

# LaZer2

## COMMERCIAL SYSTEMS



harnessing the power of the sun to provide you with a

**clean, free & reliable**

heat source

**designed, developed and built in Britain, for Britain**

**sunshine not required**

**high performance even in cold and windy conditions**

### The LaZer2 Solar system will:

- Provide up to 75% of your domestic hot water
- Radically reduce your water heating bills
- Heat your water in summer and winter
- Integrate with all types of heating system
- Require no scheduled maintenance
- Greatly reduce CO<sup>2</sup> emissions

### LaZer2 Solar System Overview

The LaZer2 Solar System is the result of extensive research and development. It has been tested alongside other leading solar hot water systems to ensure that it offers the highest level of performance and the maximum amount of hot water. Designed and built in the UK, the LaZer2 Solar System is based on advanced yet proven technology and has been optimised to work in climates like those of Britain. The compact, stylish LaZer2 Solar Collectors incorporate the most advanced vacuum tube technology, allowing them to heat your water when there is no direct sunshine and it is freezing outside.

The LaZer2 Solar System works with all types of domestic hot water system and will provide free hot water for at least 25 years. A system usually takes a day to fit, requires no scheduled maintenance and no user input once installed.

By using a LaZer2 Solar System to heat your water you will save money and help the environment in the process.

### How to get a LaZer2 solar System

Once we have answered your initial questions a survey is carried out to ensure you get the most suitable system and to confirm the total cost. When we have received your order your bespoke system is manufactured and we normally arrive within 3-4 weeks to fit your system. You can then take advantage of free hot water for the next 25 years!

### Grants & Financial Help

The LaZer2 Solar System is designed and built by a fully accredited manufacturer and is UK Government approved. From April 2011 the Renewable Heat Incentive (RHI) will guarantee long-term payments to installers of solar thermal technologies, with the rate of return likely to be 6%. As a further incentive a fully fitted UK LaZer2 Solar System is normally subject to only 5% VAT (standard rate 17.5%). There are 100% capital allowance schemes as well as interest free loans available for businesses.

### LaZer2 Solar System Features & Benefits

#### LaZer2 Solar Collector

##### All-Glass Vacuum Tubes

Highly efficient, they work as effectively in cold, windy conditions as they do when it is hot. 25-Year warranty against loss of vacuum

##### Horizontally Mounted

Maximises the amount of energy that can be absorbed by automatically compensating for changes in the angle of the sun

##### Curved Collector

Ensures a constant aperture to the sun, increasing energy input compared to systems with flat collectors

##### Direct Water Series Manifold

More efficient than an in-direct 'heat pipe' manifold. A series manifold offers better heat transfer performance than a parallel one

#### TD3 Digital Controller

##### Digital Sensors

More accurate than analogue sensors so more energy gained

##### SMARTlogic

Allows the panel to start heating your cylinder earlier and for longer each day

##### SAFElogic

Protects the system from overheating

### Supplier Details

SolarUK is the retail division of Magpie Technologies Ltd, the leading British Solar Thermal Research & Development company and manufacturer of the LaZer2 system. We don't use sales gimmicks, or high-pressure selling techniques, instead we offer every customer the highest quality products and service at the best possible manufacturers prices. SolarUK can supply systems for anywhere in the world.

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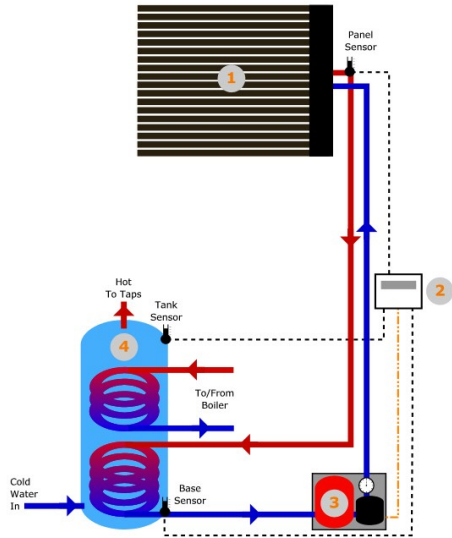
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## How The LaZer2 Solar System Works

The LaZer2 Collectors work just like your existing heat source, except they are powered by free, clean solar energy rather than an expensive, dirty, carbon fuel. The LaZer2 Solar System is your primary heat source. Your boiler, stove or immersion heater will automatically raise the water temperature if required. Even when solar energy levels are low the LaZer2 system will add some heat to the water, so your existing heat source will do far less work. The system comprises of four main components: LaZer2 Solar Collectors, TD3 Digital Controller, Circulation Module and a Hot Water Cylinder.



