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LaZer2 DOMESTIC SYSTEMS

Introduction

This document details the core range of LaZer2 solar system modules available for domestic installations. Individual components have been combined into system modules, making the order process as easy as possible and ensuring you will have absolutely everything you need to install a complete LaZer2 system.

All LaZer2 systems have been tested to the latest British/European Standards (EN12975 & EN12976) and are on the UK Governments Clear Skies approved technology list (product identification codes available on request).

The Main LaZer2 Module Categories

BOROUGH OF WORTHING
DEPOSITED
TP. REF. No.
WB / / .

- Collector Systems (all m² sizes relate to aperture area)
- System Cylinders
- Heat Exchanger System
- Control & Plumbing Systems
- Optional Extras

What You Need for a Typical Domestic Installation

1. Decide the type and size of **Collector System** you require. For most domestic properties of up to 4-people a south-facing 2m² collector is normally the most suitable solution. We usually recommend 3m² of collector for 5/6-person properties, and 4m² for 7/8-person properties.
2. Then decide if you need a **System Cylinder** or **Heat Exchanger System**. If you require a cylinder, select the type (vented or mains pressure) and size (in the UK 50-70 litres per 1m² of LaZer2 Collector + 60-80 litres for a boiler). The cylinder dimensions are quoted including insulation/casing.
3. Now select which **Control & Plumbing System** you needed.
4. Finally decide if you need any **Optional Extras.**

Example Systems

A complete kit required to fit a LaZer2 solar hot water system in a domestic house occupied by two adults and two children, with a south-facing pitch roof and an old indirectly heated, vented cylinder includes:

Collector System: LZ2-PS2 – LaZer2 2m² Collector System with Roof Fixings
System Cylinder: LZ2-180TC - LaZer2 180 Litre Twin Coil System Cylinder
Control & Plumbing System: LZ2-C&P10 - LaZer2 Control & Plumbing system (10mm)

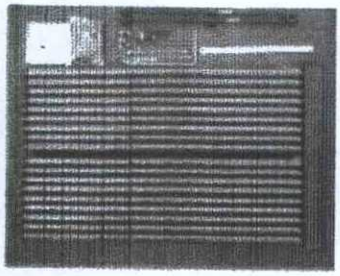
Optional Extras: CO1B - Cylinder Blender Valve Kit – 28mm High Flow

LaZer2 Collector Systems

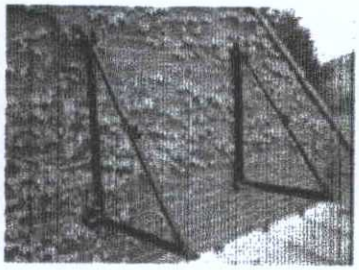
There are two basic variants of the LaZer2 Collector Systems:

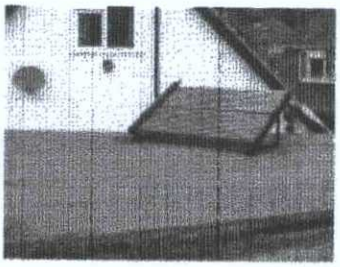
- Pitch Roof Mounting Systems
  - LZ2-PS2 LaZer2 2m² Pitch Roof Collector System (W:2110mm x H:1230mm)
  - LZ2-PS2B LaZer2 2m² Pitch Roof Collector System (W:4220mm x H:615mm)
  - LZ2-PS3 LaZer2 3m² Pitch Roof Collector System (W:2110mm x H:1845mm)
  - LZ2-PS4 LaZer2 4m² Pitch Roof Collector System (W:2110mm x H:2460mm)
  - LZ2-PS4B LaZer2 4m² Pitch Roof Collector System (W:4220mm x H:1230mm)

- Flat Roof or Wall Mounting Systems (depth dimensions are approximates)
  - LZ2-PS2W LaZer2 2m² Wall/Flat Roof Collector System (W:2110mm x D:1230mm)
  - LZ2-PS2WB LaZer2 2m² Wall/Flat Roof Collector System (W:4220mm x D:615mm)
  - LZ2-PS3W LaZer2 3m² Wall/Flat Roof Collector System (W:2110mm x D:1845mm)
  - LZ2-PS4W LaZer2 4m² Wall/Flat Roof Collector System (W:2110mm x D:2460mm)
  - LZ2-PS4WB LaZer2 4m² Wall/Flat Roof Collector System (W:4220mm x D:1230mm)



(LZ2-PS2: 2m² Pitch Roof System Kit)





(2m² Wall Mounting Frame & Flat Roof Collector)

Kits can be combined for larger systems. The kits contain all the parts required to mount and connect the individual collectors. The Pitch Roof kit also has all the components needed to weather proof the 'through roof' pipe work.

