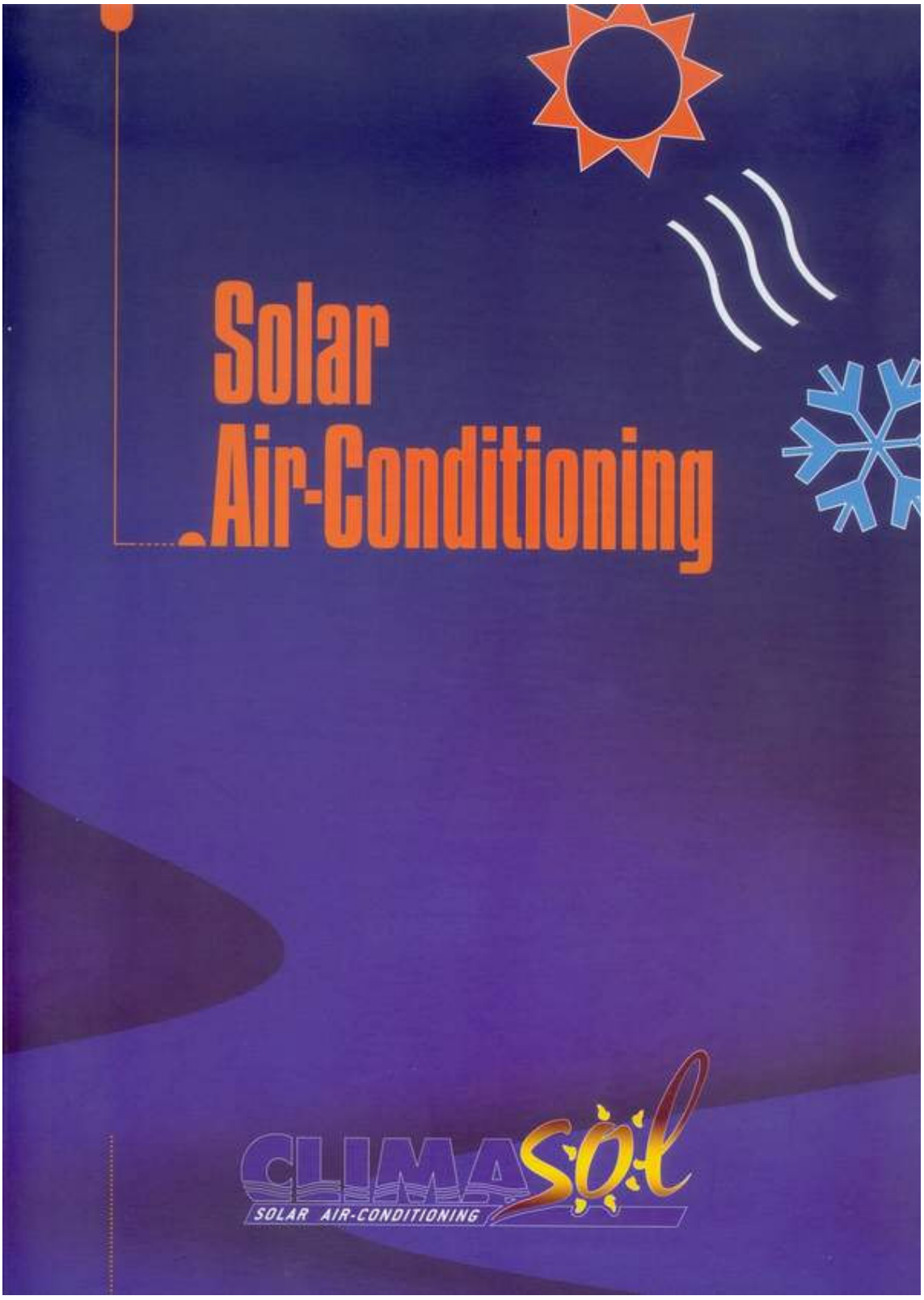
Solar Air-Conditioning



Until yesterday...

...we simply lived under the sun.

The sun warmed us, dried our clothes,

dried our agricultural products,

lit up our lives.

