Product Range

Solahart manufactures "solar thermal" systems. These are mainly used for generating hot water for any application.

"Solar Electric" or "Photovoltaic" (PV) systems are beyond the scope of this manual.

For the benefit of the reader a brief performance comparison between "solar thermal" and "photovoltaic" systems is shown on Section 15-1.

There are two main categories in "solar thermal" systems:

"Passive " and "Active"

A **"Passive"** system relies on a natural principle – "Thermosiphon". In these systems, the storage cylinder is always located higher than the collectors. As the sun's rays hit the surface of the collector, the temperature of the fluid in the collectors rises making it less dense or lighter. This hot and lighter fluid naturally moves to the top of the collector and via the pipe work into the storage cylinder, transferring the energy from the collectors to the storage cylinder. This makes the fluid colder and heavier and moves to the bottom of the collectors. This continuous displacement occurs naturally. These are often referred to as **"PASSIVE" OR "THERMOSIPHON" systems.**

An **"Active"** system uses a circulating pump, operated by an electronic controller, which circulates the closed circuit fluid or potable water, through the collectors. The energy in the collectors, normally located on the roof, is transferred to the closed circuit fluid or potable water and returned to a storage cylinder, normally located at ground level below the level of the collectors. These systems are also referred to as **"PUMP" or "SPLIT" systems.**

A further classification in solar thermal systems is the **"Open Circuit"** system and the **"Closed Circuit"** system.

In an **"Open Circuit"** system the potable water flows through the collectors, whereas in a **"Closed Circuit"** system an appropriate fluid, usually an ***antifreeze*** fluid flows through the collectors and a jacket that envelopes the main storage cylinder or a heat exchanger. The suitability and selection of an **"Open Circuit"** or a **"Closed Circuit"** system is discussed later in this manual.

The Product Range:

- Residential Thermosiphon system
- Split system (Streamline & Aurora) – 'open circuit' split system
- PowerPak – 'closed circuit' split system
- EnergyPak – 'closed circuit' split system
- CombiPak
- Non Residential system – 'closed circuit' split system
- Heat Pump (Sorcerer)
- Mounting Frames
- Gas Booster
- Accessories

"Passive" or "Thermosiphon" Systems

This group of products is normally referred to as **"passive"** or **"thermosiphon"** systems and comprises

- A Storage Cylinder
- One to four Collectors

The Storage Cylinder is of three types

- 'J' Cylinder for "Closed Circuit" systems
- 'K' Cylinder for "Closed Circuit" systems
- 'L' Cylinder for "Open Circuit" systems

The 'J' Cylinder is constructed with a jacket enveloping the main Storage Cylinder, normally referred to as a mantle heat exchanger.

The 'K' Cylinder is similar in construction to the 'J' cylinder. There are additional features, such as a 33 mm anode, a patented alloy element and a polycarbonate tray separating the jacket and the polyurethane insulation.

The 'L' cylinder is a standard cylinder without the jacket.

All the above cylinders are insulated with high density CFC free polyurethane foam and encased in aluminium.

Each type of cylinder is manufactured in several storage capacities

- 150 litres
- 180 litres
- 220 litres
- 300 litres
- 440 litres

All types of cylinders are suitable for mains pressure connection with a maximum inlet pressure of 850 kPa.

Collectors are manufactured and supplied to suit both the open circuit and closed circuit systems.

- "J' Series – suitable for "Closed Circuit" Systems only
- 'K' Series – suitable for "Closed Circuit" Systems only
- 'L' Series – suitable for "Open Circuit" Systems only
- 'M' Series – suitable for both "Open" & "Closed Circuit" Systems

The 'L' series collector is not suitable for "Frost Prone and Harsh Water Regions"

The 'M' series collector is not suitable for "Frost Prone and Harsh Water Regions" when used in an "open circuit" configuration.

The recommended combinations of storage cylinder and collector(s) to form complete systems is shown below:

151J 151K 151L
181J 181K 181L 182J 182K 182L
221J 221K 221L 222J 222K 222L
301J 301K 301L 302J 302K 302L 303J 303K 303L
443J 443K 443L 444J 444K 444L

Examples:

151J is a 150 litre 'J' Storage Cylinder with 1(one) 'J' series Collector
302K is a 300 litre 'J' Storage Cylinder with 2(two) 'K' series Collectors
443L is a 440 litre 'L' Storage Cylinder with 3(three) 'L' series Collectors

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"Active" or "Pump" Systems

These systems can be installed with the collectors on the roof or at an elevated location above the storage cylinder. The storage cylinder can be installed at ground level or at a location below the level of the collectors.

