTTINETST: 24 8006 Zurich SWitzerland TT BEVELOPED: TE DEVELOPED: TE OF LAST REVISION: PHONE MO.: SWITZERLAND PHONE MO.: SUPPORTED BY: TO EVELOPED BY: TO EVELOPED: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: TO EVELOPED BY: THE DESCRIPTION: BUTO I RAMBE: THOUGH: THE DESCRIPTION: AVAILABLE THROUGH: PHONE MO.: SUPPORTED BY: THE DESCRIPTION: AVAILABLE THROUGH: PHONE MO.: SUPPORTED BY: THE DEVELOPED: THE OF LAST REVISION: PHONE MO.: SUPPORTED BY: THE DEVELOPED THE THE THE THE THE THE THE THE THE THE		
BOOG ZUTICH SWITZETIAND SWITZETIAND SWITZETIAND SUPPORTED 8Y: THE DEVELOPED: THE OF LAST REVISION: DOL MANE: ELCO VELOPED BY: Thomas Nordmann Elco 7324 Wildhaus SWITZETIAND THE DEVELOPED: THE OF LAST REVISION: THE DEVELOPED: THE OF LAST REVISION: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: THE DESCRIPTION: This is a microcomputer program which can be used for determining building loads and the calculation of performance of passive solar energy systems. PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO	OL MAME: DYWAN	AVAILABLE THROUGH: U. Roth, Dipl. Arch. ETH
BOOG ZUTICH SWITZETIAND SWITZETIAND SWITZETIAND SUPPORTED 87: THE DEVELOPED: THE OF LAST REVISION: DIAMRE: ELCO VELOPED BY: Thomas Nordmann Elco 7324 Wildhaus SWITZETIAND THE DEVELOPED: THE OF LAST REVISION: THE DEVELOPED: THE OF LAST REVISION: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: PHON	VELOPED BY: Buro ur'	Buro f Raumplanung
SWITZERIAND SWITZERIAND TRE DEVELOPED: TRE OF LAST REVISION: DIAST REVISION: DIAST REVISION: DIAST REVISION: DIAGRAME: ELCO AVAILABLE THROUGH: PHONE NO.: SWITZERIAND PHONE NO.: SWITZERIAND PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: TRE DEVELOPED BY: SUPPORTED BY: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: PHO	Turnerstr 24	10111613111. 24
SWIZERIAND TRE DEVELOPED: TRE OF LAST REVISION: SUPPORTED BY: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: OF LAST REVISION: PHONE NO.: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: SUPPORTED BY: THE DEVELOPED: TRE DEVELOPED: TRE DEVELOPED: THE DEVELOPED: SUPPORTED BY: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: OF DEVELOPED: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: OF DEVELOPED: PHONE NO.: PHONE NO.: PHONE NO.: OF DEVELOPED: PHONE NO.: OF DEVELOPED: PHONE NO.: OF DEVELOPED: PHONE NO.: PHONE NO.: OF DEVELOPED: PHONE NO.: PHONE NO.: OF DEVELOPED: PHONE NO.: OF DEVELOPED: PHONE NO.: OF DEVELOPED: PHONE NO.: OF DEVELOPED: OF DEVELOPED: PHONE NO.: OF DEVELOPED: PHONE NO.: OF DEVELOPED: PHONE NO.: OF DEVELOPED: OF DEVELOPED: PHONE NO.: OF DEVELOPED: OF DEVELOP	8006 Zurich	8006 Zurich
TE DEVELOPED: TE OF LAST REVISION: DEFINITION: PHONE NO.: SEP DESCRIPTION: PHONE NO.: SWITZERIAND PHONE NO.: SUPPORTED BY: TE DEVELOPED: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: PHONE NO.: OF DEVELOPED: TE OF LAST REVISION: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: OF DEVELOPED: TE OF LAST REVISION: PHONE NO.: PHONE NO.: OF DEVELOPED: TE OF LAST REVISION: PHONE NO.: PHONE NO.: PHONE NO.: OF DEVELOPED: TO PHONE NO.: PHONE NO.: PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: TO PHONE NO.: OF DEVELOPED: TO PHONE NO.: TO PHON	Switzerland	PHONE NO.: 01/361-33-21
PHONE NO.: SIEF DESCRIPTION: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO		SUPPORTED BY:
PHONE HO.: PHONE HO.: PHONE HO.: PHONE HO.: AVAILABLE THROUGH: WELOPED BY: Thomas Nordmann Elco 7324 Wildhaus SWITZERIAND PHONE HO.: SUPPORTED BY: WE DEVELOPED: WIEF DESCRIPTION: This is a microcomputer program which can be used for determining building loads and the calculation of performance of passive solar energy systems. PHONE HO.: PHONE HO.: PHONE HO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE HO.: SUPPORTED BY: ALELIER DESCRIPTION: Manual method for calculation of building loads and performance of passive solar energy systems.	TE DEVELOPED:	
Sheral OOL MAME: ELCO OVELOPED BY: Thomas Nordmann Elco 7324 Wildhaus Switzerland PHONE NO.: SUPPORTED BY: THE OF LAST REVISION: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: TO DEVELOPED:	ATE OF LAST REVISION:	
Sheral OOL MAME: ELCO OVELOPED BY: Thomas Nordmann Elco 7324 Wildhaus Switzerland PHONE NO.: SUPPORTED BY: THE OF LAST REVISION: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: TO DEVELOPED:		
Sheral OOL MAME: ELCO OVELOPED BY: Thomas Nordmann Elco 7324 Wildhaus Switzerland PHONE NO.: SUPPORTED BY: THE OF LAST REVISION: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: TO DEVELOPED:	NICE RESCRIPTION.	PRONE NO.:
AVAILABLE THROUGH: TO LAST REVISION: PHONE NO.: SUPPORTED BY: THE DEVELOPED: THE OF LAST REVISION: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: ATT. DEVELOPED: TT. DEVELOP	(IEF DESCRIPTION:	
AVAILABLE THROUGH: WELDFED BY: Thomas Nordmann Elco 7324 Wildhaus SWITZETIAND PHONE NO.: SUPPORTED BY: WELDFED: WIEF DESCRIPTION: This is a microcomputer program which can be used for determining building loads and the calculation of performance of passive solar energy systems. PHONE NO.: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: ATE OF LAST REVISION: PHONE NO.: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: FROME NO.: SUPPORTED BY: SUPPORTED BY: FROME NO.: SUPPORTED BY: FROME NO.: SUPPORTED BY: FROME NO.: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: SUPPORTED BY: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: SUPPORTED		
AVAILABLE THROUGH: WELOPED BY: Thomas Nordmann Elco 7324 Wildhaus SWITZETIAND PHONE NO.: SUPPORTED BY: THE DEVELOPED: THE OF LAST REVISION: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: ATE DEVELOPED: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: S		
AVAILABLE THROUGH: WELOPED BY: Thomas Nordmann Elco 7324 Wildhaus SWITZETIAND PHONE NO.: SUPPORTED BY: THE DEVELOPED: THE OF LAST REVISION: PHONE NO.: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: ATE DEVELOPED: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: THOME NO.: SUPPORTED BY: S		
OL RAME: ELCO VELOPED BY: Thomas Nordmann Elco 7324 Wildhaus SWITZERIAND PHONE NO.: SUPPORTED BY: THE DEVELOPED: THE OF LAST REVISION: PHONE NO.: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: THE DEVELOPED: T		# 10 Holeson .
WELOPED BY: Thomas Nordmann Elco 7324 Wildhaus Switzerland PHONE NO.: SUPPORTED BY: THE DEVELOPED: THE OF LAST REVISION: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: OUR MAME: GRES-EPFL WELOPED BY: Atelier d'Architecture Solaire Passive PHONE NO.: SUPPORTED BY: TR. DEVELOPED: TR. DEVELOPED: TR. DEVELOPED: TR. DEVELOPED: TR. DEVELOPED: TR. DEVELOPED: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: SUPPORTED BY: TR. DEVELOPED: TR. D	auet#i	
WELOPED BY: Thomas Nordmann Elco 7324 Wildhaus Switzerland PHONE NO.: SUPPORTED BY: THE DEVELOPED: THE OF LAST REVISION: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: OUR MAME: GRES-EPFL WELOPED BY: Atelier d'Architecture Solaire Passive PHONE NO.: SUPPORTED BY: TR. DEVELOPED: TR. DEVELOPED: TR. DEVELOPED: TR. DEVELOPED: TR. DEVELOPED: TR. DEVELOPED: PHONE NO.: SUPPORTED BY: PHONE NO.: SUPPORTED BY: PHONE NO.: PHONE NO.: SUPPORTED BY: TR. DEVELOPED: TR. D	OL MANY: ELCO	Attata and B. Gusanicu.
PHONE NO.: SUPPORTED BY: TE DEVELOPED: TE OF LAST REVISION: PHONE NO.: AVAILABLE THROUGH: VELOPED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: TE DEVELOPED: TE DEVELOPED: TE OF LAST REVISION: PHONE NO.:	WEIGPED BY: Thomas Nordmann Floo	
PHONE NO.: SUPPORTED BY: TE DEVELOPED: TE OF LAST REVISION: PHONE NO.: AVAILABLE THROUGH: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: SUPPORTED BY: PHONE NO.: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.:	7324 Wildhaus	
PHONE NO.: SUPPORTED BY: TE DEVELOPED: TE OF LAST REVISION: PHONE NO.: AVAILABLE THROUGH: SUPPORTED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: SUPPORTED BY: PHONE NO.: SUPPORTED BY: TE OF LAST REVISION: PHONE NO.:	Switzerland	
PHONE NO.: PHONE NO.: Duilding loads and the calculation of performance of passive solar energy systems. PHONE NO.: DUILDING TO BE STREET TO BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: FE OF LAST REVISION: PHONE NO.:		
PHONE NO.: PHONE NO.: Description: This is a microcomputer program which can be used for determining building loads and the calculation of performance of passive solar energy systems. PROPER BY: Atelier d'Architecture Solaire Passive PHONE NO.: SUPPORTED BY: TE DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: TO DEVELOPED: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.:		PHONE NO.:
PHONE NO.: PHONE NO.: Depth bescription: This is a microcomputer program which can be used for determining building loads and the calculation of performance of passive solar energy systems. The mane: Gres-Epfl Available through: Available through: PHONE NO.: Supported BY: The developed: PHONE NO.:		PHONE NO.: SUPPORTED BY:
building loads and the calculation of Performance of passive solar energy systems. This is a microcomputer program which can be used for determining building loads and the calculation of Performance of passive solar energy systems. The manual GRES-EPFL AVAILABLE THROUGH: SULPPED BY: Attelier d'Architecture Solaire Passive PHONE NO.: SUPPORTED BY: TO DEVELOPED: TO DEVELOPED	TE DEVELOPED:	PHONE NO.: SUPPORTED BY:
building loads and the calculation of Performance of passive solar energy systems. This is a microcomputer program which can be used for determining building loads and the calculation of Performance of passive solar energy systems. The manual GRES-EPFL AVAILABLE THROUGH: SULPPED BY: Attelier d'Architecture Solaire Passive PHONE NO.: SUPPORTED BY: TO DEVELOPED: TO DEVELOPED	TE DEVELOPED:	PHONE NO.: SUPPORTED BY:
building loads and the calculation of performance of passive solar energy systems. NOTE THE DEVELOPED BY: AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: THE DEVELOPED: THE OF LAST REVISION: PHONE NO.:	TE DEVELOPED:	
PHONE MO.: PHONE	TE DEVELOPED: TE OF LAST REVISION:	PHONE MO
AVAILABLE THROUGH: WELOPED BY: Atelier d'Architecture Solaire Passive PHONE NO,: SUPPORTED BY: TE OF LAST REVISION: PHONE MO.: PHONE MO.: PHONE MO.:	TE DEVELOPED: TE OF LAST REVISION: THIS IS A MICTOCOMPUTER DE	PMONE MO.: Ogram which can be used for determining
AVAILABLE THROUGH: AVAILABLE THROUGH: AVAILABLE THROUGH: PHONE NO,: SUPPORTED BY: TE DEVELOPED: TE OF LAST REVISION: PHONE MO.: PHONE MO.: PHONE MO.:	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer pr	PMONE MO.: Ogram which can be used for determining
AVAILABLE THROUGH: AVAILABLE THROUGH: AVAILABLE THROUGH: PHONE NO,: SUPPORTED BY: TE DEVELOPED: TE OF LAST REVISION: PHONE MO.: PHONE MO.: PHONE MO.:	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer pr	PMONE MO.: Ogram which can be used for determining
DE MANE: GRES-EPFL AVAILABLE THROUGH: PELOPED BY: Atelier d'Architecture Solaire Passive PHONE NO,: SUPPORTED BY: PHONE NO.: PHONE NO.: PHONE NO.:	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer pr	PMONE MO.: Ogram which can be used for determining
PHONE MO.: SUPPORTED BY: TO DEVELOPED: TO OF LAST REVISION: Manual method for calculation of building loads and performance of the content of building loads and performance of the content of building loads and performance of the content of building loads and performance of the content of building loads and performance of the content of building loads and performance of the content of building loads and performance of the content of t	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer probuilding loads and the calculation of Pe	PMONE MO.: Ogram which can be used for determining
Atelier d'Architecture Solaire Passive PHONE NO,: SUPPORTED BY: TO DEVELOPED: TO OF LAST REVISION: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.:	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer probuilding loads and the calculation of Pe	PMONE MO.: Ogram which can be used for determining
Atelier d'Architecture Solaire Passive PHONE NO.: SUPPORTED BY: TE DEVELOPED: TE OF LAST REVISION: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.:	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer pr building loads and the calculation of Pe	PMONE MO.: rogram which can be used for determining riormance of passive solar energy systems.
PHONE NO.: SUPPORTED BY: TO DEVELOPED: TO P LAST REVISION: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.:	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer pr building loads and the calculation of Pe Property of the calculation of Pe The calculation of Pe The calculation of Pe The calculation of Pe The calculation of Pe The calculation of Pe The calculation of Pe The calculation of Pe The calculation of Pe The calculation of Pe The calculation of Pe	PMONE MO.: rogram which can be used for determining riormance of passive solar energy systems.
TE DEVELOPED: TE OF LAST REVISION: PHONE MO.: PHONE MO.: THE DESCRIPTION: Manual method for calculation of building loads and performance of	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer probuilding loads and the calculation of Developeral This is a microcomputer probuilding loads and the calculation of Developeral This is a microcomputer probuilding loads and the calculation of Developeral This is a microcomputer probuilding loads and the calculation of Developeral This is a microcomputer probuilding loads and the calculation of Developeral This is a microcomputer probuilding loads and the calculation of Developeral probuilding loads and the calculation of Developeral probuilding loads and the calculation of Developeral probuilding loads and the calculation of Developeral probuilding loads and the calculation of Developeral probuilding loads and the calculation of Developeration probuilding loads and the calculation of Developeration probuilding loads and the calculation of Developeration probuilding loads and the calculation of Developeration probuilding loads and the calculation of Developeration probuilding loads and the calculation of Developeration probuilding loads and the calculation of Developeration probuilding loads and the calculation probuilding loads and the calculation of Developeration probused by the calculation probu	PMONE MO.: rogram which can be used for determining riormance of passive solar energy systems.
SUPPORTED BY: TE DEVELOPED: TE OF LAST REVISION: PHONE MO.: PHONE MO.: THE DESCRIPTION: Manual method for calculation of building loads and performance of	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer probuilding loads and the calculation of Developeral The developed by:	PMONE MO.: rogram which can be used for determining riormance of passive solar energy systems.
PHONE MO.: PHONE MO.: PHONE MO.: IEF DESCRIPTION: Manual method for calculation of building loads and performance of	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer probuilding loads and the calculation of Developeral The developed by:	PMONE MO.: Ogram which can be used for determining orformance of passive solar energy systems. AVAILABLE THROUGH:
PHONE WO.: Output PHONE WO.: Output Description: Manual method for calculation of building loads and performance of	TE DEVELOPED: TE OF LAST REVISION: IEF DESCRIPTION: This is a microcomputer pr building loads and the calculation of Pe Property of the calculation of Pe Company of the cal	PHONE NO.: Ogram which can be used for determining orformance of passive solar energy systems. AVAILABLE THROUGH:
(EF DESCRIPTION: Manual method for calculation of building loads and performance of	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer pr building loads and the calculation of De properat DL MAME: GRES-EPFL VELOPED BY: Atelier d'Architecture Solaire Passive	PHONE MO.: ogram which can be used for determining erformance of passive solar energy systems. AVAILABLE THROUGH:
ter pescription: Manual method for calculation of building loads and performance of	THE DESCRIPTION: This is a microcomputer pr building loads and the calculation of De boneral OL MAME: GRES-EPFL VELOPED BY: Atelier d'Architecture Solaire Passive	PHONE MO.: ogram which can be used for determining orformance of passive solar energy systems. AVAILABLE THROUGH: PHONE MO.:
indirect gain and direct gain passive solar energy systems.	TE DEVELOPED: TE OF LAST REVISION: This is a microcomputer pr building loads and the calculation of De properat DL MAME: GRES-EPFL VELOPED BY: Atelier d'Architecture Solaire Passive	PHONE MO.: ogram which can be used for determining erformance of passive solar energy systems. AVAILABLE THROUGH: PHONE MO.: SUPPORTED BY:
Anotitett Rain and direct Kain passive Solar energy systems.	THE DEVELOPED: THE OF LAST REVISION: This is a microcomputer probuilding loads and the calculation of Perperal of Mark: GRES-EPFL VELOPED BY: Atelier d'Architecture Solaire Passive TR. DEVELOPED: TE OF LAST REVISION:	PHONE MO.: Ogram which can be used for determining orformance of passive solar energy systems. AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY:
	TE DEVELOPED: TE OF LAST REVISION: IEF DESCRIPTION: This is a microcomputer probuilding loads and the calculation of Peroperal District Control of Peroperal Particles of Architecture Solaire Passive TE OF LAST REVISION: IEF DESCRIPTION: Manual method for calculation of Peroperal Passive Pass	PHONE NO.: Ogram which can be used for determining or formance of passive solar energy systems. AVAILABLE THROUGH: PHONE NO.: SUPPORTED BY: PHONE MO.: D of building loads and performance of

A1	
General	W. Marinharm
TOOL NAME: HBF-ETHZ	AVAILABLE THROUGH: M. Nussbaum HBF Institut für Hochbauforschung
HRF Institut for Hochhanforschung	FTH7 Honggerberg
HBF Institut für Hochbanforschung ETHZ Hönggerberg	8093 Zurich. Switzerland
8093 Zurich	PHONE NO.: SUPPORTED BY:
Switzerland BATE DEVELOPED:	
DATE OF LAST REVISION:	
	PHONE NO.:
mier pescription: The program calculates the b	nuilding loads and the performance of the grammable calculators and manual calculations.
passive solar systems. Available for PIC Active systems cannot be accommodated.	grammable calculators and manual calculations.
ACTIVE SYSTEMS CARROT BE ACCOMMODATED.	
General	
UEL LOC 1	AVAILABLE THROUGH: EMPA abc. ASA
TOOL MANE: HELIOS I DEVELOPED BY: EMPA Abt. ASA	RVALLANDE THROUGH. LAIR AIR. ASA
(Th. Frank)	
	PHONE NO.: 01/823_55_11
	SUPPORTED BY: NF
DATE DEVELOPED: 1980/1982	
DATE OF LAST REVISION: June 1982	
	PHONE NO.:
MIEF DESCRIPTION: Single zone model for simular	ting the thermal behavior of a building, takin
envelope.	(shortwave and longwave) at the building
enverone.	
General / .	
	ALLEAN AND A CHINALISM -
TOOL MARE: IGLOU SEVELOPED BY: Motor-Columbus Ing. AG	AVAILABLE THROUGH: Motor-Columbus, Inc. AG
Parkshasse 27, 5400 Baden	Parkstrasse 27, 5400 Baden
and	PHONE NO.: 056 20 1121
Hohere Techn. Lehranstalt Brugg-Windisch	EUPPORTED BY: Motor-Columbus, Ing. AG
BATE DEVELOPED: 1979	Parkstrasse 27, 5400 Baden
DATE OF LAST REVISION: 11.03.1982	J. Lanz. A. Schopfer
·	PHONE NO.: 056 20 11 21
BRIEF DESCRIPTION: Warmetechnische Analysen im	Hochbau
J. lanz. A. Schonfer Schwelzer Incenieur unol Ar	chitect. Heft 20/1981
General	•
TWO DIE	AVAILABLE THROUGH: Mr. M. Claude Roulet
TOOL MANE: LMC-EPFL MEVELOPED BY:	32 Ch. de Bellerive
M. Claude Roulet	1007 Lausanne
	Switzerland
	PHONE NO.: SUPPORTED BY: As above
DATE DEVELOPED:	
DATE OF LAST REVISION:	
	PHONE NO.;
DRIEF DESCRIPTION: The program calculates the v	early hearing energy requirements of huildings The passive solar contribution is only
The program is useful for houses only.	The passive solar contribution is only
approximately calculated. The calculation Thermique Des Batiments." Manuel Etudes	& Projects EDMZ No. 724-500.
Alexandra 21 - 12 - 12 - 12 - 12 - 12 - 12 - 12	
•	
General	
TOOL MANE: LTA-EPFL	AVAILABLE THROUGH: Prof. P. Suter
DEVELOPED BY: Prof. P. Suter	174-EPFL Ecublens 1015 Lausanne
LTA EPEL Ecublens 1015 Lusanne	Switzerland
* Switzerland	PHONE NO.:
	SUPPORTED BY: As above
DATE DEVELOPED: DATE OF LAST REVISION:	
BRIEF DESCRIPTION: The program calculates the	
mairy malairiion: life bioriam taltulates the	phone No.: building loads, active solar energy systems.
and is available for handheld calcu	building loads, active solar energy systems. Hators, microcomputers and tables. Passive
and is available for handheld calcu- solar energy systems are considered contribution is calculated by solar	building loads, active solar energy systems. Hators, microcomputers and tables. Passive in a limited manner. The passive solar

OOL MANE: LTA-EPFL	
	AVAILABLE THROUGH:
EVELOPED SY: R. Kriesi	
LTA-EPFL Ecublens	
1015 Lausanne	
Switzerland	PHONE NO.:
	SUPPORTED BY:
TE DEVELOPED:	
ATE OF LAST REVISION:	
	PNONE NO.:
ter procession. This design tool calculates	the building loads and space temperatures to
indirect gain passive solar systems. A	ctive solar energy calculations and other pas
solar features are being added. It is	a manual /graphic tool
	N-1001 F971 BA GUILLE LVVA
lanani.	
ieneral	
DOL NAME: MODPAS	AVAILABLE THROUGH: Not available as present
EVELOPED BY: J. C. Hadorn - D. Chyard	NOT AVAITABLE AS DIESERT
Sorane S.A.	
Route du Chatelard 52	
1018 Lausanne	PHONE NO.: (021) 37 11 75
1016 Lausanne 161. 021/37 11 75	SUPPORTED BY: Sorane S.A.
TE DEVELOPED: May 1982	TARREST MARKET TO SERVICE AND ADDRESS OF THE PARTY OF THE
ATE DEVELOPED: May 1982 ATE OF LAST REVISION: June 1982	
	PROHE NO.:
RIEF DESCRIPTION: <u>MODPAS Nodel for Passive S</u>	vstems solves a modal network describing the
thermal interactions betwee	en nodes representing parts of the system.
by means of equivalent con	ductances and capacities
<u> </u>	