Throughout the ages, technology progressed with the use of oil as the energy source. The industrial society and the population explosion constantly demand energy and our needs are continuously increasing. Now, here we are, just one century after the discovery of oil, and the international scientific community is warning us that these reserves will be exhausted in the very near future.

Free Energy

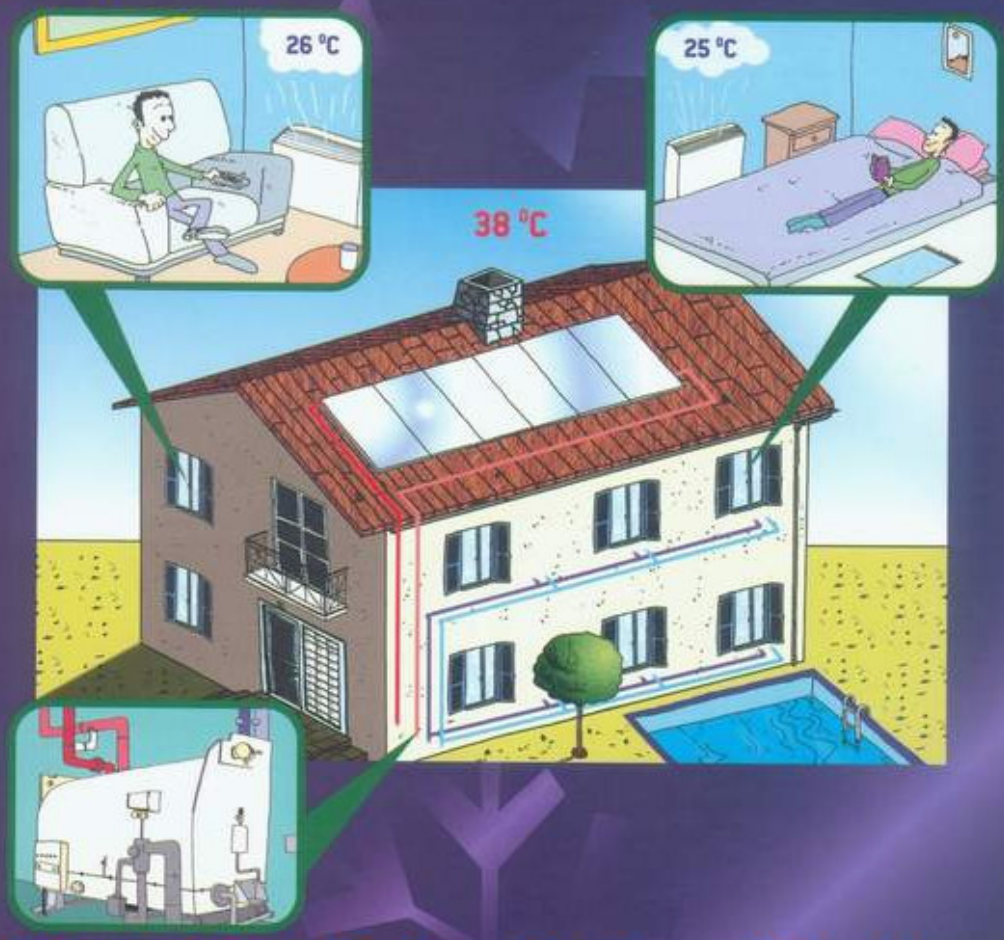
The only inexhaustible energy source around us is the sun. For many years science has been working in the direction of utilizing solar energy. Some of the solar products resulted from these efforts are water heaters, lighting fixtures, vehicles etc. that operate using free energy from the sun.

But can cooling be produced from the sun's heat?

For the regions on our planet which are exposed to solar radiation almost all year round and have an exceptionally warm climate, this is a very significant issue. It is the issue that scientists of all times have pondered over and the solution was found at SOLE's R & D department.

The future is here

Collecting all the scientific data available and using their unique experience of exploiting solar energy for 25 years, SOLE succeeded in being the FIRST IN THE WORLD to make this dream come true on a commercial basis.



