



Filsol High Efficiency Solar Water Heating Collectors

The SML solar water heating system is centred around the Filsol flat plate collector which has been manufactured at Filsol Solar's factory in South Wales for over 25 years. Based on a high efficiency stainless steel absorber plate, the Filsol collector is widely regarded as one of the most effective, reliable and long lasting solar collectors available.

Key features:

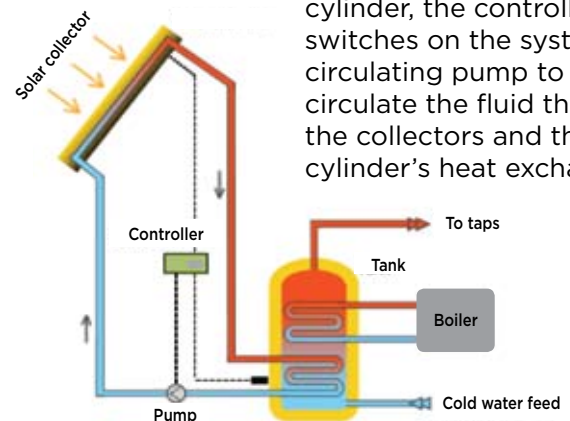
- Stylish modular design with high energy conversion efficiency
- Highly durable to provide long life expectancy in UK climate
- Proven technology with over 25 years successful use
- Available in a range of sizes to facilitate optimal system design
- Available for 'on-roof', 'in-roof' and 'frame-mounted' installation
- Tested to BS EN 12975. Accredited under the Low Carbon Buildings Programme

How it works

Solar water heating systems use high efficiency solar collectors to absorb the sun's energy and heat a transfer fluid which circulates within the collector.

The temperature of the fluid within the solar collector is constantly monitored, via an electronic controller, against the temperature of the water in the solar hot water cylinder. Whenever the collectors are hotter than the

cylinder, the controller switches on the system's circulating pump to circulate the fluid through the collectors and the cylinder's heat exchanger.



Performance

Based on independent evidence, Filsol collectors are proven to generate an average output of 440kWh per m² of collector per year.

A properly designed system can be expected to provide between 60% and 70% of a household's annual hot water requirement, and over 90% of the hot water requirement through the summer months.

Example Specification

The table below provides examples of how solar water heating systems might be sized to meet the requirements of different property types. Outline costs are also provided covering the total equipment and installation excluding VAT costs. Details provided are for illustrative purposes only and actual specifications and costs may vary.

Property Type	Solar Collector Area (m ²)	Solar Cylinder Volume	Expected Thermal Output Per Annum	CO ₂ Displaced* ¹ Per Annum	Outline Installed Cost* ²	Outline Installed Cost after 50% LCBP grant* ³
1 Bedroom 2 Person Flat	2m ²	120 litres	880 kWh	167 kg	£2,950 - £3,250	£1,475 - £1,625
2 Bedroom 3 Person Flat	3.3m ²	160 litres	1,452 kWh	276 Kg	£3,350 - £3,750	£1,675 - £1,875
3 Bedroom 4 Person House	4m ²	200 litres	1,760 kWh	334 kg	£3,700 - £4,250	£1,850 - £2,175
4 Bedroom 6 Person House	6m ²	300 litres	2,640 kWh	501 kg	£4,250 - £4,850	£2,125 - £2,425

*¹ Estimated CO₂ displacement calculations are based on replacing mains gas. Figures will vary for other fuel types.

*² Outline costs are for guidance only and include supply of solar water heating system as well as installation.

*³ Grants of up to 50% of the total equipment and installation costs are available through the LCBP Phase 2 scheme.

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Technical Specification

Collector name	Filsol Solar Stamax
Collector type	Pre-assembled flat plate collector
Installation type	On-roof, in-roof or frame-mounted
Absorber material	Stainless steel (18% Chromium 10% Nickel AISI)
Selective surface	Colourless oxide of Chromium, Iron and Nickel
Solar absorption (α)	0.93
Thermal emission (ϵ)	0.12 at 100°C
Glazing	3mm Acrylic with 89% transmission. 20 year warranty against degradation
Insulation type	Mineral wool (20mm) and Polyisocyanurate foam (20mm)
Exterior trim	Black powder coating to BS53590
Roof angle	20-60 degrees
Tile compatibility	Interlocking and plain tiles, natural and artificial slates

Thermal Performance Data (according to BS EN12975-2)

Zero loss collector efficiency (η_0)	0.714
Collector heat loss coefficient, W/M ² k (a_1)	4.0
W/M ² k (a_2)	0.00132
Collector performance ratio (a_1/η_0)	5.602
Collector performance factor	146.991

Dimensions

	On-roof (single absorber)			In-roof (single absorber)			In-roof (double absorber)		
	FS 14	FS 16	FS 20	IRV/H14	IRV/H16	IRV/H20	IR28	IR33	IR40
Length (mm)	1779	1889	2063	1776	1922	2092	1822	1922	2092
Width (mm)	879	975	1063	866	1017	1092	1792	1972	2142
Thickness (mm)	80	80	80	105	105	105	105	105	105
Gross area (m ²)	1.564	1.842	2.193	1.538	1.955	2.284	3.265	3.790	4.481
Aperture area (m ²)	1.441	1.700	2.021	1.429	1.701	2.009	2.951	3.466	4.112
Absorber area (m ²)	1.410	1.674	1.989	1.410	1.674	1.989	2.821	3.347	3.978
Area of tiles replaced (m ²)	N/A	N/A	N/A	1.538	1.955	2.284	3.265	3.790	4.481
Weight (kg)	38	40	42	40	44	48	80	88	96
Fluid volume (l)	1.12	1.28	1.6	1.12	1.28	1.6	2.24	2.56	3.2

Component List

In addition to the pre-assembled collector, each system includes:

- Solar cylinder (vented or unvented; single or dual coil; stainless steel or copper).
- Flow and control command centre, including Resol Deltasol controller with digital display unit
- Expansion unit, drainback vessel (as appropriate)
- Installation kit, including non-toxic antifreeze, filling pump, pressure reducing valve, sensor and remote cabling, service valves, anti-thermosiphon and fixings
- Electrical connectivity including controller, pump and sensors
- Additional pipework and insulation

Collector Warranty and Life Expectancy

The Filsol collector carries a full warranty for 10 years. The expected life of the collector is in excess of 25 years; this is based on installed collectors which have been in service for more than 25 years. The expected service life of the stainless steel absorber plate is a lifetime (70 years +).