University Hospital of Hartlepool

University Hospital gains new environmentally focussed energy plant through a Private Finance Initiative agreement

"This new energy scheme has enabled us to generate heat and electricity on site and at the same time minimise our environmental impact and improve our patient care environment. The investment provided through the PFI also gives us the opportunity to concentrate our capital on Patient care."

Barrie Kirton, Estates Director, University Hospital of Hartlepool, North Tees and Hartlepool NHS Trust

Customer profile
The University Hospital of Hartlepool is located on the outskirts of Hartlepool and provides general hospital services including A&E to people in the local area. Mainly built during the 70’s and 80’s the hospital has 427 beds.

Site need
The existing coal fired heating boilers were over 25 years old and at the end of their operational life. The Trust identified the need to move replace the plant with a gas fired solution which would remove the burden of coal handling on site and would improve environmental emissions and improve cost performance.

Dalkia’s solution
Working in partnership with Dalkia the Trust signed a 15 year contract to provide modern remotely controlled combined heat and power plant to supply environmentally generated heating and electricity to the hospital. By including a combined heat and power plant the efficiency is greatly increased, electricity is generated on site and the Hospital gains from climate change levy exemption. Also included in the contract is a Private Finance Initiative (PFI) investment of £1.5 million to completely refurbish the existing boilerhouse. The agreement also includes the subsequent operation and maintenance of the new plant and will provide secure and stable future energy supplies that provide a more cost effective and reliable energy solution for the hospital.
Special Features
To provide heating, hot water and electricity to Hartlepool Hospital the existing heating boilers have been replaced by a modern gas-fired combined heat and power unit coupled to a waste heat boiler, and two 6 te/hr (dual fuel) steam boilers. Other changes will include refurbished pipework, flues and new gas oil storage tanks. Dalkia will provide 24 hour operation and maintenance of the system for the next 15 years.

Under the agreement Dalkia is responsible for:
- Installation of a 1.4 MWe gas fired reciprocating CHP Engine.
- Installation of two new 6 te/hr steam boilers.
- Installation of a combination waste heat and fired boiler.
- Chimney modifications with individual steel flues.
- Installation of a new gas oil storage tanks.
- Installation of new monitoring and control systems.
- Operation and maintenance of the system with full risk guarantee for 15 years.

Service
- Removal of two of the existing coal fired boilers and installation of two new gas fired boilers.
- Operation and Maintenance of the new CHP and new boilers on a mobile service/remote basis.
- Supply of all fuel including import electricity for steam and CHP systems.
- Generate and supply metered steam and electricity.
- Capital funding of £1.5million.
- Replacement Guarantee for all new plant and existing steam fed plant.
- Supply of all fuel for steam and CHP systems including imported electricity.
- Set up the electricity export agreement contract to optimise export revenue and reduce import costs.

BENEFITS
- Stable heating and electricity supplies to improve the patient care environment
- Reduced environmental emissions as CHP units are typically twice as efficient at generating electricity than conventional generation - scheme reduces carbon dioxide emissions by approximately 4000 tonnes per year
- PFI investment of £1.5million to cover the cost of construction
- Cost and logistic savings compared to the previous energy plant
- Replacement Guarantee Scheme ensures that there are no unbudgeted steam plant replacement costs during the contract

To date Dalkia has invested around £50million through PFI in energy plant for hospitals, and this provides this type of managed energy service to over 45 hospitals in the UK - these account for around 15,000 NHS beds. (Management Plan). The new plant had an 8% impact within the first 6 months of operation.