eneral	
	1
OL MARE: PASSIM	AVAILABLE THROUGH: Nicolas MOREL
VELOPED BY: Nicolas MOREL	LSB - EPFL
laboratory for Solar Energy	LESO - Building 1015 LAUSANNE
and Building Physics (LSB)	1015 LAUSANNE
	PHONE NO.: 021/47145147
Tr. Programme. 1001	SUPPORTED BY: IEA Solar Task I and EPFL
TE DEVELOPED: 1981	SUPPORTED BY: IEA Solar Task I and EPIL
ATE DEVELOPED: 1981 ATE OF LAST REVISION: Dec. 1981	SUPPORTED ST: IEA Solar lask I and EPFL
ATE DEVELOPED: 1981 ATE OF LAST REVISION: Dec. 1981	
ATE OF LAST REVISION: Dec. 198)	PHONE NO.:
THE OF LAST REVISION: Dec. 198)	PHONE NO.:
TE OF LAST REVISION: Dec. 1981	PHONE NO.:
TE OF LAST REVISION: Dec. 1981	PHONE NO.:
TE OF LAST REVISION: Dec. 1981	
TE OF LAST REVISION: Dec. 1981	PHONE NO.:
TE OF LAST REVISION: _Dec. 1981 IEF DESCRIPTION:Nodal decomposition of sys	PHONE NO.:
TE OF LAST REVISION: Dec. 1981 IEF DESCRIPTION: Nodal decomposition of eye connected by therma conduction of eye connected by therma conduction of eye connected by therma conduction of eye connected by the eye connected by the eye conduction of eye connected by the eye conduction of eye connected by the eye connected by the eye conduction of eye connected by the eye conduction of eye connected by the eye	PHONE NO.:
IEF DESCRIPTION: Nodal decomposition of eye connected by therma conduction of eye connected by the	PHOME NO.: Lem (max. 30 to 50 nodes): the nodes may be tance, natural convection on radiation coupli
IEF DESCRIPTION: Nodal decomposition of eye connected by therma conduction of eye connected by the	PHOME NO.: tem (max. 30 to 50 nodes); the nodes may be tance, natural convection on radiation coupli
DE PROPERTIEN: Nodal decomposition of systematic connected by thermal conduction connected by the connected by the connected by the connected connected by the connected connected by the connected connec	PHOME NO.: Lem (max. 30 to 50 nodes): the nodes may be tance, natural convection on radiation coupli
DEF DESCRIPTION: Dec. 1981 DEF DESCRIPTION: Nodal decomposition of system connected by therma conduction of system connected by therma conduction of system connected by therma conduction connected by therma conduction connected by therma conduction connected by therma conduction consulting consu	PHOME NO.: tem (max. 30 to 50 nodes); the nodes may be tance, natural convection on radiation coupli AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers
DESCRIPTION: Dec. 1981 IEF DESCRIPTION: Nodal decomposition of syschemic connected by therma conduction connected by therma conduction connected by therma conduction consulting systems. SOLAR TRAP	PHOME NO.: Tem (max. 30 to 50 nodes): the nodes may be tance, natural convection on radiation coupli available through: Basler & Hofmann Consulting Engineers PHOME NO.: 01/55 11 22
PROFILES BEVISION: Dec. 1981 IEF DESCRIPTION: Nodal decomposition of eye connected by therma conduction of eye connected by therma conduction of eye connected by therma conduction. SOLAR TRAP VELOPED BY: Dr. C. Filleum/P. Jemelka Basier & Hofmann Consulting Engineers Forchstrase 395 8029 Zurich	PHOME NO.: Tem (max. 30 to 50 nodes): the nodes may be tance, natural convection on radiation coupli available through: Basler & Hofmann Consulting Engineers PHOME NO.: 01/55 11 22
IEF DESCRIPTION: Dec. 1981 IEF DESCRIPTION: Nodal decomposition of mys connected by therma conduction of mys connected by therma conduction of manner. SOLAR TRAP VELOPED BY: Dr. C. Filleum/P. Jemelka Basler & Hofmann Consulting Engineers Forchstrase 395 8029 Zurich TE DEVELOPED: 1981	PMOME NO.: tem (max. 30 to 50 nodes); the nodes may be tance, natural convection on radiation coupii AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers
DEF DESCRIPTION: Dec. 1981 IEF DESCRIPTION: Nodal decomposition of mys connected by therma conduction of mys connected by the mys connected by th	PHOME NO.: Tem (max. 30 to 50 nodes): the nodes may be tance, natural convection on radiation coupli AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHOME NO.: 01/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs
IEF DESCRIPTION:	PHONE NO.: LET (max. 30 to 50 nodes): the nodes may be tance, natural convection on radiation coupli and tance, natural convection on radiation coupli and tance, natural convection on radiation coupli and tance, natural convection on radiation coupli and tance, natural convection on radiation coupli and tance, natural and tance and t
REF DESCRIPTION: Dec. 1981 IEF DESCRIPTION: Nodal decomposition of syschemic connected by therma conduction connected by therma conduction consulting system conductions and consulting Engineers Forchstrase 395 8029 Zurich TE DEVELOPED: 1981 TE OF LAST REVISION: 1981	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: 01/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs PHONE NO.:
PROPERTY DESCRIPTION: Dec. 1981 DEF DESCRIPTION: Nodal decomposition of eyes connected by therms conducted by the conducted	PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: PHONE NO.: CGY flows in an active/passive system. Nodal
PROPERTY REVISION: Dec. 1981 PROPERTY DESCRIPTION: Nodal decomposition of eyes connected by therma conduction of eyes eyes and eyes a connected by therma conduction of eyes property and ey	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fronts PHONE NO.: The property of the property
IZEF DESCRIPTION: Dec. 1981 IZEF DESCRIPTION: Nodal decomposition of eyes connected by therma conduction of eyes connected by therma conduction of eyes connected by therma conduction with the conduction of eyes connected by therma conduction with the consulting the consulting Engineers for character of the developed 1981 IZEF DESCRIPTION: 1981 IZEF DESCRIPTION: Dynamic simulation of energy connected by therma conduction of energy connected by the	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: Tegy flows in an active/passive system. Nodal
PROPERTY REVISION: Dec. 1981 Dec	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fronts PHONE NO.: The property of the property
IEF DESCRIPTION:	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: Tegy flows in an active/passive system. Nodal
IEF DESCRIPTION: Nodal decomposition of eye connected by therma conduction IN MAME: SOLAR TRAP IN MAME: SOLAR TRAP IN MAME: SOLAR TRAP Basier & Hofmann Consulting Engineers Forchstrase 395 8029 Zurich EDEVELOPED: 1981 EDEVELOPED: 1981 EDEVELOPED: 1981 EVEN DESCRIPTION: Dynamic simulation of energy decomposition of system. Tor active part of system.	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: Tegy flows in an active/passive system. Nodal
REF DESCRIPTION:	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fronts PHONE NO.: The property of the property
PROPERTY DESCRIPTION:	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: rey flows in an active/passive system. Nodal finite difference solution method. Brace box
IEF DESCRIPTION:	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: CRY flows in an active/passive system. Nodal Finite difference solution method. Brace hox
PROPERTY DESCRIPTION: Dec. 1981 DEF DESCRIPTION: Nodal decomposition of syscenation of syscenation by therma conduction by the consulting Engineers Forchstrase 395 FORCHSTRASE 395 FOR DEVELOPED: 1981 THE DESCRIPTION: Dynamic simulation of energy decomposition of system. For active part of system. FOR ANTE: SORANE FELOPED BY: D. Chuard	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: rey flows in an active/passive system. Nodal finite difference solution method. Brace hox
PROPERTY DESCRIPTION:	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: CRY flows in an active/passive system. Nodal Finite difference solution method. Brace hox
IZEF DESCRIPTION: Nodal decomposition of gys connected by therma conduction of gystem and gystem and gystem and gystem and gystem are decomposition of gystem for active part of system and gystem are gystem and gystem are gystem and gystem are gystem are gystem are gystem and gystem are g	PHONE NO.: AVAILABLE THROUCH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: Cgy flows in an active/passive system. Nodal Finite difference solution method. Brace hox AVAILABLE THROUGH: Same
REF DESCRIPTION: Nodal decomposition of syscenation with the system of t	PHONE NO.: PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: Cey flows in an active/passive system. Nodal finite difference solution method. Brace hox AVAILABLE THROUGH: Same PHONE NO.: Same
PROPERTY DESCRIPTION:	PHONE NO.: AVAILABLE THROUCH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: Cgy flows in an active/passive system. Nodal Finite difference solution method. Brace hox AVAILABLE THROUGH: Same
IEF DESCRIPTION: Nodal decomposition of Eye Connected by therma conduction of Eye Eye Description of Eye Eye Description: Dynamic Eye Description: 1981 INTERIOR DESCRIPTION: Dynamic simulation of Eye Description: Dynamic simulation of Eye Composition of Eye Eye Description: On Eye Eye Description: Dynamic Simulation of Eye Eye Description: Sorance Eye Description: Eye Description: Sorance Eye Description: Eye	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: Cey flows in an active/passive system. Nodal finite difference solution method. Brace hox AVAILABLE THROUGH: Same PHONE NO.: Same
REF DESCRIPTION: Nodal decomposition of syscenation by therma conduction by the consulting Engineers For Consulting Engineers For Consulting Engineers For Consulting Engineers For Consulting Engineers For Consulting Engineers For Engineers For Consulting Engineers For Description: 1981 Expression: PHONE NO.: PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: Cey flows in an active/passive system. Nodal finite difference solution method. Brace hox AVAILABLE THROUGH: Same PHONE NO.: Same	
IZEF DESCRIPTION:	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: rey flows in an active/passive system. Nodal finite difference solution method. Brace hox AVAILABLE THROUGH: Same PHONE NO.: Same
IZEF DESCRIPTION:	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: CRY flows in an active/passive system. Nodal Finite difference solution method. Brace hox AVAILABLE THROUGH: Same PHONE NO.: SUPPORTED BY: Same
REFORMATION: Dec. 1981 REFORMATION: Nodal decomposition of eye connected by therma conduction of eye consulting Engineers For C. Filleum/P. Jemelka Basler & Hofmann Consulting Engineers Forchstrase 395 8029 Zurich 8029 Zurich 1981 1981 1981 1981 1981 1981 1981 198	PHONE NO.: AVAILABLE THROUGH: Basler & Hofmann Consulting Engineers PHONE NO.: O1/55 11 22 SUPPORTED BY: Nationales Energie-Forschuigs Fords PHONE NO.: rey flows in an active/passive system. Nodal finite difference solution method. Brace hox AVAILABLE THROUGH: Same PHONE NO.: Same

CODAND	ALLAND AND BURGALOUS.
SOL MANE: SORANE EVELOPED BY: Chuard Hadorn	AVAILABLE THROUGH:
Sorane S.A.	
Rte du Chatelard 52	
1008 1 aug anne	PHONE NO.:
Switzerland	PHONE NO.: SUPPORTED BY:
TE BEVELOPED:	
TE OF LAST REVISION:	
	PMONE NO.:
HER BERCEIPTION: This program available	in various computers, programmable calculators, and
manual versions. Dete	ermines the huilding load, performance of active and
passive solar energy s	systems.
eneral	
INL MANE: STEMOD	AVAILABLE THROUGH: U. Roth, Dipl. Arch. ETH
WELOPED MT: Buro ur'	Turnerstr, 24
Turnerstr. 24 8006 Zurich	1) Therstr. 24
8006 Zurich	8006 Zurich PHONE NO.: 01/361,33.21
TE DEVELOPED: 1981	SUPPORTED BY:
TE DEVELOPED: 1701	
TE OF LAST REVISION:	
	AMANY MA
	PHORE HO.:
REF DESCRIPTION:	
-	
•	
·'	
eneral	
OOL MANTE: TREC-EPFL EVALUPED BY: G. R. Perrin	AVAILABLE THROUGH: G. R. Perrin Department of Architecture
NELOPED BY: G. R. Perrin	Department of Architecture
Benartment of Architecture	14 AV de l'Englise-Anglaise
Department of Architecture 14, AV de l'Englise-Anglaise 1006 Lausanne	1006 Lausanne, Switzerland
1006 Lausanne	PHONE NO.:
Switzerland	SUPPORTED BY: As above
ATE DEVELOPED:	
ATE OF LAST REVISION:	
	PROME MY.:
ter secretarion. The program was solar	r load ratio mathed fan the performance
of no witte The program uses sorat	r load ratio method for estimating the performance and be used for the active solar energy system.
Tuesday Commenced Systems. Also C	stors and manual Calculations.
Available for programmable calcula	ifore and manual Carculations,
·	
ianeral	•
DOL MANE:	AVAILABLE THROUGH:
velored by: Ueli Schafer	
Dipl. Architect ETH/SIA Zollikonstrasse 20	
20111NUMSCIASSE 40	PHONE NO.: 01-980-2577
8122 BINZ	
Switzerland	SUPPORTED BY:
TE DEVELOPED:	<u> </u>
ATE OF LAST REVISION:	
_	
	PNONE NO.:
AIRF DESCRIPTION: This unpublished design	gn tool works with diagrams in the stereographic
projection together with the Hor	izontoskop by F. Tonne. The evicting discreme as
described in Konioshurgers of al	"Manual of Tropical Housing and Ruildings" have
been enlarged to a set of disors	izontoskop by F. Tonne. The existing diagrams as "Manual of Tropical Housing and Buildings" have ms including the circles of transmission factors for

UNITED KINGDOM

General	
TOOL NAME: BREADMIT	AVAILABLE THROUGH: D. Bloomfield
DEVELOPED BY: Building Research Station	
	Garston United VINCEN
	Walford, Herts WD2 7JR, UNITED KINGDO: PHONE NO.: 09273-76040 SUPPORTED BY:
	SUPPORTED BY:
DATE DEVELOPED: September 1983 (current vers DATE OF LAST REVISION: September 1983 (current ver	ion) Same as above
DATE OF BRIDE WAS ASSESSED.	
BRIEF DESCRIPTION: An interactive microcomputer prediction tool based on steady cyclic (performed for a typical day.	PHONE NO.: heating/cooling load and temperature admittance) theory. Calculations are
General	
PRODUCT 1	AVAILABLE THROUGH: G. Henderson
TOOL NAME: BREDEM I DEVELOPED BY: C. Uglow/B. Anderson	Building Research Establishment
Building Research Establishment	Garston
(BRE)	Watford, Herts WD275R ENGLAND PHONE NO.: 0923-674040
	SUPPORTED BY:
DATE DEVELOPED: 1981/1983	
DATE OF LAST REVISION: 1981/1983	Same as above
	PHONE NO.:
BRIEF DESCRIPTION: A steady state equation is us	sed to estimate domestic building
energy requirements. Appropriate values t	or terms in this equation are selected from
observed quantities and allow for e.g. mas	ss of building, intermittent heating. Values
for useful solar are based on results obta	for terms in this equation are selected from ye survey of existing knowledge of actual as of building, intermittent heating. Values ained with more complex calculation methods.
General	
TIOL NAME: ENVIRONMENTAL SYSTEMS PERFORMANCE (ESP)available through: Joe Clarke
DEVELOPED BY: Joe Clarke Abacus	
University of Strathclyde	
Dept. of Architecture, 131 Rotten Row	PHONE NO.: 041-552-4400, Ext. 3021 SUPPORTED BY: Abacus
Glawgow G4 ONG	SUPPORTED BY: Abacus
DATE DEVELOPED: 1977 DATE OF LAST REVISION: September 1983	
BRIEF DESCRIPTION: ESP is a large finite-differe or mini computer providing a detailed si construction.	PHONE NO.: nce based program running on a main frame mulation of hourly heat flows in a multi-zone
General	
TOOL NAME: SEU 2	AVAILABLE THROUGH: Solar Energy Unit
DEVELOPED BY: P B Howells	AANTAANID INNAANT BOLLE BIOLES OLLE
Solar Energy Unit University College Cardiff CF2 ITA	
University College Cardiff CF2 ITA	PHONE NO.: 041-222-44211, Ext. 7075
United Kingdom	SUPPORTED BY:
DATE DEVELOPED: 1980	Same as above
DATE OF LAST REVISION: 1983	
The solution procedure is very fast and	PHONE NO.: ulation code employing a variable time-step. accurate, so that control functions can be time requirement is so short that multiple formed quickly and cheaply.
General	
CEU DECICN METUOD	AVAILABLE TURNIUM. Solar Energy Unit
TOOL NAME: SEU DESIGN METHOD DEVELOPED BY: J. P. Kenna, R. H. Marshall	AVAILABLE THROUGH: SOLAT Energy Unit
Solar Energy Unit University College Cardiff CF2 lTA	0/1 000 1101
Cardiff CF2 1TA	PHONE NO.: 041-222-44211, Ext. 7075 SUPPORTED 8Y:
UNITED KINGDOM DATE DEVELOPED: 1980	
DATE OF LAST REVISION: 1993	Same as above
	PHONE NO :
BRIEF DESCRIPTION: Design Method is a correlat	ion of solar traction on system dimensionless
groups for active SH. DHW and combined sy System Simulation Code. Load size and pa	stems. Correlations derived from SEU 2
System Similarion Code. Load Size and pa	ecern to Impue.

UNITED STATES

General	
TOOL NAME: ACLOAD	AVAILABLE THROUGH: Computer Mart, Inc.
DEVELOPED BY: Inatome & Associates	1824 West Maple
10140 West Nine Mile Oak Park, MI 4823/	Troy, MI 48084
Van Tulity 772 10237	PHONE NO.: 313-288-0040
	SUPPORTED BY: Joseph Inatome
DATE OF LAST REVISION:	Inatome and Associates 10140 West Nine Mile
DATE OF LAST REVISION:	Oak Park, MI 48237
	PHONE NO.: 313-542-4862
BRIEF DESCRIPTION: This is a load analysis prograwith peak load, diversity, and does 6 mont typical day weather profile required, uses as input for ACLOAD.	ram, room by room, zone by zone calculation has at a time. Ideal for VAV systems. S ASHRAE 1972 algorithm. ELSOL program used
General .	
TOOL MANE: AC PROGI/ENERGY	AVAILABLE THROUGH: Robert Z. Gibson
DEVELOPED BY:	Gibson and Associates
	3118 Fulton Avenue, Suite 1 Sacramento, California 95821 PHONE NO.: (916) 484-6716 SUPPORTED BY: Gibson and Associates
	Sacramento, Calliornia 93021
	SUPPORTED BY: Gibson and Associates
DATE DEVELOPED:	3118 Fulton Avenue. Suite !
DATE OF LAST REVISION: 1980	Sacramento, California 95821
	SHOWE NO . (016) 484-4616
the ASHRAE TETD method. The program also	ion and Energy Analysis program based on
the ASHRAE TETD method. The program also	provides HVAC design information and
simulates the building system operation of	n an annual basis.
General	
TOOL MAKE: ACG-80 AARDVARK Active System	AVAILABLE THROUGH:
SEVELOPED ST: Size Calculation	Aardvark & Sun Solar, Inc.
	167 Webbers Path West Yarmouth, MA 02673
Aardvark & Sun Solar, Inc.	West Yarmouth, MA 02673
167 Webbers Path West Yarmouth, MA 02673	BUPPORTED BY: John Murphy
MEST TATMOUTH, MA UZOZA	John Harbny
BATE OF LAST REVISION: January 1980	
	PROME NO.:617+394-6391
This T1-59 program will give active systems. You can chatilt, deviation from south operformance is affected.	monthly and yearly system performance for all nee collector size, storage size, efficiency, r initial memory inlet temp, to see how the
General	
TOOL NAME: ADM-2	AVAILABLE THROUGH: Taghi Alereza
DEVELOPED BY: ADM Associates	ADM Associates
601 University Avenue Sacramento, CA 95825	601 University Avenue
Sacramento, CA 93823	Sacramento, CA 95825
	SUPPORTED BY: ADM Associates
MATE PEVELOPED:	601 University Avenue
BATE OF LAST REVISION: 1983	Sacramento, CA 95825
	PROME NO.: 916-929-5595
min mecanifica: This is an hour by hour calc	ulation model which can simulate all sorts
of complex HVAC equipment (such as VAV	systems with reheat, double bundle condensers,
yarious types of chillers, absorption to	achine, various distribution systems, etc.) thod to perform energy calculations for each
hour for the year.	thou to perform energy carculations for cuch
General	
TOOL MANE: ADM-3	AVAILABLE THROUGH: Taghi Alerega
MINITORD BT: ADM Associates	ADM Associates
601 University Avenue	601 University Avenue
Sacramento, CA 95825	Sacramento, CA 95825
	PHONE NO.: 916-929-5595
BATE DEVELOPED:	SUPPORTED ST: ADM Associates 601 University Avenue
BATE OF LAST MEVISION: 1983	Sacramento, CA 95825
teres presentations. While amounts were sendicted to	PROME NO.: 916-929-5595
calculate energy requirements of small by	uildings. The program handles natural
ventilation, ventilative cooling, daylig	nildings. The program handles natural hing, evaporative cooling, etc. Solar DHW

A 44 P DO AARRYARY	AVAILABLE THROUGH:
TOOL MANE: A-H-L - 80 AARDVARK DEVELOPED SY:	Aardvark & Sun Solar, Inc.
Aardvark & Sun Solar, Inc.	167 Webbers Path
167 Webbers Path	167 Webbers Path West Yarmouth, MA 02673
167 Webbers Path West Yarmouth, MA 02673	PWORE NO.: 617-394-6391 SUPPORTED BY: John Murphy
	SUPPORTED BY: John Murphy
DATE DEVELOPED:	Same
DATE OF LAST REVISION:	
	PMORE NO.: 617-394-6391
and alleas her yet acrost	calculation of the monthly heat loss and thout hot water load). The local monthly we permanently stored on data cards. The entage loss for each building component.
General	
TOOL MANE: ARTIFICIAL LIGHTING LOADS	AVAILABLE THROUGH:
DEVELOPED BY: ANALYSIS PROGRAM	Moreland, Unruh Smith PC
BEVELOPED BY: ANALISIS PROGRAM	44 Club Road, Suite 200
	44 Club Road, Suite 200 P. O. Box 1650, Eugene, Oregone 97440 PHORE NO: (503) 686-2014 SUPPORTED BY: Moreland, Unruh Smith PC
	PHONE NO.: (503) 686-2014
	SUPPORTED BY: Moreland, Unruh Smith PC
DATE DEVELOPED:	44 Club Road, Suite 200 P. O. Box 1650 Eugene, Oregon 97440
DATE OF LAST REVISION: 1981	P. O. Box 1650
	Eugene, Oregon 97440
Mb ======== 11	PROME MO.: (503) 686-2014 , monthly, and annual artificial lighting natural daylighting. The primary n the northern hemisphere occupied 8:00 a.m.
BRIEF DESCRIPTION: The program computes nourly	notional daylighting The principle lighting
needs for commercial buildings utilizing	natural daylikuting, life primary
application is to office areas focated in	Fire not flight Hemisbhete Occubies 0100 8101
to 5:00 p.m.	
•	
Beneral Comments of the Commen	
FOOL MANE: ASHRAE BIN	AVAILABLE THROUGH:
PEYELOPED BY:	
American Society of Heating	
Refrigeration and Air Conditioning	
Engineering	PWONT. NO.: SUPPORTED BY:
	SUPPORTED BY:
MTE DEVELOPED:	
DATE OF LAST REVISION:	
-	
	Contract In .
	PROME NO.:
majer mescalprion: This method uses the "bins'	of temperature for the hours that the ambient
mier mescription: This method uses the "bins'	of temperature for the hours that the ambient
MIET MESCRIPTION: This method uses the "bins'	of temperature for the hours that the ambient
MIET MESCRIPTION: This method uses the "bins'	of temperature for the hours that the ambient
MIEF MESCRIPTION: This method uses the "bins'	of temperature for the hours that the ambient
This method uses the "bins' temperature is in a particul is available primarily from is useful in determining the	of temperature for the hours that the ambient
This method uses the "bins' temperature is in a particul is available primarily from is useful in determining the	of temperature for the hours that the ambient
This method uses the "bins' temperature is in a particul is available primarily from is useful in determining the	of temperature for the hours that the ambient ar range. The him data for different areas. U.S. Air Force weather data. The him method heating and cooling requirements of buildings
This method uses the "bins' temperature is in a particul is available primarily from is useful in determining the General TOOL MARE: ASHRAE DEGREE DAYS	of temperature for the hours that the ambient
This method uses the "bins' temperature is in a particul is available primarily from is useful in determining the General TOOL NAME: ASHRAE DEGREE DAYS	of temperature for the hours that the ambient ar range. The him data for different areas. U.S. Air Force weather data. The him method heating and cooling requirements of buildings
This method uses the "bins' temperature is in a particul is available primarily from is useful in determining the General TOOL MANE: ASHRAE DEGREE DAYS SEVELOPED BY: American Society for Heating, Re-	of temperature for the hours that the ambient ar range. The him data for different areas U.S. Air Force weather data. The him method heating and cooling requirements of buildings
General ASHRAE DEGREE DAYS American Society for Heating, Refriceration and Air Conditioning	of temperature for the hours that the ampleht ar range. The him data for different areas U.S. Air Force weather data. The bin method heating and cooling requirements of buildings available through:
This method uses the "bins' temperature is in a particul is available primarily from is useful in determining the General TOOL MANE: ASHRAE DEGREE DAYS SEVELOPED BY: American Society for Heating, Re-	of temperature for the hours that the ambient ar range. The hin data for different areas U.S. Air Force weather data. The bin method heating and cooling requirements of buildings available THROUGH:
General Tool MAME: American Society for Heating, Referenced and Air Conditioning Engineering	of temperature for the hours that the ampleht ar range. The him data for different areas U.S. Air Force weather data. The bin method heating and cooling requirements of buildings available through:
General ASHRAE DECREE DAYS American Society for Heating, Refrigeration and Air Conditioning Engineering MATE DEVELOPED:	of temperature for the hours that the amplent ar range. The hin data for different areas U.S. Air Force weather data. The hin method heating and cooling requirements of buildings available THROUGH:
General ASHRAE DECREE DAYS American Society for Heating, Refrigeration and Air Conditioning Engineering MATE DEVELOPED:	of temperature for the hours that the amplent ar range. The hin data for different areas U.S. Air Force weather data. The hin method heating and cooling requirements of buildings available THROUGH:
General ASHRAE DEGREE DAYS American Society for Heating, Refrigeration and Air Conditioning Engineering MATE DEVELOPED:	of temperature for the hours that the amplent ar range. The him data for different areas il.S. Air Force weather data. The him method heating and cooling requirements of buildings AVAILABLE THROUGH: PHYMIC NO.: SUPPORTED BY:
General Tool NAME: ASHRAE DEGREE DAYS EXTERDED BY: American Society for Heating, Refrigeration and Air Conditioning Engineering BATE DEVELOPED: BATE OF LAST REVISION: The method allows the calcumulated are climate dominated	of temperature for the hours that the ambient ar range. The hin data for different areas il.S. Air Force weather data. The hin method heating and cooling requirements of buildings available THROUGH: **PRONTE NO.:** **property BY:** **pronted No.:** *pronted No.:** **pronted No.:** **pronted No.:*
General General ASHRAE DECREE DAYS American Society for Heating, Refizeration and Air Conditioning Engineering MATE DEVELOPED: BATE OF LAST REVISION: The method allows the calcuminated as used to determine the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the method allowed to determine the mo	of temperature for the hours that the amplent ar range. The him data for different areas IN.S. Air Force weather data. The him method heating and cooling requirements of buildings available through: AVAILABLE THROUGH: PHONE NO.: PHONE NO.: larions of the heating requirements of buildings the overall loss coefficient of the buildings of the heating requirements. The degree days
General General ASHRAE DECREE DAYS American Society for Heating, Refizeration and Air Conditioning Engineering MATE DEVELOPED: BATE OF LAST REVISION: The method allows the calcuminated as used to determine the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the method allowed to determine the mo	of temperature for the hours that the ambient ar range. The hin data for different areas il.S. Air Force weather data. The hin method heating and cooling requirements of buildings available THROUGH: **PRONTE NO.:** **property BY:** **pronted No.:** *pronted No.:** **pronted No.:** **pronted No.:*
General General ASHRAE DEGREE DAYS Aperican Society for Heating, Refrigeration and Air Conditioning Engineering MATE DEVELOPED: BATE OF LAST REVISION: The method allows the calcuminated as used to determine the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the method allowed to determine the mo	of temperature for the hours that the amplent ar range. The him data for different areas IN.S. Air Force weather data. The him method heating and cooling requirements of buildings available through: AVAILABLE THROUGH: PHONE NO.: PHONE NO.: larions of the heating requirements of buildings the overall loss coefficient of the buildings of the heating requirements. The degree days
General General This method uses the "bins' temperature is in a particul is available primarily from is useful in determining the second second in determining the second secon	of temperature for the hours that the amplent ar range. The him data for different areas IN.S. Air Force weather data. The him method heating and cooling requirements of buildings available through: AVAILABLE THROUGH: PHONE NO.: PHONE NO.: larions of the heating requirements of buildings the overall loss coefficient of the buildings of the heating requirements. The degree days
General General ASHRAE DEGREE DAYS Aperican Society for Heating, Refrigeration and Air Conditioning Engineering MATE DEVELOPED: BATE OF LAST REVISION: The method allows the calcuminated as used to determine the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the mate of the method allows the method allowed to determine the mo	of temperature for the hours that the amplent ar range. The him data for different areas IN.S. Air Force weather data. The him method heating and cooling requirements of buildings available through: AVAILABLE THROUGH: PHONE NO.: PHONE NO.: larions of the heating requirements of buildings the overall loss coefficient of the buildings of the heating requirements. The degree days
General ASHRAE DECREE DAYS American Society for Heating, Refrigeration and Air Conditioning Engineering BATE DEVELOPED: BATE OF LAST REVISION: The method allows the calcuminated is used to determine the mount of the mount	of temperature for the hours that the ambleht ar range. The bin data for different areas. U.S. Air Force weather data. The bin method heating and cooling requirements of buildings available through: AVAILABLE THROUGH: PHONE NO.: BUPPORTED BY: PROME NO.: larions of the heating requirements of building. The overall loss coefficient of the building this heating requirements. The degree days y various locations in the country.
General ASHRAE DEGREE DAYS American Society for Heating, Refrigeration and Air Conditioning Engineering MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE OF LAST REVISION: The method allows the calcumping are discussed to determine the mowith 65°F base are given for Make: General TOOL MAKE: AXCESS Version 7	of temperature for the hours that the ambleht ar range. The him data for different areas. U.S. Air Force weather data. The him method: heating and cooling requirements of building: AVAILABLE THROUGH: PROME NO.: lations of the heating requirements of building. The overall loss coefficient of the building the building of the heating requirements. The degree days are various locations in the country.
General ASHRAE DEGREE DAYS MATERIAL DEGREE	of temperature for the hours that the amplent ar range. The hin data for different areas IN.S. Air Force weather data. The hin method heating and cooling requirements of buildings wallable through: PHONE NO.: PHONE NO.: lations of the heating requirements of buildings the overall loss coefficient of the building on the heating requirements. The degree days y various locations in the country. AVAILABLE THROUGH: Vanocar Pace Engineering Services, Inc.
General ASHRAE DEGREE DAYS MARY: ASHRAE DEGREE DAYS MOVIETOR BY: American Society for Heating, Refineering Engineering MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE OF LAST REVISION: The method allows the calcumping are climate dominated is used to determine the mounth 65°F base are given for the calcumping and the calcumping are contract. General TOOL MANE: AXCESS Version 7 DEVELOPED BY: Seeyle, Stevenson, Value and Krecht, under contract to the	of temperature for the hours that the amplent ar range. The hin data for different areas il.S. Air Force weather data. The bin method heating and cooling requirements of buildings available through: **PHONE NO.:** **PHONE NO.:** **PHONE NO.:** **Interported BY:** **PHONE NO.:** **PHONE NO.:** **Interported BY:** **PHONE NO.:** **Interported BY:** **PHONE NO.:** **PHONE NO.:** **PHONE NO.:** **Interported BY:** **PHONE NO.:** **PHON
General ASHRAE DEGREE DAYS MATERIAL DEGREE	of temperature for the hours that the amplent ar range. The hin data for different areas il.S. Air Force weather data. The bin method heating and cooling requirements of buildings available through: **PHONE NO.:** **PHONE NO.:** **PHONE NO.:** **Interported BY:** **PHONE NO.:** **PHONE NO.:** **Interported BY:** **PHONE NO.:** **Interported BY:** **PHONE NO.:** **PHONE NO.:** **PHONE NO.:** **Interported BY:** **PHONE NO.:** **PHON
General ASHRAE DEGREE DAYS MARY: ASHRAE DEGREE DAYS MOVIETOR BY: American Society for Heating, Refineering Engineering MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE DEVELOPED: MATE OF LAST REVISION: The method allows the calcumping are climate dominated is used to determine the mounth 65°F base are given for the calcumping and the calcumping are contract. General TOOL MANE: AXCESS Version 7 DEVELOPED BY: Seeyle, Stevenson, Value and Krecht, under contract to the	of temperature for the hours that the ambleht ar range. The bin data for different areas. U.S. Air Force weather data. The bin method heating and cooling requirements of buildings heating and cooling requirements of buildings. AWAILABLE THROUGH: PROWE MO.: larions of the heating requirements of building the overall loss coefficient of the building on the heating requirements. The degree days y various locations in the country. AVAILABLE THROUGH: Vanocar Pace Engineering Services, Inc. 135 Old York Road Jenkintown, PA 19046 PMOWE MO.: 215-885-5900
General ASHRAE DEGREE DAYS MATERIAL DAYS MATERIAL DEGREE DAYS	of temperature for the hours that the amorent ar range. The hin dara for different areas IN.S. Air Force weather data. The bin method heating and cooling requirements of buildings heating and cooling requirements of buildings available through: PROME NO.:
General ANCESS Version 7 BATE DEVELOPED BY: Seeyle. Stevenson. Value and Krecht, under contract to the Edison Electric Institute. BATE DEVELOPED: 15 Used to 15 Us	of temperature for the hours that the ambient ar range. The hin data for different areas il.S. Air Force weather data. The hin method heating and cooling requirements of buildings heating and cooling requirements of buildings available through: PROME NO.:
General ANCESS Version 7 BATE DEVELOPED BY: Seeyle. Stevenson. Value and Krecht, under contract to the Edison Electric Institute. BATE DEVELOPED: 15 Used to 15 Us	of temperature for the hours that the amplent ar ange. The hin data for different areas IU.S. Air Force weather data. The hin method heating and cooling requirements of buildings available through: ### PRONE NO.: ### PRONE NO.: PRONE NO.: PRONE NO.: PRONE NO.: PRONE NO.: PRONE NO.: PRONE NO.: Available through: Available through: Vancar Pace Engineering Services, Inc. 135 Old York Road Jenkintown, PA 19046
General ANCESS Version 7 BATE DEVELOPED BY: Seeyle. Stevenson. Value and Krecht, under contract to the Edison Electric Institute. BATE DEVELOPED: 15 Used to 15 Us	of temperature for the hours that the amplent ar range. The hin data for different areas IN.S. Air Force weather data. The hin method heating and cooling requirements of buildings heating and cooling requirements of buildings available through: ### PRONE NO.: ### PRONE NO.: lations of the heating requirements of buildings of the overall loss coefficient of the building of the overall loss coefficient of the overall loss coefficient of the building of the overall loss coefficient of the overall loss c
General This method uses the "bins' temperature is in a particul is available primarily from is useful in determining the General TOOL MAME: ASHRAE DEGREE DAYS BEVELOPED BY: American Society for Heating, Re- frigeration and Air Conditioning Engineering BATE DEVELOPED: BATE OF LAST REVISION: The method allows the calcu which are climate dominated is used to determine the mo with 65°F base are given for General TOOL MAME: AXCESS Version 7 DEVELOPED BY: Seeyle, Stevenson, Value and Krecht, under contract to the Edison Electric Institute BATE DEVELOPED: 1969 BATE DEVELOPED: 1969 BATE DEVELOPED: 1981	of temperature for the hours that the amplent ar range. The hin data for different areas il.S. Air Force weather data. The bin method heating and cooling requirements of buildings heating and cooling requirements of buildings available through: PHONE NO.:
General ASHRAE DEGREE DAYS Merican Society for Heating, Refrigeration and Air Conditioning Engineering BATE DEVELOPED: BATE OF LAST REVISION: The method allows the calcumpth of the mount of the m	of temperature for the hours that the amplent arrange. The hin dara for different areas IL.S. Air Force weather data. The bin method heating and cooling requirements of buildings heating and cooling requirements of buildings available through: PROBLE TO PROBLE
### PERSONAL PRIORS This method uses the "bins' femperature is in a particul is available primarily from is useful in determining the suseful in determining the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property requirements. #### DEVELOPED BY: Seevies 1981 ##################################	of temperature for the hours that the amplent arrange. The hin data for different areas ILS. Air Force weather data. The hin method heating and cooling requirements of buildings available through: ### Available through: ### PRONE NO.: lations of the heating requirements of building. The overall loss coefficient of the building on the heating requirements. The degree days arrange of the property of the building of the property of the building of the heating requirements. The degree days are various locations in the country. ###################################
General ASHRAE DEGREE DAYS BEVELOPED BY: American Society for Heating, Refrigeration and Air Conditioning Engineering BATE DEVELOPED: BATE OF LAST REVISION: The method allows the calcumpth of the mount of th	of temperature for the hours that the amplent ar range. The hin data for different areas il.S. Air Force weather data. The bin method heating and cooling requirements of buildings heating and cooling requirements of buildings available through: ### PRONE NO.: PRONE NO.:

