

Case Study

Client: Lancaster University

Services provided: District Heating System (DHS) and Building Management System (BMS) review and optimisation

Sector: Higher education

Benefits achieved: many opportunities to improve efficiency and beneficially extend the system

Summary

Lancaster University is in the top 10 in The Complete University Guide 2024 and consistently placed in the top 15 in major UK league tables. They also rank highly in international league tables such as the QS World Rankings, have over 16,000 students and plan to be carbon net-zero by 2035.



"I have been consistently impressed by the level of skill, understanding and capabilities of JRP Solutions. They delivered a very insightful BMS health check, and subsequently a very thorough and robust set of proposals for our district heating system which helps make the system fit for the next 50 years. I look forward to continuing to work with JRP Solutions, as we move to a low carbon future." ***Jan Bastiaans, Former Energy Manager***

Scope

JRP Solutions was appointed to carry out a health check of Lancaster University's Building Management System (BMS) which highlighted that their District Heating System (DHS), aged over fifty years, was not operating efficiently. In addition, the university required feasibility studies into the extension of the DHS and the separation of generation and distribution.

The DHS comprised an Energy Centre with a gas Combined Heat and Power (CHP), biomass boiler, three gas boilers, heat store and a distribution system supplying space heating and domestic hot water to thirty five buildings on the 120 acre campus.

Further to the health check, JRP were also commissioned to carry out:

- A forensic study to provide a firm foundation for all future decisions about the DHS. This involved a thorough survey of the system, comprehensive analysis of all relevant data and thermal/hydraulic modelling.
- A feasibility study into the separation of DHS heat generation and distribution.
- A feasibility study into extending the DHS to the Infolab 21 Building.



Infolab 21

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Results

Numerous opportunities were identified for improving the efficiency of the DHS involving improved insulation and changes to: BMS control, variable speed drives, pumping, valves and the geometry of hydraulic systems. DHS heat generation and distribution separation was recommended at a budget cost under £300,000 with an annual cost-saving in excess of £200,000. The Infolab 21 Building DHS extension was recommended at a budget cost under £140,000 with an annual cost-saving of £28,000. It was also concluded that the system could be beneficially extended to other buildings on the campus to improve the utilisation of the plant and infrastructure.



Gas boilers

In addition, JRP advised against a project being considered to introduce differential pressure control which was deemed to result in unwanted operational inflexibility and substantial unnecessary cost.

JRP's work gave the University a sound basis on which to plan for the improvement and expansion of the DHS over the second fifty years of its life.



Combined heat and power



Biomass boiler

For more information about any of JRP's services, call 0800 6127 567 or email info@jrpsolutions.com.