

# SOLAR

## THERMAL PACKAGES



### KEY PACKAGE FEATURES

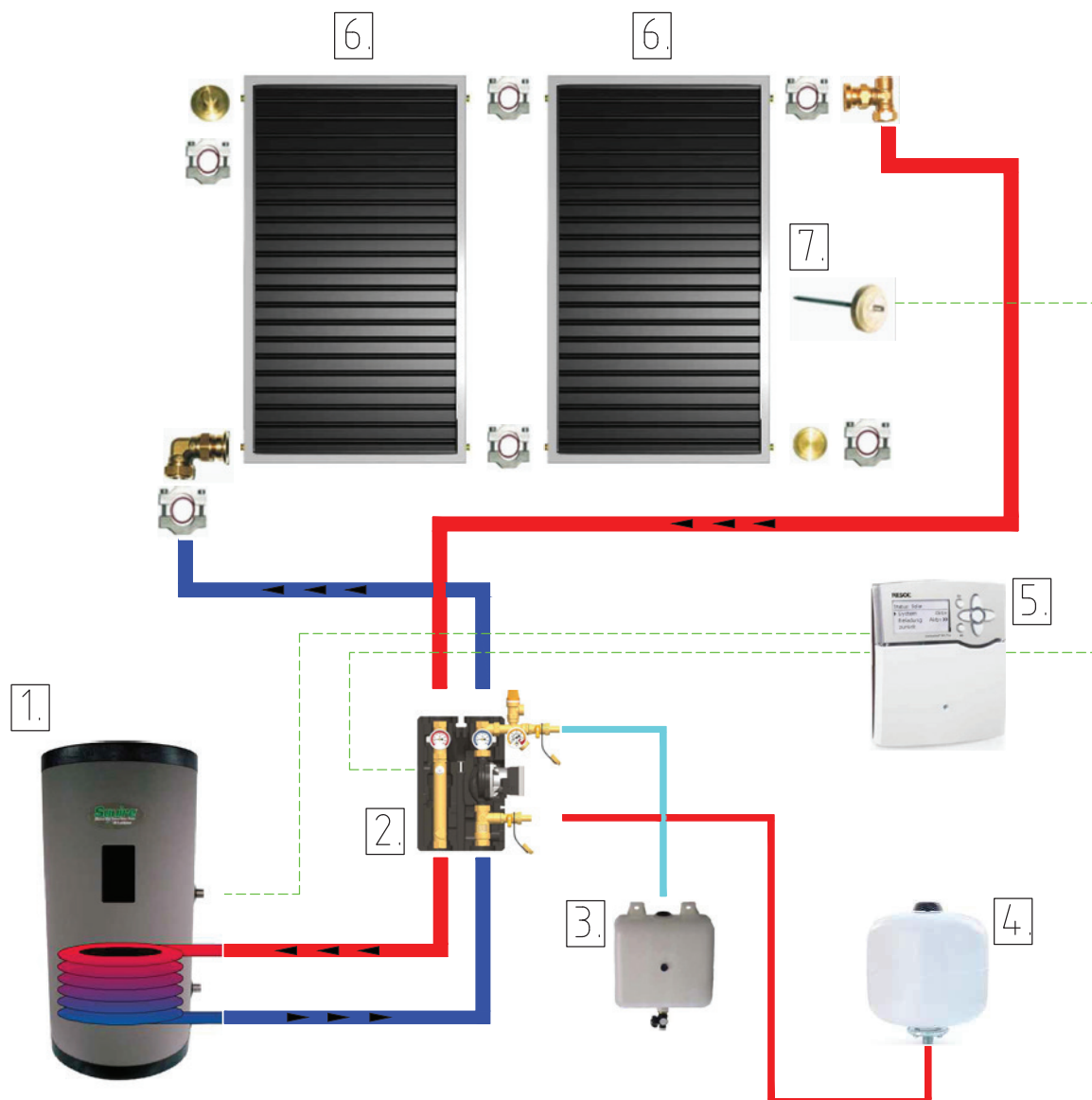
- Flat plate Solar collectors in either Portrait or Landscape versions
- Suitable frames for either on roof, A frame or façade installation
- Solar pump station with safety valve
- Solar controller with BMS alarm module and flow sensor
- Solar expansion vessel
- Glycol
- Solar storage vessel
- 10-year warranty on solar collectors

# Lochinvar

## Solar thermal package

Lochinvar Solar thermal packages provide everything required except pipework and roof fixings including:

1. Solar storage vessel, single coil or twin coil
2. Solar pump station
3. Solar safety valve and collection vessel
4. Solar expansion vessel
5. Solar controller
6. Solar thermal collector with connectors and frames
7. Solar sensor