General	
TOOL NAME: BAS, LOAD	AVAILABLE THROUGH: Louis Abernethy
MOULANDE: BAS, LOAD MEVELOPED BY: Mr. Louis Abernethy	A. O. Software, Inc. 2001 Beverley Drive
	Charlette NC 28207
	PMONE NO.: (704) 332-4093
·	Charlotte. NC 28207 PHONE NO.: (704) 332-4093 SUPPORTED BY: Louis Abernethy
DATE DEVELOPED:	A. O. Software, Inc. 2001 Beverley Drive
1200	2001 Beverley Drive
-	Charlotte NC 28207
The amount to cold	Charlotte, NC 28207 PHONE NO.: (704) 332-4093 culate the peak loads and also gives the daily
load profile. It uses ASHRAE steady st	ate method.
1086 profile. It uses approximate steady be	<u> </u>
General	
TOOL MANE: BILL	AVAILABLE THROUGH: Londe, Parker, Michels
severorm at: Londe, Parker, Michels	150 North Meramec, Suite 205
St. Louis, MO	<u>St. Louis, MO 63105</u>
	PHONE NO.: 314-725-5501
	PRORE NO.: 314-725-5501 SUPPORTED BY: As above
BATE DEVELOPED:	Attn: Steve Andes
DATE OF LAST REVISION:	
	ession analysis from the energy bills and
major mescalation: The program performs a regi	ession analysis from the energy bills and
acted atom it to the Deathe	or, thus being mble to bredict the bulluink
performance in any weather.	The tool is suitable as post-design services.
General	
91 ACT	AVAILABLE THROUGH: U.S. Army CERL or NTIS or
TOOL MANT: BLAST	ring National Energy Software Center
Research Lab.	_ Mai Tunai Fine 189 Juni February
P.O. Box 4005	
P.O. Box 4005 Champaign, IL 61820	PHONE No.: NTIS National Energy Software Center 312-972-7250
-	SUPPORTED BY: Dale Herron
BATE DEVELOPED: Release 3 1978 BATE OF LAST REVISION: 1980	· · · · · · · · · · · · · · · · · · ·
BRIE OF CASI REVISION. 1700	
	PHONE NO.: 217-352-6511
BRIEF DESCRIPTION: The program is written to	permit analysis and design of energy conservation ings including application of liquid type active s. Many of the methods used are based on ASHKAL
in new and existing build	ings including application of liquid type active
and passive energy system	d some new ones which were developed.
AND RESID ATEUTICIONS. GI	o soult new ones and a second

General	
Andre	
TOOL MANZ: BLDSIM	AVAILABLE THROUGH: Honeywell, Inc.
BEVELOPED BY: Dr. Gideon Shavit	Commercial Division
Honeywell, Inc.	1500 West Dundee Road
<u> </u>	1500 West Bundee Road Arlington Heights, 11 60004
	RIPPORTED BY: Same as above
BATE DEVELOPED:	
DATE OF LAST REVISION:	Attn: Dr. Gideon Shavit
	SHOWE NO. 313 30/ 1000
BRIEF DESCRIPTION: The program analyses sys	tem performance and energy conservation impact
of alegenative building	evetem, and control designs. The output con-
eigts of load on interio	r and exterior zones and Ian Evstems. Energy
requirements to maintain	operating conditions, zone temperatures, daily totals,
KW demand and Kwh profil	es.
	
General	
	VCTC AMANGANG THRONGH. Not available for public use
TOOL MANE: BRIDGERS AND PARTON ENERGY ANALY	YSIS AVAILABLE THROUGH: THE WAITEDIE TOT PUBLIC USE YEL. WILL TUN TOT Them.
BEVELOPED BY: PROGRAM	yet. Will run lor them.
Frank H. Bridgers	PHONT NO.:
Albuquerque, NM 87108	SUPPORTED BY: Bridgers and Paxton Consulting
BATE DEVELOPED:	Fredness Inc. 213 Triman Street.
BATE OF LAST REVISION:	N.E. Albuquerque NM 87108
<u> </u>	·
	PHONE NO.: 505-265-8577
MILEY DESCRIPTION: The DIOPTED CALCULATES the	yearly energy consumption for heating and cooling siders various types mechanical equipment and
DI DUTINITS, PROFIAT CON	ectors, etc. Output is the yearly energy consump-
tion for various types of	HVAC equipment

General	
TOOL MANE: BUEHRER METHOD	AVAILABLE THROUGH:Charles Eley
MYMLOPED MY: Charles Elev Associates	Charles Elev Associates
519 Mission Street	519 Mission Street San Francisco, CA 94105
San Francisco. CA 94105	San Francisco, CA 94105
	PHONE NO.: 415-957-1977
DATE DEVELOPED:	SUPPORTED BY: Charles Eley Associates 519 Mission Street
DATE OF LAST REVISION: March 1983	San Francisco, CA 94105
many mescaiption: This program uses Buehrer met	PROVE NO.: 415-957-1977
MAIST DESCRIPTION: This program uses Buenrer met	nod for calculating the heating and cooling
energy requirements for commercial buil	Idings. Inis method uses variable base
roofs based on material properties Th	ve temperature difference for walls and ne program can be used with electronic spread
sheet programs on any microcomputer.	to program con se asea with executorize porcha
•	
General	\mathcal{L}_{i} and \mathcal{L}_{i} and \mathcal{L}_{i} and \mathcal{L}_{i} and \mathcal{L}_{i} and \mathcal{L}_{i}
TOOL WANT: California Energy Commission	AVAILABLE THROUGH: California Energy Commission (CEC)
DEVELOPED BY: Passive Solar Handbook	1111 Howe Avenue
Philip B. Niles & Kenneth L. Haggard	Sacramento, CA 95825
California Polytechnic State Univ.	PWONT: NO.: 916-920-6216
San Luis Obispo, CA 916-920-6216	SUPPORTED BY:
DATE DEVELOPED: January 20, 1980	
BATE OF LAST REVISION:	
area assessment. Rendhook designed for huilding	rwomt wo.: ng professionals who are interested in planning
for designing and constructing passive s	solar buildings. Provides delinitions and
basic principles along with conceptual.	analytical and technical information required
in the design of passive solar buildings	. Designed for California estimates only.
lises performance and sensitivity curves	developed through computer simulations.
	, ,
General	
CATALT CITY	Dave Machanada
TOOL MANE: CADLIGHT	AVAILABLE THROUGH: Doug Mackenzie
MANUALOPED BY: Energy Works, Inc. 44 Hunt Street	Energy Works, Inc. 44 Hunt Street
Watertown, MA 02172	Watertown MA 02172
WALETLUWII. PIR UZITZ	Watertown, MA 02172 PHOME NO.: (617) 926-8600 SUPPORTED BY: Doug Mackenzie
	SUPPORTED BY: Doug Mackenzie
DATE DEVELOPED:	Energy Works, Inc.
BATE OF LAST REVISION: 1983	Watertown, MA 02172
	PRONE NO.: (617) 926-8600
MRIEF DESCRIPTION: This is a set of two programs arrificial lighting calculations. These p	one for daylighting and the other for
artificial lighting calculations. These p	rograms are used during the building design
process to model the lighting performance lighting energy consumption are obtained f	of huildings. The profiles for artificial
TIGHTING ENERGY CONSUMPTION ARE OBLASHED I	rom the program.
General	
TOOL NAME: CALPAS 1	AVAILABLE THROUGH: California Energy Commission (CEC)
bevzlored st: Philip Niles	1111 Howe Avenue
Professor of Environmental Engi-	Sacramento, CA 95825
California Polytechnic University	PRONZ NO.: 916-920-6216
in San Luis Obispo. CA	PRONT WO.: 916-920-6216 BUPPORTED BT: As above
BATE DEVELOPED: 1979	
DATE OF LAST REVISION: 1981	
	PRIONE NO.: 916-924-2269
SAIRY DESCRIPTION: The program can perform a the	
was designed to assess the po	tential of passive sciar heating and night
ventilation cooling. It uses	hourly weather data to simulate periormance
of a building for the whole y	ear.
General	
CAT DAG 2	
TOOL NAME: CALPAS 3	AVAILABLE THROUGH:
DEVELOPED BY: Berkeley Solar Group	Same
3140 Martin Luther King, Ir. Way Berkeley, CA 94703	· · · · · · · · · · · · · · · · · · ·
Delketey, OA 94/U1	PHONE NO.: 415-843-7600
	SUPPORTED BY: Same
DATE DEVELOPED: 1980	
DATE OF LAST REVISION: Spring 1984	
- ·	
	DIONE NO .
BRIEF DESCRIPTION: Hourly simulation program for	PHONE NO.: analysis of residential and small commercial
	PHONE NO.: analysis of residential and small commercial
BRIEF DESCRIPTION: Hourly simulation program for buildings.	PHONE NO.: analysis of residential and small commercial

General	
Sont Many: Corrier E20-2	AVAILABLE THROUGH: Andy Schwartz
TOOL NAME: Carrier E20-2 DEVELOPED BY: Carrier Corporation	Twenty Twenty Software
Syracuse, NY	700 Wheaton Plaza North
	700 Wheaton Plaza North Wheaton, MD 20902 PHONE NO.: (301) 565-2020 SUPPORTED SY: CP/M version of the program
	SUPPORTED BY: CP/M version of the program
DATE DEVELOPED:	supported by above.
DATE OF LAST REVISION: 1983	
	
BRIST DESCRIPTION: The program uses bin method t	PRONE NO.: (301) 565-2020
BRIST DESCRIPTION: The program uses bin method t	day. This program is a CP/M version of
ments, by zones and at various times of the the original Carrier program.	day. This program is a drift version of
the digital carries program.	
General	
	•
TOOL MANE: Carrier Manual of Air Conditioning	AVAILABLE THROUGH:
DEVELOPED ST: Systems Design	
	As above
Carrier Corporation	PHONE NO.:
Carrier Parkway Syracuse, NY 13221	SUPPORTED BY: As above
DATE OF LAST REVISION:	
,	PRONE NO.:
BRIEF DESCRIPTION: A set of books in the form of	if a manual for the air conditioning systems
design.	. 5 2211001 101
General .	
	AVAILABLE THROUGH:
TOOL MARE: CDA Sun-Chart DEVELOPED BY: Solar Energy Systems	
Copper Brass Bronze Design Handbook	
Copper Develop, Association, Inc.	Same
COUDET DE CETODA PROGRAMMA	
405 Levinoton Avenue	PNORE NO.:
New York, NY 10174	GUPPOSTED BY
New York, NY 10174	GUPPOSTED BY
New YORK, NY 10174 BATE DEVELORED: BATE OF LAST REVISION:	Same
New YORK, NY 10174 BATE DEVELORED: BATE OF LAST REVISION:	Same
New YORK, NY 10174 BATE DEVELORED: BATE OF LAST REVISION:	Same
New YORK, NY 10174 BATE DEVELORED: BATE OF LAST REVISION:	Same
New York, NY 10174	Same
New YORK, NY 10174 BATE DEVELORED: BATE OF LAST REVISION:	Same
New YORK, NY 10174 BATE DEVELORED: BATE OF LAST REVISION:	Same
New YORK, NY 10174 BATE DEVELORED: BATE OF LAST REVISION:	Same
New York, NY 10174 BATE DEVELORED: BATE OF LAST REVISION: Calculation procedure using company fraction for active spansors.	Same
New YORK, NY 10174 BATE DEVELORED: BATE OF LAST REVISION:	Same Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate cand domestic hot water systems.
New York, NY 10174 BATE DEVELOR: BATE OF LAST REVISION: Calculation procedure using companies of the second companies of th	Same Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate cand domestic hot water systems.
New York, NY 10174 BATE DEVELOR: BATE OF LAST REVISION: Calculation procedure using comparing for active spanning for activ	Same FROME NO.: 212-953-7300 Charts. tables. nomographs to calculate and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa
New York, NY 10174 BATE DEVELOID: BATE OF LAST REVISION: Calculation procedure using control for active spans of the state of the st	Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service
New York, NY 10174 BATE DEVELOR: BATE OF LAST REVISION: Calculation procedure using comparing for active spanning for activ	Same FROME NO.: 212-953-7300 Charts, tables, nomographs to calculate cand domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland, Oregon 97201
New York, NY 10174 BATE DEVELOID: BATE OF LAST REVISION: Calculation procedure using control for active spans of the state of the st	Same Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa Portland, Oregon 97201 PHONE NO.: 800-547-4232
New York. NY 10174 MATE DEVELOTED: BATE OF LAST REVISION: Calculation procedure using contact fraction for active spanning fraction for active spanning fraction. General TOOL NAME: CEAC DEVELOPED BY: Energy Management Service Portland, Oregon	Same FROME NO.: 212-953-7300 Charts, tables, nomographs to calculate cand domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland, Oregon 97201
New York, NY 10174 BATE DEVELOID: BATE OF LAST. REVISION: Calculation procedure using contact fraction for active spans of the state	Same Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate commodities and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY:
New York. NY 10174 MATE DEVELOTED: BATE OF LAST REVISION: Calculation procedure using contact fraction for active spanning fraction for active spanning fraction. General TOOL NAME: CEAC DEVELOPED BY: Energy Management Service Portland, Oregon	Same Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa Portland, Oregon 97201 PHONE NO.: 800-547-4232
New York. NY 10174 BATE DEVELOTED: BATE OF LAST REVISION: Calculation procedure using color fraction for active spansor fraction fraction for active spansor fraction fra	Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above
New York. NY 10174 BATE DEVELOTED: BATE OF LAST REVISION: Calculation procedure using color fraction for active spansor fraction fraction for active spansor fraction fra	Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above
New York. NY 10174 MATE DEVELOID: BATE OF LAST. REVISION: Calculation procedure using Calculation for active spansor fraction fraction for active spansor fraction f	Same PROME NO.: 212-953-7300 charts. tables. nomographs to calculate ace and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland. Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12
New York. NY 10174 BATE DEVELOTED: BATE OF LAST REVISION: Calculation procedure using color fraction for active spansor fraction fraction for active spansor fraction fra	Same PROME NO.: 212-953-7300 charts. tables. nomographs to calculate ace and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland. Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12
New York. NY 10174 MATE DEVELOID: BATE OF LAST. REVISION: Calculation procedure using Calculation for active spansor fraction fraction for active spansor fraction f	Same PROME NO.: 212-953-7300 charts. tables. nomographs to calculate ace and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland. Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12
New York. NY 10174 MATE DEVELOID: BATE OF LAST. REVISION: Calculation procedure using Calculation for active spansor fraction fraction for active spansor fraction f	Same PROME NO.: 212-953-7300 charts. tables. nomographs to calculate ace and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland. Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12
New York. NY 10174 MATE DEVELOID: BATE OF LAST. REVISION: Calculation procedure using Calculation for active spansor fraction fraction for active spansor fraction f	Same PROME NO.: 212-953-7300 charts. tables. nomographs to calculate ace and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland. Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12
New York. NY 10174 MATE DEVELOID: BATE OF LAST. REVISION: Calculation procedure using control for active spans of the solar fraction for active spans of the solar fraction for active spans fraction for active spans of the solar fraction fracti	Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland, Oregon 97201 PHONE NO.: 800-547-4232 Supported BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses increcomputer. The program can handle 12 impment types.
New York. NY 10174 MATE DEVELOID: BATE OF LAST. REVISION: Calculation procedure using Control for active spansor fraction fraction fr	Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland, Oregon 97201 PHONE NO.: 800-547-4232 Supported BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses increcomputer. The program can handle 12 impment types.
New York. NY 10174 MATE DEVELOPED: BATE OF LAST REVISION: Calculation procedure using of solar fraction for active spanning fraction fr	Same Same
New York. NY 10174 BATE DEVELOTED: BATE OF LAST. REVISION: Calculation procedure using control for active spansor fraction fraction f	Same Same
New York. NY 10174 BATE DEVELOTED: BATE OF LAST. REVISION: Calculation procedure using control for active spansor fraction fraction f	Same FROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the like and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12 inpment types. AVAILABLE THROUGH: Robert Sanderegges Lawrence Berkeley Laboratory Building 90-3074. Diversity of CA. Berkeley, CA. 94720 PHONE NO.: 15-486-4029
New York, NY 10174 MATE DEVELOID: BATE OF LAST REVISION: Calculation procedure using control for active spans of the following form of the following following form of the following fo	Same PROME NO.: 212-953-7300 Charts, tables, nonographs to calculate and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12 impment types. AVAILABLE THROUGH: Robert Sanderegges Lawrence Berkeley Laboratory
New York. NY 10174 MATE DEVELOTED: BATE OF LAST. REVISION: Calculation procedure using Calculation for active spansor fraction fracti	Same FROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the like and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12 inpment types. AVAILABLE THROUGH: Robert Sanderegges Lawrence Berkeley Laboratory Building 90-3074. Diversity of CA. Berkeley, CA. 94720 PHONE NO.: 15-486-4029
New York, NY 10174 MATE DEVELOID: BATE OF LAST REVISION: Calculation procedure using control for active spans of the following form of the following following form of the following fo	Same FROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the like and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Towa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12 inpment types. AVAILABLE THROUGH: Robert Sanderegges Lawrence Berkeley Laboratory Building 90-3074. Diversity of CA. Berkeley, CA. 94720 PHONE NO.: 15-486-4029
New York. NY 10174 MATE DEVELOPED: BATE OF LAST REVISION: Calculation procedure using of solar fraction for active spanning fraction fractio	Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 Lation energy analysis program that uses incrocomputer. The program can handle 12 inpment types. AVAILABLE THROUGH: Robert Sanderegges Lawrence Berkeley Laboratory Building 90-3074 University of CA. Berkeley, CA 94720 PHONE NO.: 415-486-4029 SUPPORTED BY:
New York. NY 10174 MATE DEVELOPED: BATE OF LAST REVISION: Calculation procedure using of solar fraction for active spanning fraction fractio	Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 Lation energy analysis program that uses incrocomputer. The program can handle 12 inpment types. AVAILABLE THROUGH: Robert Sanderegges Lawrence Berkeley Laboratory Building 90-3074 University of CA. Berkeley, CA 94720 PHONE NO.: 415-486-4029 SUPPORTED BY:
New York. NY 10174 MATE DEVELOTED: BATE OF LAST. REVISION: Calculation procedure using Calculation for active spans of the process of the	Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the and domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 ation energy analysis program that uses incrocomputer. The program can handle 12 infipment types. AVAILABLE THROUGH: Robert Sanderegges Lawrence Berkeley Laboratory Building 90-3074 University of CA. Rerkeley, CA 94720 PHONE NO.: 415-486-4029 SUPPORTED BY: PHONE NO.: aily and nightly heating and cooling resum on building surfaces is considered. The
New York. NY 10174 BATE DEVELOTED: BATE OF LAST. REVISION: Calculation procedure using of solar fraction for active spanning for solar fraction for active spanning for solar fraction for active spanning for solar fraction for active spanning for solar fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction for active spanning fraction frac	Same PROME NO.: 212-953-7300 Charts, tables, nomographs to calculate the domestic hot water systems. AVAILABLE THROUGH: Energy Management Service 434 S.W. Iowa Portland, Oregon 97201 PHONE NO.: 800-547-4232 SUPPORTED BY: Same as above PHONE NO.: 503-244-36/3 Lation energy analysis program that uses incrocomputer. The program can handle 12 inpment types. AVAILABLE THROUGH: Robert Sanderegges Lawrence Berkeley Laboratory Building 90-3074 University of CA. Berkeley, CA 94720 PHONE NO.: 415-486-4029 SUPPORTED BY:

DOL MANE: CL4	AVAILABLE THROUGH: McClintock Corporation
EVELOPED ST: McClintock Corporation	P.O. Box 430980
THE THE PART OF TH	Miami, FL 33143
	PHONE NO.: 305-666-1300
	SUPPORTED BY: As above
ATE DEVELOPED:	Attn: R. C. McClintock
ATE OF LAST REVISION:	
•	
	PROME NO.: 305-666-1300 ng load program which uses ASMRAL 1977 methods,
RIP BESCRIPTION: This is a cooling and heating	ig load program which uses Ashrat 1977 Bethous,
which takes into account building therm	nal inertia. The program calculates all loes ASHRAE 90-75 Energy Analysis. A
handling equipment specifications and d	loes ASHRAE 90-75 Energy Analysis. A
maximum of 99 prompted input values can	De useo.
	
