EQUANS

Claremont Case Study

CLADE

Claremont Case Study

Claremont Resource Centre, located in Manchester, is a vital community hub supporting various local groups. To enhance energy efficiency and reduce carbon emissions, Equans collaborated with the Manchester City Council to secure PSDS funding. This initiative led to the replacement of the outdated gas boiler with a state-of-the-art heat pump system provided by Clade.

Equans are working with Manchester on a broad range of decarbonisation projects. An application for PSDS funding was submitted and approved to replace the dilapidated gas boiler with a heat pump along with other retrofit decarbonisation solutions.

Feedback

"We were really pleased and impressed with the site team, Equans were fantastic at communicating with us throughout the project"

"So far we're delighted with the heat pump system, it replaced a really old boiler and oil heaters that I had to turn on manually".

"We are learning how to best use the new heating system, the building is used by elderly people who like it a bit warmer and the kitchen staff start early so we've made adjustments for them" - *Andrew the centre manager*

Clade Engineering
Clade are the UK's leading manufacturer of natural refrigerant heat pumps, based in Leeds and with a full UK based engineering team.

Clade were engaged to complete the stage 4 design of the new heating system and supply the two 75KW Acer low noise CO2 heat pumps and control panels.

Existing system
The existing heating system consisted of two Clyde 93KW heating gas boilers and a 46KW hot water boiler. A total capacity of nearly 250KW. All the boilers were in bad shape and needed constant care to keep them going.

The heating system was in poor shape too, often supplemented by oil filled electric radiators by the occupants.

Claremont Case Study

Designing the new system

During design the Clade team calculated that 150KW (at -5C ambient) would be sufficient to heat the building and provide hot water. It is quite common for excess boiler plant to be fitted and so 1 for 1 replacement is not required.

The chosen technology is two CO2 Clade Acer heat pumps with 75KW at -5C ambient temperature. This provides good turn down, defrost with out losing heat and resilience.

The new heating system runs at 70°C flow and 30°C return. There are new radiator and radiant panel heating circuits for space heating. The radiators have pressure independent TRVs to control flow under all conditions so the return temperature is a stable 30°C. The radiators are top entry and bottom exit to further improve DT.

The domestic hot water system is a new twin cylinder design from Clade with immersion heaters to provide efficient pasteurisation and secondary return reheat.

As well as the heat pumps Clade supplied a master controller to sequence the heat pumps and a hot water controller to manage the operation of that system. The buildings BMS manages the heating pumps which are now inverter controlled variable speed driven this is important for energy efficiency and maintaining the 40C temperature differential.

Claremont Case Study

The heat pumps are in a fenced compound with local LV electrical panels and a reverse return header system.

