

## **SPECIFICATION FOR VERSATILE GUILDFORD HEAT INTERFACE UNITS**

### **1.0 General requirements**

- a) Heat Interface Units (HIU) shall enable LTHW from the central plant to provide heating and DHWS to each apartment and provide complete hydraulic separation with brazed stainless steel heat exchangers between the LTHW primary and the secondary heating and DHW systems as **Versatile Guildford** pattern HIU. Furthermore the secondary heating and DHW flow temperatures and flow rates shall be controlled.
- b) A **Versatile** fixed spring differential pressure control valve shall be fitted across the primary flow and return circuits on **each** HIU to protect the control valves from excessive differential pressure and to govern the primary flow rate. The differential pressure control valve shall form part of the assembled **Guildford** HIU as per BSRIA Guide BG 62/2015.
- c) The HIU shall be a complete package comprising of all components and controls mounted on a frame, factory assembled and tested.
- d) The mounting frame shall be sufficient to support all the components of the HIU. Excess support and metal plate shall be avoided to reduce unnecessary and unwanted heat emission.
- e) The option should be provided to insulate all components in the HIU where practical to reduce heat loss and to reduce heat rise in the cupboard, this shall include all heating pipework and the HIU back board.
- f) A first fix rail with isolating ball valves shall be provided with each HIU to allow the shell and core pipework to be installed and tested before introducing the HIU. Each ball valve shall have a drain valve to facilitate draining and have test points fitted on the primary and secondary heating to aid additional temperature or pressure measurement if required.
- g) The HIU shall be able to facilitate top entry by means of a stand-off bracket to enable any combination of services to be piped from above or below by means of insulated pipework.
- h) Integral strainers shall be included in the primary flow and secondary return of the HIU.
- j) A white powder coated steel casing shall incorporate a viewing window to allow meter reading without casing removal, the casing shall be insulated and lockable to prevent non-permissible access.
- k) All distribution pipe work within the HIU shall be 18mm stainless steel.
- l) A WRAS Approved temporary filling loop with double check valve shall be provided as a loose item.
- m) The HIU shall be WRAS approved and KIWA approved in its own right.
- n) The HIU shall have been tested to the BESA UK HIU test regime October 2018 at a UKAS accredited test facility and have passed all tests with the results published on the BESA website.

### **2.0 Apartment Heating System (LTHW)**

a) The primary flow to the heating system plate heat exchanger (HE1) shall be controlled by a two port on/off actuated valve linked to the room thermostat and will close when the room temperature setting has been achieved or when the heating system is not in use.

Flow rate through HE1 will be controlled via a thermostatic control valve installed in the primary return. A thermostatic head with remote sensor shall be mounted on the control valve to limit the secondary flow temperature by controlling the primary return from HE1 as per BSRIA Guide BG 62/2015.

b) The secondary heating circuit shall be provided with a 7.5 litre expansion vessel, pressure relief safety valve and a variable speed secondary space heating pump selected to provide a constant DP to assist in setting the correct flow rates to each radiator as per CIBSE/ADE CP1 3.4.10 & BSRIA BG 62/2015. The circulation pump shall be mounted in the secondary return to aid in the removal of air during the commissioning process, an automatic air vent shall also be installed in the secondary circuit.

c) A **Versatile** programmable room thermostat (Fig 3 F799 17) shall be provided separately for each apartment and shall be mounted within the apartment living area. The programmable room thermostat shall be set for day/night/summer/winter operation and will close the two port actuated valve and stop the secondary domestic heating pump during the heating off periods.

### 3.0 Apartment Domestic Hot Water (DHW)

a) Domestic hot water (DHW) for each apartment shall be generated via a plate heat exchanger (HE2) mounted in the HIU

b) DHW flow rate and temperature shall be controlled via a **Versatile** pressure temperature control valve which shall have proportional control. When a hot water tap is opened the drop in pressure in the hot water pipe shall open the 4 port pressure temperature controller which in turn shall allow primary hot water into HE2. The pressure temperature controller shall proportionally control the amount of primary water flowing through HE2 for maximum system efficiency. When the DHW tap or shower mixer unit is closed the pressure temperature controller shall immediately stop the primary flow into HE2 thus reducing the risk of high temperatures building up in HE2 causing lime scale and bacteria build up. The operation of the pressure temperature controller shall be mechanical and require no auxiliary power.

c) The proportional control of the pressure temperature controller shall ensure constant DHW temperature over a primary flow temperature range of 60 – 90°C. A thermostatic control valve with temperature sensor shall limit the DHW temperature and a **Versatile** tempering valve installed downstream within the HIU will deliver a constant temperature of 50 - 55°C to minimise the risk of temperature spikes and scalding.

d) The pressure temperature control valve shall have an integral hot water priority valve which will isolate the primary supply to the secondary heat exchanger when there is DHW demand.

e) A **Versatile** thermostatic “summer” bypass valve fitted with a return temperature limiter shall be installed between the primary flow and return to ensure a quick DHW response and maintain primary temperatures when there is no heating demand. There shall be an option to turn off the thermostatic bypass to reduce the standing losses in the system and maximise the system efficiency. This function shall be enabled at commissioning stage if appropriate, relative to the position of the HIU in the circuit.

f) There shall be no standing losses or meter creepage resulting in the end user being charged for periods of no demand.

### 4.0 Energy Metering

If required the HIU may be provided with a built in energy meter mounted in the primary heating return pipe.

The meter should meet the following minimum specification

a) Flow measurement using the ultrasonic principle

b) Measuring accuracy meets EN1434 Class 2

c) Heat calculator to have read out in kW/hr

d) 2 x Pt500 sensors mounted in the pipework

e) Battery operated with 12 year life battery

f) 24 month data storage

g) Data collection shall be via M-bus or remote reading via hand held scanner

h) A 110mm spool piece shall be provided within the incoming cold water supply to the HIU to allow the installation of a cold water meter if required.