CLIMASOL Solar Air-Conditioning

The CLIMASOL system by SOLE is a "product" that produces cooling in the summer and heating in the winter with the exclusive use of solar energy.
It can be installed on any building, existing or under construction and it can be combined simply and easily with all typical air-conditioning systems.
It replaces electricity consumption for cooling in the summer and oil or natural gas for room heating in the winter.

The heart of CLIMASOL

The heart of the Climasol is the super efficient solar collector CLIMASOL manufactured by SOLE, utilizing the TINOX ultra selective surface.

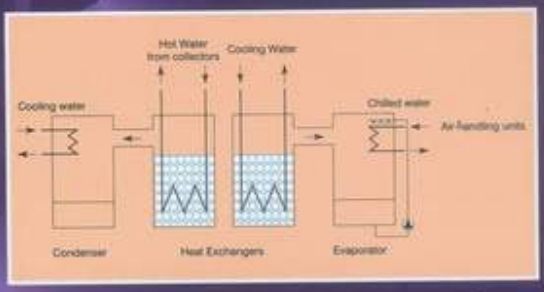
Solar collector CLIMASOL

The "solar chiller" transforms the hot water to cold in a totally natural way by the process of condensation & evaporation of the "cooling medium" (water) under vacuum conditions.

Solar chiller

The brain of CLIMASOL

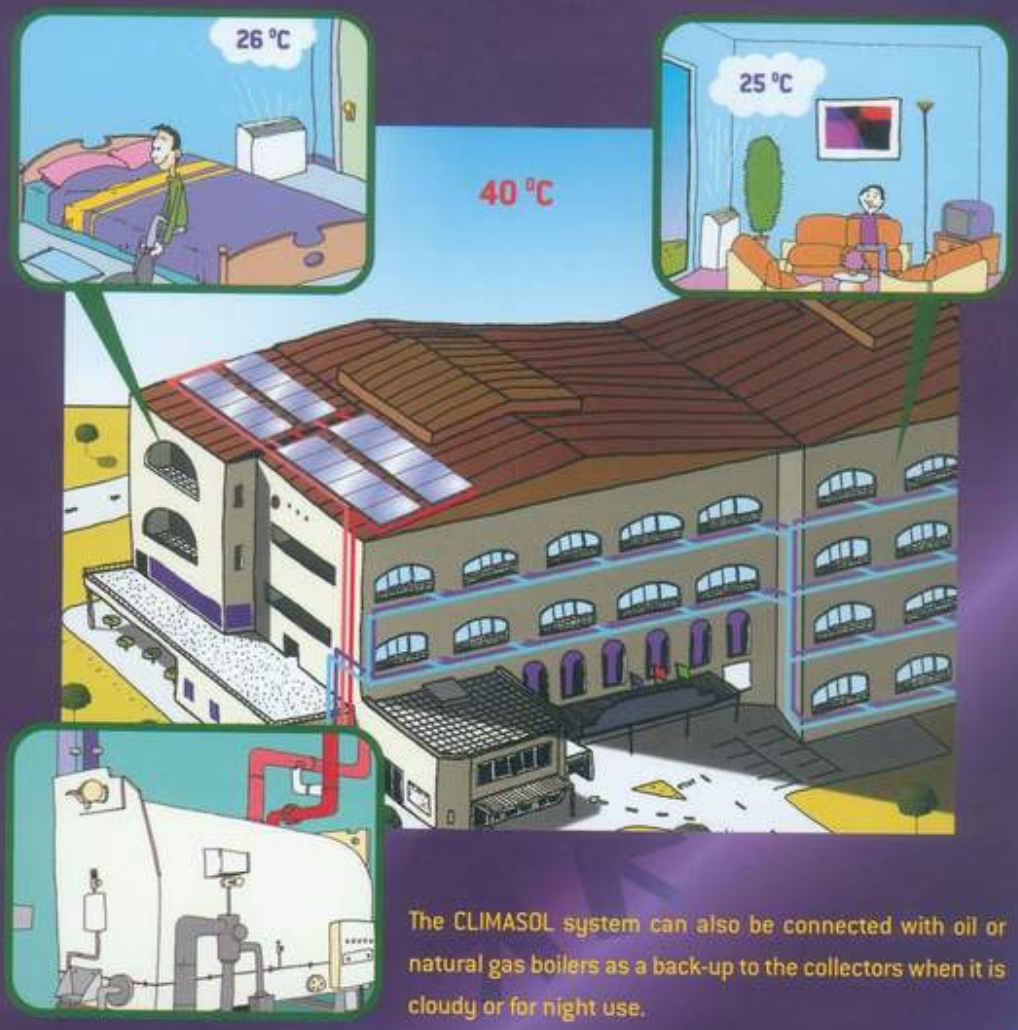
SOLE'S scientists, the SOFTWARE programs that they produce for each application as well as the Computer PLC for the control and operation of CLIMASOL, are the brain of the system.
The operating and adjustment instructions are automatically given according to the desired program of operation. This computer is connected via telephone line and all the operational data of the system are transferred "live" to the owner's or engineer's office. At the same time, the data is also transferred to **SOLE's headquarters** in Athens where all the CLIMASOL systems are checked and controlled.