eneral	•
DOL MANE: CL4M	AVAILABLE THROUGH: McClintock Corporation
EVELOPED BY: McClintock Corporation	P.O. Box 430980
WELDTED BI. MEGIZINEGER BOLFOTALION	Miami, FL 33143
	PHONE NO.: 305-666-1300
	BUPPORTED BY: As above
TE DEVELOPED:	Attn: R. C. McClintock
TE OF LAST REVISION:	ALLEN IN OF MENTAL PARK
	PHONE NO.: 305-666-1300
HER DESCRIPTION: This is a cooling and heatin	PHONE NO.: 305-666-1300 g load program which uses ASHRAE 1977 methods,
which takes into the accoun-	t building thermal inertia. The program
calculates air handling equi-	building thermal inertia. The program pment specifications, and does ASHRAE 90-75
Energy Analysis: max. of 255	zones can be handled.
eneral .	Control of the Contro
r i	, , ,
OL HAME: COMM BLDG ENERGY ANAL PGM	AVAILABLE THROUGH: Rill Smith
WELDERD MY: Elite Software Development Inc.	Elite Software Development Inc.
P. O. Drawer 1194 Bryan, TX 77806	P. O. Drawer 1194 Bryan, TX 77806 PHONE MO.: (409) //5-1782
Bryan, TX 77806	Bryan, TX //806
	PHONE NO.: (409) 775-1782
	EUPPORTED BY: Bill Smith
	Elite Software Development Inc.
	P. O. Drawer 1194
ATE OF LAST REVISION:	P. O. Drawer 1194 Bryan, TX 77806
THE OF LAST REVISION: July 1983	P. O. Brawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782
ME OF LAST REVISION: July 1983	P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782
TE OF LAST REVISION: July 1983	P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782
TE OF LAST REVISION: July 1983	P. O. Drawer 1194 Bryan, TX 77806
TE OF LAST REVISION: July 1983	P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782
TE OF LAST REVISION: July 1983	P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782
IEF DESCRIPTION:	P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782
TE OF LAST REVISION: July 1983	P. O. Brawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782
IEF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program is	P. O. Brawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 eating and cooling loads and performs a nutred for heating and cooling. The energy has a built-in economic analysis program.
IEF DESCRIPTION:	P. O. Brawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for hearing and cooling. The energy mas a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith
IEF DESCRIPTION:	P. O. Brawer 1194 Bryan TX 77806 PHOWE WO.: (409) 775-1782 Paring and cooling loads and performs a nutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc.
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program is the program of the program is the program of the program is the program of the program is the program of the program is the program of the program is the program of the program is the program is the program of the program is the program of the program is the program of the program of the program is the program of the progra	P. O. Brawer 1194 Bryan TX 77806 PHOWE WO.: (409) 775-1782 Paring and cooling loads and performs a nutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc.
IEF DESCRIPTION:	P. O. Brawer 1194 Bryan. TX 77806 PHOWE MO.: (409) 775-1782 Leafing and cooling loads and performs a mutred for heating and cooling. The energy las a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806
INFO DESCRIPTION: The program calculates the be aystems simulation to give the energy requise profile is also given. The program is the program in the program is the program in the program is the program in the program is the program in the program is the program in the program is the program in the program in the program in the program in the program is the program in the progr	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy mas a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO: (409) 775-1782
The program calculates the be systems simulation to give the energy require profile is also given. The program is the program of the program is the profile is also given. The program is the profile is also given. The program is the program is the profile is also given. The program is the program is the program is the program is the program is the program is the program in the program is the program in the program is the program in the program is the program in the program is the program in the program is the program in the program is the program in the program is the program of the program calculates the because of the program calculates the program is the program of the program calculates the program is the program of the program of the program is the program of the program is the program of the program is the program is the program of the program is the program	P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 eating and cooling loads and performs a nutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX //806 PHOME MO.: (409) 775-1782 BURDERTED BY: RIPLE SMITH
IEF DESCRIPTION:	P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 eating and cooling loads and performs a nutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX //806 PHOME MO.: (409) 775-1782 BURDERTED BY: RIPLE SMITH
INF DESCRIPTION:	P. O. Drawer 1194 Bryan TX 77806 PHOWE WO.: (409) 775-1782 Paring and cooling loads and performs a nutred for hearing and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 7806 PHOME MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194
IEF DESCRIPTION:	P. O. Drawer 1194 Bryan TX 77806 PHOWE WO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806
INF DESCRIPTION:The program calculates the he systems simulation to give the energy requise profile is also given. The program is use profile is also given. The program is common to the common term is a system of t	P. O. Brawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a nuired for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782
IEF DESCRIPTION:The_program_calculates the he_systems simulation to give the energy rec_use profile is also given. The program for the program is also given. The program for the program is also given. The program for the program for the program is also given. The program for the program for the program for the program for the program for the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program calculates heating the program is also given. The program calculates heating the program is also given.	P. O. Drawer 1194 Bryan TX 77806 PHOWE WO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE WO.: (409) 775-1782 BUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOWE NO.: (409) 775-1782 Bryan, TX 77806 PHOWE NO.: (409) 775-1782
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program calculates heating the program calculates heating of 1000 zones (or more). The basic method	P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Learing and cooling loads and performs a mutred for hearing and cooling. The energy lass a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 BUPPORTED BY: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782
INF DESCRIPTION:	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 BUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME NO.: (409) 775-1782 Bryan, TX 77806 PHOME NO.: (409) 775-1782
INF DESCRIPTION: The program calculates the be systems simulation to give the energy requise profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program calculates heating the program calculates heating the program calculates heating to 1000 zones (or more). The basic methods	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 BUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME NO.: (409) 775-1782 Bryan, TX 77806 PHOME NO.: (409) 775-1782
INF DESCRIPTION: The program calculates the be systems simulation to give the energy require profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile in the program of the program calculates heating the program calculates heating to 1000 zones (or more). The basic method.	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 BUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME NO.: (409) 775-1782 Bryan, TX 77806 PHOME NO.: (409) 775-1782
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program calculates heatifor 1000 zones (or more). The basic meth ASHRAE Handbook of Fundamentals method.	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 BUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME NO.: (409) 775-1782 Bryan, TX 77806 PHOME NO.: (409) 775-1782
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program calculates heatifor 1000 zones (or more). The basic meth ASHRAE Handbook of Fundamentals method.	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a multed for hearing and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME NO.: (409) 775-1782 Ing and cooling loads for commercial buildings
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program calculates heating for 1000 zones (or more). The basic meth ASHRAE Handbook of Fundamentals method.	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Bupported BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program calculates heating the program of the progr	P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program of the progra	P. O. Brawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc.
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program of the program is a system of the systems of the systems of the systems of the system of the system of the system of the system of the system of the system of the system of the program of the program of the system of the sys	P. O. Drawer 1194 Bryan TX 77806 PHOWE WO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE WO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOWE WO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program calculates heating the program of the progr	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court
INF DESCRIPTION: The program calculates the he systems simulation to give the energy requise profile is also given. The program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program calculates heating the program calculates heating the program of the prog	P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 7/806 PHOWE MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 7/806 PHOWE NO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PHOME MO.: (619) 578-5910
IMP DESCRIPTION:The program calculates the he systems simulation to give the energy requise profile is also given. The program of the prog	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a multed for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PHOME MO.: (619) 578-5910 SUPPORTED BY: Jim Ford
INF DESCRIPTION:The program calculates the he systems simulation to give the energy requise profile is also given. The program of the prog	P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 BUPFORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau, Assoc. 7175 Construction Court San Diego, CA 92121 PHOME MO.: (619) 578-5910 BUPFORTED BY: Jim Ford Paoluccio Willis Nau Assoc.
INF DESCRIPTION:The_program_calculates the he systems simulation to give the energy requise profile is also given. The program of the prog	P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PHOWE MO.: (619) 578-5910 SUPPORTED BY: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court
INF DESCRIPTION:The program calculates the he systems simulation to give the energy requise profile is also given. The program of the prog	P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PHOME MO.: (619) 578-5910 SUPPORTED BY: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PHOME MO.: (619) 578-5910 SUPPORTED BY: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121
INF DESCRIPTION:The program calculates the he systems simulation to give the energy requise profile is also given. The program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program of the program calculates heat of the program of the pro	P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PHOWE MO.: (619) 578-5910 SUPPORTED BY: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PROME MO.: (619) 578-5910
INF DESCRIPTION:The_program_calculates the he_systems simulation to give the energy requise profile is also given. The program is profile is also given. The program of the program is program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile in the program of the program is profile in the program calculates heat if for 1000 zones (or more). The basic method. BRANKAE Handbook of Fundamentals method. BROWN INDUSTRIES IN THE PROGRAM IN THE PROGRAM IN THE P	P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego CA 92121 PHOWE MO.: (619) 578-5910 SUPPORTED BY: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PROWE MO.: (619) 578-5910
REF DESCRIPTION:The_program_calculates the he systems simulation to give the energy requise profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile in the program calculates heating the program calculates heating for 1000 zones (or more). The basic method. Selected by the program calculates heating for 1000 zones (or more). The basic method. Selected by the program calculates heating for 1000 zones (or more). The basic method. Selected by the program calculates heating for 1000 zones (or more). The basic method. Selected by the program calculates heating for last revision:	P. O. Drawer 1194 Bryan TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a multed for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME NO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Pacluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PHOME MO.: (619) 578-5910 SUPPORTED BY: Jim Ford Pacluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PHOME MO.: (619) 578-5910 SUPPORTED BY: Jim Ford Pacluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PHOME MO.: (619) 578-5910 -158 procedure for the calculation of heating gs. Any number of building zones can be used.
INF DESCRIPTION:The_program_calculates the he systems simulation to give the energy requise profile is also given. The program is profile is also given. The program of the comment is also given. The program is profile is also given. The program is profile is also given. The program is profile is also given. The program is profile in the program of the program of the program of the program calculates heating for 1000 zones (or more). The basic method. Seneral of the program of t	P. O. Drawer 1194 Bryan, TX 77806 PHOWE MO.: (409) 775-1782 Paring and cooling loads and performs a mutred for heating and cooling. The energy has a built-in economic analysis program. AVAILABLE THROUGH: Bill Smith Elite Software Development Inc. P. O. Drawer 1194 Bryan, TX 77806 PHOME MO.: (409) 775-1782 SUPPORTED BY: Bill Smith Elite Software Development I P. O. Drawer 1194 Bryan, TX 77806 PHOME NO.: (409) 775-1782 Ing and cooling loads for commercial buildings od used to calculate the peak loads is 1981 AVAILABLE THROUGH: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego CA 92121 PHOME MO.: (619) 578-5910 SUPPORTED BY: Jim Ford Paoluccio Willis Nau Assoc. 7175 Construction Court San Diego, CA 92121 PROWNE MO.: (619) 578-5910 PROWNE MO.: (619) 578-5910 158 procedure for the calculation of heating gs. Any number of building zones can be used izing only. The program does not calculate

MANE: DAYLITE	AVAILABLE THROUGH: Solarsoft Inc.
NORTH BY: Solarsoft Inc.	Box 124
Box 124	Snowmass, CO 81654
Snowmass. CO 81654	PHONE NO.: (303) 927-4411
	Solarsoft Inc.
DEVELOPED:	SUPPORTED BY: Solarsoft Inc. Box 124
OF LAST REVISION: 1983	Snowmass, CO 81654
	(202) (027 (727)
To de a deutstand do odom	PHONE NO.: (303) 927-4411 and analysis tool developed to provide the
operay efficient lighting systems. The	program is based on the most recent research
done at SERI and Lawrence Berkeley Labo	program is based on the most recent research ratory.
neral	
MAME: DEROB	AVAILABLE THROUGH:F_Arimi
ELOPED BY: F. Arumi	Solenco, Inc.
University of Texas	P.O. Box 7907
Austin, TX	Austin, TX 78712
	PNOWE NO.: SUPPORTED SY: F. Arumi
E DEVELOPED: 1972	Solenco, Ins. P.O. Box 7907
OF LAST REVISION: 1979	Austin, TX 78712
	BEAUT MO
er pescription: The program is its current	t version is capable of simulation of a variety
- · · · · · · · · · · · · · · · · · · ·	actone Calculator bullante PPOMPTIIE idelbie
of hourly loads and inter	ior distribution. Allows modelling of multi-
zone configuration.	
neral	
L MARE: <u>Direct Gain Admittance Model</u>	AVAILABLE THROUGH: Department of Mechanical Engine
ELOPED SY:	California State Polytechnic Institute
California State Polytech, University	San Luis Obispo. CA
San Luis Obisdo, CA 9340/	
San Luis Obispo. CA 93407	PHONE NO.: 805-546-2643
	PRONE MO.: 805-546-2643 SUPPORTED BY: As above
E DEVELOPED:	PHONE NO.: 805-546-2643
San Luis Obispo. CA 9340/	PRONE MO.: 805-546-2643 SUPPORTED BY: As above
TE DEVELOPED:	PHONE MO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles
TE DEVELOPED: TE OF LAST REVISION: THE DESCRIPTION: This tool consists of a di	PHONE MO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PROME MO.: 805-546-2643 Irect gain admittance model which is a closed
TE DEVELOPED: TE OF LAST REVISION: This tool consists of a difference of the control of the con	PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PROME NO.: 805-546-2643 Prect gain admittance wodel which is a closed pain passive solar systems. It is a graphical
E DEVELOPED: TO P LAST REVISION: This tool consists of a different solution for direct general method although can be promoted.	PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PHONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the periormance
E DEVELOPED: E OF LAST REVISION: This tool consists of a difference of the control of the cont	PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PHONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the periormance
E DEVELOPED: E OF LAST REVISION: This tool consists of a different solution for direct go method although can be prometed.	PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PHONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the periormance
E DEVELOPED: E OF LAST REVISION: This tool consists of a different solution for direct go method although can be prometed.	PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PHONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the periormance
E DEVELOPED: Z OF LAST REVISION: This tool consists of a differ solution for direct g method although can be pro of passive solar systems (PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PHONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the periormance
E DEVELOPED: ET DESCRIPTION: This tool consists of a different solution for direct general method although can be proof passive solar systems (PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PHONE NO.: 805-546-2643 Prect gain admittance wodel which is a closed gain passive solar systems. It is a graphical syrammed as well. Calculates the periormance (direct gain).
E DEVELOPED: E OF LAST REVISION: This tool consists of a difference of partial although can be proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the proof passive solar systems (There is necessary to the passive solar systems (There is necessa	THOME NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles THOME NO.: 805-546-2643 Prect gain admittance wodel which is a closed gain passive solar systems. It is a graphical syrammed as well. Calculates the periormance (direct gain). AVAILABLE THROUGH: NTIS
E DEVELOPED: 2 OF LAST REVISION: 2F MESCRIPTION: This topl consists of a difference of passive solar systems (DOE=2 L MANE: DOE=2	PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PHONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the performance (direct gain). AVAILABLE THROUGH: NTIS 5285 Port Royal Road Graphic field VA 22161 or National
E DEVELOPED: 20 PLAST REVISION: 27 MESCRIPTION: This topl consists of a difference of particular for direct general and the property of passive solar systems (DOE-2 ELOPED BY: Lawrence Berkeley Laboratory University of California	PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PHONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the performance (direct gain). AVAILABLE THROUGH: NTIS 5285 Port Royal Road Graphic field VA 22161 or National
E DEVELOPED: 20 P LAST REVISION: This topl consists of a different solution for direct presented although can be proof passive solar systems (DOE=2 L MANE: DOE=2	THOME NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles THOME NO.: 805-546-2643 Prect gain admittance wodel which is a closed gain passive solar systems. It is a graphical syrammed as well. Calculates the periormance (direct gain). AVAILABLE THROUGH: NTIS
C DEVELOPED: COP LAST REVISION: This topl consists of a difference of particular for direct government of although can be proposed to passive solar systems (DOE-2 ELOPED BY: Lawrence Berkeley Laboratory University of California	PHONE NO.: 805-546-2643 SUPPORTED BY: As above Philips W. B. Niles PHONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical ogrammed as well. Calculates the performance (direct gain). AVAILABLE THROUGH: NTIS 5285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL 604
E DEVELOPED: E OF LAST REVISION: This topl consists of a diform solution for direct go method although can be proof passive solar systems (There is the proof of passive solar systems (There is the	TWOME MO.: ROS-546-2643 SUPPORTED BY: As above Philips W. B. Niles TWOME MO.: 805-546-2643 [rect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the periormance (direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL 604 PMONE MO.: SUPPORTED BY: (Limited support). Mr. Richard Curtis.
E DEVELOPED: LET DESCRIPTION: This tool consists of a difference of passive solar systems (The property of California Berkeley CA 94720 E DEVELOPED: 1979	THOME MO.: ROS-546-2643 SUPPORTED BY: As above Philips W. B. Niles PRONE MO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the performance (direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL 604
E DEVELOPED: ET DESCRIPTION:	THOME NO.: 805-546-2643 PHONE NO.: 805-546-2643 Irect gain admittance wodel which is a closed gain passive solar systems. It is a graphical syrammed as well. Calculates the performance (direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield, VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: BUPPORTED BY: (Limited support) Mr. Richard Curtis, LBL. Berkeley, CA 94720
E DEVELOPED: 2 OF LAST REVISION: 2 DEVELOPED: 2 DEVELOPED: 2 DEVELOPED: 3 DEVELOPED: 4 DEVELOPED: 5 DEVELOPED: 5 DEVELOPED: 6 DEVELOPED: 7 DEVELOPED: 7 DEVELOPED: 8 DEVELOPED: 1979 8 OF LAST REVISION: 1980	##WHE MO.: ADS-546-2643 ##PORTED BY: As above Philips W. B. Niles ##RONE MO.: 805-546-2643 Prect gain admittance model which is a closed gain passive solar systems. It is a graphical ocrammed as well. Calculates the Deriormance (direct gain). #### AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL PHONE MO.: ####################################
E DEVELOPED: ET BESCRIPTION: This tool consists of a different solution for direct general statement of passive solar systems (There is tool consists of a different solution for direct general statement solution for direct solutions and systems (There is tool to the solution of th	THOME NO.: ROS-546-2643 SUPPORTED BY: As above Philips W. B. Niles PROME NO.: 805-546-2643 Irect gain admittance wodel which is a closed gain passive solar systems. It is a graphical grammed as well. Calculates the performance (direct gain). AVAILABLE THROUGH: NTIS 5285 Port Royal Road Springfield, VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, LBL. Berkeley, CA 94720 PHONE NO.: 415-486-571
E DEVELOPED: ET DESCRIPTION:	#WOME NO.: 805-546-2643 #WAILABLE THROUGH: NTIS S285 Port Royal Road Springfield, VA 22161 or National Energy Software Center, Argonne, IL #WOME NO.: #WIPPORTED BY: 415-486-5711 BUPPORTED BY: (15-486-5711 BUPPORTED BY: 415-486-5711 B
E DEVELOPED: ET DESCRIPTION:	AVAILABLE THROUGH: NTIS SUPPORTED BY: AS above Philips W. B. Niles PRONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the performance direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, LBL. Berkeley. CA 94720 PHONE NO.: 415-486-5711 ment base approach whereby the user defines gent and the manner in which they are connected. but dding components as well as systems, HVAC
E DEVELOPED: ET DESCRIPTION:	AVAILABLE THROUGH: NTIS SUPPORTED BY: AS above Philips W. B. Niles PRONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the performance direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, LBL. Berkeley. CA 94720 PHONE NO.: 415-486-5711 ment base approach whereby the user defines gent and the manner in which they are connected. but dding components as well as systems, HVAC
E DEVELOPED: 2. OF LAST REVISION: 2. OF LAST REVISION: 2. This tool consists of a difference solution for direct general although can be proved although can be proved passive solar systems (2. MANNE:	AVAILABLE THROUGH: NTIS SUPPORTED BY: AS above Philips W. B. Niles PRONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the performance direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, LBL. Berkeley. CA 94720 PHONE NO.: 415-486-5711 ment base approach whereby the user defines gent and the manner in which they are connected. but dding components as well as systems, HVAC
E DEVELOPED: LOW LAST REVISION: This topl consists of a diform solution for direct got method although can be proposed to th	AVAILABLE THROUGH: NTIS SUPPORTED BY: AS above Philips W. B. Niles PRONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the performance direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, LBL. Berkeley. CA 94720 PHONE NO.: 415-486-5711 ment base approach whereby the user defines gent and the manner in which they are connected. but dding components as well as systems, HVAC
E DEVELOPED: E OF LAST REVISION: This topl consists of a diform solution for direct general and although can be proposed to the proposed to	PROME NO.: 805-546-2643 PROME NO.: 805-546-2643 Prect gain admittance wodel which is a closed gain passive solar systems. It is a graphical orrammed as well. Calculates the periormance (direct gain). AVAILABLE THROUGH: NTIS 5285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, IRL. Berkeley, CA 94720 PMONE NO.: 415-486-5711 ment base approach whereby the user defines cent and the manner in which they are connected. Software components as well as systems, HVAC malyses.
E DEVELOPED: E OF LAST REVISION: This tool consists of a differ solution for direct general solution for direct general solutions are presented by the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses are presented to the program uses and presented the program uses are presented to the program uses are	PHONE NO.: 805-546-2643 PHONE NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 Prect gain admittance wodel which is a closed gain passive solar systems. It is a graphical grammed as well. Calculates the performance (direct gain). AVAILABLE THROUGH: NTIS 5285 Port Royal Road Springfield, VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED NY: (Limited support) Mr. Richard Curtis, LBL. Berkeley, CA 94720 PHONE NO.: 415-486-571 Tent base approach whereby the user defines ient and the manner in which they are connected. If building components as well as systems, HVAC nalyses.
E DEVELOPED: E OF LAST REVISION: This tool consists of a differ solution for direct general solution for direct general solutions are presented by the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses are presented to the program uses and presented the program uses are presented to the program uses are	PROME NO.: 805-546-2643 PROME NO.: 805-546-2643 Prect gain admittance wodel which is a closed gain passive solar systems. It is a graphical orranged as well. Calculates the periormance (direct gain). AVAILABLE THROUGH: NTIS 5285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, IRL. Berkeley, CA 94720 PMONE NO.: 415-486-5711 ment base approach whereby the user defines cent and the manner in which they are connected. Si building components as well as systems, HVAC malyses.
E DEVELOPED: E OF LAST REVISION: This tool consists of a differ solution for direct general solution for direct general solutions are presented by the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses a component of the program uses are presented to the program uses and presented the program uses are presented to the program uses are	PHONE NO.: 805-546-2643 PHONE NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 Prect gain admittance wodel which is a closed gain passive solar systems. It is a graphical grammed as well. Calculates the performance (direct gain). AVAILABLE THROUGH: NTIS 5285 Port Royal Road Springfield, VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED NY: (Limited support) Mr. Richard Curtis, LBL. Berkeley, CA 94720 PHONE NO.: 415-486-571 Tent base approach whereby the user defines ient and the manner in which they are connected. If building components as well as systems, HVAC nalyses.
E DEVELOPED: ET DESCRIPTION: This tool consists of a differm solution for direct general and although can be proposed by the	PHONE NO.: 805-546-2643 PHONE NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield, VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: 8UPPORTED BY: (Limited support) Mr. Richard Curtis, LBL Berkeley, CA 94720 PHONE NO.: 415-486-571 PHON
E DEVELOPED: ET DESCRIPTION: This topl consists of a diform solution for direct per method although can be proposed to the pr	WALLABLE THROUGH: PHONE NO.: AVAILABLE THROUGH: Mr. Richard Curtis. List. approach whereby the user defines sent and the manner in which they are connected. of building components as well as a systems. AVAILABLE THROUGH: AVAILABLE THROUGH: Mr. Richard Curtis. Libl. Berkeley. CA 94720 PHONE NO.: LIBL. Berkeley. CA 94720 PHONE NO.: 415-486-5711 Ment base approach whereby the user defines sent and the manner in which they are connected. of building components as well as systems, HVAC halyses. AVAILABLE THROUGH: AVAILABLE THROUGH: AS above
E DEVELOPED: ET DESCRIPTION: This tool consists of a diform solution for direct part and although can be proved by the solution of passive solar systems (solution) and solution of passive solar systems (solution) and solution of passive solar systems (solution) and service between the solution of passive solar systems (solution) and service by: Lawrence Berkeley Laboratory University of California Berkeley. CA 94720 E DEVELOPED BY: Lawrence Berkeley Laboratory University of California Berkeley. CA 94720 E DEVELOPED: 1979 E OF LAST REVISION: 1980 EF DESCRIPTION: The program uses a compon which components are pressive by the suitable for simulation of equipment and economic an equipment and economic and passive by: Carrier Corporation P.O. Box 4808 Syracuse. NY 13221	PHONE NO.: 805-546-2643 PHONE NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 PROPER NO.: 805-546-2643 AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield, VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: 8UPPORTED BY: (Limited support) Mr. Richard Curtis, LBL Berkeley, CA 94720 PHONE NO.: 415-486-571 PHON
E DEVELOPED: E DEVELOPED: E OF LAST REVISION: This topl consists of a diform solution for direct general although can be proposed to the pr	WALLABLE THROUGH: PHONE NO.: AVAILABLE THROUGH: Mr. Richard Curtis. List. approach whereby the user defines sent and the manner in which they are connected. of building components as well as a systems. AVAILABLE THROUGH: AVAILABLE THROUGH: Mr. Richard Curtis. Libl. Berkeley. CA 94720 PHONE NO.: LIBL. Berkeley. CA 94720 PHONE NO.: 415-486-5711 Ment base approach whereby the user defines sent and the manner in which they are connected. of building components as well as systems, HVAC halyses. AVAILABLE THROUGH: AVAILABLE THROUGH: AS above
E DEVELOPED: E DEVELOPED: E OF LAST REVISION: This topl consists of a diform solution for direct general although can be proposed to the pr	PHONE MO.: ANS-546-2643 SUPPORTED BY: As above Philips W. B. Niles PRONE MO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the periormance direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL PHONE MO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, LRL. Berkeley. CA 94720 PHONE MO.: 415-486-5711 Tent base approach whereby the user defines ient and the manner in which they are connected. If building components as well as systems, HVAC allyses. AVAILABLE THROUGH: As above PHONE MO.: BUPPORTED BY: 315-451-2660
E DEVELOPED: E OF LAST REVISION: This tool consists of a differm solution for direct general and solution for direct general This tool consists of a difference method although can be propertied by: L MANE: DOE-2 ELOPED BY: Lawrence Berkeley Laboratory University of California Berkeley. CA 94720 E DEVELOPED: 1979 E OF LAST REVISION: 1980 EF DESCRIPTION: The program uses a compon which components are pressive and economic an equipment and economic an equipment and economic an P.O. Box 4808 Syracuse. NY 13221 E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED: E DEVELOPED:	PHONE NO.: ADS-546-2643 SUPPORTED BY: As above Philips N. B. Niles PRONE NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical perammed as well. Calculates the periormance direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL PHONE NO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, LBL. Berkeley. CA 94720 PHONE NO.: 415-486-5711 Tent base approach whereby the user defines gent and the manner in which they are connected. of building components as well as systems, HVAC galyses. AVAILABLE THROUGH: As above PHONE NO.: 315-451-2660
E DEVELOPED: E DEVELOPED: E OF LAST REVISION: This topl consists of a diform solution for direct per method although can be proved to be provided by the solution of passive solar systems (The property of passive solar systems (The property of the	PROME NO.: ROS-546-2643 SUPPORTED BY: As above Philips N. B. Niles PROME NO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical orrammed as well. Calculates the performance (direct gain). AVAILABLE THROUGH: NTIS S285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL 604 PHONE NO.: Mr. Richard Curtis, IRL, Rerkeley, CA 94720 PHONE NO.: 415-486-5711 Tent base approach whereby the user defines sent and the manner in which they are connected. It building components as well as systems, HVAC halyses. AVAILABLE THROUGH: As above PHONE NO.: 316-451-2660 OFFRMS: the set consists of operating cost analysis
E DEVELOPED: ET DESCRIPTION: This tool consists of a different solution for direct general solutions are presented by the program uses a component are presented by the program uses a component and economic and process of the program uses a component and economic and process of the program uses a component and economic and process of the program uses a component and economic and process of the program uses a component by the program uses a co	PHONE MO.: Ans. 546-2643 Supported BY: As above Philips W. B. Niles PRONE MO.: 805-546-2643 Irect gain admittance model which is a closed gain passive solar systems. It is a graphical organized as well. Calculates the periormance (direct gain). AVAILABLE THROUGH: NTIS 5285 Port Royal Road Springfield. VA 22161 or National Energy Software Center, Argonne, IL 604 PHONE MO.: SUPPORTED BY: (Limited support) Mr. Richard Curtis, IBL. Berkeley. CA 94720 PHONE MO.: 415-486-5711 ment base approach whereby the user defines gent and the manner in which they are connected. Si building components as well as systems, HVAC malyses. AVAILABLE THROUGH: As above As above

