VITAL ENERGi

CASE STUDY

University of Edinburgh

CHP ENERGY CENTRE AND DISTRICT HEATING

PROJECT SUMMARY:

CLIENT
University of Edinburgh Utilities Supply Company

PROJECT
CHP Energy Scheme

TIMESCALE:
September 2012 – April 2014

CONTRACT VALUE:
£8 million

OVERVIEW

Last year, Scotland's energy bill for its universities and colleges reached £25 million and they have been officially tasked with reducing their energy bills and CO2 emissions.

The University of Edinburgh is a perfect example of the challenges facing modern educational institutions. In the last 25 years its student population has almost trebled to well over 30,000 and it saw the number of computers connected to the university network grow from 1,000 in 1999 to more than 16,000 in 2009.

This huge growth has seen a dramatic rise in the amount of energy consumed, but through continuous investment in its energy infrastructure and campus, the university has significantly reduced their CO2 output despite their expansion. The most recent step to lower their energy consumption and emissions saw a new £8 million low carbon community heating system and private electricity network installed by Vital Energi for the University of Edinburgh Utilities Supply Company.

The University of Edinburgh has a track record of investing a percentage of their annual utilities spend on energy efficiency improvements, a practice which has seen the Guardian describe their work as the country's "quietest green revolution."

VITAL'S SOLUTION

The University of Edinburgh proved to be one of the most challenging projects we have undertaken. The 431 year old University brought with it a mix of conservation and heritage issues, extremely limited access and a hugely challenging timescale for completion of the project. This timescale was made even more difficult due to scheduled periods where work ceased to accommodate the Edinburgh Fringe Festival and student exams.

THE BENEFITS:

- Scoring 83% higher than industry standard for customer satisfaction on overall service
- Flexible solution that adapted to the clients requirements and kept project schedule on track
- Careful preparation ensuring multiple hurdles were successfully managed

Installation of a 1.4MWe CHP engine as well as 2x9MW Gas Boilers

‘Vital have shown themselves to be flexible during the course of this project. There were several instances, such as during the exam period and the Edinburgh Fringe when some areas of work had to stop and Vital have had to work around it and through good planning and management they continued to meet the tight deadlines while causing as little disruption to the University of Edinburgh and its stakeholders as possible.’

DAVID BARRATT, OPERATIONS MANAGER AT UNIVERSITY OF EDINBURGH

Efficient delivery to manage strict timescales

The University needed a contractor who could move quickly and work to a very tight schedule. Our in-house expertise allowed them to be flexible with regards to planning and installation and they were on site just two weeks after signing the contract and completed basic building work on the energy centre within three months.

Careful ground excavation due to challenging site

Working within the historic part of Edinburgh brought its own challenges. We had to lay district heating pipe beneath Flodden Wall which is a historic monument, meticulously removing and replacing cobbled streets and were accompanied by an archaeologist who was plotting the boundaries of the old city wall. The work also led to the discovery of a knight’s skeleton during excavation in High School Yards, which created a temporary delay.

Using pre-fabricated work to assist with programme delivery

The University of Edinburgh has a long history of improving its environmental performance and was already utilising CHP technology, having a clear idea of the areas where it could make improvements.

The energy centre houses one CHP 1.4MWe engine, a 100,000 litre thermal storage, two 9MW back-up/peak load gas boilers, High Voltage/Low Voltage switch-rooms and associated plant. The CHP engine will provide heat and hot water via a district heating network which involved approximately 4km of pipe connecting 13 sites and generating electricity for 14 buildings.

Forethought and careful planning enabled Vital Energi to overcome some significant obstacles in order to successfully complete the design and build of a new CHP energy centre located within the staff car park area of The Centre for Sport and Exercise (CSE) to provide heating, hot water and electricity to the University campus via underground pipework and cabling. In its determination to meet the timescale, Vital Energi undertook a large amount of prefabrication work to ensure ease and speed of installation on-site. This included having all the energy centre mechanical pipe work prefabricated off site to ensure quality of product, less on-site welding and to save install time on site.