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University of Greenwich cuts £10,000 from air handling bill

The University of Greenwich is set to save £10,000 on its air handling costs across its three campuses following the installation of ABB variable-speed drives at a number of its buildings. Additional savings from further projects could cut running costs by another £4,000.

The university is determined to reduce its energy bill while also cutting its contribution to CO₂ emissions by targeting energy efficiency improvements across its teaching faculty buildings and other facilities.

David Blackman, Building Services Engineer in the University's Building Services department says: "The University has a five year target to reduce its carbon emissions and this is one project we had identified as being capable of contributing to that. We worked on the premise that most of the air conditioning plant is overrated and that we could reduce the speed of the fans without affecting the air flow adversely."

Blackman asked ABB Drives Alliance member Mid Kent Electrical (MKE) to investigate the potential for using variable-speed drives (VSDs) on air handling units (AHUs) in buildings on the Medway, Greenwich and Avery Hill campuses.

Russel Kimpton of MKE says: "Starting on the university's Medway campus, we looked at the air handling equipment across several buildings and recorded motor and fan data. During our survey of the site we found that many of the fan units have rated speeds and powers less than that of the motors. These were either being run too fast or the speed of the motor is being reduced by the pulley ratios on the belts driving the fans. We were also told that when the original system was set up, airflow was adjusted by setting dampers on vents at room level."

MKE looked at air handling installations in the six buildings on the Medway campus – Blake, Hawke, Anson, Nelson, Grenville and Pembroke. Monitoring was carried out on the AHU3 fan motor in Anson. Over the two day test period, while running on normal direct-on-line operation, the 4 kW motor consumed an average of 3.353 kW, for a total annual running cost of £871. Running the motor for two days using an ABB ACH550 HVAC drive consumed an average of 2.087 kW at a total annual cost of £542.

These results were extrapolated to produce estimated savings for the motors in the other buildings, a total of 44 installations with a combined installed power of 127 kW. It was estimated that following the installation of VSDs on these fans, the fan applications would save some £10,472 a year in running costs, as well as reducing carbon emissions by over 57 metric tonnes per annum.

MKE recommended that the applications highlighted in the report should be fitted with ABB VSDs, a project which has now been completed. MKE also recommended conducting further investigations to establish the rooms served by each air handling unit and each extractor fan. This would highlight areas where additional savings may be achieved by further adjustment of both vents and VSDs.

Further investigation of the Greenwich campus revealed the potential to save £883 on the Dreadnought, Queen Mary and Stephen Lawrence buildings, with a corresponding reduction of four metric tonnes of CO₂. The King William building on the Greenwich campus could save a further £1,157 a year, cutting CO₂ by five metric tonnes a year.

Avery Hill campus could save £2,157 per annum in running costs with a cut in CO₂ of 10 metric tonnes a year. Total monetary savings from these additional projects could amount to £4,197, with a total cut in CO₂ of 19 metric tonnes.

Says Blackman: “We were looking for payback times on the projects of around five years, yet most were much quicker than that. We are very pleased with the outcome of the project and consider it very worthwhile doing. MKE are a good company to work with and there were no problems throughout the contract.”

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Caption: The University of Greenwich is set to save £10,000 on its air handling costs across its three campuses following the installation of ABB variable-speed drives.



Caption: MKE looked at air handling installations in the six buildings on the Medway campus – Blake, Hawke, Anson, Nelson, Grenville and Pembroke (pictured)

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