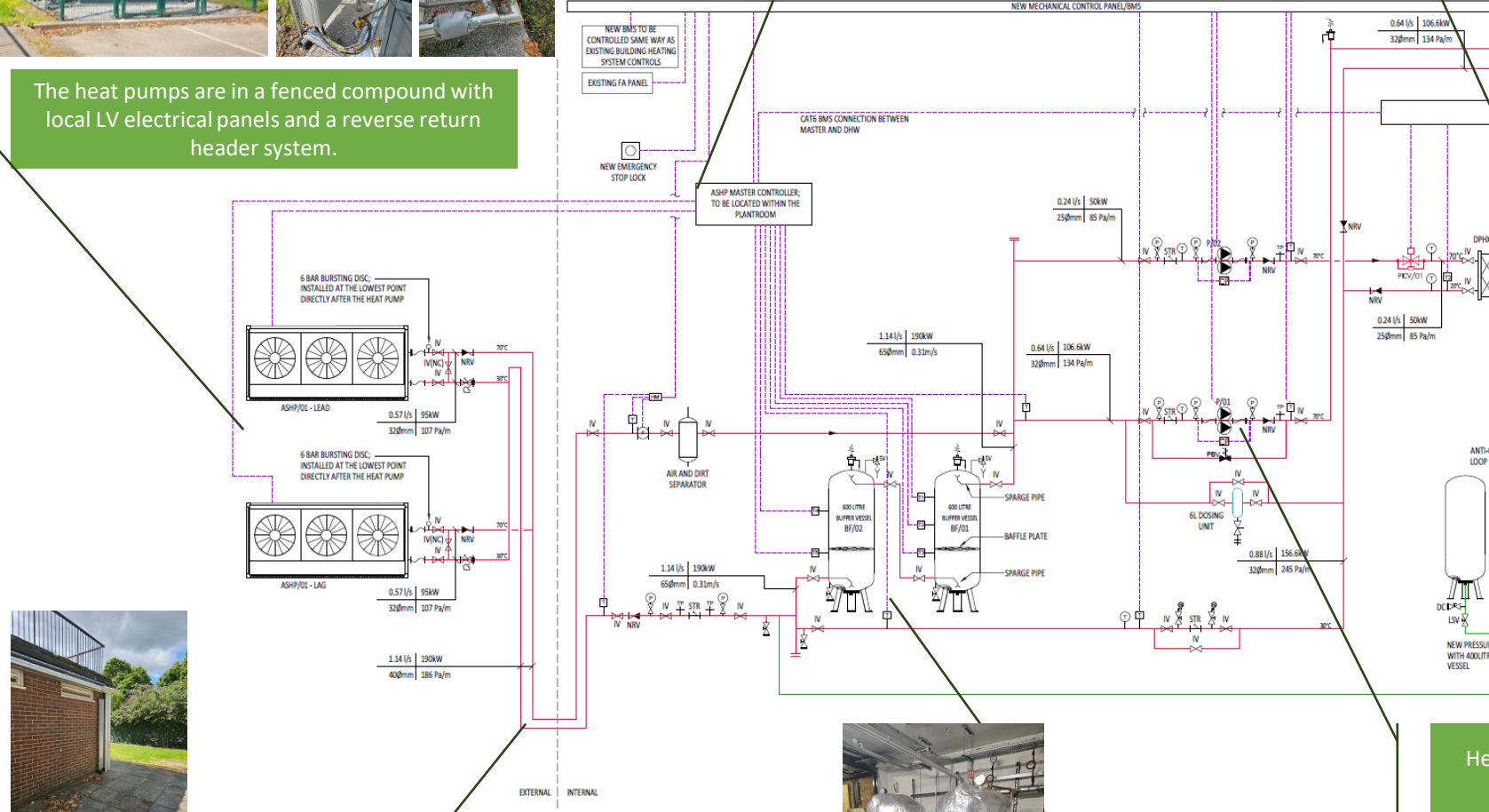
Clade DHW pre-configured controller manages DHW production working in conjunction with the master controller

Master controller manages the heat pumps up to the buffer tanks and communicates with the BMS

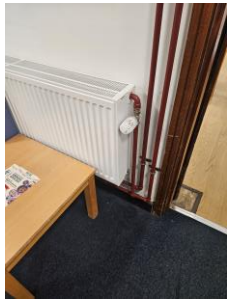
System Design

The system is based on the Clade standard r290 design.

Final PICV on heating return protects the DT



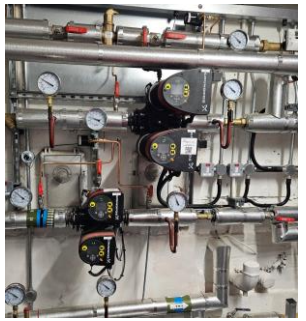
Radiators were replaced as part of the project. Sized for a large DT with PI-TRVs



The heat pump is connected to the building via underground and overground pipework.

Twin buffers is not ideal for stratification but was necessary due to the plant room door width

