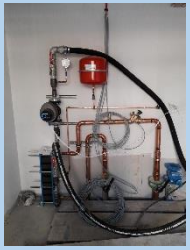
HULL UNIVERSITY WEST CAMPUS PROJECT TEMPORARY SITE HEATNG SOLUTION

Overview

At the Hull University we were contracted to deliver 1400 student bedrooms as part of the UPP Westfield Court Campus. The construction period was 24 months with fit out activities being carried out over two winter periods. One of the challenges to the project was keeping temperature sensitive activities, such as flooring which needs to be laid in an ambient temperature of 18c, on programme.

We currently employ various methods to provide temporary heating on our sites. The method that was originally used on the first phase of the Westfield Court project was electric heating which was expensive to run, needed an extensive electrical infrastructure and require a substantial electrical incoming supply. Whilst we had the electrical supply available the site lost many man hours due to the heaters tripping out the electrical supply.

For the second phase of the Westfield Campus we decided that there must be a better way of providing temporary heating. This is when we came across a wet heating solution which is utilized in Scandinavia. We contacted El-Bjorn who were keen to help develop a solution for Hull as the system proposed had never been used in the UK.

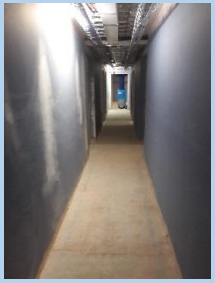


The wet heating solution distributes heat around the building using heaters located on each floor. The heaters are then connected via temporary pipework to the ground floor where they are connected to the district heating main that was installed as part of the phase 1 works.

Benefits

The benefits of using a wet heating solution are shown below;

- *Cost of fuel (unit price of gas v's unit price of electricity)*
- *Reduced cost of infrastructure installation*
- *No need for large electrical distribution units which cannot be moved until the final temps. are stripped out*
- *Minimal disruption to the electrical system due to circuits being overloaded*
- *Tidier and safer on site – no trailing cables. Infrastructure can be installed in spaces such as smoke shafts*



- *Increased productivity on site – heaters run constantly and efficiently*
- *The system is ideal for high rise buildings and sites with no power available. The system can be run with the introduction of a containerized boiler plant*
- *Risk of Fire reduced*
- *Heaters have a greater output and cover a larger area.*

Considerations

For the temporary wet heating system installed at the University of Hull we had to consider & develop the following

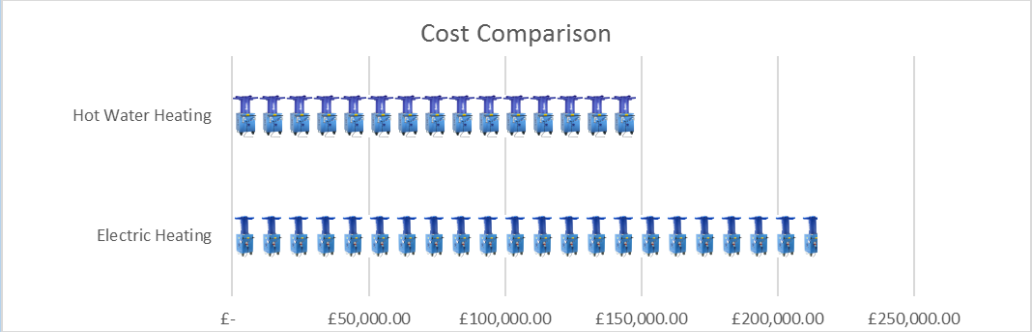
1) *Number of heaters required – The kW output of the heaters meant that 2no. were required per floor*
2) *Location of Temporary pipework - The smoke shafts were utilized as this meant little disruption to the site activities.*
3) *Expansion to the system - Camlock fittings were left at each floor allowing the system to be easily expanded.*
4) *Plate Heat Exchanger Sizing - This was determined by reviewing the programme to determine what heaters were required during the colder months.*
5) *Pump sizing - Variable speed invertor pumps were sized on the number of heaters required. The height the pipework is ran to was also accounted for.*
6) *Commissioning & Moving - The Onsite Mechanical contractor was involved in moving and commissioning the temporary heating. El-Bjorn are training up the hire company to provide this service in the future*
7) *Retaining heat within the building - To maximize the heat benefit an amount of temporary heating there is a requirement to seal the floors from areas of loses such as loading bays, staircase, shafts and risers.*

Comparisons

Heater Types	***Wet Heating***	***Electric Heating***
Physical Size	*1260x530x660*	*1260x530x660*
Weight	*77kg*	*72kg*
kW Rating	*30kW*	*18kW*
Power Supply	*230v sph 2.6A*	*400v 3ph 32A*
Noise Rating	*65dB(A)*	*65dB(A)*
Air Flow	*2100m2 / 1650m3/h*	*2300m2 /1700m3/h*
Area Covered	*650m2 / 2275m3*	*350m2 / 1225m3*
Temperature Control	*Thermostatic Valve*	*None (on/off by User)*

Running Costs

- *Total Projected cost of Hot Water Heating (Including Install & Power Consumption)* — *£148,092.00*
- *Equivalent cost of Conventional Electric Heating (Including install & Power Consumption)* — *214,696.00*
- *Projected Saving* — *£66,604.00*



Carbon Footprint

- *Total Projected Emissions Electric Heating* — *434.76 Tons of CO2*
- *(at a factor of 0.3072 KgCO2e/KWH)*
- *Total Projected Emissions Hot Water Heating* — *235.87 Tons of CO2*
- *(at a factor of 0.18 KgCO2e/KWH)*
- *Potential Reduction of environmental impact circa* — *200 Tons CO2*

A Ford Focus with an Co2 of 99g/km will produce 200 tonnes of CO2 if it travelled approximately 1,000,000 miles.