Summer operation

The way the air-conditioning system works in the summer is quite simple. The energy source is the hot water that the CLIMASOL collectors produce.

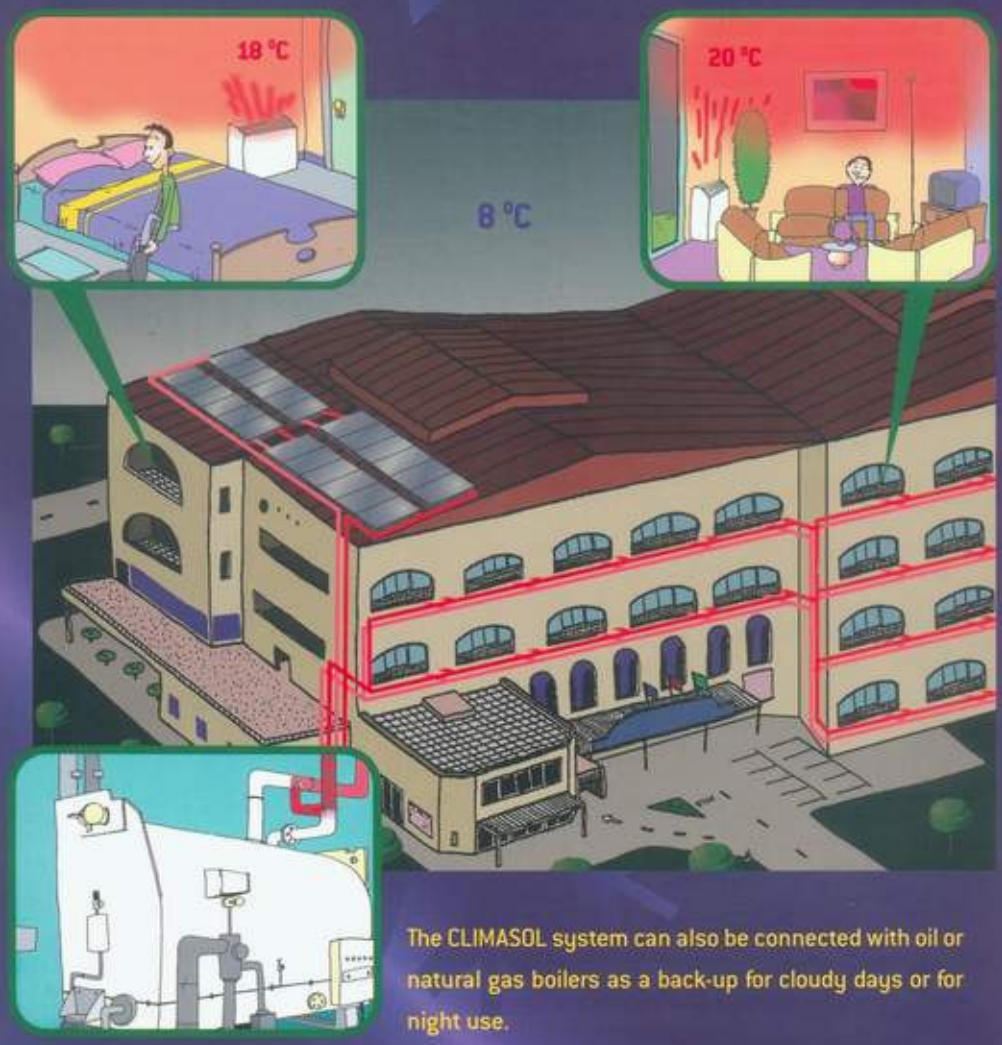
The "solar chiller" uses this energy to produce cold water. The cold water is then led to the air-handling units (fan coils) that supply the cold air. Each room can have a different temperature - depending on the requirements - regulated by its thermostat.