Heating and hot water pumps are replaced with VSD



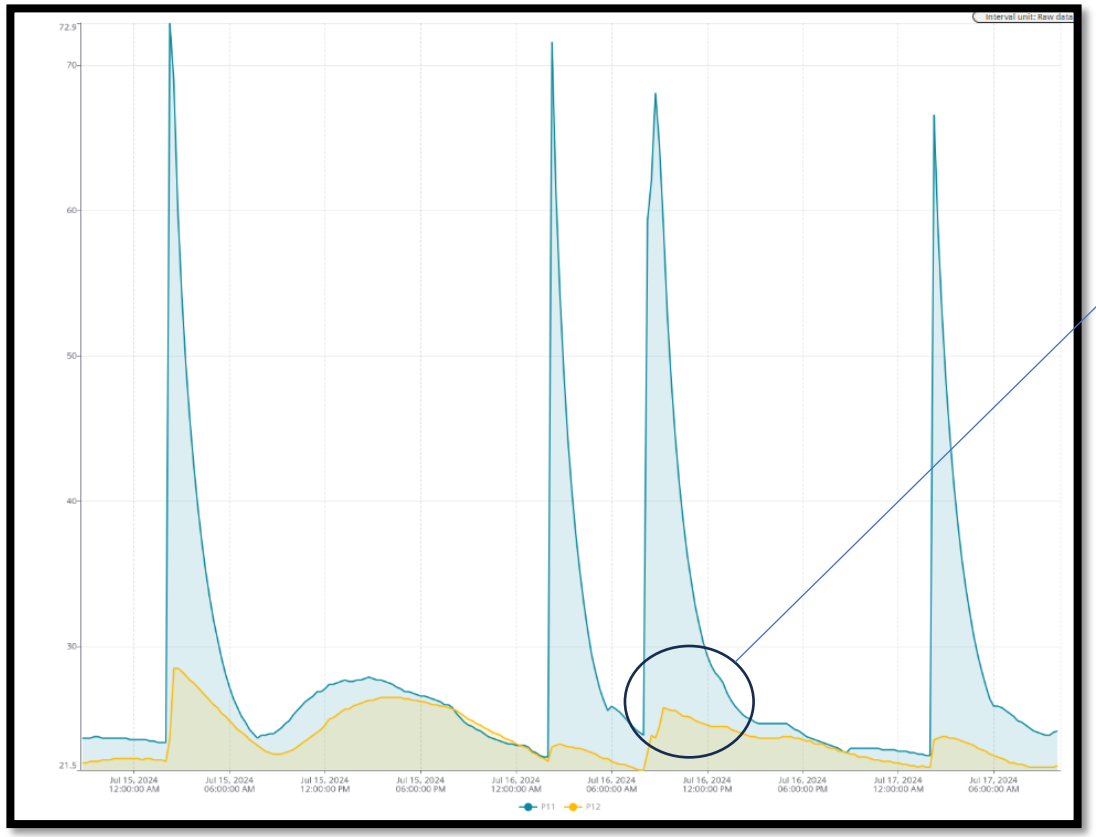
System Performance

Claremont Case Study

Having completed the installation in late spring of 2024 the heat pumps are providing heat for a little back ground space heating and domestic hot water.

The building control system provides time control to the Clade Master controller, which in turn controls the sequencing of the heat pumps for heat production. The master controller ensures the heat pumps work efficiently, i.e. CO2 is more efficient at part load so running two heat pumps at 50% is better than one at 100%.

When domestic hot water is required, the master controller sends a signal to the Clade DHW controller that manages both the heating of the water, secondary return reheat and pasteurisation cycles.

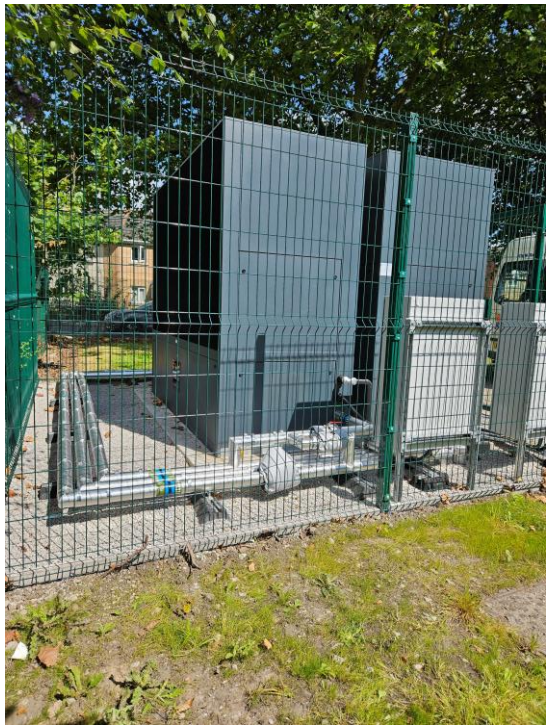


The data displayed here was downloaded from the Clade cloud based data platform.

This data is available to customers and to the Clade Engineering team who spent time post installation tuning up the controls so the building and heat pumps work together to maximise efficiency.

When the heating season starts the Clade team will take another look at the data and make any amendments to the controls needed to maintain efficiency. This optimisation process is necessary on all heat pump installations to get the very best performance and deliver both cost and carbon savings.

Claremont Case Study



About the Clade ACER 95/75 //

The UK's leading low noise natural refrigerant heat pump for heating and hot water.

Up to 95KW of low carbon heat

- Future proof CO2 refrigerant which is non toxic and non flammable
- GWP =1
- ODP = 0
- Low noise model for minimum impact on surrounding houses
- Up to 75°C hot water
- Positioned back to back for low space take
- Multiplexed using Clade Multi Controller
- Manufactured in the UK by the Clade team
- Full UK based technical support

CLADE

Contact:
www.clade-es.com
sales@clade-es.com

Contact:
https://www.equans.co.uk/
richard.carmichael@equans.com