## Solar collector options

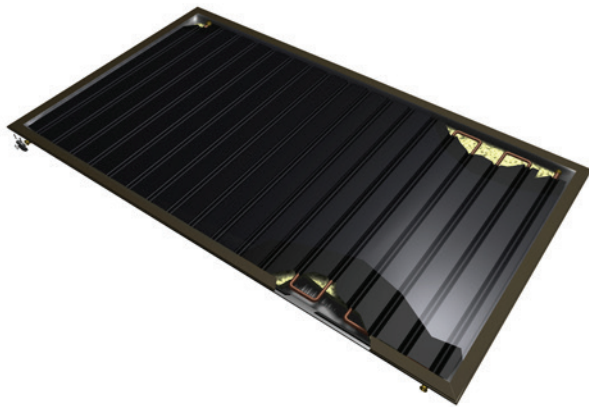
There are three versions of the LSP Lochinvar solar collector, all are a flat plate design to reduce high stagnation temperatures.

All three Lochinvar flat plate collectors have the following standard features:

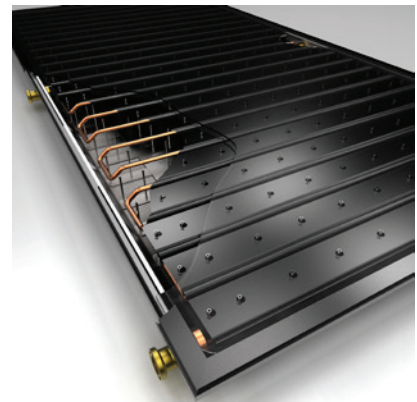
1. Toughened solar glass.
2. One piece Al/Mg tray and frame.
3. Insulation behind the plate (LSP400 versions use a vacuum to provide insulation).
4. Absorber with highly selective coating for low loss light-heat conversion and quick transfer of heat to the pipework behind.
5. Meandering pipework folded into the flat plate, with no welding or brazing there is no fail point.

This system also increases the efficiency of the heat transfer from the plate to the pipework.

6. Quick connection clamps for easy pipework connection.



LSP20+ Solar collector



LSP400 Vacuum solar collector

## Versions available

### LSP20+

This is our standard vertical flat plate collector. It can be installed in a single bank of up to ten collectors.

### LSPH20+

This is a horizontal version of our standard flat plate collector. It can be installed in a single bank of up to five collectors.

### LSP400

This is our vacuum flat plate collector.

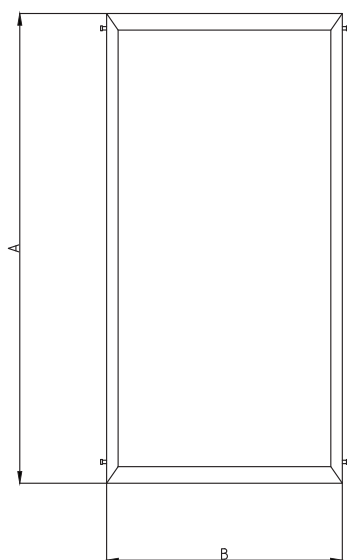
As it is a flat plate vacuum collector it can be used for specialist applications such as:

- Close to the sea.
- In areas with high pollution in the air.
- When collectors need to be laid at a very low angle i.e., almost flat.
- When higher temperatures are required.
- In extreme weather areas, such as very cold or sandy areas.

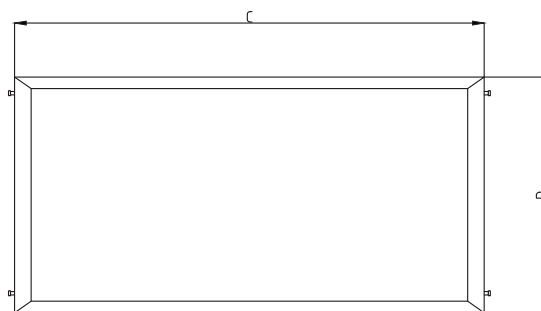
## Technical specification

Collector Identification Reference		LSP20+ Vertical	LSP20+ Horizontal	LSP400
Efficiency no (Aperture)	%	81,49	80,63	79,33
a1a with wind, in relation to aperture	W/(m2K)	3,638	3,729	3,246
a2a with wind, in relation to aperture	W/(m2K2)	0,010	0,013	0,007
Gross surface area	m <sup>2</sup>	2,03	2,03	2,03
Aperture area	m <sup>2</sup>	1,78	1,78	1,85
Collector contents	litres	1,57	1,50	1,57
Weight (empty)	Kg	36,1	36,5	45,3
Max. working pressure	bar	6	6	6
Max. stagnation temperature	°C	196	189	224
Min / max inclination	°	15/90	15/90	5/90
4mm Safety solar glass		yes	yes	yes
Collector material		Copper	Copper	Copper
Test and approvals EN 12975, Solar Keymark ISO 9001		yes	yes	yes
Maximum Number of Panels per bank		10	5	10

