VITAL ENERGi

CASE STUDY

York Teaching Hospital

UPGRADE EQUIPMENT, ENERGY CONSERVATION MEASURES,
15 Year Guaranteed Savings ESCO Project

OVERVIEW

York Teaching Hospital NHS Foundation Trust has lowered its carbon emissions and made financial savings which has positvely resulted in investment into front-line clinical treatment.

The hospital was designed in the 1960's and built in the 1970's, this enabled for scope in demand reduction as well as being able to use new types of technology to improve efficiency. The Trust wanted a CHP solution which would minimise carbon emissions and maximise energy savings over a 15 year period

CHP engines had been used by the hospital but had come to the end of their lifecycle and were removed in 2010. Having the right partner on board meant that the Trust could make improvements with demand reduction.

CHALLENGE

Brian Golding, Energy Manager for York hospital was clear about the challenge facing the successful bidder. "Reduce our carbon footprint, reduce our energy consumption, enhance our site resilience, and take the project forward 15 years."

We were confident we could deliver in all of these areas, but we are also ideally structured to meet the extremely tight project schedule which saw York enter the Carbon and Energy Fund's September 2012 tranche with the plant scheduled to go on-line just 20 months later.

With a workforce in excess of 8,000, the Trust cares for over 700,000 people per year across its 10 hospitals, giving it similar energy requirements to a small town. In 2012/13 the Trust had a combined gas and electricity bill of £2.45 million and emitted 13,586 tonnes of CO_2 .

PROJECT SUMMARY:

CLIENT
York Teaching Hospital NHS Foundation Trust

PROJECT
Combined Heat & Power

TIMESCALE:
September 2013 – July 2014

CONTRACT VALUE:
£12.7 million

THE BENEFITS:

- 96% Customer Satisfaction KPI Score
- Significant savings produced through demand reduction
- 3,000 tonnes of CO2 savings each year
- £848,000 financial savings per year
- Winner of CHPA Integrated energy award

Ian Whitelock, Joint Managing Director of Vital Energi with Patrick Crowley, Chief Executive of York Teaching Hospital NHS Foundation Trust at the official opening ceremony of the York Teaching Hospital CHP Energy Centre

Vital Energi are one of the more successful contractors on the CEF framework, and the York contract is a perfect example of the innovation that a good contractor can bring to a NHS energy scheme. The Vital Energi bid outperformed the project feasibility by more than £1m.

CLIVE NATTRASS, CEO OF THE CARBON AND ENERGY FUND

THE SOLUTION

Vital Energi identified a number of energy saving measures which would bring real demand reduction and will reduce carbon emissions going forward. Vital Efficienci replaced 5,400 fittings with more modern T5 fittings which can deliver savings of over 50% energy usage while producing increased illumination. Vital Energi also upgraded heating, ventilation and air conditioning (HVAC) controls and expanded the existing building management system.

Investment was made in improving some faulty infrastructure and obsolete technology. We also installed two plate heat exchangers, the condensate hotwell was also replaced, along with a transformer and HV switchgear. All of these replacements and upgrades will contribute to improved reliability and increased efficiency.

The centrepiece of Vital Energi's new system is the 1.2MWe Combined Heat and Power engine which produces electricity. The new CHP engine will provide 100% of the electricity needed overnight and 50% of the electricity during the day. The engine will run for the majority of the year and come offline for maintenance during the summer months when heat demand is at its lowest. Vital Energi installed a 512kWth waste heat boiler to capture heat from the Combined Heat and Power engine exhaust.

The CHP engine, along with the hospital's three 500kVA standby generators means that they are now fully self-sufficient in electricity in the event of mains power failure.

Significant upgrades to the Building Management System will bring overall improvements for the Trust, with Brian Golding, Energy Manager for York Teaching Hospital NHS Foundation Trust stating, "The Site-wide BMS enables it to control the environmental temperatures better, it improves the resilience of the controls so we don't get as many faults, it enables us to monitor and increase the useable information. It changes us from being reactive to proactive."

Vital Energi engineers spoke to managers and staff within the hospital on a daily basis to keep them informed of the details of upcoming work and to ensure we accurately understood any issues and concerns they had.

THE CONCLUSION:

The Trust's is now saving almost 3,000 tonnes of CO2 each year. This has positively resulted in financial savings of £848,000 per year.

REDUCED CO2 EMISSIONS BY

22%

Vital Energi guarantee these savings for the length of the 15 year contract, meaning that over £12.7 million can be redirected to patient care where it will do the most good.