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Greener Power

Case History

Surrey, England

Where:

Frimley Park Hospital
Surrey, England, UK

Supply:

1370 kwe QSV81 containerised
lean-burn gas engine generator set,
with switchboard PLC control panel

Application:

Combined heat and power

UK hospital reduces carbon footprint with combined heat and power (CHP) plant

Since achieving foundation trust status in 2005, Frimley Park Hospital — a 700-bed facility in the commuter town of Frimley, Surrey, about 30 miles from London — has made significant financial investments to enhance its acute services for the nearly 365,000 people in the North East Hampshire and West Surrey region.

After hiring a full-time environmental officer in 2006, the forward-thinking hospital trust also adopted a greener agenda, continually raising awareness of energy issues among its 4,000 employees and nearby residents. Recently, the hospital took a huge step toward reducing its carbon footprint with a new tri-generation project featuring a combined heat and power (CHP) plant driven by Cummins Power Generation Inc.



Frimley Park Hospital has taken a huge step toward reducing its carbon footprint with a new tri-generation project featuring a (CHP) plant driven by Cummins Power Generation Inc.

Part of the UK state-funded National Health Service (NHS) Foundation Trust, Frimley Park Hospital sought out a cogeneration system in 2007 to combat rising fuel prices, combined with the need to reduce the facility's carbon emissions. After determining that Cummins Power Generation provided the best experience and price, Cummins installed a 1,370 kW QSV81G CHP Module and switchboard PLC control panel inside a plant with an electrical output of approximately 1,200 kW at 400 volts and 50 Hz. The Cummins engine on the generator set features an efficient natural gas-fired lean burn turbocharged V16 spark ignition reciprocating engine with intercooler to meet strict emission requirements. The project also required heat from the engine water jacket and oil coolers at a normal minimum temperature of 95 degrees Celsius.

To suit absorption chilling within the CHP plant, heat from the exhaust gas manifolds and first-stage exhaust heat exchanger was required at a normal minimum temperature of 105 degrees. In addition, heat from the engine intercooler is required at a normal operating temperature of 50 degrees Celsius so that it can be effectively circulated inside the hospital. And not to be overlooked was that the containerised CHP plant needed suitable protection to withstand Britain's cold winters.

There are four giant blast coolers and two absorption chillers stationed inside the plant, which was secured with funding from the Department of Health's Energy and Sustainability Fund. In all, the plant is expected to save Frimley Park Hospital about £150,000 each year in electricity costs along with providing an estimated 2,000 ton reduction in carbon.

Like any undertaking of this scale, the project was not without its challenges. The equipment was delivered in an extremely tight space for maneuvering, requiring close supervision of craning equipment from the Cummins Power Generation delivery team.



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Toshiba Carrier (absorption chillers and condensing coolers), E&B Engineering Services and Nationwide Engineering were among other team members on the project.

In addition to being able to meet Frimley Park's accelerated project timeline, Cummins Power Generation's solution provided the greatest amount of carbon saving and financial payback over a 20-year period. According to Colin Mapperley, General Manager of Facilities for Frimley Park Hospital, "Energy savings contribute directly to reducing operating costs at the hospital, so spending on patient care is not affected during financially challenging times.

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Colin Mapperley, General Manager of Facilities for Frimley Park Hospital.

Michael Rule, Sales Manager for Cummins Power Generation said the hospital trust's decision to go with a cogeneration solution will have long-term benefits — both financially and environmentally.

"In addition to saving money in the long run, Frimley Park Hospital has taken an important step in reducing its carbon footprint," Rule said. "That's a win-win situation that you just can't beat."

For more information about combined heat and power or other energy solutions, contact your local Cummins Power Generation distributor or visit www.cumminspower.com.



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