### 1. LaZer2 Solar Collectors

The 93% efficient LaZer2 vacuum tubes are ideal for cooler climates such as Britain's, as they work virtually as effectively when it is 0°C or 30°C outside. The LaZer2 vacuum tubes have a 25-year warranty, as there is no glass to metal seal that can fail.

The collectors incorporate horizontally mounted vacuum tubes with a curved collecting surface, automatically compensating for varying roof pitches and the change in the Sun's angle throughout the year. Solar energy penetrates the glass and is absorbed by the specially selected coating on the collecting surface. Once absorbed the energy is trapped inside the tube by the vacuum. A unique aluminium heat-sink transfers the trapped energy to the advanced internal manifold, which directly heats the water, minimising energy losses.

A LaZer2 collector will perform better throughout the year than systems with flat-plate collectors, vertically mounted vacuum tubes or 'heat pipes'.

### 2. TD3 Digital Controller

The TD3 Digital Controller is the 'digital heart' of the system. It uses digital sensors to compare the temperature of the water in the collector with that in the calorifier. When the collector is 3°C warmer than the calorifier, the solar pump switches on and the water circulates through the system, transferring heat to the calorifier. If the temperature difference is below 3°C the pump turns off to stop the water in the calorifier being cooled.

The TD3 incorporates SMARTlogic to allow the system to start heating the calorifier earlier and for longer each day. SAFElogic prevents your system over heating during periods of low water usage.

The controller's LCD Display will continually show three temperatures; water entering the collector, water leaving the panel and water in your calorifier.

A 'Solar Pump' indicator illuminates when the circulation pump is operating and your system is producing hot water.

A 'Tank Hot' indicator illuminates when the water in the calorifier reaches the predefined temperature (e.g. 55°C).

### 3. Circulation module

The Circulation Module is made up of the following components:

- **Pressure Gauge** - Shows the pressure within the system
- **Flow Meter** - Indicates the flow rate within the system
- **Pump** - Circulates water around the system
- **Expansion Vessel** - Allows for changes in the water volume inside the system
- **Filling Loop** - Allows the system to be filled
- **One-Way Valve** - Prevents thermo-siphoning during cold periods

### 4. Hot Water Calorifier

The type of calorifier you need depends on your water heating system and hot water usage. We normally recommend the use of stainless steel unvented vessels, however vented units can also be provided.

In buildings with continuous hot water demand, multiple smaller capacity calorifiers can be installed so that the collectors can heat the water to a usable temperature faster, in order to minimise the use of traditional fuels.

A typical LaZer2 system will incorporate a bespoke twin-coil calorifier; the top coil for the boiler circuit and the lower coil (with twice the standard surface area) for the solar circuit. All of our calorifiers are built to order and can be fitted with necessary auxiliary coils and immersions as required.

## Installation & Maintenance

The LaZer2 Solar System is designed for easy installation, and planning permission is not normally required. The low-profile Collectors clip into a unique mounting system that can be fixed on to a pitch roof, flat roof, wall or the ground. It avoids leaks and keeps pipe-work hidden from view.

The Circulation Module will usually be fitted close to your calorifier and will integrate seamlessly with your existing hot water system.

The TD3 will be placed to allow you to monitor the system.

The LaZer2 Solar System has been designed and manufactured in Britain to the highest of European standards (EN12975-1). Once installed no scheduled maintenance is required. The non-toxic anti-freeze and corrosion inhibitor will provide protection for the life of the system. The extra smooth glass will even clean itself.

## LaZer2 Solar Thermal Collector Specifications

<b>Collector Type</b>	LaZer2 Direct Water
<b>Absorber Area</b>	0.80 m <sup>2</sup>
<b>Aperture Area</b>	0.93m <sup>2</sup> (1m <sup>2</sup> )
<b>Gross Area</b>	1.35m <sup>2</sup>
<b>Total Length</b>	2110 mm
<b>Total Width</b>	615 mm
<b>Total Depth</b>	104mm (manifold 113mm)
<b>Total Weight</b>	43kg
<b>Operating Pressure</b>	< 4 bar
<b>Design Life</b>	> 25 years
<b>Vacuum Tube</b>	High-borosilicate Glass
<b>Tube Diameter</b>	58 mm
<b>Tube Length</b>	1960 mm
<b>Vacuum</b>	P = 5 x 10 <sup>-2</sup> Pa
<b>Tube Strength</b>	Tested to withstand a 25mm hailstone
<b>Absorber</b>	Wavelength Selective Coating AL-N/AL
<b>Efficiency</b>	>93% (optimum)
<b>Tube Warranty</b>	25-Years
<b>EN/BS standard</b>	EN12975 - 1

