

CHPs at the heart of energy and carbon savings

A true champion of CHP (combined heat and power), Heart of England NHS Foundation Trust now has three successful carbon and energy saving schemes to its name, each with CHP as its focal point.

David Lively, the trust's energy and sustainability manager, told *Hospital Bulletin*: "We'd already completed two CHPs at Solihull Hospital and Birmingham Heartlands, when we came to upgrade at Good Hope. The two earlier schemes were in fact pilot sites for the Carbon and Energy Fund's framework. Clive Natrass, CEO of the Carbon and Energy Fund, was heavily involved at both the Solihull and Birmingham Heartlands projects.



Paul Street, estates officer - mechanical, Good Hope Hospital

"The tendering process was 12 months and the programme of work installation was 12 months. It's all up and running now. Practical completion was 7th July. I'd certainly speak very highly of Dalkia," said Dave. "It wasn't an easy installation. We had some issues around the old boiler plant which both parties worked to overcome. We obviously had to keep operational 24/7. From a project point of view it went very well."

In the scheme Dalkia removed one boiler, installing a composite boiler in its place, upgraded the controls to the existing boilers and installed the CHP unit within the boiler house.

"We're responsible for the day-to-day operation," said Dave. "Dalkia handle any breakdowns and monitor the site remotely."

"We're running a sustainability development contract across the trust, so all bidders were told to concentrate solely on the boiler house."

Dave explained: "The boilers were 10-years old and in reasonable condition. However the boiler controls needed replacing. We were having major issues with some engineers having to come from Germany and problems with replacement parts. So that was all included in the CHP scheme."

"Dalkia have delivered on what we wanted. They've worked well with the trust."

Good Hope Hospital is a 600-bed acute and general

hospital in Sutton Coldfield, West Midlands. With its 35-year-old energy centre and lack of a modern energy plant, the hospital was in need of a new facility to improve its carbon and energy performance. The hospital chose Dalkia for a self-funding solution with guaranteed performance over the contract term.

The 15-year contract, valued at £5.4m, has seen the Good Hope Hospital's energy plant upgraded with a new CHP unit. The CHP will account for a CO₂ cut of 2,692 tonnes, annual guaranteed savings of £477,000 per annum and a further £42,700 of operational savings.

The installation at Good Hope Hospital comprises a 1,166kW CHP plant from Cogenco, Dalkia's packaged CHP subsidiary, a 5000kg/hr fired 820kg/hr waste heat combination boiler, CHP heat recovery system and associated infrastructure, including a complete upgrade of the burner controls for two existing boilers.

Annually, the CHP engine unit will provide 9,400 MW/h of electricity and 9,100 MW/h of heat, using natural gas as a primary fuel source. The heat that is produced as a result of the electrical generation process is recovered by the CHP system and conducted to the new waste heat boiler where it is used to produce steam and low temperature hot water for heating and domestic hot water top-ups. While most of the electric and thermal energy is

distributed out to the hospital's facilities, any surplus electricity can be exported to the National Grid when appropriate.

Martin Hazel, Dalkia operations manager for the Midlands region, said: "The carbon and utility cost savings that Good Hope Hospital will gain from the new energy centre in the first three years will offset the initial capital outlay for buying the equipment."

Dave Lively added: "To Good Hope Hospital, the new CHP plant is a step forward in implementing our sustainability development programme and achieving the carbon sustainability targets set by the NHS. The installation of a similar plant at Solihull Hospital provided operating data in support of the business case for such a unit at Good Hope."

"In the future, we are expecting to see similarly successful results here. The estimate shows that we will be able to save 2,692 tonnes of carbon, with guaranteed savings of £477,000 and £42,000 in operational costs per annum."

One of the team at Good Hope Hospital who was responsible for the day-to-day operation of the project, Paul Street, estates office-mechanical, explained: "I'm from an engineering background, so I see things from that perspective."

"Dalkia and Cogenco have been very good. Martin Hazel,



operations manager Dalkia, and Gary McKiernan, senior project manager Cogenco, were very helpful throughout the scheme. Their foreman on site, Tony Health, was excellent, very approachable. They looked at our operational needs and considered what we wanted first."