The CLIMASOL system can also be connected with oil or natural gas boilers as a back-up to the collectors when it is cloudy or for night use.

Winter operation

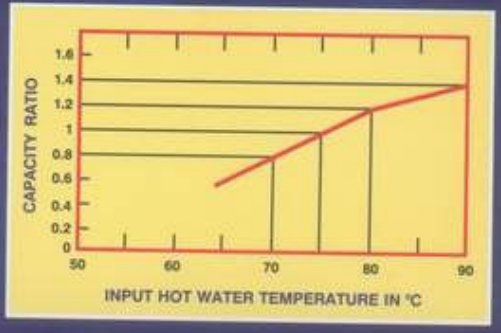
In winter the operation is even simpler. The hot water produced by the collectors goes directly to the air-handling units (fan coils) in the space, bypassing the solar chiller. Thus the rooms are heated by hot air. Once again, each room can have a different temperature according to the desired setting of the thermostat.



The CLIMASOL system can also be connected with oil or natural gas boilers as a back-up for cloudy days or for night use.

Advantages Characteristics

A great advantage of the SOLAR AIR-CONDITIONING SYSTEM CLIMASOL especially during the summer is that the more sun there is, the more "cooling" is supplied in the building. As the temperature of the water rises in the collectors the output of the solar chiller rises too. Therefore there is a total link between peak load and system efficiency.



A CLIMASOL size for you

SOLE offers CLIMASOL in 3 standard sizes from 70 up to 350KW and can cover any large installation using multiple units.

It is ideal for office complexes, manufacturing plants, public buildings, hotels, airports, sports facilities, hospitals and anywhere central air-conditioning is needed. This system is also suitable for large houses.

TECHNICAL SPECIFICATIONS

TYPE	COOLING & HEATING CAPACITY				CLIMASOL COLLECTORS M²	AIR-CONDITIONED AREA (approximate) M²	ANNUAL SOLAR CONTRIBUTION %
	SUMMER		WINTER				
	KW	BTU/HR	KW	KCAL			
CLIMASOL 70	70	240.000	150	130.000	300	1.200-2.000	60-70
CLIMASOL 175	175	600.000	375	325.000	750	3.000-5.000	60-70
CLIMASOL 350	350	1.200.000	750	650.000	1500	6.000-10.000	60-70

SOLE guarantees a reliable design, supply installation and a perfect function of all CLIMASOL systems.

SOLE provides after sales services - of online connection with any CLIMASOL, of engineering support and constant supply of information.

CLIMASOL SOLAR

SOLE IS FI

PROJECT:	«FOTONIO»
OWNER:	SARANTIS S.A.
LOCATION:	INOFYTA - VIOTIAS
AIR-CONDITIONED AREA:	22.000m² - 130.000m³
TYPE OF SYSTEM:	CLIMASOL 2 x 350
CLIMASOL COLLECTOR FIELD:	2.700m²
COOLING CAPACITY:	SUMMER 700 KW
HEATING CAPACITY:	WINTER 1.500 KW
DESIGN - SUPPLY INSTALLATION:	SOLE S.A.
COMMENCEMENT OF OPERATION:	August 15, 1999

AIR-CONDITIONING RST AGAIN

«FOTONIO»
Solar Air-Conditioning Plant

WORLD'S FIRST SOLAR AIR-CONDITIONING

on a commercial basis using flat plate collectors

The history of SOLE

SOLE was founded in 1974 and was the first company in Greece involved in the field of renewable energy sources.

