ROYAL LIVERPOOL AND BROADGREEN UNIVERSITY HOSPITALS NHS TRUST

Private capital boosts development of hospital CHP

“...This project has not only significantly reduced the Trusts’ energy bill across both Hospital sites, but has also enabled us to substantially improve the reliability and resilience of our electrical supplies. The replacement of the controls equipment and the provision of new back up systems has avoided significant investments which the Trust would otherwise have had to take from other resources”.

AJ Wilks,
Executive Director of Finance,
Royal Liverpool and Broadgreen University Hospitals NHS Trust

The Royal Liverpool University Hospital has nearly 1000 beds covering a wide range of medical care needs. Prior to 1994 the Hospital recognised that their existing boilerplant had to be completely replaced and energy costs reduced. In order to achieve these objectives, the Hospital negotiated a 20 year Contract with Dalkia to provide a £2 million capital investment for new energy plant. This contract (phase 1) covered the design, installation, operation and maintenance of plant to provide all the steam, hot water and electricity for the Hospital and included a 2.8MW combined heat and power plant.

In 1996 The Royal Liverpool University Hospital merged with the Broadgreen Hospital, a smaller acute care facility, to form the Royal Liverpool and Broadgreen University Hospitals NHS Trust. To provide optimised energy management for both sites a second contract (phase 2) was signed in 2001 which provided a further £5million investment to upgrade the existing facilities to meet the growing needs of both Hospital sites. The phase 2 contract includes additional combined heat and power plant and increased standby electricity generation plant as well as additional control equipment.

In phase 1 Dalkia financed, designed, installed operated and maintained two new boilers and a 2.8MW CHP plant to provide all the electricity, steam and hot water to the Royal Liverpool University Hospital.
The phase 2 Contract covered the design, installation and commissioning of:

- Two 2.7MW natural gas fired CHP engines.
- One new waste heat boiler and existing fired waste heat boiler to serve the new engines.
- Conversion of the existing 2.8 MWe CHP engine to gas oil firing and configure for use as a standby generator and as peak lopping facility.
- Conversion of existing HFO storage and pumping to gas oil.
- Two new 800 kW emergency generators, control system and new essential supplies switchboard.

Under this Contract Dalkia is responsible for providing all Royal Liverpool Hospital site electricity. The agreement has an electricity export supply to optimise export revenue and achieve as low as possible import electricity prices for the Broadgreen Hospital site.

- Supply 56,677 tonnes of steam per annum.
- Generate 43,800MWh of electricity per annum.
- Make available 1,050 kW of low temperature hot water.

Operation and Maintenance of the new CHP plant and existing boilers on a mobile service/remote basis.

Replacement Guarantee for all new plant and existing plants.

ENERGY MANAGEMENT

ROYAL LIVERPOOL AND BROADGREEN UNIVERSITY HOSPITALS NHS TRUST

BENEFITS

- Significant energy cost savings
- Private investment of around £7million
- Secure, stable and economic energy supplies
- Risk transfer for plant and generation of hospital energy supplies
- Lower emissions and environmental compliance through use of Combined heat and power plants