Vertical



Horizontal



Collector Identification Reference		LSP20+ Vertical	LSP20+ Horizontal	LSP400
Dimension A	mm	2009	n/a	2009
Dimension B	mm	1009	n/a	1009
Dimension C	mm	n/a	2009	n/a
Dimension D	mm	n/a	1009	n/a



## Frame options available

All versions have three frame options available:

### On roof frame

This frame is used when installing the collectors onto a sloping roof of any type, the final roof fixings are not included as all roof types require specialist fixing methods. Upstands are available to increase the collector pitch if the roof is set at a low angle.



### On roof A frame

This frame is available in three angles, 30°, 45° and 60°. 45° is the optimum for UK installations. The final roof fixings are not included as these roof types require specialist fixing methods.

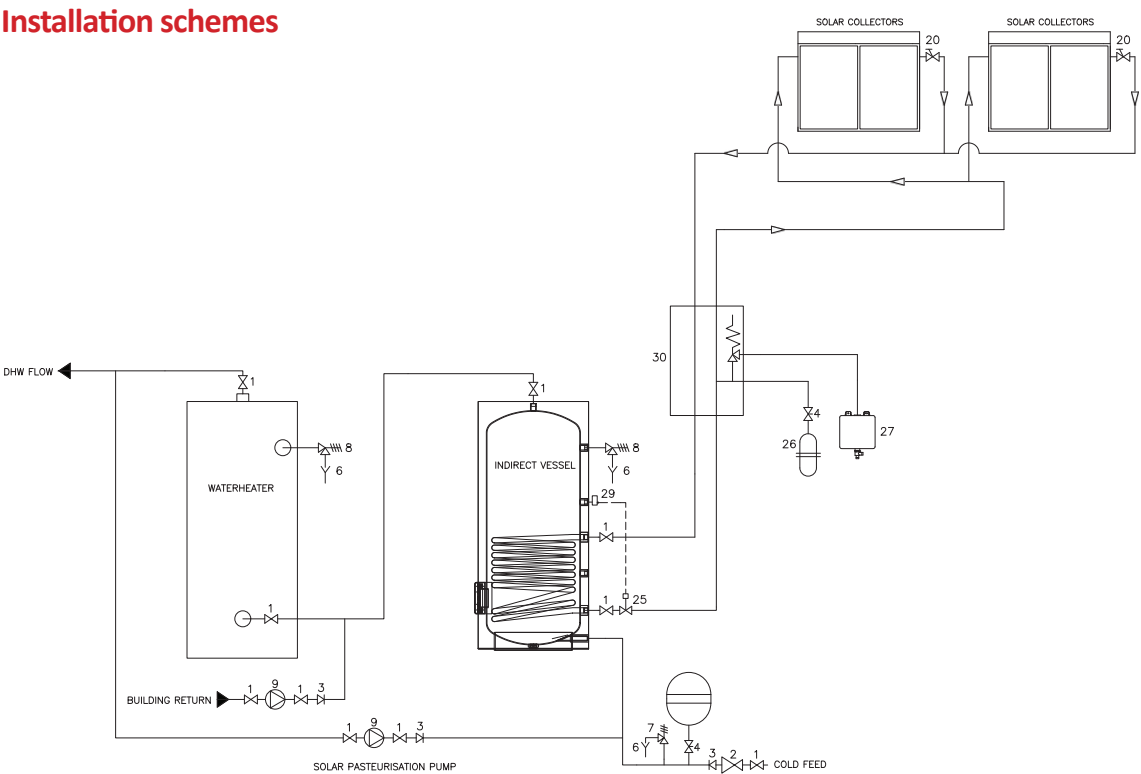


### Façade frame

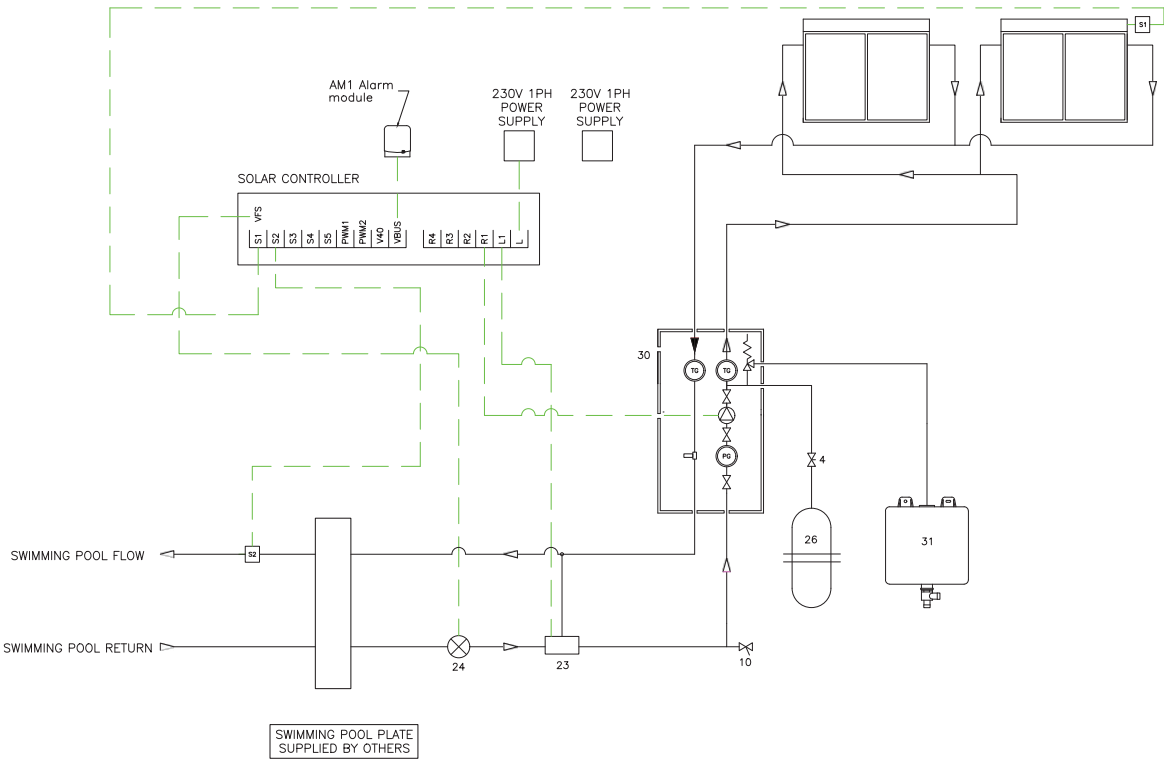
Both the standard on roof and A frame can be used to fix the solar collectors to a façade.



Installation schemes



Standard solar domestic hot water pre-heat system



Solar swimming pool system

## Solar vessels

As part of the package Lochinvar will supply the solar vessel, this can be a standalone system with immersion heaters, twin coil with boilers or a pre-heat system working with one or more from our range of electric or gas fired water heaters or heat pumps.

Vessels are available in stainless steel, glass lined or our HSV thermal store provides a reduced legionella risk as it does not store domestic hot water.



Squire  
indirect water heaters



Squire stainless  
indirect water heaters



HSV  
thermal store

## Case study Liverpool John Moore University

### Key Equipment Supplied:

- 12 x LSP20+ Flat Plate Solar Collectors
- 1 x HSV1250 HSV Thermal Store
- 1 x SHW145-435CE EcoShield™ Gas-Fired Condensing Water Heater

### Project Details

- 11,500m<sup>2</sup>, 6 floor innovative learning accommodation for students.
- Hot water requirement throughout the day for numerous hand wash basins, showers and several small catering facilities.

