

Combined heat and power solutions

Queen's Hospital, Romford, UK

Dresser-Rand provide power and hot water to Queen's Hospital, Romford.

The Opportunity

Commencing construction in July 2003, the new £261 million (\$425 million) Queen's Hospital PFI development was built to replace the ageing Harold Wood and Oldchurch sites. Built on a brown field site, the new hospital incorporates state-of-the-art facilities and the latest technical advancements.

This hospital site provided an ideal application for CHP as it has a simultaneous demand for heating and power throughout the day. The installation of the CHP system took place during the building construction phase.

The Solution

The site has a purpose-built Energy Centre housing the incoming electrical supply connections, boilers, associated plant and flues. The CHP system was designed to sit adjacent to a number of standby diesel generator sets, installed to provide emergency power in the event of mains failure, within this Energy Centre.

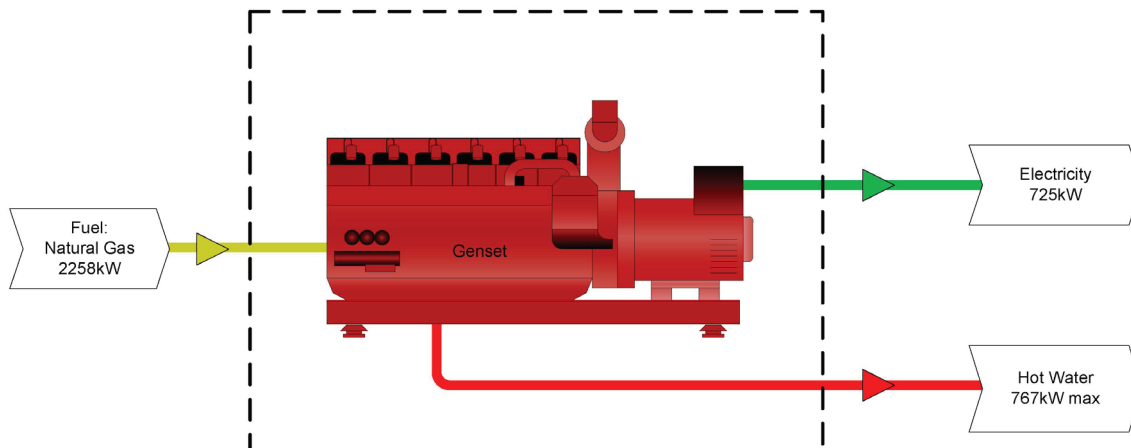
Scheme technical data

System	1 x 725 kWe unit
Fuel input	2,258 kW (7.710 MMBTU/hr)
Power output	725 kWe
MTHW heating	767 kWth (2.619 MMBTU/hr)
System efficiency	66%
Project payback	2.6 years
System CO ₂ saving	1,259 tonnes/year (22% CO ₂ reduction)

The Dresser-Rand model 725M was selected as the best fit solution given the baseload energy requirements of the hospital. The CHP unit interfaces with the MTHW building services flow and return at temperatures of 120°C / 95°C (248°F / 203°F) and the electrical distribution system at 11kV.

By employing a 'High Temperature' Caterpillar model G3512LE gas engine with a three circuit cooling system the engine jacket water heat can be fully utilised at the required MTHW flow temperature. By recovering this energy along with the exhaust heat the CHP plant efficiency is maximised thus meeting 'Good Quality CHP' status and achieving full Climate Change Levy exemption.

The CHP system generates electricity continuously in parallel with the



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mains supply. In the event of a mains failure the CHP control system automatically activates the necessary shutdown procedure.

System Control

The Dresser-Rand PLC control system ensures fail safe and commercially optimised operation in accordance with the hospital's environmental programme. At all times

the CHP system is remotely monitored from the Dresser-Rand operation in Peterborough, UK, allowing continuous diagnostic assessment and performance review. Detailed reports on system operation are presented to the hospital on a monthly basis and an annual review ensures that contracted efficiency and availability levels are maintained.



The Company

Dresser-Rand provides a complete range of fully packaged and tested combined heat and power (CHP) systems to commercial, industrial and municipal energy users worldwide. CHP (or cogeneration) systems reduce on-site energy costs and carbon dioxide emissions through the highly efficient delivery of power and heating. Combined cooling, heat and power (CCHP or trigeneration) systems, provide the high efficiency of CHP, with the added benefit of chilled water output.



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