LaZer2 System Cylinders

Our vented and mains-pressure cylinders are designed specifically for use with solar hot water systems and include a high efficiency solar coil offering improved heat transfer. They are supplied with up to 100mm of foam insulation, an immersion heater & stat, an integrated drain and sensor pocket as well as the necessary compression fittings. The majority of cylinders are built to order.

We recommend that an automatic blender valve (Optional Extra: CO1B) is fitted with all systems. The blender valve will conserve the hot water supply and regulate the temperature of water reaching the taps. Please note that blender valves can reduce flow rates.







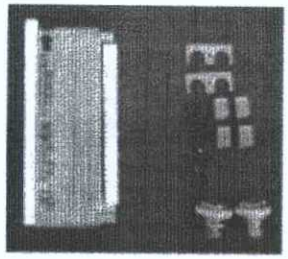
- **Vented – Copper System Cylinders**
  The lowest coil connects to the solar circuit, upper coils to the original heat source (e.g. gas/oil boiler, stove). Single, twin or triple coil cylinders can be supplied. We can have cylinders manufactured to a wide range of specifications (please ask). Popular options include:
  - LZ2-166SC LaZer2 166L Single Coil Economy7 System Cylinder (H:1200mm x D:550mm)
  - LZ2-180TC LaZer2 180L TC & Blender Valve System Cylinder (H:1350mm x D:550mm)
  - LZ2-206TC LaZer2 206L TC & Blender Valve System Cylinder (H:1500mm x D:550mm)
  - LZ2-250TC LaZer2 250L TC & Blender Valve System Cylinder (H:1500 x D:600mm)

- **Unvented - Mains Pressure Stainless Steel System Cylinders**
  White enamelled Duplex stainless steel cylinders with a 25-year manufacturer's guarantee and all necessary fittings. Popular options include:
  - LZ2-150TI LaZer2 150L Single Coil SS MP System Cylinder (H:1093mm x D:550mm)
  - LZ2-180TT LaZer2 180L Twin Coil SS MP System Cylinder (H:1281mm x D:550mm)
  - LZ2-210TT LaZer2 210L Twin Coil SS MP System Cylinder (H:1469mm x D:500mm)
  - LZ2-250TT LaZer2 250L Twin Coil SS MP System Cylinder (H:1719mm x D:500mm)

Heat Exchanger Systems

If the current household cylinder is in good condition and of a suitable size, it can be converted to use an external heat exchanger that requires no additional pumps. By using two patented flanges that fit to the cylinder wall the heat exchanger can be fitted quickly and easily, removing the need for a pre-feed cylinder or replacement of the existing cylinder. There is only one option:

- LZ2-HX LaZer2 Heat Exchanger with Insulation Jacket



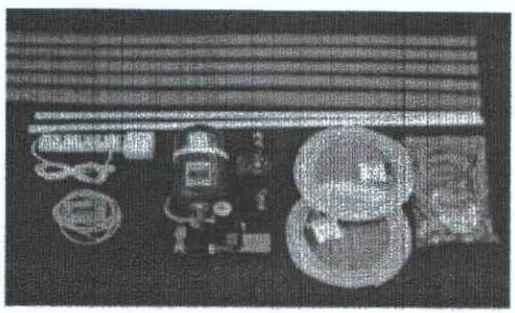
Control & Plumbing Systems

These kits contain all the components necessary to:

- Link the LaZer2 solar Collectors to the cylinder or heat exchanger
- Provide the control of the circulation pump via the digital thermostatic differential controller

They are available with either 10mm pipework (for 2-3m^2 systems) or 15mm (for 4m^2+ systems). The following options are available:

- LZ2-C&P10 LaZer2 Control & Plumbing system (10mm)
- LZ2-C&P15 LaZer2 Control & Plumbing systems (15mm)



(10mm LaZer2 Control & Plumbing System Kit)

There is also the option of a photovoltaic (solar powered) pump controlled system. However, this is only recommended if no mains-power supply is available as the lack of thermostatic control means it is less effective than a system with differential controller (please ask for more information). The following options are available:

- LZ2-C&P10PV LaZer2 Solar powered Control & Plumbing systems (10mm)
- LZ2-C&P15PV LaZer2 Solar powered Control & Plumbing systems (15mm)

Popular Optional Extras

- CO1B Cylinder Blender Valve Kit – 28mm High Flow
- PS22 22mm Power Shower Boss
- CCK Combi Boiler Conversion Kit

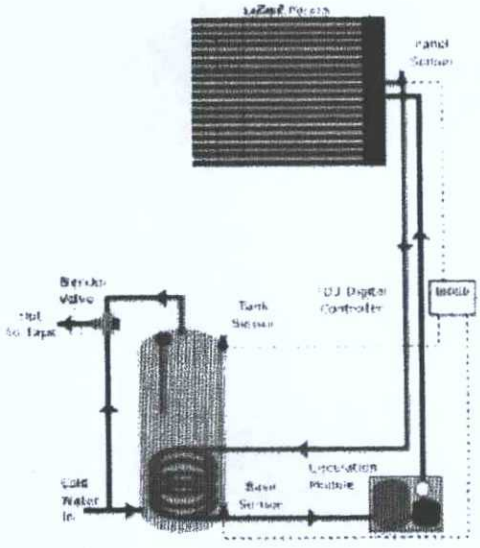
Ordering

If you would like to order a LaZer2 system or discuss your requirements before choosing a system please contact us on +44 (0)1892 52 63 68. If required we can send you a simple domestic survey form to complete and return in order for us to specify the system for you. Alternatively we can arrange for an engineer to carry out a survey of your property.

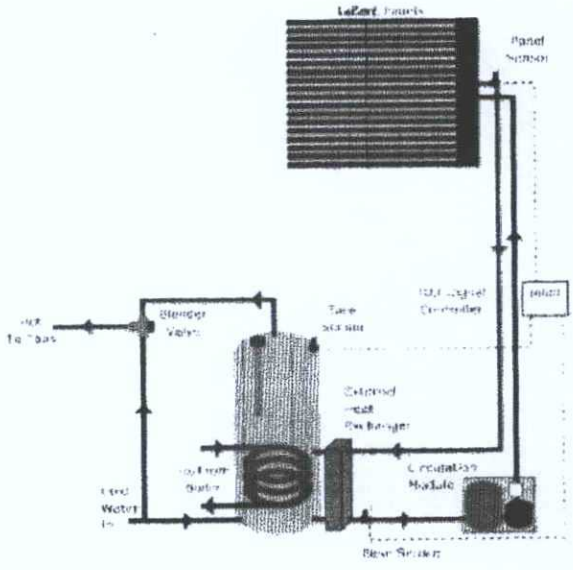
The most popular LaZer2 components required for domestic installations are detailed in this document. If you need a variation of any of these components, or a component you are looking for is not listed please call us on the same number.