These systems are manufactured in two capacities and supplied under the product names **"Streamline"** and **"Aurora".** The **"Streamline"** is supplied with electric boost and the **"Aurora"** is supplied with gas boost.

"Streamline" systems

- 252SL A 250 litre Storage Cylinder with 2 'L' Collectors
- 303SL A 315 litre Storage Cylinder with 3 'L' Collectors

These Systems are supplied with two 3.6 kW elements fitted in the Storage Cylinders as standard.

"Aurora" systems

- 302SLG – Aurora – A 315 litre Storage Cylinder with 2 'L' Collectors
- 303SLG – Aurora – A 315 litre Storage Cylinder with 3 'L' Collectors

These Systems are supplied with a 13 MJ/hr Gas Booster to be fitted to the Storage Cylinder.

"These systems are not suitable for installation in Frost Prone and Harsh Water Regions"

"Heat Pump" systems

The heat pump refrigeration technology used in this energy efficient Sorcerer hot water system widely used in Europe and the United States is now available in Australia.

The Heat Pump uses an evaporator coil containing low pressure liquid refrigerant, a compressor and a heat exchanger to absorb the energy from the ambient air and transfers it to the water. The heat pump works on a similar principle to a refrigerator, except in reverse. Refer Section 1-15 for a more detailed explanation.

Sorcerer systems are available in two capacities either for residential or for commercial ring main configurations.

- 250HP & 250HPR 250 litre Storage Cylinder
- 315HP & 315 HPR 315 litre Storage Cylinder

"Non Residential (Heat Store)" systems

Non Residential (Heat Store) systems are manufactured in three capacities and supplied as a package with the Heat Store and a predetermined number of 'M' Collectors.

- 2500J 2500 litres between 15 and 24 'M' collectors
- 3500J 3500 litres between 25 and 42 'M' collectors
- 6500J 6500 litres between 43 and 96 'M' collectors

Each size of Heat Store is fitted and supplied with the relevant circulating pump, necessary controls and different types of boosting.

Boosting Options: Optional: Electric or Gas or Electric & Gas or bio mass or coal or steam subject to client specifications.

	Electric	Gas	Electric & Gas
• 2500J	19.2 kW	275 MJ/hr	19.2 kW & 275 MJ/hr
• 3500J	33.6 kW	345 MJ/hr	33.6 kW & 345 MJ/hr
• 6500J	48.0 kW	420 MJ/hr	48.0 kW & 420 MJ/hr

"Active" or "Pump" Systems

These systems can be installed with the collectors on the roof or at an elevated location above the storage cylinder. The storage cylinder can be installed at ground level or at a location below the level of the collectors.

"PowerPak" systems

The PowerPak system is a "Solar Energy Transfer Module" and has a wide range of applications. These systems are specifically designed for, but not limited to, use in frost prone regions, ***hard water*** areas and for hot water demands ranging between 300 and 1,200 litres per day.

The PowerPak systems are designed for connection to remote storage systems and supplied in two capacities.

- 10 kW Module
- 5 kW Module

A 10 kW Module comprises a Heat Exchanger and an insulated drain back cylinder that has a capacity to be coupled with up to 8 'K' Collectors.

A 5 kW Module comprises a Heat Exchanger and an insulated drain back cylinder that has a capacity to be coupled with up to 4 'K' Collectors.

Each Module is supplied with or without push button Electronic Controls.

"EnergyPak" systems

The EnergyPak system is a potable water "Solar Energy Pre Heater Module". The storage cylinder is constructed with a jacket around it that serves as the Heat Exchanger.

The EnergyPak system is supplied in three storage capacities – 325, 150 & 100 litres.

- The EnergyPak 365 comprises a 325 litre Storage Cylinder and a drain back container with a capacity to be connected with 3 'K' Collectors.
- The EnergyPak 150 comprises a 150 litre Storage Cylinder and a drain back container with a capacity to be connected with up to 2 'K' Collectors.
- The EnergyPak 100 comprises a 100 litre Storage Cylinder and a drain back container with a capacity to be connected with 1 'K' Collector.

"CombiPak" systems

The CombiPak is essentially a Storage Cylinder with a delivery capacity of 315 litres and is designed to accept up to two heating elements of any combination.

This product is designed to give flexibility with storage and boosting for water heater applications. It can be used as a stand alone hot water system or in conjunction with any of the above solar hot water systems. It is best suited to be used with the PowerPak as a multi energy hot water storage cylinder.

The CombiPak is suitable for connection with hot water ring main installations.

Boosting options:

- Electric: 1.8 kW to 9.6 kW
- Natural Gas or LPG: 13MJ/hr to 26 MJ/hr