An integrated solar thermal solution has been supplied to meet the high demand for hot water at Liverpool John Moore University's new city centre Redmond Building.

Building services engineer Matt Ganley oversaw the installation: "We suggested a renewable hot water heating system to the university as the hot water load to the building was expected to be high and we needed to present an energy efficient, low NO<sub>x</sub> solution. We also wanted to ensure the system would be resistant to legionella build-up.

Having worked with Lochinvar in the past, and always found its products to be reliable, efficient and cost effective, its integrated solar thermal solution was our first choice."

The integrated solution included LSP20+ flat plate solar collectors; these feed the HSV Thermal Store which, in turn, provides pre-heated water to the EcoShield<sup>®</sup> gas-fired condensing water heater.

The HSV Thermal Store is able to combine multiple heat sources for the generation of pre-heated water for DHW supply. DHW storage within the HSV is minimal and under normal operating conditions its basic design will not allow the build-up of legionella bacteria. Unlike other renewable preheat systems, HSV does not require a pasteurisation regime, which can be a highly energy intensive process.

EcoShield™ gas-fired condensing water heaters work on the principle of low hot water storage but fast recovery, this makes it particularly suitable to meet the diverse uses of the Redmond Building, reacting rapidly to the students' hot water demand.

[www.lochinvar.ltd.uk/projects/liverpool-john-moore-university](http://www.lochinvar.ltd.uk/projects/liverpool-john-moore-university)



Further information can be found in our solar installation planning guide available at [www.lochinvar.ltd.uk/solar-collectors](http://www.lochinvar.ltd.uk/solar-collectors)



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*Lochinvar Ltd reserves the right to change specifications without prior notice*

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