VITAL ENERGi

CASE STUDY

Circus Street Development

CHP ENERGY CENTRE AND DISTRICT HEATING

PROJECT OVERVIEW

On the site of a 2.4 acre derelict municipal market, Circus Street is a project by Cathedral Limited to regenerate the area into an innovation quarter. The scheme is a £130 million public private partnership with Brighton and Hove Council which will create over 400 new jobs and will see the creation of a 450-bed student accommodation, 142 residential properties, 30,000 sq ft of office space, and a public square with shops, cafes, restaurants and a dance studio.

There is a push for green energy on the site and so we are providing a low carbon heating and hot water solution to supply the student and residential accommodation and retail space.

VITAL'S SOLUTION

The client required a scheme that could serve a large number of residents and students, along with all but two office blocks, therefore we needed to design a solution that can cater for a large heat demand. By creating an Energy Profile for the development which included predicted heat usage, we were able to analyse this data to provide a solution that included a 210kWe CHP engine, 9x 240kW gas boilers and 4x 5000L thermal stores. We have ensured that there will be sufficient equipment for the demand by designing 8 boilers to cover the peak site load and 1 boiler as a standby source.

PROJECT SUMMARY:

CLIENT:
U+I

PROJECT:
Circus Street Development

TIMESCALE:
June 2018 - March 2020

CONTRACT VALUE:
£2.1m

THE BENEFITS:

- A scheme designed based on the unique site requirements
- Finding a solution to fit large equipment in a small space using 3D modelling software
- Reducing noise breakout by acoustically adapting plant and ventilation system
- Supplying heat and hot water to a large number of students and residents

The scheme will supply heat and hot water to a large number of students and residents.

There was restricted space available onsite so we used ***intelligent 3D modelling software*** *to ensure all the large plant and equipment would fit.*

A district heating network will distribute the heat and hot water around the site, along with heat interface units (HIUs) installed in each apartment, a 800kw heat substation for each student flat and commercial HIUs for the retail units and landlord areas to ensure that the correct temperature of water is supplied to each customer.

Utilising intelligent 3D modelling software to design energy centre into a small area

The energy centre was required to be installed in the basement of a student accommodation building which had very limited space. In order to ensure that our design would be appropriate for the space, we used a specialist 3D modelling software which would highlight any potential issues with the location and operation of the equipment easily and ensure precision fit prior to starting construction. This is beneficial as we can confirm the quality of the design and prevent and potential problems during the build which increases project efficiencies.

As the energy centre is located in a tight space, we designed the thermal stores to be located external to the energy centre plant room in order to have the area required for this large equipment.

Acoustically protecting equipment to prevent noise breakout in student flats

As the main energy centre is located directly under one of the student accommodation blocks, it was important for there to be minimal noise emitted and therefore a stringent noise reduction methodology was required. We worked closely with an acoustician to create a solution that would reduce noise breakout. This included an acoustic ceiling, acoustic silencers, acoustic thermal installation, acoustic louvres and spring hanger supports which would ensure a suitable environment for occupants and neighbours.

Insulated district heating network with specialist monitoring system

The district heating network is made up of both buried pipe as well as above-ground pipe to connect into each student accommodation block which is supported via structural columns in the ground-level car park.

The buried heat network is fitted with a responsive moisture detection surveillance system which can locate and highlight potential issues before they develop which allows for quick resolution before any disruption to supply, and ensuring the lifespan of the pipework.