To this day SOLE is a leader in the market of solar systems.

1974: The first company in Greece to produce solar systems.
Produces the well known solar water heater HELIOTHERMO.

1975: The company innovates and applies the closed circuit system for the first time in solar water heaters.
Today this system is used by all the other manufacturers.

1975: For the first time in Europe SOLE installs a **central solar water heating system** in a large hotel.

1979: SOLE installs a solar central heating system covering 90% of the demand of the building for the first time in Greece.

1983: The company presents the revolutionary (at the time) model JUNIOR with an integrated collector and boiler, satisfying even the most demanding aesthetic requirements.

1986: SOLE creates the LECTRON PL 1 electronic thermometer. This thermometer indicates the temperature of the water in the solar system on a display panel in the home.

1993: 10 years later, the JUNIOR is re-developed, renamed ALPHA, and wins a competition held by the Ministry of Industry.

1994: SOLE expands internationally and exports its products to countries like Spain, Germany, Egypt, Morocco, Tunisia, Korea, Malaysia, Indonesia and many more.

1999: SOLE completes the internationally innovative project - production of room **cooling and heating by solar energy.**

1999: SOLE's international innovation in technology for 25 years is rewarded by ISES (International Solar Energy Society), giving SOLE the "ACHIEVEMENT AWARD" and the first prize of $9,000.

Technological Superiority

The philosophy behind SOLE's development was, is and always will be, the production of high technology and high quality products, aimed at the absolute satisfaction of the end customer.
For this reason the company has a special research and development department that is always improving and developing the characteristics of SOLE products.
The products are produced according to the procedures of ISO 9002 quality assurance, CE - mark, and are certified for their reliability and efficiency at institutes such as ELOT (Hellenic National Standards Organization), NCSR DEMOKRITOS (National Solar Laboratory) and TUV Germany.
The technological superiority that SOLE clearly maintains is mainly due to the vast experience SOLE has, to the company's manpower, and to the feeling of responsibility that characterizes SOLE's management.

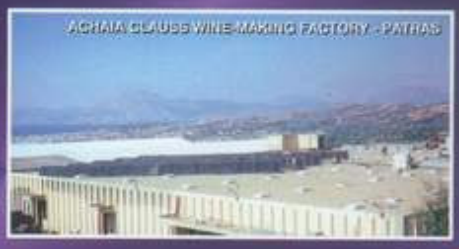
Large projects

Surely it is not by chance that SOLE was chosen for most of the large projects using solar energy in Greece and abroad.


RHOUL PALACE HOTEL - MOROCCO


ATHENS OLYMPIC STADIUM


PEACE AND FRIENDSHIP STADIUM - PIRAEUS


ACHAIA CLAUSS WINE-MAKING FACTORY - PATRAS

Other products by SOLE

EUROSTAR

The solar water heater especially designed for installations also on tiled roofs achieving the best aesthetic result, exported worldwide.

ALPHA

Compact solar water heater with an integrated boiler and collector.
The perfect solution for discrete installations in homes, hotels, bungalows and even tiled roofs.

SunStar

Solar collectors made of polypropylene used exclusively for heating swimming pools. Easy installation and low initial cost.

HELIOTHERMO

"HELIOTHERMO" - The well known solar water heater installed in thousands of roofs all over Greece and whose brand name became synonymous with the product.

PANEL

"Steel Sandwich" type solar collectors for domestic and central installations.

Wasko

Selective surface solar collectors, with high efficiency, low iron safety glass - for large central high demand installations.

CLIMASOL

Solar collectors with the super selective absorber TINOX, with special low iron safety glass, maximum efficiency - for specialized applications like solar air-conditioning.

THERMOMAX

The well-known vacuum tube solar collector from the U.K. Especially made for use in unfavorable weather conditions, reaching very high temperatures.

Airsol

Solar air collectors for direct room heating with hot air.

ASSOS

Electric and electronic water heaters from 40 - 120 liters.
Electro-boilers from 80 - 300 liters and boilers for higher demands from 300 - 1000 liters.

SOLE S. A.

CLIMASOL

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