Simplified System Diagrams

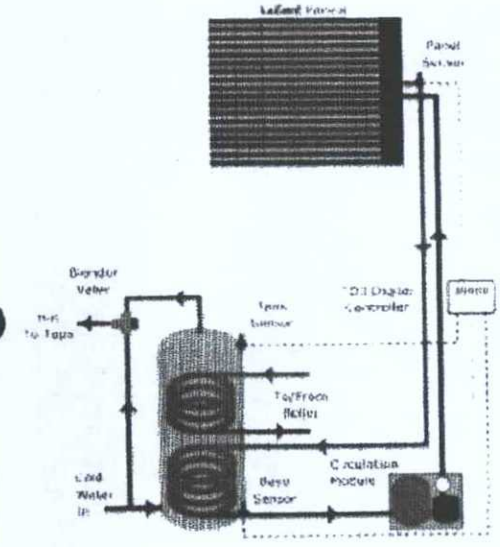
Replacement Single Coil Cylinder System



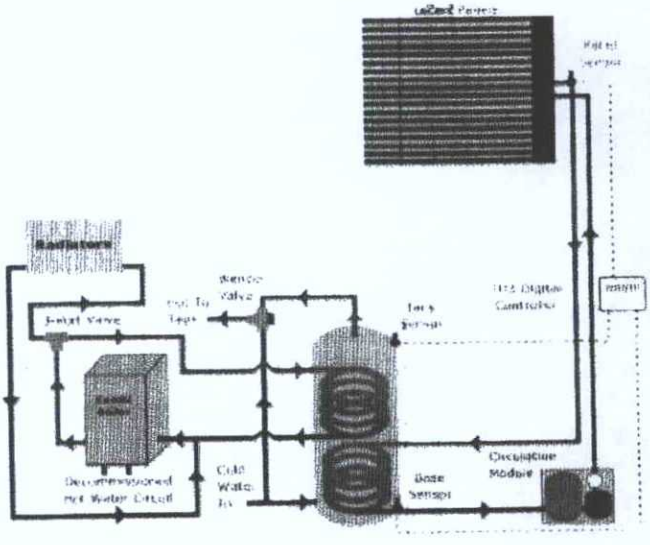
Existing Cylinder & Heat Exchanger System



Replacement Twin Coil Cylinder System



Combi Boiler Conversion System

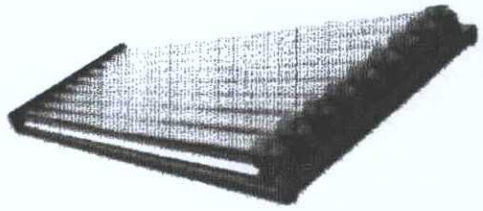


Data Sheet

LaZer2 Solar Thermal Collector

Overview

The UK designed and manufactured LaZer2 collector has been developed to deliver the maximum amount of thermal energy. Independent tests carried out by a leading European research institute (Institut für Solartechnik SPF) have shown that the LaZer2 solar collector out-performs all of our major competitors' products*[1].



Because we realise that reliability is as important as performance, the LaZer2 collector has been designed to operate for at least 25-years with no loss of performance and to require no scheduled maintenance. To ensure total confidence in the collector's reliability all LaZer2 vacuum tubes are covered by a **25-year warranty***[2].

If the LaZer2's unparalleled performance and reliability isn't enough, then the collector's sleek and compact design really sets it apart from the competition. An all-black anodised aluminium frame means minimum visual impact, whilst the unique manifold-end allows all unsightly pipes, insulation and cables to be completely hidden from view.

Technical Specification	
Type	LaZer2 Direct Water
Absorber Area	0.80m²
Aperture Area	0.93m² (1m²)
Gross Area	1.35m²
Total Length	2110mm
Total Width	615mm
Total Depth	104mm (Manifold 113mm)
Total Weight	43Kg
Op. Pressure	<4-bar
Design Life	>25-years
Vacuum Tube	High-Borosilicate Glass
Tube Diameter	58mm
Tube Length	1960mm
Vacuum	$P = 5 \times 10^{-2}$Pa
Tube Strength	Tested to withstand a 25mm hailstone
Absorber	AL-N/AL
Efficiency	> 93% (optimum)
Tube Warranty	25-Years
EN/BS standard	EN12975

Design

The all-glass design of the LaZer2 vacuum tubes (evacuated tubes) means that you no longer have to worry about collector failure. In traditional vacuum tube collector designs the glass-metal seal can fail due to the varying expansion/contraction of the two materials. By eliminating the glass-metal seal we have eliminated the risk of vacuum loss.

Our >93% efficient vacuum tubes are ideal for climates like those of the UK as they are virtually unaffected by air temperature or wind-chill, with no noticeable variation in performance whether the ambient temperature is 0°C or 30°C.

The LaZer2 collector incorporates horizontally mounted vacuum tubes with a curved collecting surface. The collector can therefore be mounted off of the optimum angle yet still absorb the same amount of energy. This design allows a constant aperture to be maintained to the sun, in order to maximise solar gain. By automatically compensating for the change in the sun's angle throughout the year, more 'useful' energy can be gained.

The LaZer2 collector features a unique aluminium heat sink and a direct-water, serial-manifold. A direct-water manifold is more efficient than a heat-pipe manifold because it does not require an in-direct transfer of energy, which will always lead to some loss of energy. In a collector with a serial-manifold, the transfer fluid passes through each vacuum tube in series rather than just in and out of a single tube. This means the fluid moves much faster as it has further to travel (38m in a LaZer2 collector). The increased speed means more turbulence and a distinct improvement in heat transfer.

Operation

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. The unique aluminium heat-sink transfers the trapped energy to the advanced internal manifold, directly heating the transfer fluid.