General	
TOOL NAME: ECAL	AVAILABLE THROUGH: Louis Abernethy
DEVELOPED BY: Mr. Louis Abernethy	A. O. Software, Inc.
	2001 Beverley Drive
	Charlotte, NC 28207
	PHONE NO.: (704) 332-4093 SUPPORTED ST: Louis Abernethy
DATE DEVELOPED:	A. U. Software, Inc.
DATE OF LAST REVISION: 1983	2001 Beverley Drive
	Charlotte, NC 28207
The Acres 1	PMONE NO.: (704) 332-4093
BRIEF DESCRIPTION: Uses ASHRAE bin method of an	alysis similar to TC4.7. Peak heating and
Teguirements for heating and cooling of	y periods. The program gives the energy one with energy use profile by the equipment
for heating and cooling.	OUR AITH ENELSA USE DIGITIE BY THE SUNTEMENT
General	
TOO MANY. ECAP	ANATIANI B. MIRANON
SEVELOPZO BY: Tennessee Valley Authority	AVAILABLE THROUGH: George Arnold Tennessee Valley Authority
400 West Summit Hills Drive, W40	
Knoxville, TN 37902	C126 400 West Summit Hills Drive, W4C126 Knoxyille, TN 37902
	PHONE NO.: 615-632-3698
	SUPPORTED BY: Tennessee Valley Authority
DATE DEVELOPED:	400 West Summit Hills Drive, W4Cl2
DATE OF LAST REVISION: November 1983	Knoxville, TN 37902
	PHONE NO.: 615-632-3698
BRIEF MESCRIPTION: This is a 12-zone commercial	buildings energy calculation program which
includes economic analysis. The pro	gram uses condensed weather data and performs
<u>extensive HVAC systems simulation</u>	The information on energy requirement and
the electric demand is also provided	
General	
TOOL NAME: ECP	AVAILABLE THROUGH: COSMIC
SEVELOPED BY: California Institute of Technolog	
Jet Propulsion Laboratory	University of Georgia
	Athens, GA 30602
· · · · · · · · · · · · · · · · · · ·	PHONE NO.: 404-542-3265
,	SUPPORTED BY: _COSMIC
DATE DEVELOPED: 1978	112 Barrove Hall, University of
DATE OF LAST REVISION:	Georgia, Athens. GA 30602 Attn: Ms. Jamie Ferguson
	Attn: Ms. Jamie Ferguson
anyer percentages. Who among the could for account	PHONE NO.: 404-542-3265
BRIEF DESCRIPTION: The program is used for accur	by computational cost and requiring a minimum
of input data Inputs requir	ed are weather, control information, informa-
tion on building construction	, and basic system configuration.
General	
General	
TOOL NAME: EEDO	AVAILABLE THROUGH: Burt Hill Kosar Rittelmann
DEVELOPED BY: Burt Hill Kosar Rittelmann	Associates
Associates	400 Morgan Center
400 Morgan Center	Butler, Pennsylvania 16001, U.S.A.
Butler, Pennsylvania 16001	PHONE NO.: 412/285-4761
U.S.A. DATE DEVELOPED: ADVIL 1984	SUPPORTED BY:
	Caraca at a second
DATE OF LAST REVISION: April 1984	Same as above
	PRONE NO.:
BRIEF DESCRIPTION: EEDO is the IBM microcompute:	r version of CIRA program which was developed
by Lawrence Berkeley Laboratory, EEDO ca	alculates daily and nightly heating and cooling
requirements of buildings. The effect of	f sun on building surfaces is considered.
EEDO is extremely user friendly. The eco	onomic optimization produces output of energy
retrofits which could be implemented in	a given budget. EEDO is easy to translate
into any modern language without changing	g source code.
General	
FI SOI	
TOOL MAME: ELSOL	AVAILABLE THROUGH: Computer Mart, Inc.
NEVELOPED BY: Inatome & Associates 10140 West Nine Mile Road	1824 West Maple
Oak Park, MI 48237	Troy_MI48084
Uak Park, MI 4823/	PHONE NO.: 313-288-0040
	SUPPORTED SY: Joseph Instome
BATE DEVELOPED:	10140 West Nine Mile Road
BATE OF LAST REVISION:	Oak Park, MI 48237
•	PHONE NO.: 313-542-4862
MIEF MICHIPION: The program outputs the di	ffuce and direct radiation components. The
incident angle, the vertical and	horizontal radiation components and the total
amount of solar radiation inputte	ed to a collector on a clear day. The input
<u>data is then used with a modified</u>	d F-Chart program.

Beneral .	
DOL NAVE: EMPS 2	AVAILABLE THROUGH:
EVELOPED BY: Arthur D. Little. Inc.	Software Distribution Center
2G ACOTO PAIK	Electric Power Research Institute (EPRI)
Cambridge MA 02140	3412 Hillyiew Ave. Palo Alto. CA 94304
	PWOME NO.: 415-855-2168
MATE DEVELOPED: 1982	SUPPORTED BY: Dick Meriam Arthur D. Little, Inc.
ATE DEVELOPED: 1982	20 Acorn Park
DATE OF LAST REVISION: 1982	20 Acorn Park Cambridge, MA 02140
•	PRONE NO.: 617-864-5770
incrementation. The average is a detailed t	PROME NO.: 617-864-5770 hermal network type program which was developed Floring Power Research Institute). Suitable
for residences with up to 1	O zones. Detailed systems calculations as
well as economics is include	ed
General	•
	McClintook Corneration
FOOL NAME: EN2M	AVAILABLE THROUGH: McClintock Corporation
DEVELOPED BY: McClintock Corporation	P.O. Box 430980
	Miami, FL 33143
	PHONE NO.: 305-666-1300
	SUPPORTED BY: AS Above
DATE DEVELOPED:	R. C. McClintock
DATE OF LAST REVISION:	· · · · · · · · · · · · · · · · · · ·
	PHONE NO : 205-666-1200
The program uses the warfahl	PRONE NO.: 305-666-1300 le base, degree day method for computing monthly energy consumption. The building is treated as
BRIEF DESCRIPTION: THE PLOSTAIN USES the Validon	energy consumption. The building is treated as
and/or annual nvac systems e	g loads are calculated using NBS/DOE procedure
a single zone. The bullding	E TODAS GIE PATENTACES ASINE MEDIDON PROFESSION
for Residential Energy Analy	y 515.
***	······································
General	
General	,
TOOL MANE: EN4M	AVAILABLE THROUGH: McClintock Corporation
DEVELOPED BY: McClintock Corporation	P.O. Box 430980
DEVELOPED BY: MCCTITITOCK COTPOTALION	Miami, FL 33143
	· _ · _ ·
	PHONE NO.: 305-666-1300
	SUPPORTED BY: As above
DATE DEVELOPED:	R. C. McClintock
DATE OF LAST REVISION:	
	PHONE NO.: 305-666-1300 red ASHRAE TC 4-7 simplified energy calculation
BRIEF DESCRIPTION: This program uses an improv	ed ASHRAE TC 4-7 simplified energy calculation
procedure to estimate month	ily and/or annual building energy consumption.
The program is primarily in	nly and/or annual building energy consumption. Itended for use in existing buildings energy
audit and retrofit applicat	ions.
General	
Delivita	non-E Tarmer O Dongalman
TOOL HAME: ENCON2	AVAILABLE THROUGH: Prof. Larry O. Dengelman
never over the Prof Larry O. Denge man	Department of Architecture
Department of Architecture	Texas A & M University
Texas A & M University	College Station, TX 77843 PHONE NO.: 409-845-1015
College Station, TX 77843	PHONE NO.: 409-845-1015
BATE DEVELOPED:	Texas A & M University
BATE OF LAST REVISION: September 1983	College Station, TX 77843
	400 0/5 1015
	PRONE NO.: 409-845-1015
BRIEF DESCRIPTION: This program performs the e	nergy analysis for single zone bullding using
modified Ruherer Method and degree	nergy analysis for single zone building using hour approach. The weather data required is in
the form of average and maximum tem	nour approach. In months and their standard in temperature is also required.
deviations. Monthly average due po	Int temperatore 25 date 1-4
	·
General	
muBC 2	AVAILABLE THROUGH: Prof. Larry O. Dengelman
TOOL NAME: ENECO	Department of Architecture
Prof. Larry O. Dengelman Department of Architecture	Towns A L M University
Department of Architecture	Texas A & M University College Station, TX 7/843
Texas A & M University College Station, TX //843	College Station, IA //043
College Station, TX //843	PHONE NO.: 409-845-1015
	SUPPORTED BY: Department of Architecture
BATE DEVELOPED: January 1984	Texas A & M University College Station, TX 77843
BATE OF LAST REVISION:	
···································	Marches 10 . //102-87/5-1111/5
	James have mathed (cimilar to Ruberer Methor
This program uses modified	device nours method (Similar to bunerer Method
to calculate the heating and c	PROPER NO.: 409-845-1015 degree hours method (similar to Buherer Method cooling energy requirements of buildings. The weather data requirements
are similar to the program ENC	ONE :

TOOL MANE: ENERGY-\$AVE	AVAILABLE THROUGH:
MANUALORED MY: Peachtree Associates	Peachtree Associates
P. O. Box 1312	P O Roy 1312
Decatur, Georgia 30031	Decatur, Georgia 30031
	PHONE NO.: (404) 373-3000
	WIFFORTED BY: Peachtree Associates
BATE DEVELOPED:	P. O. Box 1312
BATE OF LAST REVISION:	Decatur, Georgia 30031
use. It uses ASHRAE Handbook of Fundar program is extremely simple to use and is on a yearly basis.	PMONE NO.: ed energy calculation methodology for residentia mentals and Solar Load Ratio methodology. The has extensive defaults built in. The output
General	
TOOL MANE: Energy Analyst	AVAILABLE THROUGH:
DEVELOPED BY: .	American Energy Service
American Energy Service	727 Massachusetts Avenue
727 Massachusetts Avenue	Cambridge, MA 02139
727 Massachusetts Avenue Cambridge, MA 02139	PHONE NO.:
	SUPPORTED BY: _Michael Mark
DATE DEVELOPED:	THUBEL HALK
DATE OF LAST REVISION:	
	PHONE NO.: 617-547-1345
BRIEF DESCRIPTION: <u>It is a residential program</u>	suitable for home owners. Available in
microcomputer and time shar	ring basis. The usefullness of the program is end use. Interactive, more than 100 questions,
to give the energy use by e	end use. Interactive, more than 100 questions.
building description. syste	em and equipment descriptions needed.
General	
FOOL NAME: ENERGY BILL ANALYSIS	AVAILABLE THROUGH: Doug Mackenzie
Energy Works, Inc.	Energy Works, Inc
44 Hunt Street	44 Hunt Street
Watertown, MA 02172	Watertown, MA 02172
	FRUNE NO.: (617) 026 0600
	SUPPORTED BY: Doug Mackenzie
MATE DEVELOPED:	Francy Marks To
DATE OF LAST REVISION: 1983	- Energy Works, Inc.
	44 Hunt Street Watertown, MA 02172
	PHONE NO.: (C17) DOC DOD
MIRF DESCRIPTION:This program calculates th	PHONE NO.: (617) 926-8600 e month by month fuel bill for any type of
year energy consumption is modified to	take into account the weather variations and
the building use pattern.	
Seneral .	
TOOL NAME: ENERGY GRAPHICS	
EVELOPED BY.	AVAILABLE THROUGH:
EVELOPED BY:	Booz Allen & Hamilton, Inc.
Booz Allen & Hamilton, Inc.	Booz Allen & Hamilton, Inc. 4330 East West Highway
Rouz Allen & Hamilton, Inc. 4330 East West Highway	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814
Booz Allen & Hamilton, Inc.	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814
Bethesda MD 20814	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814
Bouz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814
Bouz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.:
Rouz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED:	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE MO: SUPPORTED BY: John Kurtz
Bouz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION:	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz
BOUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by construction a
BOUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile:	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE MO.: SUPPORTED BY: John Kurtz PHONE NO.: PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a
BODZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: Energy graphics calculates typical daily load profile summary of shell, solar, our	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 910-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tride air, and internal loads.
BOUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: Energy graphics calculates typical daily load profile. Summary of shell, solar, our load is that area below the	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE MO.: SUPPORTED BY: John Kurtz PHONE NO.: PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a
BOUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: Energy graphics calculates typical daily load profile summary of shell, solar, our	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 910-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tride air, and internal loads.
BOUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: Energy graphics calculates typical daily load profile. Summary of shell, solar, our load is that area below the	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 910-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tride air, and internal loads.
BODZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: Energy graphics calculates typical daily load profile summary of shell, solar, our load is that area below the line.	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 910-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tride air, and internal loads.
BOUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: Energy graphics calculates typical daily load profile summary of shell, solar, our load is that area below the line.	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 910-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tride air, and internal loads.
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: Energy graphics calculates typical daily load profile summary of shell, solar, our load is that area below the line.	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE MO.: John Kurtz PHONE MO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, out load is that area below the line. ieneral OOL NAME: The Energy Nomographs	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, out load is that area below the line. Heneral OOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, out load is that area below the line. Heneral BOOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, our load is that area below the line. ieneral OOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann ASSOciates 400 Morgan Center	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, out load is that area below the line. Heneral BOOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 PHONE NO:: 412/285-4761
ROUZ Allen & Hamilton. Inc. 4330 East West Highway Bethesda. MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, out load is that area below the line. DOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, our load is that area below the line. General DOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 PHONE NO.: 412/285-4761 SUPPORTED BY:
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, our load is that area below the line. General DOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 PHONE NO:: 412/285-4761
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, our load is that area below the line. General DOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air. and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 PHONE NO.: 412/285-4761 SUPPORTED BY: Same as above
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, our load is that area below the line. General COL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 ATE DEVELOPED: December 1984 ATE OF LAST REVISION: December 1984	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 PHONE NO: 412/285-4761 SUPPORTED BY: Same as above
ROUZ Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, out load is that area below the line. DOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 ATE DEVELOPED: December 1984 ATE OF LAST REVISION: December 1984	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air. and internal loads. Actual building heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 PHONE NO.: 412/285-4761 Same as above PHONE NO.:
ROUL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 ATE DEVELOPED: ATE DESCRIPTION: Energy Staphics calculates typical daily load profile summary of shell, solar, out load is that area below the line. Seneral FOUL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 ATE DEVELOPED: December 1984 ATE OF LAST REVISION: December 1984 RIEF DESCRIPTION: The Energy Nomographs are a predict the energy consumption of commerces.	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads. Actual building heating line and above the allowable heat gain heating line and above the allowable heat gain AVAILABLE THROUGH: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 PHONE NO.: 412/285-4761 SUPPORTED BY: Same as above PHONE NO.: series of graphic calculation sheets which could building aparture the descriptions.
REVELOPED BY: Bool Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: Energy graphics calculates typical daily load profile summary of shell, solar, out load is that area below the line. Beneral OOL NAME: The Energy Nomographs EVELOPED BY: Burt Hill Kosar Rittelmann Associates 400 Morgan Center Butler, Pennsylvania 16001 ATE DEVELOPED: December 1984 ATE OF LAST REVISION: December 1984	Booz Allen & Hamilton, Inc. 4330 East West Highway Bethesda, MD 20814 PHONE NO.: SUPPORTED BY: John Kurtz PHONE NO.: 301-951-2000 heating and cooling loads by constructing a for each season. The daily profile is a tside air, and internal loads, Actual building heating line and above the allowable heat gain heating line and above the allowable heat gain heating line and above the allowable heat gain heating line and above the allowable heat gain heating line and above the allowable heat gain heating line and above the allowable heat gain heating line and above the allowable heat gain heating line and above the allowable heat gain heating line and above the allowable heat gain heating line and above line and lin

Beneral	
COL NAME: ENERGY - I	AVAILABLE THROUGH: Ed Henry
EVELOPED SY: Disco Tech	Disco Tech P. O. Box 1659, 600 B Street
P. O. Box 1569	Santa Rosa, California 95401
600 B Street Santa Rosa, California 95401	PROME NO.: (707) 592_1600
SHILL WORL COTTLOINE SAINT	SUPPORTED BY: Disco Tech
MTE DEVELOPED:	P. O. Box 1659 600 B Street
	600 B Street
 :	Santa Kosa, Calliothia 9.1401
The amount shocks the compli	Santa Rosa, California, 95401 PHONE NO.: (707) 523-1600 lance of the residential buildings with program calculates heating and cooling
Title 24 of California Energy Code. The	program calculates heating and cooling
loads for residences.	Thruston your min and a second
10025 101	
General	
perior el	PJ II
ROOL HAVE: ENERGY - II	AVAILABLE THROUGH: Ed Henry
EVELOPED ST: Disco Tech	Disco Tech P. Q. Box 1569, 600 B Street
P. O. Box 1659	Santa Rosa, California 95401
600 B. Street	PHONE NO.: (707) 523-1600
Santa Rosa, California 95401	PHONE WO.: (707) 523-1600 SUPPORTED BY: Disco Tech
MIE DEVELOPED:	P. O. Box 1569
MATE OF LAST REVISION: 1983	600 B Street
A11 07 201 157151011	Santa Rosa, California 95401
	PROVE NO.: (707) 523-1600
This program checks the comp	liance of the commercial building with
Title 24 of California Energy legislation	on. ASHRAE steady state method is used to of commercial buildings by zones
calculate the heating and cooling loads	of commercial buildings by zones
General	
	AVAILABLE THROUGH: Solar Energy Design
TOOL NAME: EP-CHART	Corporation of America
DEVELOPED BY: Dr. G. F. Lamerio	P.O. Box 67
	Ft, Collins, CO 80522
	PHONE NO.:
	SUPPORTED BY: Dr C F Lamerio
DATE DEVELOPED:	Department of Business
DATE OF LAST REVISION:	Colorado State University
	Fr Calling, LU BURZE
BRIEF DESCRIPTION: It is a simplified design pr	PHONE NO.: 303-484-2019
BRIEF DESCRIPTION: It is a simplified design pr	cocedure for determining the optimum solar
aperture area for passive so	lar systems. This program is for use in
Europe and has the data for	lar systems. This program is for use in 150 European cities included in the docu- dology used is solar load ratio (SLR).
mentation. The basic method	lology used is sold! loss to the control of the con
General	•
EDITO	AVAILABLE THROUGH: Tim Grether
TOOL NAME: EPDS	Insulation Division
Owens-Corning Fiberglas Corporation	Owens-Corning Fiberglas Corporation
Wens-Corning ribergias corporation	Toledo, Ohio
Toledo, Ohio	Toledo, Ohio PHONE NO.: 419-248-8000
	SUPPORTED BY: As above
DATE DEVELOPED:	
DATE OF LAST REVISION:	
	PHONE NO.:
	ders to predict heating and cooling require-
BRIEF DESCRIPTION: The program allows the bullo	he effects of varying building components can
be easily seen. The program also gives t	the annual energy cost based on the local
	THE BINIOUS CHEEK, DAVID BEAUTIFUL CO.
energy rates.	
<u></u>	· ·
General	
TO A O	AVAILABLE THROUGH: Ross G. Meriwether
TOOL NAME: ESAS	
DEVELOPED BY: Ross F. Meriwether & Associates	Northwood Executive Building, 1600
San Antonio, Texas	Northeast Loop 410, San Antonio, TX 7820
	PHONE NO.: 512-824-5302
	SUPPORTED BY:
DATE DEVELOPED:	
DATE OF LAST REVISION:	Same as above
-	PHONE NO.
	PHONE NO.:
BRIEF DESCRIPTION: The program consists of a se	tod The program determines the annual
Very complex HVAC systems can be simulal energy consumption of various types of s	ted. The program determines the annual
energy consumption of various types of s	

	·
TOOL MAME: ESP-2	AVAILABLE THROUGH: Automatic Procedures for Engine
EVELOPED BY: Automatic Procedures for Engine	ering Consultants. Inc.
Consultants.	
	Grant-Doneau Tower, Suite M-15 40th, and Ludlow Street, Dayton, OH 4540
	PHONE NO . ILLA AGO ACAG
	SUPPORTED BY:
ATE DEVELOPED: 1977	As_above
ATE OF LAST REVISION: 1978	
RIEF DESCRIPTION: Energy edmulation program	PRIONE NO.: 513-228-2602
The program consists of	m intended to simulate HVAC system performance. thermal loads program and an HVAC system simula-
tion program The program	am allows for wariable ashedule of Makes and
ment, people, systems and	d building temperatures. Individual peak load
requirements and monthly	am allows for variable schedule of lights, equip- d building temperatures. Individual peak load and yearly total loads are output.
ieneral	
OOL MANE: EW-CHART	AVAILABLE THROUGH: Solar Energy Design Corporation
EVELOPED BY: Dr. G. F. Lamerio	of America
	P.O. Box 67
	Ft. Collins, CO 80522
	PHONE, NO.:
ATE DEVELOPED:	
ATE OF LAST REVISION:	Department of Business
	Colorado State University
	Ft. Collins. CO 80521 PHONE MO.: 303-484-2019
HEF DESCRIPTION: It is a simplified procedur	e for determining the optimum collector area
for solar bot water eveteme	This optimum is based on themal and
economic optima. It is a f	. This optimum is based on thermal and ive-step procedure and has weather data for
150 European cities. The b	pasic methodology used is F-Chart.
	· · · · · · · · · · · · · · · · · · ·
eneral	
OOL NAME: EWIREAS	AVAILABLE THROUGH: Doug Mackenzie
WELOPED BY: Energy Works, Inc.	Energy Works, Inc.
44 Hunt Street	44 Hunt Street
Watertown, MA 02172	Watertown, MA 02172
	PHONE NO.: (617) 926-8600 SUPPORTED BY: Doug Mackenzie
ATE DEVELOPED:	Doug Mackenzie
	Energy Works, Inc.
	44 Hunt Street
ATE OF LAST REVISION: March 1983	Energy Works. Inc. 44 Hunt Street Watertown. MA 02172
MATE OF LAST REVISION: March 1983	PROME NO.: PROME NO.: Proper No.: Proper
ATT OF LAST REVISION: March 1983 RIEF DESCRIPTION: This is a residential energy utilities for residential energy auditi	PROFESS WORKS. Inc. 44 Hunt Street Watertown. MA 02172 PROME NO.: gy auditing program, the kind used by the
MATE OF LAST REVISION: March 1983	PROFESS WORKS. Inc. 44 Hunt Street Watertown. MA 02172 PROME NO.: gy auditing program, the kind used by the
MATE OF LAST REVISION: March 1983 HEF DESCRIPTION: This is a residential energy utilities for residential energy auditi	PROFESS WORKS. Inc. 44 Hunt Street Watertown. MA 02172 PROME NO.: gy auditing program, the kind used by the
HER OF LAST REVISION: March 1983 HER DESCRIPTION: This is a residential energy utilities for residential energy auditions.	PROFESS WORKS. Inc. 44 Hunt Street Watertown. MA 02172 PROME NO.: gy auditing program, the kind used by the
MATCH 1983 HEF RESCRIPTION: This is a residential energy utilities for residential energy auditions.	PROFESS WORKS. Inc. 44 Hunt Street Watertown. MA 02172 PROME NO.: gy auditing program, the kind used by the
ATT OF LAST REVISION: March 1983 RIEF DESCRIPTION: This is a residential energy utilities for residential energy auditi	PROFESS WORKS. Inc. 44 Hunt Street Watertown. MA 02172 PROME NO.: gy auditing program, the kind used by the no. The program gives the energy used
March 1983 INFO MAST REVISION: March 1983 INFO MAST REVISION: This is a residential energy utilities for residential energy auditor by the houses on a yearly basis. Seneral	PROFESS WORKS. Inc. 44 Hunt Street Watertown. MA 02172 PROME NO.: gy auditing program, the kind used by the
March 1983 Mer pescention: March 1983 Mer pescention: This is a residential energy utilities for residential energy audition by the houses on a yearly basis. Concrete the percentage of the	AVAILABLE THROUGH: Area, Inc.
MATCH 1983 HEF DESCRIPTION:	AVAILABLE THROUGH: Area, Inc.
MATCH 1983 HEF RESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E.
March 1983 HEF DESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102
March 1983 This is a residential energy utilities for residential energy audition by the houses on a yearly basis. The process of the proce	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653
eneral OL NAME: EWIT UNION Square 111 Gold Avenue, S.E. Albuquerque, NM 87102	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY:
March 1983 March 1983	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653
March 1983 March 1983	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY:
March 1983 MEET DESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same
March 1983 MEF DESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same
March 1983 MEF DESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: Same PRONE NO.: PRONE NO.: Same PRONE NO.: Albuquerque and salves of building
March 1983 March	AVAILABLE THROUGH: Area, Inc. Union Square III Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: Liter design tool for analysis of building and
March 1983 March	AVAILABLE THROUGH: Area, Inc. Union Square III Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: Liter design tool for analysis of building and
March 1983 INTERPRESERIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square III Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: Liter design tool for analysis of building and
March 1983 INTERPRESERIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: Liter design tool for analysis of building Il output to examine the timing and
March 1983 MET RESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square III Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: Liter design tool for analysis of building and
COLUMN ST REVISION: March 1983 HEF DESCRIPTION: This is a residential energy untilities for residential energy auditing by the houses on a yearly basis. Her Description: EWIT EVELOPED BY: Area, Inc. Union Square Ill Gold Avenue, S.E. Albuquerque, NM 87102 HE DEVELOPED: September 1983 HE OF LAST REVISION: September 1983 HEF DESCRIPTION: A user friendly microcomputabas by architects, Provides graphical magnitude of loads caused by changes in	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: Liter design tool for analysis of building Il output to examine the timing and
COLUMN TO LAST REVISION: March 1983 HIEF DESCRIPTION: This is a residential energy auditing by the houses on a yearly hasis. COL NAME: EWIT Description: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 TE DEVELOPED: September 1983 TE OF LAST REVISION: September 1983 TEST DESCRIPTION: A user friendly microcomputal loads by architects. Provides graphical magnitude of loads caused by changes in the provide of loads	AVAILABLE THROUGH: Area, Inc. Union Square III Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: 11ter design tool for analysis of building it output to examine the timing and design.
March 1983 MET DESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: ater design tool for analysis of building in output to examine the timing and a design.
March 1983 MEF DESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: ater design tool for analysis of building of output to examine the timing and a design. AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory
March 1983 MET DESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: ater design tool for analysis of building in output to examine the timing and a design.
March 1983 March	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: Same AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Madison, WI 53706
March 1983 MEF DESCRIPTION:	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: Same PHONE NO.: Same PHONE NO.: Leer design tool for analysis of building and design. AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Madison, WI 53706 PHONE NO.: 608-263-1589
ATT OF LAST REVISION:	AVAILABLE THROUGH: Area, Inc. Union Square. 111 Gold Avenue, S.E. Abbuquerque, NM 87102 PHONE NO.: Same PHONE NO.: Same PHONE NO.: Same AVAILABLE THROUGH: University of Wisconsin design. AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Madison, WI 53706 PHONE NO.: 608-263-1589 SUPPORTED BY: University of Wisconsin
March 1983 March	AVAILABLE THROUGH: Area, Inc. Union Square Ill Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Maison, WI 53706 PHONE NO.: 608-263-1589 SUPPORTED BY: Libiversity of Wisconsin Solar Energy Laboratory Maison, WI 53706
March 1983 March	AVAILABLE THROUGH: Area, Inc. Union Square. 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: 505/243-0653 SUPPORTED BY: Same PHONE NO.: Same PHONE NO.: Same AVAILABLE THROUGH: University of Wisconsin design. AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Madison, WI 53706 PHONE NO.: 608-263-1589 SUPPORTED BY: University of Wisconsin
RIEF DESCRIPTION: March 1983 RIEF DESCRIPTION: This is a residential energy utilities for residential energy auditing by the houses on a yearly basis. REPLOPED BY: Area, Inc Union Square III Gold Avenue, S.E Albuquerque, NM 87102 ARE DEVELOPED: September 1983 ARE OF LAST REVISION: September 1983 RIEF DESCRIPTION: A user friendly microcompuuloads by architects. Provides graphical magnitude of loads caused by changes in Solar Energy Laboratory PROPER BY: University of Wisconsin Solar Energy Laboratory TE DEVELOPED: 1976 TE DEVELOPED: 1976 TE OF LAST REVISION: 1980	AVAILABLE THROUGH: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 PHONE NO.: Same PHONE NO.: Same PHONE NO.: ater design tool for analysis of building and design. AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Madison, WI 53706 PHONE NO.: 608-263-1589 SUPPORTED BY: Inniversity of Wisconsin Solar Energy Laboratory Addison, WI 53706 PHONE NO.: Solar Energy Laboratory Attn: Jim Braun PHONE NO.: AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Attn: Jim Braun
RIEF DESCRIPTION: This is a residential energy utilities for residential energy auditing by the houses on a yearly hasis. COL NAME: EWIT EVELOPED BY: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 THE DEVELOPED: September 1983 THE OF LAST REVISION: September 1983 THE OF LAST REVISION: A user friendly microcompusus and an application of loads caused by changes in September 1983 CHART STATE OF LAST REVISION: 1980 CHART STATE OF LAST REVISION: 1980 THE DEVELOPED: 1976 THE DEVELOPED: 1976 THE DEVELOPED: 1976 THE DEVELOPED: 1976 THE DEVELOPED: 1980	AVAILABLE THROUGH: Area, Inc. Union Square. 111 Gold Avenue, S.E. Abbuquerque, NM 87102 PHONE NO.: Same PHONE NO.: 12 Same PHONE NO.: 13 Supported BY: Same AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Madison, WI 53706 PHONE NO.: 608-263-1589 Or air solar water heating on combined water
RIEF DESCRIPTION: This is a residential energy utilities for residential energy auditing by the houses on a yearly hasis. COL NAME: EWIT EVELOPED BY: Area, Inc. Union Square 111 Gold Avenue, S.E. Albuquerque, NM 87102 THE DEVELOPED: September 1983 THE OF LAST REVISION: September 1983 THE OF LAST REVISION: A user friendly microcompusus and an application of loads caused by changes in September 1983 CHART STATE OF LAST REVISION: 1980 CHART STATE OF LAST REVISION: 1980 THE DEVELOPED: 1976 THE DEVELOPED: 1976 THE DEVELOPED: 1976 THE DEVELOPED: 1976 THE DEVELOPED: 1980	AVAILABLE THROUGH: Area, Inc. Union Square III Gold Avenue, S.E. Abbuquerque, NM 87102 PHONE NO.: Same PHONE NO.: Same PHONE NO.: Iter design tool for analysis of building and design. AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Madison, WI 53706 PHONE NO.: 608-263-1589 SUPPORTED BY: Solar Energy Laboratory AVAILABLE THROUGH: University of Wisconsin Solar Energy Laboratory Madison, WI 53706 PHONE NO.: 608-263-1589 SUPPORTED BY: Ilniversity of Wisconsin Solar Energy Laboratory Attn: Jim Braun

