



CHELSHAM HOUSE //



This is a retrofit project to a residential NHS ward near London. The building was heated by a pair of old gas boilers nearing the end of their useful working lives. The ward is home to vulnerable patients and is heated year round.

The existing heating system based on underfloor was retained and an old AHU brought back in to service as part of the project as well. Propane was chosen as a refrigerant because the temperature differential most closely matched the existing system, thereby reducing the interventions required on the heating system itself. Being an NHS ward it would have been very difficult to make many changes to pipework, emitters etc.

The heat pump is sited well away from the building inside a hit-and-miss fence, the fence is there for security and doesn't interfere with the air flow to the heat pump.

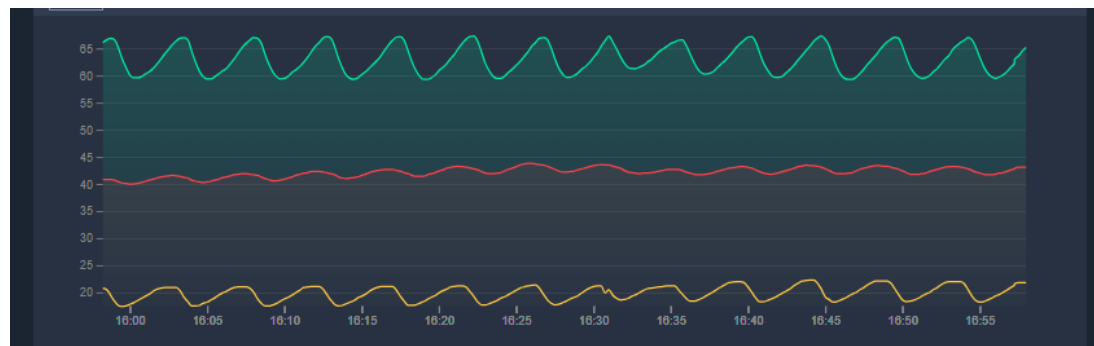
A new buffer tank was fitted inside the existing plantroom, this is quite small at 960L due to space constraints. Ideally it would be around 4000L for the 150KW of heat pump. However the Clade team made it work with this space constraint.

One boiler has been retained as back up for the ward, if the heat pump doesn't reach flow set point within a set period the boiler comes on to support it. This could happen if the demand is exceptionally high or if there is a fault on the heat pump.

As part of the works a new BMS panel was fitted which enabled integration with the heat pump and energy meters. Whilst energy meters do enable performance measurement it is essential that they are correctly specified, well installed and calibrated.

The heat pump is controlled from return temperature, adjusting flow rate to sustain the flow temperature with in parameters. The trace below shows the cycling of the HP output, a larger buffer would result in less cycling but there is no noticeable effect on output.

COP is between 2.8 and 3.1, more efficient at part load and the higher flow temperatures bring it down a little too.



Flow temperature

Return temperature