

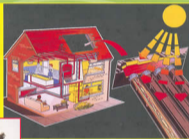


**THERMOMAX®**



**EVACUATED HEAT-PIPE SOLAR COLLECTOR**

**MAZDON  
SOLAR SYSTEM**



**COMMERCIAL & RESIDENTIAL APPLICATIONS**



# THERMOMAX®

## EVACUATED HEAT-PIPE SOLAR COLLECTOR

### THE COMPANY

For over fifteen years, Thermomax has been a world-wide leader in the design and fabrication of advanced vacuum solar thermal systems.

Operating from two modern facilities in Bangor and Blackwood, Thermomax's teams of experts are dedicated to meeting today's energy needs while preserving tomorrow's environment.

The plants occupy 100,000 square feet of engineering and administration offices, manufacturing plants, development laboratories and testing facilities. They are fully automated with specialised tooling for efficient and consistent production.

So far in excess of one million Thermomax collector tubes are in service throughout the world to the satisfaction of users. Installations in the extreme climates such as Scandinavia and Arizona show the exceptional design characteristics of the product.

Thermomax has won several prestigious national and international awards over the years, including two Queen's Awards for Export Achievement and a Design Council Award for an Outstanding Design. The product has also received certification by several testing authorities, including TÜV in Germany. Thermomax has been awarded the ISO 9002 Certification for its quality procedures in both of its manufacturing plants.

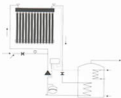


### THE TECHNOLOGY

Variation in climatic conditions in northern countries has limited the benefit of a solar heating collector on cold, windy or cloudy days. Heat losses reduce considerably the performance output of a system. Furthermore, weathering influences such as moisture cause condensation, reducing collector efficiency and deteriorate the panel.

It took over a decade of dedicated work by a team of scientists to develop a solar collector suitable for all types of weather. Thermomax's advanced evacuated 'heat-pipe' solar collector is a breakthrough in solar technology. It is effective throughout the year and saves its users a considerable amount in expensive fuels.

Thermomax's collector performs not only at noon or on clear sunny days, but also when the sun is low or the weather is cloudy. Wind or low temperatures have little effect on its performance. A Thermomax system is simple to install and requires negligible maintenance. The quality and durability of Thermomax solar products have contributed to an unequalled history of achievements in the development and implementation of solar technology. This continues a tradition of innovation begun over four decades ago when NASA invented the heat-pipe. Thermomax brings this superb technology to the market place within a vacuum solar tube for exceptional 'all year, all weather' performance.



Domestic hot water supply  
United Kingdom, 20 Tubes



Domestic hot water and central heating (winter) and  
swimming pool heating (summer).  
United Kingdom, 120 Tubes



# THERMOMAX<sup>®</sup>

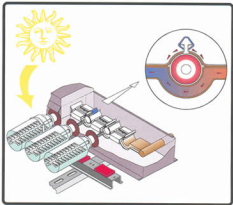
## EVACUATED HEAT-PIPE SOLAR COLLECTOR

### THE PRODUCT

Thermomax solar collectors convert direct and diffuse solar radiation into heat. They efficiently collect and transfer this energy through a collector plate and 'heat-pipe' in an evacuated glass tube, to a highly insulated manifold heat exchanger. The collector plate has a special wavelength 'selective' coating using a semi-conductor layer. This special absorber material converts the maximum amount of solar radiation into heat. Infra-red rays which can pass through clouds are also absorbed and converted into usable heat.

Transfer of heat from the absorber plate to the water is via an efficient and very fast heat conductor, the 'heat-pipe'. This has a very low heat capacity but an exceptionally rapid conductivity. The 'heat-pipe' also provides the system with a diode function i.e. heat transfer is always in one direction — from the absorber to the water and never the reverse. Due to the physical properties of the 'heat-pipe' fluid and the special construction of the condenser, the maximum working temperature of the system can be controlled.

This unique feature eliminates the need for complicated controls and ensures safety in the system. The special fluid inside the



'heat-pipe' evaporates when heated, transferring heat energy to its top. The vapour condenses inside a special condenser and the fluid then returns to its original position, at the bottom of the 'heat-pipe', due to gravity and the cycle is repeated continuously.

The vacuum in the glass tube, being the best possible insulation for a solar collector, suppresses heat losses and also protects the absorber plate and the heat-pipe from external adverse conditions. This results in exceptional performance far superior to any other type of solar collector.



Commercial hot water supply  
Hospital, Lindau, Germany 800 Tubes





Commercial hot water supply  
Changi Airport, Singapore 2000 Tubes



# THERMOMAX<sup>®</sup>

## EVACUATED HEAT-PIPE SOLAR COLLECTOR

### TECHNICAL SPECIFICATIONS

COLLECTOR		CONTROLLER	
			
<b>MAZDON 20</b>	<b>MAZDON 30</b>	<b>SMT 400</b>	<b>SMT 300</b>
Number of Tubes: 20	Number of Tubes: 30	Electrical Voltage: 220-240 V AC	
Dimensions: (W x L x D) 1500 x 2040 x 161mm	Dimensions: (W x L x D) 2210 x 2040 x 161mm	Dimensions: (W x L x D) 160 x 100 x 85mm	
Weight: (Empty) 61 kg (Filled) 91,5 kg	Weight: (Empty) 89 kg (Filled) 89,7 kg	Weight: 0,9 kg	
Capacity 0,5 L	Capacity 0,7 L	Outputs: Pump: 2A (450W) Auxiliaries: 2A (450W)	
Max. Operating Pressure 6 bar	Max. Operating Pressure 6 bar	Sensor Cable Length: Collector: 25 m (Standard) Return: 5 m (Standard) Tank: 5 m (Standard)	
Connections: 22 mm	Connections: 22 mm	Material: Box: Plastic Reverse Printed Display: Large LCD, super twist graphics	
Efficiency $\eta_{10} = 0.80 \quad k_1 = 1.2, \quad k_2 = 0.007 \text{ W/m}^2\text{K}$			

SMT 400 Graphic Display with 4 Sensors

SMT 300 Digital Display with 3 Sensors

### SPECIFICATIONS

Thermomax evacuated solar collectors are specifically designed for operation in all kinds of climates. The size of the collector will depend on the required volume of hot water in a given latitude. A Thermomax collector system consists of an array of

evacuated solar tubes and insulated Mazdon manifolds. This new collector has a special 'dry' connection to the water system which makes it particularly suitable in areas with unfavourable water quality. Supports and brackets for sloping or flat roofs are all made from stainless steel ensuring durability and requiring no maintenance. A solar controller, model SMT300,

regulates the operation of a small circulator. A sophisticated controller, model SMT400, will also provide the user with full information on the performance of the solar heating system.

- Domestic hot water: 30 tubes for a family of up to 4.
- Central heating: 1-3 tubes per m<sup>2</sup> heating area (Central heating is recommended with combination application in summer such as pool heating or spa.)
- Swimming pool heating: approximately 3 tubes per m<sup>2</sup> of surface of indoor or covered outdoor pool.
- Spa/Hot-tub: 60 tubes for up to 1500 litres (Indoor.)



Specifications subject to change without notice.

Thermomax products and production techniques are protected by several patents throughout the world.



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