3eneral	•
OOL MANE: F-CHART PLUS	AVAILABLE THROUGH: Same
EVELOPED BY: F-Chart Software	Bill Beckman
Box 5562	
Madison, WI 53705	PHONE NO.: 608-263-1590
	SUPPORTED BY: Not specified
ATE DEVELOPED:	
ATE OF LAST REVISION:	
•	PHONE NO.:
Interactive computer progr	on for analysis and design of active and
RIEF DESCRIPTION: Interactive computer progr	ems. Available for TRS 80 Model III and Apple
11.	
Beneral Communication of the C	
TOL MANE: F-CHART SOLAR SYSTEM DESIGN	AVAILABLE THROUGH: Computer Mart, Inc.
	1824 West Maple
VELOPED W: Inatome & Associates 10140 West Nine Mile Road	Trov. MI 48084
Oak Park, MI 48237	
	PHONE NO.: 313-288-0040
	SUPPORTED BY: Joseph Inatome
ATE DEVELOPED:	10140 West Nine Mile Road Oak Park, MI 48237
MATE OF LAST REVISION:	
•	PROME NO.: 313-542-4862 hart method for sizing the residential solar program ELSUL is used to calculate solar us tilts and orientations.
MINT DESCRIPTION: This program uses the F-Ch	nart method for sizing the residential Solar
heating and DHW systems. The p	program ELSUL IS used to carculate some
radiation on surfaces of variou	US Elits and Ottentacions.
_	
3eneral	
MOOL NAME: F-Load Building Load Calculation	AVAILABLE THROUGH:
DEVELOPED BY:	Same
Beckman-Duffie and Associates	
4406 Fox Bluff Road	PHONE NO.: 608-263-1590
Middleton, WI 53562	SUPPORTED BY: Dr. Sandy Klein
OF DELICA OPER	
DATE DEVELOPED: DATE OF LAST REVISION: February 1981	
DATE OF BASI REVISION	
	PHONE NO.: 608-263-1590
BRIEF DESCRIPTION: An interactive computer pro	ogram which calculates monthly/annual building sive buildings as well as economic evaluations
of conservation measures.	3170 0022928,49 00
OI CONSELVATION MEASUREMENT	
General	
FASER	AVAILABLE THROUGH: Mr. Ade Bright
MOD MAS.	Software Engineering Company
Several Fraincering Company	Box 836
Software Engineering Company Box 836	Coattle Washington 98111
Seattle, Washington 98111	PHONE NO.: (206) 852-2522 SUPPORTED BY: Software Engineering Company
	SUPPORTED BY: Software Engineering Company
BATE DEVELOPED:	Box 836 Seattle, Washington 98111
DATE OF LAST REVISION: November 1982	
•	PHONE NO.: (206) 852-2522
MARKET MESCRIPTION: This is a complete data ?	management program which performs energy usage
aslaulatione for large huildings of t	he institutional and industrial type.
output of the program is a complete en	nergy usage report.
	•
General	
	AVAILABLE THROUGH: Solar Energy Design Corporation
TOOL NAME: G-Chart	of America
DEVELOPED BY: Dr. G. F. Lamerio	Box 67
	Ft. Collins, CO 80522
	PHONE NO.:
	SUPPORTED BY: Dr. G. F. Lamerio
DATE DEVELOPED:	Department of Business Colorado State University Ft. Collins, CO 80523
DATE OF LAST REVISION:	Colorado State University
	PE. COLLINS, CO 00020
	PHONE NO: 303-484-2019 ocedure for sizing liquid type active solar energy g and hot water. Each calculation takes IU minutes culator. Weather data and other system constants ied. Basic calculation method used is from F-
evereme for space hearing	g and hot water. Each calculation takes IU minutes
with a four function cale	culator. Weather data and other system constants
for 150 cities are suppl:	ied. Basic calculation method used is from F-

General	
TOOL NAME: GAIN	AVAILABLE THROUGH: David Claudio
DEVELOPED BY: Holguin & Associates	Holguin & Associates
5822 Cromo Drive	5822 Cromo Drive
El Paso, Texas 79912	
	rm/mc m/+: 1_800_351_1061
MATE DEVELOPED:	PUFFURIED DI: HOTOLITE & Accordator
BATE OF LAST REVISION:	5822 Cromo Drive
	El Paso, Texas 79912
	PHONE NO.: 1-800-351-1061
mile mescaliffica: The program calculates the	e beating and cooling loads for commercial
buildings.	
	*** <u>****</u>
	· · · · · · · · · · · · · · · · · · ·
3eneral	
WAOD	
OOL NAME: HACE	AVAILABLE THROUGH:
EAETOLED BA:	Time sharing only
William Tao & Associates, Inc.	
St. Louis, MO	PHONE NO.:
	SUPPORTED BY: WTA Computer Services, Inc.
ATE DEVELOPED:	2357 59th. Street
ATE OF LAST REVISION:	St. Louis, MO 83110
	Attn: Judy Sachs PHONE NO.: 314-644-1400
	PHONE NO.: 314-644-1400
RIEF DESCRIPTION: The program uses thermal r	response factors to calculate the conting and
heating loads for each how	r. Various alternative configurations of HVAC
equipment can then be eval	uated.
· · · · · · · · · · · · · · · · · · ·	
Annead .	
3eneral	
MOOL MANE: HCC-III	AVAILABLE THROUGH, Automoted Decondumns for
EVELOPED BY: Automated Procedures for	AVAILABLE THROUGH: _Automated Procedures for Engineering Consultants (APEC)
Engineering Consultants	Miami Valley Towers, Suite 2100
Dayton, OH	40 West 4th St., Dayton, OH 45402
	PHONE NO.: (513) 228-2602
	PHONE NO.: (513) 228-2602 SUPPORTED BY: Automated Procedures for
MATE DEVELOPED:	Engineering Consultants (APEC)
NATE OF LAST REVISION: 1981	Mismi Valloy Towers Suite 2100
	Wismi Vallay Towers, Suite 2100 40 West 4th St., Dayton, OH 45402
INTER DESCRIPTION. MILL	PHONE NO.: (513) 228-2602
of pork cooling day over party	PHONE NO.: (513) 228-2602 culate coincident cooling load for 12 hours useful for small and large commercial buildin
Of peak Coulting day every month. It is	useful for small and large commercial building
· · · · · · · · · · · · · · · · · · ·	
Zeneral	
DOL MANE:HEATING/COOLING LOAD	AVAILABLE THROUGH: Computer Mart, Inc.
EVELOPED BY: Inatome & Associates	1824 West Maple
Oak Park, MI	Trov, MI 48084
	PHONE NO.: _313-288-0040
ATT DEUT OFFI	SUPPORTED BY: Joseph Inatome
ATE DEVELOPED: ATE OF LAST REVISION:	Inatome & Associates
nes ve undi Abridiva;	10140 West Nine Mile
	10140 West Nine Mile 0ak Park, MI 48237 PHONE NO.:313-542-4862
RIEF MESCRIPTION: This is a heating and cool	line load calculation program broad on 1977
ASHRAE Handbook of Fundamentals.	The program can be used for any five month
spread to search for the month wit	ling load calculation program based on 1972 The program can be used for any five month th the most severe requirements.
ieneral	
OOL NAME: HELIOS	AVAILABLE THROUGH:
EVELOPED BY:	Leonard A. Rydell
Leonard A. Rydell	601 Pinehurst Drive
601 Pinehurst Drive	Newberg, UK 9/132
Newberg, OR 97132	PHONE NO.:
ATE DEVELOPED:	SUPPORTED BY: Leonard A. Rydell
ATE OF LAST REVISION:	
	PHONE NO.: 503-538-5700
RIEF DESCRIPTION: This is a passive solar/he	at loss program written tor skin dominated ables plus window size, shading, orientation
structures. Using 20 vari	ables plus window size, shading orientation
program calculates a month	ly profile of solar gain, auxiliary, and
total heating load includi	ng annual costs for electric, natural gas.
oil or wood heat.	

Beneral	
COL MANE: HOUSE	AVAILABLE THROUGH: Department of Mechanical
EVELOPED BY:	Engineering, University of Washington, Seattle, WA 98195
	Seattle, WA 95193
	PHONE NO.: 206-543-5338
	MUPPORTED BY: As above Attn: Dr. A. F. Emery
ATE DEVELOPED: 1982	Attn: Dr. A. F. Elliely
ATE OF LAST REVISION: 1983	
	y hour simulation technique for solving thermal
RIEF DESCRIPTION: This program uses hour by	y hour simulation technique for solving the had
network. The program is	useful for residential, small commercial and gs. The solar systems which can be evaluated
are passive heating and o	ecolino system
are passive hearing and c	COUTTINE SYSTEMS
ieneral	
OOL MAHE: HUBER	AVAILABLE THROUGH:
EVELOPED BY: Derringer Group	Derringer Group
111 7th Street, N.E. Washington, DC 20002	111 7th Street, N.E.
Washington, DC 20002	Washington, DC 20002 PHONE NO.: (202) 544-5000
	BUFFORTED BY: Derringer Group 111 7th Street, N.E.
ATE DEVELOPED:	III 7th Street, N.E.
ATE OF LAST REVISION: September 1983	Washington DC 20002
	BEOMT #0 · (202) 5//-5000
Tt is a decree hour calcu	PROME NO.: (202) 544-5000 plation program for Single and multi-zoned
required by the equipment is calculat	ed on the basis of seasonal equipment
efficiency.	
	·
General	
TOOL NAME: HUD-RSVP/2	AVAILABLE THROUGH: NTIS
ATURE OPEN BY:	5285 Port Royal Road
Booz, Allen & Hamilton, Inc.	Springfield, VA 22161
Bethesda, MD	
	PHONE NO.: SUPPORTED BY:
1077	Surrokies st.
DATE DEVELOPED: 1977 DATE OF LAST REVISION: 1979	
Burn At Bust universal	
mt	be performance of residential solar heating and
BRIEF DESCRIPTION: The program calculates t	he performance of residential solar heating and methodology used is the F-Chart, along with com-
prehensive economic anal	ysis developed by Booz, Allen & Hamilton, Inc.
P	
	,
General	
	AVAILABLE THROUGH: Bonnie Kelley
TOOL MANE: HVAC PACKAGE	TAC Architects
TAG Architects 1010 Washington Street. Eas	1010 Washington Street, East
Charleston WV 25301	Charleston WV 25301 PHONE NO.: (304) 344-2521 SUPPORTED BY: Bonnie Kelley
UIRLANDENIA PROPERTIES	PHONE NO.: (304) 344-2521
	BUPPORTED BY: Bonnie Keiley
DATE DEVELOPED:	TAG AYCHITECTS
BATE OF LAST REVISION:	1010 Washington Street East Charleston, WV 25301
	PROBE NO.: (304) 1442-2521
marge practitation: The program uses ASHRA	AF steady state method to calculate the heating
and cooling loads for residential an	od commercial buildings.
_	, '
General	
TOOL WANE: IMPSLR	AVAILABLE THROUGH:
DEVELOPED BY:	
Princeton Energy Group	
575 Fwing Street	PHONE NO.:
Princeton, NJ 08540	SUPPORTED BY: Michael Piserchio
DATE DEVELOPED:	
DATE OF LAST REVISION:June 1980	
· ·	200 071 1045
	PRONE NO.: 809-921-1965
BRIEF DESCRIPTION: Interactive design and a	pplying the solar load ratio method, it predicts ds of buildings employing DG, MW, WW for passive rent subsystems in a single building.
the annual auxiliary nee	rent subsystems in a single building.
meating, up to 10 dille	

ieneral	·
OL MANE: INSULATE	AVAILABLE TURNICE. T. I TO I NOT THE
VELOPED BY: Londe. Parker. Michels.	AVAILABLE THROUGH: Londe, Parker, Hichels
St. Louis, MO	150 North Meramec, Suite 205
	St. Louis, MO 63105
	PHONE NO.: 314-725-5501
	SUPPORTED BY: As above
E DEVELOPED:	Attn: Steve Andes
E OF LAST REVISION:	
,	
PT R006519016W. Dil	PNONE NO.:
The program is used to opti	imize the insulation in structures. The
DIOGRAM calculates the buil	lding loads and then with the given economic
criterion, optimizes the in	isulation_thickness.
· · · · · · · · · · · · · · · · · · ·	
•	·*
neral	·
L NAME: ISDP	AVAILABLE THROUGH:
LOPED BY:	Perkins & Wills Group, Inc.
Perkins and Will, Inc.	2 North Incelle Street
Perkins and Will, Inc. 2 North Lasalle Street	2 North Lasalle Street Chicago, 1L 60602
Chicago, II. 60602	PHONE NO.: 312-977-1100
Chicago, IL 60602 (312) 977-1100	PHONE NO.: 312-977-1100 SUPPORTED BY: Same as above
DEVELOPED: 1981	Mr. Guy Gehlhausen
OF LAST REVISION: 1981	nt. ouv Geninausen
· _	PHONE NO.: 312-977-1100 the design of active, passive and hybrid solar
F DESCRIPTION: For use by architects for t	the design of active, passive and hybrid solar
Systems for billiothes. The	9 decien analysis and appeared
are combined in a single br	[DRIAM. MPThodology used is F-Chart and uplay
savings fraction method.	SOLAT MARKET WAS A STAN AND SOLAT
eral	
MAME: LASL 81	AUATIANI P Introvou
LOPED BY:	AVAILABLE THROUGH:
Earth Integral Suite 5	
2655 Portage Bay Avenue	Subur No.
Davis, CA 95816	PHONE NO.:
DEVELOPED:	SUPPORTED BY: Bruce Maeda/Ken Nittler
OF LAST REVISION:	
 	
	BHONE NO. OLG COO TOO!
of DESCRIPTION: The program calculates the r	performance of page 120 golds appears and
including the sunspaces. T	PHONE NO.: 916-920-7334 performance of passive solar energy systems he method used is the solar load ratio method.
<u> </u>	
eral	
~· = ·	
MADE: LOAD GRAPHICS	AVAILABLE THROUGH: Charles Eley
LOPED BY: Charles Eley Associates	Charles Eley Associates
519 Mission Street	519 Mission Street
San Francisco, CA 94105	San Francisco CA WARE
	San Francisco, CA 94105 PMONE NO.: 415-957-1977
,	SUPPORTED BY: Charles Elev Associates
DEVELOPED:	
OF LAST REVISION: 1983	519 Mission Street
· ··· · · · · · · · · · · · · · · · ·	San Francisco, CA 94105
	PRONE NO.: 415-957-1977
MSCRIPTION: This program is based on +h	PROME NO.: 415-957-1977
Booz-Allen and Homilton, Inc. The in-	he methodology developed for U.S. DUE by buts for this program are Similar to those of
the Buehrer method. The output is the	building thermal performance for a typical
day.	- voltaing thermal performance for a typical
eal .	
eral	
MANY, I TURNS	
MARE: LPMTZ	AVAILABLE THROUGH: Londe Parker Michels, Inc.
OPED BY: F. Stephen Andes	150 N. Meramec, Suite 205
londe Parker Michels, Inc.	St. Louis, MO 63105
150 N. Meramec, Suite 205	
St. Louis, MO 63105	PHONE NO.: (314) 725-5501
	RUPPORTED BY: Enertronics Research, Inc.
DEVELOPED: 1977	150 N. Meramec, Suite 205
OF LAST REVISION: 1982	St. Louis, MO 63105
	PNONE NO.: (3)4) 725-5566
processiffice: In terms of modeling technic	que, the Two-Zone uses a dynamic model, simulation based on the hour-to-hour changes in environme
e thermal response of a specific design	n based on the hour-to-hour changes in environme
musicions including the divinal penelli	OI DASSIVE SOLAT INDUITS. The transient nature
	lyzed using transfer functions. A construction

General	·
The MARK METEL Annual Energy Consumption	AVAILABLE THROUGH: United Computing Systems, Inc.
TOOL MAME: MEDSI Annual Energy Consumption SEVELOPED BY: Charles J. R. McClure and	2525 Washington Street
Associates, Inc.	Kansas Ciry, MO 64)08
	PHONE NO.: 816-221-9700
	SUPPONTED BY: Mechanical Engineering Data
BATE DEVELOPED:	Services. Inc. 7616 Big Bend Bouley Id
BATE OF LAST REVISION:	št Louis, MO 63119
	##ANE #0 · 21/2-6/5-6/1/
BRIEF DESCRIPTION: The program calculates the hea buildings. The equipment efficiency are inputs.	ting and cooling energy for commercial ciency and partical performance character-
•	
General	
TOOL NAME: MEPA (Micro-Computer Energy Programs	AVAILABLE THROUGH: Same
DEVELOPED BY: for Architects)	Salle
Brandt Andersson	
184 Moraga Way Orinda,CA 94563	PHONE NO.: (415) 486-4251
Orinda,CA 94563	SUPPORTED BY:
DATE DEVELOPED: January - July, 1981 DATE OF LAST REVISION: September 1982	
DATE OF LAST REVISION. DEPCEMBER 1	
	PHONE NO.:
BRIEF DESCRIPTION: MEPA was developed as a gene.	renome wol: ral building energy analysis tool for residential intended for use by Architects during the ensive, interactive, and accurate energy and usable by Architects.
design sketching stage. It is an inexpe	ensive, interactive, and accurate energy
analysis too which is understandable to	and usable by Architects.
General	· .
TOOL NAME: MICROFIX	AVAILABLE THROUGH:
DEVELOPED BY:	Princeton Energy Group 575 Ewing Street
Princeton Energy Group	Princeton, NJ 08540
575 Ewing Street Princeton, NJ 08540	PHONE NO.:
	SUPPORTED BY: Michael Piserchio
DATE DEVELOPED:	
DATE OF LAST REVISION: 1981	
	PHONE NO.: 609-921-1965
BRIEF DESCRIPTION: This is an interactive progr	am which simulates direct gain of account
sunspaces.	
General	- t C. Farrana Problemen
TOOL NAME: MICROLITE 1.0	AVAILABLE THROUGH: Designer's Software Exchange
	Laboratory of Architecture and Planning
Department of Architecture	Massachusetts Institute of Technology 77 Mass Avenue, Cambridge, MA U2139 PHONE NO.: 617-253-1350
Cambridge MA 02139	PHONE NO.: 617-253-1350
Lambridge, Fix UZIJ9	mirrorred BY: Designer's Software Exchange
BATE DEVELOPED:	Laboratory of Architecture and Planning Massachusetts Institute of Technology
BATE OF LAST REVISION: 1983	
•	PRONE NO.: 617-253-1350 time gives the illumination levels at various and CLE algorithms. Further updates to the
mile macriffica: The program at the present t	time gives the illumination levels at various
program are planned in the near future	re
program are planned in the hear lotte.	
General	
TOOL NAME: MICROPAS	AVAILABLE THROUGH: Enercomp
BEUELOPED BY: Diemoomp	757 Russell Boulevard, Ste A3
757 Russell Boulevard. Ste A3 Davis, CA 95616	Davis, CA 95616
Davis, CA 90010	PHONE NO.: 916/753-3400
	SUPPORTED BY: Enercomp
DATE DEVELOPED: 1981-1982	
DATE OF LAST REVISION: October 1984	
	PHONE NO.: 916/753-3400 nnual hour-by-hour building energy analysis program ne program analyzes the conventional and passive solar itilation for residential and small commercial buildings.
BRIEF DESCRIPTION: MICROPAS is a sophisticated a	nnual hour-by-hour building energy analysis program
for CP/M-80 and MS-DOS microcomputers. Tr	ne program analyzes the conventional and publishings. Itilation for residential and small commercial buildings. On zones, various types of thermal mass, building envelope
aspects of space heating, cooling, and ver	ng zones, various types of thermal mass, building envelope
surfaces of arbitrary orientation, and mod	itilation for residential and small commercial buildings of parties of thermal mass, building envelope letting of heating, cooling, and ventilation systems. If or night to show compliance with the new Title24 Residentia
MICROPAS is certified by the State of Cara	fornia to show compliance with the new Title24 Residentia.
Fact	rov standatos.

General	
TOOL NAME: Modified Degree Day DEVELOPED BY: Syska and Hennessy	AVAILABLE THROUGH:
1100 West 42 Street New York, NY 10036	As above
New York, NY 10036	
	PHONE NO.: 212-921-2300 SUPPORTED BY: As above
DATE DEVELOPED:	<u> </u>
DATE OF LAST REVISION:	
mbd . d	PHONE MO.: 212-921-2300 tree day calculation method. The occupied and un- sidered separately and thus modified degree days are
SRIEF DESCRIPTION: Inls is a modified deg	ree day calculation method. The occupied and un-
used Instead of the us	ual degree days.
On and	
General	
TOOL MARE: MOAUDIT	AVAILABLE THROUGH:
Varkie C. Thomas	Time Charina Only
TAIRLE C. THOMAS	
	PHONE NO.:
BATE DEVELOPED:	BUPPORTED BY: McQuay Group
DATE OF LAST REVISION:	McQuay - Periex, Inc. 13600 Industrial Park Bouleyard
	PHONE #0: 612-533-5330 Minneapolis, Mr. 55440
BRIEF DESCRIPTION: Various energy saving	
of changes in variou	is building envelope parameters can be examined. The management systems and other changes in equipment
The effects of energing can also be studied	y management systems and other changes in equipment
CAO AISO DE STUDIED	
General	
TOOL NAME: NEATWORK	40.44.4.2
DEVELOPED BY: Princeton Energy Group	AVAILABLE THROUGH: Princeton Energy Group
575 Ewing Street Princeton, NJ 08540	575 Eving Street
Princeton, NJ 08540	Princeton, N1 08540
	PHONE NO.: SUPPORTED BY: Michael Piserchio
DATE DEVELOPED:	
BATE OF LAST REVISION: 1981	
	PRONE NO.: 609-921-1965
MILE PESCRIPTION: A general thermal net	work program. The maximum number of building nodes capability Over 30 on any 16K or larger. Up to
10 on 8K single network	rk. Later versioning will be multiple networks
	
Connect	
General	
TOOL MANE: NECAP	AVAILABLE THROUGH: COSMIC
SEVELOPED BY: NASA	Suite 11, Barrove Hall
Langley Research Center	University of Georgia
	Arbens, GA 30602 PHONE NO.: 404-542-3265
DATE DEVELOPED: 1975	SUPPORTED BY: COSMIC
DATE OF LAST REVISION:	Athens, GA 30602
	Attn: Ms. Jenie Ferguson
MIEF DESCRIPTION: The program follows A	Attn: Ms. Jenie Ferguson PHONE NO.: 404-542-3265 SHRAE procedures. Annual heating and cooling loads,
equipment performance	and economic analysis is performed. Inputs consist
of building and system	ms description. Output can be various loads, and
energy uses. Also can	give response factors for various building
components.	
General	
D CHAPT	
NOOL MARE: P-CHART DEVELOPED BY: Dr. G. F. Lamerio	AVAILABLE THROUGH: Solar Energy Design Corporation
	of America P.O. Box 6/
	Ft. Collins, CO 80522
	PHONE NO.:
ATE DEVELOPED:	SUPPORTED BY: Dr. G. F. Lamerio Department of Business
ATE OF LAST REVISION:	Colorado State University
	ft. Collins, CO 80523
RIEF DESCRIPTION: It is a simple design	procedure for determining the onlymm solar anerture
area for passive solar	
18.44 m - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	systems. The data for 200 cities is included. The
basic methodology used	systems. The data for 200 cities is included. The is Solar Load Ratio (SLR).