Outlining the scheme, Paul said: "We've completed the installation of a new boiler and upgraded the burners on the remaining two boilers, installed the CHP and between us we've upgraded the control panel on the existing boilers."

"Dalkia installed new plate heat exchangers into the boiler house and the plant room for two of the blocks. The plate heat



exchangers pre-boost the heating and the hot water so we don't have to use as much steam. It's boosting the water that's going into the calorifiers, which are now over 30 years old.

"We're looking to put plate heat exchangers into the hospital over the next few years"

"Our system was basically built in the 1970s and we worked together with Dalkia to resolve a number of issues."

"We're doing the day-to-day and the weekly checks, while Dalkia will attend if we have any issue with the new boiler and the engine. The two or three times I had to contact Dalkia they were on site that day. They've been very good"

"They are monitoring the whole of the energy centre and we're 'piggy backing' off that, so we have full knowledge of what's going on on site. We're also in the process of upgrading our site-wide BMS."

Paul explained: "There was some cross-training during the project. We've trained Dalkia on the old boilers and they've trained us on the new one. It's part of the cooperation that's run through the whole scheme."

"We're now in the process of installing a new hotwell, which is hospital funded."



"The CHP is running 24/7. We export some power to the grid at night and at weekends. Dalkia calculate all that. They have given us guaranteed savings. If we don't hit those they pay back the difference."

Describing the role of the Carbon and Energy Fund, Paul added: "Helen Brindle, project manager for CEF, and her colleagues have been very helpful."

Clive Natrass, CEO of the Carbon and Energy Fund, explained: "I led on both the Solihull and Birmingham Heartlands projects. The pilot CEF is based on the work we did with Solihull."

"On this latest scheme for Good Hope Hospital, CEF's Peter Fairclough, was the project director, and Helen Brindle, was the project manager. The technical administration was by NIFES."

"Everybody is happy with the scheme. The contractor, Dalkia, performed well. It's been a good project."

Echoing Clive's sentiments, project director Peter Fairclough said: "CEF was delighted to be



involved with the scheme. It's clearly an important scheme which has run well as a project and will deliver energy and carbon savings for the trust. We were very pleased with the contractor's team on site. There was a very good relationship between the trust and the site



team, which ensured that any problems on site were worked through."

Commenting on the benefits of the Carbon and Energy Fund, Dave Lively said: "On both of the earlier schemes we worked in essence with the forerunner to CEF but the technical back-up and programme management that CEF provided on the Good Hope scheme were of great assistance to us."

"With CEF there's a framework, no starting from scratch, with a completed tendering process. So CEF save on invitations to tender and speeds up the whole project. On top of that there's the technical assistance and guidance."

"For the NHS the CEF is a must."

Outlining the trust's sustainability development programme Dave Lively explained: "We had £2.8m funding from the Department of

Health for sustainability, which was committed in Phase 1 of the scheme, with a further £1.4m provided by the trust providing a total spend in Phase 1 of £4.2m.

"In Phase 1 of the sustainability programme we've completed quite a bit of installation work - a number of lighting schemes, fitted variable speed drives across the sites, smart metering and added some solar PV to two sites."

"We're now running into Phase 2, which will see more solar PV, more lighting, some high efficiency HP/LV transformers and PIRs added on a range of vending machines."

"We've already started to see the benefits with payback on some of the schemes. It's true to say we've picked a lot of the 'low hanging fruit' and it gets harder as you move on."

The scheme at Good Hope Hospital highlights the effectiveness of CHP units in hospitals. Dalkia currently operates energy plant for over 100 hospitals in the UK,

providing CO₂ savings of 100,750 tonnes per year. Its packaged CHP subsidiary, Cogenco, has now supplied over 70 units to healthcare facilities.

Dalkia has recently adopted the group name Veolia. The Cogenco name continues and the company

remains as part of the Veolia Group.

For further information, call Veolia on 01403 272720 or visit www.veolia.co.uk



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