Fact Sheet

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Underfloor Heating—Zoning

Facts at a glance:

Mixing Valves
If a heat pump is handling space heating only to an underfloor system there is no need for any blending valves.

Short Cycling
Short cycling occurs if the heat pump turns on and off within a short period of time and can cause electrical disturbances.

Open Zones
To avoid short cycling 25% of the zones should be left open, these should be areas such as the bathrooms, halls, etc. This allows the underfloor zones to effectively act as a buffer vessel.

Buffer Vessels
If a fully controlled zone system is required a buffer vessel can be integrated into the system (ideally a two connection tank), however the overall efficiency of the system maybe reduced.

On a typical underfloor heating system the heating system is split into zones, generally each zone represents one room, i.e. there might be a zone for the bedroom, one for the living room , etc. Each zone is generally controlled by a thermostat mounted in that room which calls for heat when the room is cold and shuts the heating system down when the room is up to temperature.

If the heat pump is handling space heating only, to an underfloor system, there is no need for any blending valve on the UFH manifold since the Kensa Compact heat pump will control flow temperatures by measuring the return temperature from the underfloor.

To avoid the heat pump from short cycling, it is important that the underfloor system is also capable of accepting the minimum load from the heat pump.

Short cycling is where the heat pump turns on and off within a short period of time (generally 4 starts within an hour), as each time the heat pump starts it draws a large starting current. This can cause disruption on the electrical supply to the building and possibly neighbouring buildings.

The easiest way to avoid short cycling is to have some zones left “open” – i.e. without electric actuators. Typically, these ‘open flow’ zones are located in bathrooms and en-suites (which always require supplementary heat) and transient rooms such as landings and hallways where there is significant heat migration to adjacent rooms so there is no risk that any ‘open zone’ over-heats.

To avoid short cycling of the heat pump the smallest actuator controlled zone (plus all the open zones) should be capable of absorbing the minimum thermal load of the heat pump. This minimum load is approximately 25% for single compressor heat pumps. In this arrangement, a thermostat is installed in each room to allow any zone to call for heat when cold. In addition, the ‘open’ zones also receive flow whenever any other zone is calling to ensure the heat pump has sufficient load.

If a fully controlled zone system is required, a buffer tank (ideally a two connection tank) can be supplied which allows a standard control set-up with an individual thermostat in each room. However, the extra cost of the buffer tank can be avoided by ensuring at least 25% of the underfloor heating zones are ‘open flow’. A buffer vessel can result in a lower overall efficiency of the system (due to the higher temperatures, pump electricity usage, etc) and hence Kensa would always advise that the ‘open zone’ method of avoiding short cycling is used.

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