
Oxford University Hospitals Trust - Becoming grid-free with CHP

Overview of the Project

The £14.8 million Hospital Energy Project at the Oxford University Hospitals Trust has included removing the 30 and 40-year-old boilers in the Churchill (CH) and John Radcliffe (JR) hospitals and replacing them with a 4.5MWe Combined Heat & Power Engine (CHP) at the JR, new combi boilers, Energy Link, heat stations and upgraded building management systems.

The CHP uses gas to produce electricity and heat is generated as a by-product. This heat is captured in steam and water that is pumped around the JR and Churchill Hospitals in a continuous loop via the Energy Link, thus providing the hospital sites with resilient power, heating and domestic hot water and ensuring that there is no waste of the energy and heat the CHP generates.

The Energy Project has also included the replacement of 6,407 light fittings.

All of this work took two years to complete and was done without interrupting any patient care or clinical procedures at either hospital.

The design, fabrication, installation, and commissioning of this project has been delivered on an agreement between the trust and Vital Energi, with the Carbon Energy Fund providing contract, legal and technical support.

This new energy and heating infrastructure will cut the trust's CO₂ output by 10,000 tonnes per year (the equivalent of 4,000 homes' CO₂ emissions) and guarantees to save the Trust £461,746 net every year on its energy bills for 25 years.

Economic, Health and Carbon Impact of the project

The benefits are the two hospitals are virtually Grid-free in the retained estate and substantial risks removed from both sites including:

1. asbestos
2. defunct, unsupported infrastructure
3. hot water boilers
4. HTHW systems
5. oil tanks
6. 1940's generators at the Churchill
7. 1970's boilers and pipework at the JR
8. 30,000 tonnes of 1970's chiller equipment

The trust's CO₂ output will be cut by 10,000 tonnes per year (equal to 4,000 homes' CO₂ emissions), it will save £461,746 (net) every year for 25 years. The new lighting is 90% more efficient and the Trust will use approximately 3,200 fewer lightbulbs a year. The Estates team who were permanently changing lightbulbs, are now being employed

in more proactive tasks. Fewer procedures have had to be cancelled due to lack of lighting or heating. Patients and staff have commented on the vastly improved brightness in wards and corridors. Lighting for bedside procedures was particularly improved. The Trust will save £11,000,000 on backlog maintenance over the next 3 years. Also, the Trust can now recruit estates staff with contemporary skills and train them for the future rather than having to look after obsolescent boilers.

Partners, supporters involved in the Project

Vital Energi is the main contractor and supplier and CEF is legal and contractual support.

Future plans for the project

A £2 million variation to the original contract is now underway that will replace the chillers at the JR. These will not be switched on until Spring so their impact will be felt Summer 2018 onwards. The new BMS gives the trust real-time data on energy usage that will inform future plans with hard evidence. The Project has also highlighted the inefficiencies of the secondary system and this will be reviewed.

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