Application Information Sheet

Space Heating with Radiators and a Buffer Vessel

Facts at a glance:

Heat pumps and radiators
Heat pumps can be effectively used with radiators, however they are certain considerations that need to be taken into account.

45-50 degC flow temperature
Heat pumps with radiators require to increase their flow temperatures to 45-50°C which reduces the COP and hence efficiency.

Over sized radiators
Due to the lower flow temperatures than traditional heating systems radiators will need to be oversized to provide the required heat into a room.

Simple Installation
Designed to simplify installation by removing the need for complicated control logic.

Off-Peak Tariffs
Due to the low water content of radiator systems and hence low thermal storage, off-peak tariffs such as Economy 10 can not be effectively used and a flat rate tariff might be more effectively

Principle of Operation

The Kensa compact heat pump is specifically designed to provide space heating at the highest efficiency possible with the simplest installation.

In space heating mode the system provides hot water into the radiator heating system at generally a flow temperature of 45—50°C. For heating in a well insulated building this will provide adequate heating into the building, however the sizing of the radiators will need to be checked. If the insulation of the building is below current regulations then this flow temperature might not be higher enough to provide sufficient heat into the building.

If full zone control is required of all the heated areas then a buffer vessel is required to be fitted. The most efficient buffer vessel design for heat pumps is a two connection buffer vessel (as shown over) and fitting this will reduce short cycling while maintaining the highest efficiency of the heat pump.

The radiators should ideally be connected using a reverse return system as this will ensure even heat flow through the radiators without the use of balancing valves and the resulting increase in water pump energy.

Any microbore pipe will need to be removed as this does not allow the correct flow rate of hot water into the radiators and systems will also need to be power flushed before the system is commissioned.

Heat pumps will operate with radiators, however due to the higher flow temperatures (45-50C) the efficiency of such systems are lower than underfloor systems. COP's for radiator systems due to this higher flow temperature are generally around 3.

Radiator systems are quicker to respond than underfloor systems, however due to the low water content of the system it does mean that off-peak tariffs such as Economy 10 can not be effectively used.

Continued...

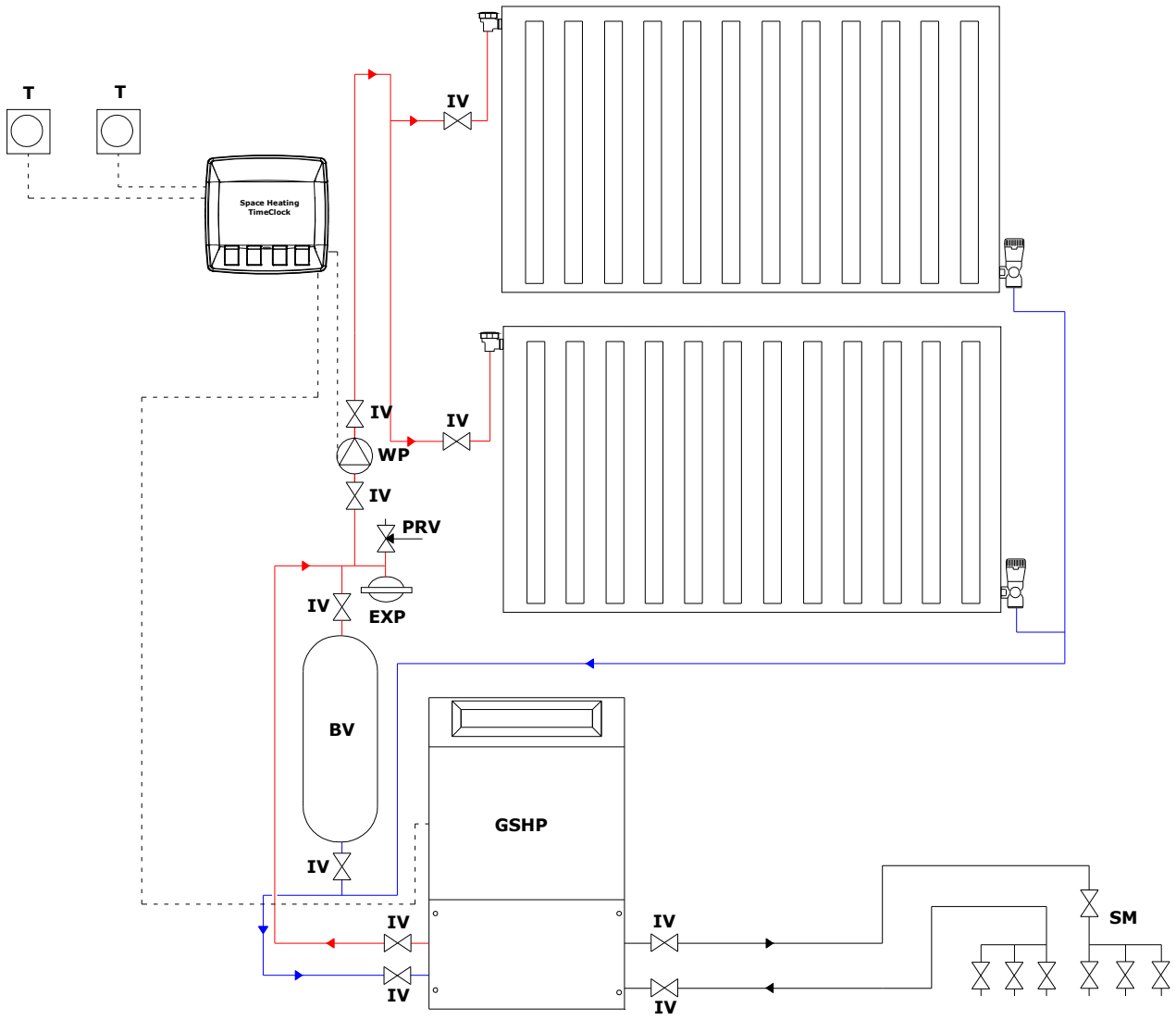
Kensa Engineering Ltd
Mount Wellington, Chacewater, Truro, Cornwall, TR4 8RJ
Tel: 01872 862140 Fax: 01872 862440
info@kensaengineering.com
www.kensaengineering.com

Kensa Engineering Ltd
Truro, Cornwall
Company Registration
Number 3739805

Certificate Number MCS1216
Heat Pumps

Application Information Sheet

Space Heating with Radiators and a Buffer Vessel



Abbreviations

BV - Buffer vessel
EXP - Expansion vessel
GSHP - Ground source heat pump
IV - Isolation valve
PRV - Pressure relief valve
SM - Slinky manifold
T - Thermostat
WP - Circulation Pump

Please note:- The above drawing is a schematic only and additional valves and fittings maybe required.

Please note:- Kensa supply is the ground source heat pump and slinky manifold. Kensa also supplies the horizontal ground arrays and anti-freeze (not shown above).

The buffer vessel (BV) is fitted to reduce short cycling of the heat pump while still allowing full zone control of the heating.