General	
TOOL NAME: PACE	AVAILABLE THROUGH: NTIS
DEVELOPED BY: Booz, Allen & Hamilton, Inc.	5285 Port Royal Road
Bethesda, MD	Springfield, VA 22161
<u>, </u>	PHONE NO.:
	SUPPORTED BY: Design Tool Manager Buildings Applications Branch
DATE DEVELOPED: 1980	Solar Energy Research Institute
DATE OF LAST REVISION: 1980	IBI/ Cole Biva., Golden, CO 00401
BRIEF DESCRIPTION: The program is based on F-Chart	PHONE NO:: 303-231-1261 and solar load ratio method for active and Comprehensive economic analysis is included. tailed economic analysis. The program has
The program was designed for de	tailed economic analysis. The program has
extensive defaults built into :	At.
General	
TOOL NAME: PASODE	AVAILABLE THROUGH: Londe, Parker, Michels
DEVELOPED BY: Londe, Parker, Michels	150 North Meramec, Suite 205
St. Louis, MO	St. Louis, MO 63105
	PHONE NO.: 314-725-5501
	SUPPORTED BY: As above Attn: Steve Andes
DATE DEVELOPED:	Attn: Steve Andes
DATE OF LAST REVISION:	
BRIEF DESCRIPTION: The program is used for calcul	PHONE NO.: 314-725-5501
BRIEF DESCRIPTION: The program is used for calcul	lating the performance of passive solar
energy systems using solar loa	id ratio method.
General	
TOOL NAME: PASOLE	AVAILABLE THROUGH: National Energy Software Center.
DEVELOPED BY Robert D. McFarland	Argonne National Laboratory
Los Alamos National Laboratory	9700 South Cass Avenue
	Argonne, IL 60439 PHONE NO.: 312-972-7250
	SUPPORTED BY:
DATE DEVELOPED:	
DATE OF LAST REVISION:	
	PHONE NO.:
BRIEF DESCRIPTION: To analyse the thermal perfor	mance of passive solar systems for building
heating. Hour by hour soluti	on of user-defined network.
General	
TOOL NAME: PASS-ONE	AVAILABLE THROUGH:
DEVELOPED BY	Time sharing systems
Energy Management Consultants, Inc.	Denver, CO Through Telenet
Suite 38 672 S. Lafayette Park Place	PHONE NO.:
Los Angeles, CA	SUPPORTED BY: James D. Roberts
DATE DEVELOPED:	
DATE OF LAST REVISION:	
	PHONE NO.: 213-383-3195
BRIEF DESCRIPTION: This program is available on	time sharing network. Will be available
on microcomputer in the next	year. Calculates loads, simple plants.
and systems for residential	or small commercial buildings.
	
General	
n n t older Breder Headhach Hal	TT AVAILABLE THROUGH: NTIS
TOOL MAME: Passive Solar Design Handbook, Vol.	5285 Port Royal Road
Los Alamos National Laboratory	Springileld, VA 22161
University of California	(also available from ASHRAE)
	PHONE NO.:
DATE DEVELOPED:	SUPPORTED BY: J. Douglas Balcomb
DATE OF LAST REVISION:	
	GAMAN MA
enter precentation. The book describes the Calm	r Load Ratio Method for various types of
naceive colar systems. Sen	sitivity studies are given. Design process
is given followed by the ec	onomic analysis procedure.

General	
TOOL MANE: The Passive Solar Energy Book DEVELOPED BY: Edward Mazria 1979	33 East Minor Street
17/7	Emmaus, PA 18049
	PHONE NO.: 215-967-5171 SUPPORTED BY:
DATE DEVELOPED: 1979	
DATE OF LAST REVISION:	
Provides fundamental concept system types and application design along with technical design development.	PHONE NO.: s of solar energy along with various passive s. Rules-of-thumb developed for schematic information for "fine tuning" a system durin
General	
TOOL NAME: PASSOL	AVAILABLE THROUGH: Perkins & Wills Group, Inc
DEVELOPED BY: Perkins & Wills Group. Inc.	2 North LaSalle Street
Chicago, IL	Chicago, IL 60602
	PHONE NO.: 312-977-1100
DATE DEVELOPED:	SUPPORTED BY: As above
DATE OF LAST REVISION:	Mr. Guy Gehlhausen
BRIEF DESCRIPTION: This program contains a buil- solar fraction calculation r- calculated by solar saving f	PHOWE NO.: ding load calculation routine and a passive outine. The passive solar performance is raction method.
General	
TOOL NAME: PEGFIX/PEGFLOAT	AVAILABLE THROUGH:
DEVELOPED BY: Princeton Energy Group	Princeton Energy Group
575 East Street Princeton, NJ 08540	575 East Street Princeton, NJ 08540
1121100011, 110 005-0	PHONE NO.:
DATE DEVELOPED:	SUPPORTED BY: Ms. Sharon McHugh
DATE OF LAST REVISION: September 1978	
BRIEF DESCRIPTION: These programs perform a 24-he sunspaces. They can account heat.	PHONE WO.: 609-921-1965 OUR simulation of direct gain or attached for night insulation, auxiliary and excess
General	
TOOL NAME: PEGSOL	AVAILABLE THROUGH:
DEVELOPED BY: Princeton Energy Group	Princeton Energy Group
575 Ewing Street Princeton, NJ 08540	575 Ewing Street Princeton, NJ 08540
	PHONE NO.:
DATE DEVELOPED:	SUPPORTED BY: Michael Piserchio
DATE OF LAST REVISION: March 1981	
BRIEF DESCRIPTION: Thermal network design tool for hour by hour performance.	PHONE NO.: 609-921-1965 or 2 zone passive solar building, simulated
General	
	Solar Ass August 1001
TOOL NAME: QUICKLITE I DEVELOPED BY: H. Bryan et al	AVAILABLE THROUGH: Solar Age August 1981
Massachusetts Institute of Technology	TT- 97 71
and R. Clear et al	BHONE NO
Lawrence Berkeley Laboratory	PHONE NO.: SUPPORTED BY: None
DATE DEVELOPED:	
DATE OF LAST REVISION:	
	PHONE HO.:
BRIEF DESCRIPTION: A set of programs which uses (the overcast and clear skies t The output of these programs o lation procedures, as well as	ElE sky luminance distribution functions for calculate the daylighting available. Compares well with other daylighting calculations of scale-model measurements.

General	Time share only
TOOL MANE: QUIKEE	AVAILABLE THROUGH:Time share only.
Donald Pedreyra	
Energy Systems Engineers	
Denver CO	PHONE MO. !
MATE DEVELOPED:	SUPPORTED BY: Energy Systems Engineers 8000 E. Girad Ave., Suite 508
BATE OF LAST REVISION:	Denver CO 80231
	
BRIEF DESCRIPTION: The program uses transfer fun	PHONE NO.: 303-696-6241
MIEF DESCRIPTION: Ine program uses transfer for	ilding envelope. The program is suited for
passive solar applications.	
General	
TOOL NAME REAC	AVAILABLE THROUGH: Energy Management Service
TOOL NAME: KEAC DEVELOPED BY: Energy Management Service	434 S.W. Iowa
Portland, Oregon	Portland, Oregon 9/201
	PHONE NO.: 800-547-4232 SUPPORTED BY:
DATE BEVELOPED	SUFFORIED B1.
DATE DEVELOPED: DATE OF LAST REVISION:	Same as above
	FD2 2// 2//2
enter perceptorion. This amount work the decree	PHONE NO.: 503-244-3613 -hour method for calculating residential energy
BRIEF DESCRIPTION: This program uses the degree	effect on heating and cooling by installation
of various conservation measures and acti	effect on heating and cooling by installation ve and passive solar energy systems.
General	
BPAD	
TOOL NAME: REAP	AVAILABLE THROUGH:
DEVELOPED BY:	
Carrier Corporation Carrier Parkway	
	PRONE NO.:
Syracuse, NY 13221	SUPPORTED BY: Mr. Dennis Yeddow
BATE DEVELOPED:	
DATE OF LAST REVISION:	
	PHONE NO.: 315-432-6000
BRIEF DESCRIPTION: The REAP Program calculates i	the operating cost of systems for commercial
<u>huildings</u> Available on Rad:	io Shack microcomputer. Uses bin method alculate the heating/cooling/lighting and
and carrier algorithms to ca	alculate the meating/cooling/lighting and
other energy uses.	
	· · · · · · · · · · · · · · · · · · ·
General	
delici di	
TOOL NAME: RESIDENTIAL ENERGY MANUAL (REM)	AVAILABLE THROUGH:
DEVELOPED BY: Russell G. Derickson, P.E.	Architectural Energy Corporation
Michael J. Holtz, A.I.A.	8752 Yates Drive. Suite 105
	Westminster, CO 80030 PHONE NO.: (303) 428-8228 SUPPORTED BY: Authors and various contract
	SUPPORTED BY: Authors and various contract
DATE DEVELOPED: Fall 1982	R&D clients
DATE OF LAST REVISION: Summer 1984	
enven processorion. 411	PRONE NO.:
BRIEF DESCRIPTION: A complete and comprehensive	REM is not currently available. Only selected
Bedford, Massachusetts: southeast Eno	ing Fairbanks, Alaska; Forsyth, Montana; land; central Belgium and central Netherlands.
Work is in progress to complete REM f	or the entire U.S. and selected foreign location
	•
General	·
TOOL NAME: RESID, LOAD CALC, PGM.	AVAILABLE THROUGH:
DEVELOPED BY:	Paoluccio Willis Nau Assoc.
Paoluccio Willis Nau Assoc.	7175 Construction Court
7175 Construction Court	San Diego, CA 92121
San Diego, CA 92121	
DATE DEVELOPED:	Pacluccio Willis Nau Assoc
BATE OF LAST REVISION: June 1983	Paoluccio Willis Nau Assoc.
	San Diego, CA 92121
	PMONE NO.: (619) 578-5910
SRIEF DESCRIPTION: The program uses ASHRAE GRP	158 procedure for the calculation of heating
and cooling load for residences. These	loads are calculated for equipment sizing
only. The energy requirements for heat:	ing and cooling are not calculated.
	· · · · · · · · · · · · · · · · · · ·

General		
TOOL NAME: RL5	AVAILABLE THROUGH:	McClintock Corporation
DEVELOPED BY: McClintock Corporation		P.O. Box 430980
		Miami, FL 33143
	PHONE NO.:	305-666-1300
ASSESSMENT OF THE SECOND SECON	SUPPORTED BY:	As above
NATE DEVELOPED: NATE OF LAST REVISION:		R. C. McClintock
RIEF DESCRIPTION: The program uses the method	of Air Condition	305-666-1300
of America (ACCA) manual J t	o calculate resid	dential cooling and heating
loads. The loads by rooms a	nd total for the	building is printed out.
General		
MOOL NAME: RL5M DEVELOPED BY: McClintock Corporation	P.O. Box	
BEVELOPED BY: MCCITHEOCK COLDOLATION	Miami, Flo	orida 33143
	PHONE NO.: 30 SUPPORTED BY: Sai	5/666-1300
MATE DEVELOPED:	Attention	: R. C. McClintock
ATE OF LAST REVISION:		
	PHONE NO. : 20	5/666-1300
RRIEF DESCRIPTION: The program uses the method	of Air Condition	ing Contractors Association
of America (ACCA) manual J to calculate :	residential cool:	ing and heating loads. The
loads by rooms and total for the building	g is printed out	•
general		
MOOL NAME: ROOMCALC	AVAILABLE THROUGH:	Dale Missler
EVELOPED BY: Universal Software Applications,	<u>Universal</u>	Software Applications, Inc.
Inc.	13001 Canr	
13001 Cannes St. Louis, Missouri 63141	St. Louis,	Missouri 63141
Dt. 10013; 111330011 03141	SUPPORTED BY: Univ	878-1277 versal Software Applications, Inc
MYE DEVELOPED:	1300	on cannes
MATE OF LAST REVISION:1982	<u> </u>	Louis, Missouri 63141
	PHONE NO.: 314-	-878-1277
This is a heat gain/heat loss	calculation pro	ogram, which is used for small
buildings. The loads for occupied and un The methodology used is ASHRAE steady-sta	ite.	are carculated separately.
enera)		
DOL NAME: SASEP	AVAILABLE THROUGH:	SUB Associates
EVELOPED BY: SUD Associates	Consultin	g Engineers
	1805 Chap	el Hill Road C 27702
	PHONE NO.: 919-	493-5277
	SUPPORTED BY:	
ATE DEVELOPED:		as above
TE OF LAST REVISION:	Attn	: Kevin Vaughan
	PHONE NO.:	
HEF DESCRIPTION: The program calculates the b		
annual energy consumption fo	r buildings. The	e weather data used is the
Din temperature data from Ar	i roice manual.	
enerai		
NOL MAKE: SCM (Simplified Computer Model) (Col	O.AVAILABLE THROUGH:	David Ford
OL MAME: SCM (Simplified Computer Model) (Colvetoped BY: Colorado Office of Energy	Colorado Of:	fice of Energy Conservation
NOL MARK: SCM (Simplified Computer Model) (Col :VELOPED BY: Colorado Office of Energy Conservation	Colorado Of: 1525 Sherman	fice of Energy Conservation n Street, Fourth Floor
NOL MARK: SCM (Simplified Computer Model) (Col :VELOPED BY: Colorado Office of Energy Conservation	Colorado Of: 1525 Sherman Denver, CO	fice of Energy Conservation n Street, Fourth Floor 80203
COL MARE: SCM (Simplified Computer Model) (Columbia BY: Colorado Office of Energy Conservation 1525 Sherman Street, Fourth Floor Denver, CO 80203 303/866-2508	Colorado Of: 1525 Sherman Denver, CO PHONE NO.: 303/86 SUPPORTED BY: Nano	fice of Energy Conservation n Street, Fourth Floor 80203 66-2508 cy Schaleb
COL MARE: SCM (Simplified Computer Model) (Col EVELOPED BY: Colorado Office of Energy Conservation 1525 Sherman Street, Fourth Floor Denver, CO 80203 303/866-2508	Colorado Of: 1525 Sherman Denver, CO PHONE NO:: 303/86 SUPPORTED BY: Nane City of Bou	fice of Energy Conservation n Street, Fourth Floor 80203 66-2508 6cy Schaleb Ider Energy Office
COL MARE: SCM (Simplified Computer Model) (Columbia BY: Colorado Office of Energy Conservation 1525 Sherman Street, Fourth Floor Denver, CO 80203 303/866-2508 MTE DEVELOPED: MTE OF LAST REVISION:	Colorado Of 1525 Sherma Denver, CO PHONE NO.: 303/8 SUPPORTED BY: Nam City of Bou P.O. Box 79 Populdor CO	fice of Energy Conservation n Street, Fourth Floor 80203 66-2508 cy Schaleb lder Energy Office
COL MARE: SCM (Simplified Computer Model) (Col EVELOPED BY: Colorado Office of Energy Conservation 1525 Sherman Street, Fourth Floor Denver, CO 80203 303/866-2508 ATE DEVELOPED: ATE OF LAST REVISION:	Colorado Of 1525 Sherma Denver, CO PHONE NO.: 303/8 SUPPORTED BY: Nam City of Bou P.O. Box 79 Populdor CO	fice of Energy Conservation n Street, Fourth Floor 80203 66-2508 cy Schaleb lder Energy Office
COL MARE: SCM (Simplified Computer Model) (Col EVELOPED BY: Colorado Office of Energy Conservation 1525 Sherman Street. Fourth Floor Denver, CO 80203 303/866-2508 MTE DEVELOPED: MTE OF LAST REVISION: CHEF DESCRIPTION: The program is based on the N	Colorado Of: 1525 Sherman Denver, CO PHONE NO.: 303/60 SUPPORTED BY: Nan. City of Bou. P.O. Box 79 Boulder, CO. PHONE NO.: 303-44	fice of Energy Conservation n Street. Fourth Floor 80203 66-2508 cy Schaleb lder Energy Office 80306 41-3270 ee days merhod and allows
COL MARE: SCM (Simplified Computer Model) (ColeveLoped BY: Colorado Office of Energy Conservation 1525 Sherman Street. Fourth Floor Denver, CO 80203 303/866-2508 ATE DEVELOPED: ATE OF LAST REVISION: RIEF DESCRIPTION: The program is based on the Nover 100 inputs. Occupant behaviour is passive solar energy systems are also eye	Colorado Of: 1525 Sherman Denver, CO PHONE NO.: 303/60 SUPPORTED BY: Nan. City of Bou. P.O. Box 79 Boulder, CO. PHONE NO.: 303-44 BS variable degreats of considered	fice of Energy Conservation n Street. Fourth Floor 80203 66-2508 cy Schaleb lder Energy Office 1 80306 41-3270 ee days method, and allows in the model. Active and

General	
TOOL NAME: Simplified Computer Model (SCM) (Ohio)	AVAILABLE THROUGH: Tom Crown
DEVELOPED BY:	Ohio Department of Energy
Ohio Department of Energy 30 East Broad Street	30 East Broad Street Columbus, OH 43215
30 East Broad Street Columbus, OH 43215	PHONE NO.:
COTUMBUS. OR 43213	SUPPORTED BY: As above
DATE DEVELOPED: 1979	
DATE OF LAST REVISION:	
	PHONE NO.:
BRIEF DESCRIPTION: The program uses modified deg	gree day method to calculate the heat loss.
The output gives the percentage of heat	loss due to each building component's annual The program has Ohio energy units and
weather data built in.	The program has mint energy mints and
	
General	
TOOL NAME: SEIM	AVAILABLE THROUGH: McClintock Corporation
D-VELOPED BY: McClintock Corporation	P.O. Box 430980
	Miami, FL 33143
	PHONE NO.: 305-666-1300
	SUPPORTED BY: As above
DATE DEVELOPED:	Attn: R. C. McClintock
DATE OF LAST REVISION:	
	PHONE NO.: 305-666-1300
BRIEF DESCRIPTION: The program calculates the mor	nthly heat demand, heat supplied by the solar
collector system and percent a	solar using F-Chart method. Weather data for well as the economic analysis program, is
included.	Well as the economic analysis program, is
Included.	
General	
OCINI CI	AVAILABLE THROUGH: Ferreira & Kalasinsky
TOOL NAME: SEA	Associates, Inc., 13 Welby Road
Ferreira & Kalasinsky Associates	P.O. Roy 1-6
Ferreita & Karasinsky Associaces	P.O. Box L-6 New Bedford, MA 02745
	PHONE NO.: 617-996-4499
	SUPPORTED BY: As above
DATE DEVELOPED: DATE OF LAST REVISION:	AS above
•	
BRIEF DESCRIPTION: This program is based upon the	PHONE NO.: 617-996-4499
onerou analysis utilizing a r	moditied him weather merood. The brogram
includes the modules for wear	ther, loads, systems, primary plants,
and financial analysis.	
General	
TOOL MANE: SEE	AVAILABLE THROUGH: Presently will run from data.
peveloped sy: The Singer Company, S. Fleming	Will become available on time sharing.
and Associates and Syracuse	
University	THORE, NO. :
	SUPPORTED BY: Snyder General Corporation
MATE DEVELOPED:	Climate Control Division
DATE OF LAST REVISION:	Auburn, NY 1302; Attn: Philip Parrman
	PHONE NO.: 315-253-2771
SETEP SESCRIPTION: Calculates heating and coo	PHONE NO.: 315-253-2771 ling loads in buildings. Simulates energy
consumption of the entire	building system. Also provides comparative financial analysis of alternative building
EVSTERS.	Timenetal englysis of biternotive paragram
General	
mus CDDC II Belendus Amen.	AVAILABLE THROUGH:
DEVELOPED BY: Sizing Program	Solar Environmental Energy Company
Solar Environmental Energy Company	2524 E. Vine Drive
2524 E. Vine Drive Ft. Collins, CO 80524	Ft. Collins, CO 80524
Ft. Collins, CO 80524	PINIME NO.: SUPPORTED BY: Same
DATE DEVELOPED:	Loren Lantz
DATE OF LAST REVISION: 1978	
	PHONE NO - 202-221-5166
BRIEF DESCRIPTION: The relative areas method is	PHONE NO.: 303-221-5166 a simplification of the F-Chart method and
allows the year to find the	ontimal collector area in one step based on
user specified economic para	meters. Annual solar fraction determined
in one step.	

General	
TOOL MAME: SEEC III Relative Areas	AVAILABLE THROUGH:
Solar Environmental Energy Company	Solar Environmental Energy Company 2524 E. Vine Drive
2524 E. Vine Drive	Ft. Collins, CO 80524
_Ft, Collins, CO 80524	PHONE NO,: SUPPORTED BY: Same
DATE DEVELOPED:	Loren Lantz
DATE OF LAST REVISION:August 1978	
PRIEF DESCRIPTION: For each portion of the huild nine options. The material w construction costs and heating systems.	PRONE NO.: 303-221-5166 ing shell, the program chooses from up to bich optimizes the trade-off between g expenses for both solar and conventional
General TOOL NAME: SEEC VIII Swimming Pool Analysis DEVELOPED BY: Program Solar Environmental Energy Company	AVAILABLE THROUGH: Solar Environmental Energy Company 2524 E. Vine Drive
Solar Environmental Energy Company 2524 E. Vine Drive	Ft. Collins, CO 80524
Ft. Collins, CO 80524	SUPPORTED BY: David Guenther
DATE DEVELOPED: DATE OF LAST REVISION: AUGUST 1980	
DATE OF EAST REVISION: AUBUST 1980	
Active pool heating collected desired performance with this included.	PHONE NO.: ors and/or pool covers can be sized for s program. A life cycle costing is also
General	
TOOL NAME: SEECJ F-CHART DEVELOPED BY: Solar Analysis Solar Environmental Energy Company 2524 E. Vine Drive Ft. Collins, CO 80524 DATE DEVELOPED: DATE OF LAST REVISION: January 1982	AVAILABLE THROUGH: Solar Environmental Energy Company 2524 F. Vine Drive Ft. Collins, CO 80524 PHONE NO.: SUPPORTED BY: David Guenther
BRIEF DESCRIPTION: Heat load analysis program, a Monthly and annual percentage Life cycle costing and economic	solar heating is calculated by F-Chart.
General	•
TOOL NAME: SERI-SLR SEEC-VI	AVAILABLE THROUGH:
Solar Environmental Energy Company	
2524 E. Vine Street Ft. Collins, CO 80524	THOUSE NO
Ft. Collins, CO 80324	PHONE NO.: C. B. Winn/David Guenther SUPPORTED BY: 303-221-5166
DATE DEVELOPED: DATE OF LAST REVISION:	
DATE OF DAST REVISION:	PHONE NO.:
BRIEF DESCRIPTION:	PHONE NO.:
General	
TOOL NAME: SESOP DEVELOPED BY: Lockheed Electronics. Company	AVAILABLE THROUGH: 112 Barrow Hall University of Georgia Athens, GA 30602 PHONE NO.: 404-542-3265
	PHONE NO.: 404-542-3265 SUPPORTED BY: As above
DATE DEVELOPED:	Ms. Jenie Ferguson

PHONE NO.: 404-542-3265

The program is used for the analysis of HVAC systems which use solar energy for Space heating and hor water. Building description is used to calculate hourly load, and then hourly energy demand is calculated. Solar energy contribution is estimated. The detailed calculation take into account all types of internal gains.

General	
TOOL NAME: SHCOST	AVAILABLE THROUGH: COSMIC
DEVELOPED BY: NASA Marshall Space Flight	112 Barrowe Hall
Center	The University of Georgia Athens, GA 30602
	PHONE NO.: 404-542-3265
	SUPPORTED BY: As above
DATE DEVELOPED: 1979	Attn: Jenie Ferguson
DATE OF LAST REVISION:	
	PHONE NO.: 404-542-3265
BRIEF DESCRIPTION: This program can be used for e for residences and small comme GFL method which is in turn ba	conomically sizing the solar energy systems
for residences and small comme	rcial buildings. The basic method used is
GFL method which is in turn ba	of cities is supplied with the program.
of constants for large number	or cities is suppried with the program.
	
