



Upgrade and automation project cuts hospital boiler house energy consumption by up to 15%

A major project to upgrade boiler controls and install an advanced Spirax Sarco automation system has played a key role in achieving up to 15% energy savings in one of the NHS's largest boiler houses. The 1,000-bed St George's hospital in South London also has a more reliable steam supply and improved on-site maintenance regime as a result of the work.

Several other energy saving measures were undertaken during the project. These included improved flowmetering, a detailed steam system survey and steam trap refurbishment programme, the installation of boiler blowdown heat recovery and a deaerator head on the boiler feedtank.

Spectacular energy savings

The results of the programme have been spectacular, says Mr Shane King, Principal Engineer at the hospital: "The aim was to improve energy efficiency and install systems necessary for de-manning the boiler house. The work has achieved between 12.5 and 15% energy savings, despite an increase in demand caused by adding several large buildings onto the site."

The boiler house is at the heart of St George's Energy Centre, which includes a 4.5 mW Combined Heat and Power

(CHP) plant. The hospital's demand for steam is mainly met by a single waste heat boiler fed by the CHP plant, with up to four gas-fired boilers coming on stream automatically as demand rises.

'The work carried out is having a very positive effect on our carbon emissions'

"During the summer we used to have the waste heat boiler plus at least two other boilers running," says Mr King. "With the new system, on the coldest nights during the past winter, only the waste heat boiler and one other boiler were firing, despite the higher steam demand from the expanded site."

"We are just thankful that the Trust was able to acknowledge the benefits that the project would deliver and that the works were completed prior to the recent increase in energy costs. Like all Trusts, we are struggling to cope with the continual increase in energy costs... I dread to think what position we would have been in if we hadn't undertaken this work," he adds.



Steam metering enables St George's to make management decisions on how they operate the plant to maximise and demonstrate efficiency measures.

Carbon emissions benefits

As well as the energy savings, there have been significant reductions in carbon emissions. The NHS has strict public sector targets that include reducing absolute carbon from the fuel and electricity used on its estate by 15% by 2010-11, relative to base line emissions in 1999-2000.

“The work carried out is having a very positive effect on our carbon emissions,” says Mr King. “Also we can achieve greater financial benefit from the exemption from the Climate Change Levy (CCL) for CHP schemes. Improving the Energy Centre’s thermal performance increases the ratio of electrical output to total output which increases the level of CCL exemption. This is worth at least £20,000 per month when we achieve an electrical efficiency of 20% or above and gain 100% exemption.”

Accurate data for accountability

Steam metering was also addressed during the project. Spirax Sarco in-line variable area flowmeters were installed on each outgoing steam line from the boiler house to provide comprehensive metering.

“We now know the steam demand from each building on site. Not only does this give us a Monitoring and Targeting (M&T) capability, but we now have the information we need to make management decisions on how we operate the plant to maximise and demonstrate efficiency measures,” explains Mr King.

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