General Control	
TOOL HANK: SOL-300 (MC)	AVAILABLE THROUGH: Parks Mitchael
mevalors by: Tennessee valley Authority	Tannaccae Valley Authority
700 West Summit Hill Drive, W4C126	400 West Summit Hill Drive, W4C126 Knoxville, TN 37902
Knoxville, TN 37902	Knoxville, TN 37902
	PNOTE NO.: 615-632-2358
BATE DEVELOPED:	Tennessee Valley Authority 400 West Summit Hill Drive, W4C126 Knoxville, TN 37902
BATE OF LAST REVISION: 1983	Knoxville, TN 3/902
DRIEF DESCRIPTION: This is a thermal network progr	PROME NO.: 615-632-2358
calculate the hourly periormance of Sin	Sie zoneo bulidinks. The average day
performance is then used to estimate the	e monthly and yearly energy requirements.
General	
TOOL NAME: SOL 300 (MF)	AVAILABLE THROUGH: Tennessee Valley Authority
DEVELOPED BY: Tennessee Valley Authority	Architectural Branch
,	400 Summit Hill Drive
	Knoxville, TN 37902
	PHONE NO.: 615/632-3120 SUPPORTED BY:
DATE DEVELOPED:	BULLOWIED DI.
DATE OF LAST REVISION: 5-26-83	
BRIEF DESCRIPTION: SOL 300 is a Fortran computer	PHONE NO.:
BRIEF DESCRIPTION: SUL 300 1s a POTETAN COMPULET	r building An average weather day for each
month is allowed to cycle until the building	reaches equilibrium. Data taken at
equilibrium are used to estimate monthly and	r building. An average weather day for each reaches equilibrium. Data taken at annual loads for an average year.
General	
TOOL MANE: Solar Energy Programs	AVAILABLE THROUGH:
DEVELOPED BY: F-Chart	F-Chart
Box 5562	Box 5562
Madison, WI 53705	Madison, WI 53705 Dr. Sandy Klein
	PHONE NO.: 606-263-5626
DATE DEVELOPED:	SUPPORTED BY: None
DATE OF LAST REVISION: September 1980	
	PRONE NO.:
BRIEF DESCRIPTION: This is a book containing a la	arge number of program listings for TI-59 cograms included are: F-Chart for active solar
PRIE for volar contribution of closed loc	op processes. PHIFAR collector utilizability
method for direct gain passive solar. EU	JN economic analysis and many others. The
terminology used is the same as given in	"Solar Engineering of Thermal Processes" by
Duffie and Beckman.	•
:	
General	
TOOL MAME: SOLAR ENGINEERING LIBRARY	AVAILABLE THROUGH: Sunshine Power Company
DEVELOPED BY: Sunshine Power Company	1018 Lancer Drive
portant tones domparts	San Jose, CA 95129
	PHONE NO.: 408-446-2446
NATE OFFICE OPEN.	SUPPORTED BY: As above Attn: Gary Shramek
DATE OF LAST REVISION:	THE LIE VOLY WILLIAMER
mi. r = 2 223	PHONE NO.: 408-446-2446
BRIEF DESCRIPTION: This is a library of solar p	rograms for calculating radiation on
for active solar systems usi	culation of solar energy system performance
TOT ACTIVE SOTAT SYSTEMS UST	TO E-MALL MELTINGTINGY

General	
TOOL MANE: Solar Reating Systems Design Manual	AVAILABLE THROUGH:
Bell & Cossett ITT	Same
ITT Training & Education Dept. Fluid Handling Division Morton Grove, IL 60053	PHONE NO.: 312-966-3700
Morton Grove, 1L 60053	SUPPORTED BY:
DATE OF LAST REVISION:	Same
BRIEF DESCRIPTION: Manual to calculate and size	PHONE NO.:
<u>applications. Building load</u>	is calculated (DD Method) then active cooling, DHW.
37315H 43 3445V 1V1 HEGELIHS	COOLINE, DUR.
	40 - 400
General	
thou make: SOLARCON 326P and 327P developed by: Solarcon, Inc.	AVAILABLE THROUGH: Solarcon, Inc. 607 Church
Ann Arbor, MI	Ann Arbor, MI 48104
	PHONE NO.: 313-769-6588 SUPPORTED BY: As above
DATE DEVELOPED: DATE OF LAST REVISION:	Dr. Roderich W. Graeff
DATE OF LAST REVISION:	119 7/8 / F00
BRIEF DESCRIPTION: These two programs allow the	evaluation of two different sized surfaces
with and without night insula	ation.
-	
General	
TOOL MAME: SOLARCON 33 DEVELOPED BY: Solarcon, Inc.	AVAILABLE THROUGH: Solarcon, Inc.
Ann Arbor, MI	Ann Arbor, MI 48104
	PHONE NO.: 313-769-6588 SUPPORTED BY: Same as above
DATE DEVELOPED: DATE OF LAST REVISION:	SUPPORTED BY: Same as above Dr. Roderich W. Graeff
DATE OF AND REPORTED.	PHONE NO.: 313-769-6588
BRIEF DESCRIPTION: This program simulates a tr	Ombe wall inetallation calculation the
to it as well as all energy	the trombe wall and the room connected flows to and from the room. The program y or daily effects of trombe wall installa-
tions.	y or daily effects of frombe wall installa-
General	
TOOL NAME: SOLARCON 34 DEVELOPED BY: Solarcon, Inc.	AVAILABLE THROUGH: Solarcon, Inc.
Ann Arbor, MI	Ann Arbor, Ml 48104
	PHONE NO.: 313-769-6588 SUPPORTED BY: Same as above
DATE DEVELOPED:	Supported By: Same as above Dr. Roderich W. Graeff
DATE OF LAST REVISION:	
BRIEF DESCRIPTION: This program simulates a dire	ct gain system with a thermal mass, either
in the floor or in the wall, or filled w distribution in the wall and in the room	ith a liquid, calculating the temperature
the room. The program calculates the ho	as well as all energy flows to and from urly or daily effects of passive direct
General	
TOOL NAME: SOLARCON 35, 36 DEVELOPED BY: Solarcon, Inc.	AVAILABLE THROUGH: Solarcon, Inc.
Ann Arbor, MI	Ann Arbor, MI 48104
	PHONE NO.: 313-769-6588
DATE DEVELOPED:	SUPPORTED BY: As above Dr. Roderich W. Graeff
DATE OF LAST REVISION:	
BRIZE DESCRIPTION: These two programs are based	on the calculation of active solar energy
system performance, by F-Cha	rt method for air and liquid type collectors luate space beating and domestic bot water
systems for residences.	more space nearing and domestic bot water

General		
FOOL NAME: SOLARCON 355 and 365	AVAILABLE THROUGH:	Solarcon, Inc.
DEVELOPED BY: Solarcon, Inc.		607 Church
Ann Arbor, MI		Ann Arbor, MI 48104
	PHONE NO.:	313-769-6588
	SUPPORTED BY:	As above
ATE DEVELOPED:		Dr. Roderich W. Graeff
ATE OF LAST REVISION:		
	PHONE NO.:	313-769-6588
RIEF DESCRIPTION: These two programs are simi	plified F-Chart pr	ograms for active solar
energy system performance	tor air and liquic	<u>l type collectors. The</u> and domestic hot water systems
for residences.	acc space nearing.	And domesers not water systems
3eneral		
COLABOON 27 and 271	AVIATIANTE MINAKAKA	Colomora In-
OOL MANE: SOLARCON 37 and 371	AVAILABLE THROUGH:	Solarcon, Inc.
EVELOPED BY: Solarcon, Inc. Ann Arbor, MI		Ann Arbor, MI 48104
	PHONE NO.: SUPPORTED BY:	313-769-6588
MATE DEVELOPED:	SUPPORTED BI:	As above Dr. Roderich W. Graeff
ATE OF LAST REVISION:		
		712 766 7500
RIEF DESCRIPTION: The program calculates the	flat plate collec	TOT utilizability and evaluated
closed loop solar energy sy	stem The basic	methodology is the one develore
by S. Klein at the Universi	ty of Wisconsin.	methodology is the one develope
Beneral		
OOL NAME: SOLARCON-PASSOLAR	AVAILABLE THROUGH	Solarcon, Inc.
EVELOPED BY: Solarcon, Inc.		607 Church
Ann Arbor, MI		Ann Arbor, MI 48104
	PRONE NO.:	313-769-6588
	SUPPORTED BY:	As above
DATE DEVELOPED:		Dr. Roderich W. Graeff
DATE OF LAST REVISION:		
•	PHONE NO.:	313-769-6588
BRIEF DESCRIPTION: The program consists of the	e main program wh	ich together with a weather
data card allows the estim	ation of the annu	ich together with a weather al performance of passive
solar bulldings incorporati	ing a direct gain	, trombe wall or a water wall
following the solar load r	atio method.	
		·
General		
		
TOOL NAME: SOLCOM	AVAILABLE THROUGH	: Charles R. Booz
Solar Computer Corporation	Denver, CO	uter Corporation
Denver, CO	benver, co	
Deliver, Co	PHONE NO.: 30	3-320-7707
	SUPPORTED BY: A	s ahove
ATE DEVELOPED:		
DATE OF LAST REVISION:		
`.	PHONE NO.:	
BRIEF DESCRIPTION: The program provides an ann	ual energy demand	profile. The energy use is
disaggregated by the end use. The pro	gram identifies v	arious energy contributions,
such as appliances. It also considers	active and passi	ve solar energy systems.
Comprehensive economic analysis is per	Tormed.	***************************************
Beneral		
TOOL NAME: SOLCOST	AVAILARIE THROUGH	: Solar Environmental Energy
DEVELOPED BY: Martin Marietta	Comp	
Aerospace Corporation		
	Ft.	E. Vine Drive Collins, CO 80524
	PHONE NO.: 303_	.221_5166
DATE DEVELOPED: 1978	Solar Fr	oren J. Lantz vironmental Energy Company
DATE OF LAST REVISION: 1979	Ft. Coll	Ins, CO
	PHONE NO.: 303	
BRIEF DESCRIPTION: Calculates heating loads for Calculates a day per month,	or small commercia	lector area for active solar
systems. Latest version ha	as the ability to	calculate passive solar
energy features.		

FOOL MANE: SOLCOST by SOLEC	AVAILABLE THROUGH Solar Energy Corporation
DEVELOPED BY: Simplified version of original Martin Marietta SOLCOST program	553 Pretty Brook
Martin Marietta SOLCOST program	Princeton, NJ 08546
DHW only	PHONE NO : 600_02/_1870 737_1112
	PHONE NO.: 609-924-1879, 737-1112 SUPPORTED BY: Solar Energy Corporation
DATE DEVELOPED:	
DATE OF LAST REVISION:	
	PHONE NO.:
BRIEF DESCRIPTION: Simplified solar domestic hot	water design tool (see enclosed brochure).
· · · · · · · · · · · · · · · · · · ·	
General	
TOOL NAME: SOLITE 1	AVAILABLE THROUGH: SOLITE
TOOL NAME: SOLITE 1	P.O. Box 17581 (5188 Balboa Arms Drive,
P.O. Box 17581	Suite D-8)
P.O. Box 17581 San Diego, CA 92117	San Diego, CA 92117
	PHONE NO.: 714-278-7069
DATE DEVELOPED:	SUPPORTED BY: As above
DATE OF LAST REVISION:	
DATE OF BASI REFERENCE	
	PHONE NO.: 714-278-7069
BRIEF DESCRIPTION: This program converts the cal	culated or measured daylighting factors for
cloudy skies (and optional c.	ear skies) with minimum effort. The program sis for energy savings due to daylighting
arso performs economic analys	c loads for costing, etc.
use and the reduction of pear	TOBUS TOL MUSICINE LELEC
	· · · · · · · · · · · · · · · · · · ·
General	
	•
TOOL MARE: SOLPATH - COMMERCIAL	AVAILABLE THROUGH:
DEVELOPED BY:	
Solar Pathways, Inc.	
Valley Commercial Plaza	PHONE NO.:
3710 Highway 82 Glennwood Springs, CO 81601	
	#UPPORTED BY: Robert Clarke or John Einers
Glennwood Springs CO BIGUI	EUPPORTED BY: Robert Clarke or John Elhers
BATE DEVELOPED: DATE OF LAST REVISION:	BUPPORTED WY: Robert Clarke or John Elhers
DATE OF LAST REVISION:	202 0/E /503
DATE OF LAST REVISION:	202 0/E /503
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a	PNOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a	PNOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a	202 0/E /503
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a	PNOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a	PNOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a	PNOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a algorithms, are used. Overhalds	PNOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered.
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a algorithms, are used. Overhalds	PNOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered.
BRIEF DESCRIPTION: It is a program for calculat: Commercial buildings using a algorithms are used. Overh	PNOWE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Case Avenue
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a algorithms, are used. Overhalds	PNOWE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne. 1L 60439
BRIEF DESCRIPTION: It is a program for calculat: commercial buildings using a algorithms, are used. Overhalds	PHONE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO.: 312-972-7250
BATE DEVELOPED: DATE OF LAST REVISION: SRIEF DESCRIPTION: It is a program for calculat:	PNOWE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHOWE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories
BRIEF DESCRIPTION: It is a program for calculat:	PNOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800
BATE DEVELOPED: DATE OF LAST REVISION: SRIEF DESCRIPTION: It is a program for calculat:	PHONE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque, NM 87185
BRIEF DESCRIPTION: It is a program for calculat:	AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE No.: 312-972-7250 BUFFORTED BY: Sandja Laboratories Division 4722, P.O. Box 5800 Albuquerque, NM 87185
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	PMONE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PMONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PMONE NO.: 505-846-0024 Um based on component method. Calculates the
BRIEF DESCRIPTION: SRIEF DESCRIPTION: It is a program for calculat:	PNOWE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	PNOWE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is
BRIEF DESCRIPTION: SRIEF DESCRIPTION: It is a program for calculat:	PNOWE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is
BRIEF DESCRIPTION: SRIEF DESCRIPTION: It is a program for calculat:	PNOWE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	PNOWE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is
BRIEF DESCRIPTION: SRIEF DESCRIPTION: It is a program for calculat:	PNOWE NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE No.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque, NM 87185 Artn: Norman Yrandjean PHONE No.: 505-846-0024 Im based on component method. Calculates the sample form economic analysis, etc. It is
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE No.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque, NM B7185 Arrn: Norman Yrandjean PHONE No.: 505-846-0024 Ean perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Bell TH
BRIEF DESCRIPTION: BRIEF DESCRIPTION: It is a program for calculat: COMMERCIAL buildings using a algorithms are used. Overh BRIEF DESCRIPTION: SOLTES DEVELOPED BY: Sandia Laboratories DATE DEVELOPED: BRIEF DESCRIPTION: It is a modular solar program performance of systems and companies basically a large buildings General TOOL MANE: STENET Hewlett Packard DEVELOPED BY: Liber's Group	AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHONE NO: 312-972-7250 EUPFORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque, NM 87185 Artn: Norman Yrandjean PHONE NO: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Hewlett Packard User's Group 1000 N. E. Circle Boulevard
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	AVAILABLE THROUGH: Division 4722. P.O. Box 5800 Albuquerque. NM 87185 Attn. Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: AVAILABLE THROUGH: AVAILABLE THROUGH: BUFFORTED BY: Sandia Laboratories Division 4722. P.O. Box 5800 Albuquerque. NM 87185 Attn. Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Hewlett Packard User's Group 1000 N. E. Circle Boulevard Coryallis, OR 97330
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	PMOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PMONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PMONE NO.: 505-846-0024 im based on component method. Calculates the ian perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Hewlett Packard User's Group 1000 N. E. Circle Boulevard Corvallis, OR 97330 PMONE NO.:
BRIEF DESCRIPTION: BRIEF DESCRIPTION: It is a program for calculat: COMMERCIAL BUILDINGS USING A algorithms are used. Overh BRIEF DESCRIPTION: SOLTES DEVELOPED BY: Sandia Laboratories DATE DEVELOPED: BRIEF DESCRIPTION: It is a modular solar program performance of systems and of basically a large buildings General TOOL MAME: STENET Hewlett Packard DEVELOPED BY: User's Group Hewlett Packard User's Group 1000 N. F. Circle Boulevard Corvalis, OR 97330	AVAILABLE THROUGH: Division 4722. P.O. Box 5800 Albuquerque. NM 87185 Attn. Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: AVAILABLE THROUGH: AVAILABLE THROUGH: BUFFORTED BY: Sandia Laboratories Division 4722. P.O. Box 5800 Albuquerque. NM 87185 Attn. Norman Yrandjean PHONE NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Hewlett Packard User's Group 1000 N. E. Circle Boulevard Coryallis, OR 97330
BRIEF DESCRIPTION: BRIEF DESCRIPTION: It is a program for calculat:	PMOWE NO.: 303-945-6503 ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PMONE NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722, P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PMONE NO.: 505-846-0024 im based on component method. Calculates the ian perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Hewlett Packard User's Group 1000 N. E. Circle Boulevard Corvallis, OR 97330 PMONE NO.:
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	PHOME NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHOME NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722. P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHOME NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Hewlett Packard User's Group 1000 N. E. Circle Boulevard Corvallis, OR 97330 PHOME NO.: BUPPORTED BY: Chris Koffin
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	PHOME NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHOME NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722. P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHOME NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Hewlett Packard User's Group 1000 N. E. Circle Boulevard Corvallis, OR 97330 PHOME NO.: BUPPORTED BY: Chris Koffin
BATE DEVELOPED: BRIEF DESCRIPTION: It is a program for calculat:	PHOME NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHOME NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722. P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHOME NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Hewlett Packard User's Group 1000 N. E. Circle Boulevard Corvallis, OR 97330 PHOME NO.: BUPPORTED BY: Chris Koffin
BRIEF DESCRIPTION: BRIEF DESCRIPTION: It is a program for calculat:	PHOME NO.: 303-945-6503 Ing the heating and cooling loads of verage weather data. Basically, ASHRAE angs and wingwalls can be considered. AVAILABLE THROUGH: National Energy Software Center, Argonne National Laboratory 9700 South Cass Avenue Argonne, 1L 60439 PHOME NO.: 312-972-7250 SUPPORTED BY: Sandia Laboratories Division 4722. P.O. Box 5800 Albuquerque. NM 87185 Attn: Norman Yrandjean PHOME NO.: 505-846-0024 Im based on component method. Calculates the can perform economic analysis, etc. It is simulation program. AVAILABLE THROUGH: Hewlett Packard User's Group 1000 N. E. Circle Boulevard Corvallis, OR 97330 PHOME NO.: BUPPORTED BY: Chris Koffin

General	
TOOL NAME: SUNCODE DEVELOPED BY: Tery Wheeling & Larry Palmiler Corms Concept version adapted by	AVAILABLE THROUGH: ECOTOPE, Inc. 2328 E. Madison Avenue Seattle, WA 98112
David Straub	PHONE NO.: 206-322-3753
	SUPPORTED BY: As above
DATE DEVELOPED: 1977-1982	
DATE OF LAST REVISION: July 3, 1982	
Hourly simulation, multi-zone change material, frombe wall, shading, arbitrary orientatio absorption, wind-speed depend heating, cooling, ventilation	ent inflittation, sensible latent load.
General	
TOOL MAME: SUNDAY	AVAILABLE THROUGH:Ecotope, Inc.
DEVELOPED BY: Davis Straub	2328 E. Madison Avenue
2328 F. Madison Avenue	Seattle, WA 98112
Seattle, WA 98112	70/ 200 272
	PHONE NO.: 206-322-3753 SUPPORTED BY: Author (Davis Straub)
DATE DEVELOPED: January 1981 - July 1982 DATE OF LAST REVISION: July 16, 1982	Author (Davis Straub)
	PRONE NO.: 206-322-3753
thermal mass. Seasonal shadin 1 - 4 layers. Design evaluati Conference, Design contest.	ode model. Uses daily weather data, account is heating or cooling set point temperature, by eight vertical orientations of glazing - con tool for Second National Passive Solar
General	
TOOL NAME: SUNEST	AVAILABLE THROUGH:
DEVELOPED BY:	
Earth Integral	
Suite 5 2655 Portage Bay Avenue	PHONE NO.:
Davis, CA 95616	SUPPORTED BY: Bruce Maeda/Ken Nittler
DATE DEVELOPED:	
DATE OF LAST REVISION:	
The program calculates the per using the solar load ratio met	PHONE MO.: 916-920-7334 formance of passive solar energy systems hod.
General	
TOOL NAME: SUNHEAT 1	AVAILABLE THROUGH: Solartek
	R. D. #1, Box 255A
DEVELOPED BY: Solartek R. D. #1, Box 255A	West Hurley, NY 12491
West Hurley, NY 12491	PHONE NO.: 914-679-5366
	SUPPORTED BY:
DATE DEVELOPED: July 1981 DATE OF LAST REVISION: July 1981	
•	PHONE NO.:
BRIEF DESCRIPTION: Evaluates solar hot water s	systems.
General	
amon 4	ANALY A DAM SHIPPONGIL.
TOOL MAME: SUNOP A computer solar design	AVAILABLE THROUGH:
DEVELOPED BY: program Solareoft Inc	Solarsoft, Inc. Box 124
Solarsoft, Inc. Box 124	Snowmass, CO 81654
Snowmass, CO 81654	PHONE NO.:
	SUPPORTED BY: Bill Ashton/Matt Crosby
DATE OF LAST REVISION:FEBRUARY 1982	
DATE OF DASE REFESION	
	PHONE NO.: 303-92/-4411
The program is divided into two the insulation and energy con-	wo sections. The first economically optimize servation levels and then gives the optimize
solar saving fraction and pass	sive collector area. Second optimizes passi
collector area and performs a	yearly cash flow analysis after setting the
building heating load.	

General	
OOL NAME: SUNPAS A computer solar design	AVAILABLE THROUGH:
EVELOPED BY: program	Solarsoft, Inc.
Solarsoft, Inc.	Box 124
Box 124	Snowmass, CO 81654
Snowmass, CO 81654	SUPPORTED BY: Matt Crosby/Bill Ashton
ATE DEVELOPED:	100 to 10
ATE OF LAST REVISION: April 1982	
	PHONE HO.: 303-927-4411
building configuration loca	program based on methodology from LASL. Uses ations t-stat selling. I gains, and other factoog, trombe wall, water wall and sunspaces.
3eneral	
not MANE: Sunpulse II Solar Simulation	AVAILABLE THROUGH: McGraw Hill Book Company
COOL MAME: Sumputse II Solar Simulation	1221 Avenue of the Americas
McGraw Hill Book Company	26th. Floor
1221 Avenue of the Americas	New York NY 10020
26th, Floor	PHONE NO.: 212-997-2388 SUPPORTED BY: John Stockwell
New York, NY 10020	SUPPORTED BY: John Stockwell
ATE DEVELOPED:	
ATE OF LAST REVISION: December 1979	
	PHONE NO.: 212-997-2388
RIEF DESCRIPTION: Three magnetic cards plus .	user's manual will simulate active space and/o
water heating systems inclu	uding some passive gain or will approximate
passive solar contribution	for 1-zone systems. 30 user specified inputs
- 5033110 30101 0010123001201	<u>,, ,, , , ,, ,, ,, ,, ,, ,, ,, ,, ,, ,,</u>
ienera!	
TOOL MAME: SYRSOL	AVAILABLE THROUGH: Department of Mechanical
	Francoring Syracuse injustsity
EVELOPED BY: Syracuse University	Engineering Syracuse University Syracuse NY 13210
Syracuse, NY 13210	Sylatuse, Ni 13210
	PHONE NO.: 215-/22-3038
1076	SUPPORTED BY: Same
MTE DEVELOPED: 1976	
ATE OF LAST REVISION: 1978	Attn: Dr. Manas Ucar
	BMART MO . 215_7.22_303H
	al performance of a multi-zoned building with
MIEP DESCRIPTION: Simulates the nourly therm	water-to-air heat pumps in a closed loop.
a solar assisted series of	ctors can be used along with cooling towers,
	CLOIS CAN be used along with cooling concre,
etc.	
Beneral	
201121 21	
COOL MANE: TEANET III Computer Program	AVAILABLE THROUGH:
EVELOPED BY:	Total Environmental Action, Inc.
Total Environmental Action, Inc.	1 Church Hill
l Church Hill	Harrisville, NH 03450
Harrisville, NH 03450	PHONE NO,:
10111011101 101 V21110	SUPPORTED BY: Pam Carlson
ATE DEVELOPED:	
ATE OF LAST REVISION: January 1981	
	PHONE NO.: 603-827-3374
ners resculption. It is a numerical thermal r	network algorithm for simulating the performan
of passive systems. Maxim	um of 7 nodes can be used. Has a radiation
generator and ambient tempe	erature generator.
Constant and amplete compt	
Deneval .	
Beneral	
MOOL NAME: TRACESOLAR	AVAILABLE THROUGH: The Trane Company,
EVELOPED BY: The Trane Company	Building Energy Systems Engineering,
La Crosse, WI 54601	3600 Pammel Creek Road.
	La Crosse, WI 54601
	PHOME NO.: 608-787-3524
· · · · · · · · · · · · · · · · · · ·	SUPPORTED BY: As above
DATE DEVELOPED: 1973	Attn: Mike Pawdski
DATE OF LAST REVISION: 1980	
PRIOR 41 4-41 1-11-11 3-1-11	
	PNONE NO.: 608-787-3524
BRIEF DESCRIPTION: The program was developed	as an aid to architects and engineers in
comparing life-cycle costs	of various architectural, HVAC systems and
equipment alternatives. I suitable for large building	t is a very detailed simulation program

general	
TRANE Air Conditioning Manual DEVELOPED BY: The Trane Company	AVAILABLE THROUGH:
La Crosse. WI	
	PHONE NO.:
<u> </u>	SUPPORTED BY:
DATE DEVELOPED:	
DATE OF LAST REVISION:	· · · · · · · · · · · · · · · · · · ·
•	PHONE NO.:
BRIEF DESCRIPTION: This book which covers t	he fundamentals and practical applications of
air conditioning.	
General	
	AMARIAND CHINATOTT.
TOOL MAME: TSD DEVELOPED BY:	AVAILABLE THROUGH:
G. K. Associates	G. K. Associates
G. K. Associates 157 Stanton Avenue Auburndale, MA U2166	15/ Stanton Avenue, Audurndate, MA 0210
Auburndale, MA U2166	PHONE NO.: SUPPORTED BY: George W. Kimball
BATE DEVELOPED:	SOFFORIED SI. GEOIRE W. RIMBELL
DATE OF LAST REVISION:	
	PRONE NO.: 617-527-0666
BRIEF DESCRIPTION:	
BRIEF DESCRIPTION:	
	<u> </u>
General	
TOOL MAME: TSWING A computer solar design	AVAILABLE THROUGH:
DEVELOPED BY: program Solarsoft, Inc.	
Box 124	
Box 124 Snowmass, CO 81654	PRONE NO.:
	SUPPORTED BY: Matt Crosby/Bill Ashton
DATE DEVELOPED: DATE OF LAST REVISION: January 1982	
DATE OF EAST RESISTOR: DAMEET & 1702	
•	PHONE NO.: 303-927-4411
	program which calculates the temperature savings
in a building. Particul	arly useful in passive solar structures, for
hybrid system.	mass to prevent overheating. Also considers
11,52.18 010.00.00	
	
General	
TOOL NAME: VDD	AVAILABLE THROUGH: Tamami Kusuda
DEVELOPED BY:	National Bureau of Standards
National Bureau of Standards	Department of Commerce Washington, DC
Washington, DC	PHONE NO.:
	SUPPORTED BY: As above
DATE DEVELOPED:	
DATE OF LAST REVISION:	
•	PHONE NO.:
BRIEF DESCRIPTION: The program uses the ASHR	AE modified degree days to calculate the heating solar features such as greenhouses can be con-
and cooling requirements. Passive s	solar features such as greenhouses can be con-
sidered. The results have been vari	fied with DOE-2 program as being within 10%.
General	
TOOL MANE: W-CHART	AVAILABLE THROUGH: Solar Energy Design
DEVELOPED BY: Dr. G. F. Lamerio	Corporation of America
	Box 67
	Ft. Collins, CO 80522
DATE DEVELOPED:	SUPPORTED BY: <u>Dr. G. F. Lamerio</u> Department of Business Colorado State University
DATE OF LAST REVISION:	Colorado State University
	Ft. Collins. CO 80523
PRIEF DESCRIPTION: It is a simplified proc	edure for determining the optimum collector area
for solar hot water sys	tems. This optimum is based on thermal and
economic ontina It is	a five-step procedure and has the weather data
for 500 cities. The ba	sic methodology used is F-Chart.

TOOL MAME: York Residential Air Conditioning DEVELOPED BY: Estimator Developed by: York	York P.O. Box 1592	
P.O. Box 1592 York, PA 17405	PHONE NO.: SUPPORTED BY: As above	
DATE DEVELOPED: DATE OF LAST REVISION:		
BRIEF DESCRIPTION: <u>It is a slide rule type of n</u> estimations for residents.	PHONE NO.: emograph which allows fo	r air conditioning
WEST GERMANY		
General TOOL NAME: KEFF METHOD	Fraunho	r.Ing.habil Karl Gertis fer-Institut Für Bauphysil
General TOOL NAME: KEFF METHOD	Fraunho Nobelst	fer-Institut Für Bauphysil r. 12. D-7000 Stuttgart 80
General TOOL NAME: KEFF METHOD DEVELOPED BY: K. Gertis, G. Hauser, H. Künzel,	Fraunho Nobelst	fer-Institut Für Bauphysil
General TOOL NAME: KEFF METHOD DEVELOPED BY: K. Gertis. G. Hauser, H. Künzel, V. Nikolic. L. Rouvel, H. Werver DATE DEVELOPED: 1979 - 1983	Fraunho Nobelst PHONE NO.: (0711)	fer-Institut Für Bauphysil r. 12. D-7000 Stuttgart 80
DEVELOPED BY: K. Gertis, G. Hauser, H. Künzel,	PHONE NO.: (0711)	fer-Institut Für Bauphysil r. 12. D-7000 Stuttgart 80

	•	
	·	

