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GREEN LABORATORY SCHEME HELPS *READING* ACHIEVE 35% EMISSIONS CUT

In spring 2017, the University of Reading announced that over the previous five years it had cut its carbon emissions by 35% from 44,000 tCO₂ in 2008/9 to just over 28,500 tCO₂ per year, generating a saving of £17 million.

The carbon reduction was the result of a £4 million-plus investment, each £1 million of which produced a saving of four times that amount.

Led by the university's dedicated Sustainability Services team, the institution's carbon reduction initiatives were spread across several key areas, including the installation of energy-efficient equipment in its laboratories.

Electronic airflow control and monitor manufacturer and consultant, Temperature Electronics Ltd (TEL) was commissioned by fume cupboard design and installation firm, CSW Technical, to work on the university's 2016 Green Gown award-winning Extracting Carbon Savings from our Science Labs project. The project followed a successful £250,000 2014 pilot, which was shortlisted for one of the awards.

The new estate-wide upgrade of science laboratory fume cupboard ventilation was delivered for £768,000, generating predicted annual savings of 694 tCO₂ and £223,958. These savings follow those achieved by the pilot - 343 tCO₂ and £91,683 – which paid for itself in less than three years.

Part of the new project saw fume cupboards upgraded from constant air volume (CAV) to variable air volume (VAV) systems across 22 laboratories in three buildings, installing TEL AFA1000 VAV controllers to 68 units. The new system was commissioned in June 2016.

The controllers automatically adjust airflow according to need, decreasing the volume of air extracted when the cupboards are not in use, minimising energy consumption. Under the CAV system, air had been continuously extracted and replaced, even when cupboards weren't in operation.

Said the University of Reading's energy and sustainability manager, Dan Fernbank: "To date, legal requirements around fume cupboards have focused on the safe containment of hazardous

substances. This can lead to energy wastage if solutions do not also consider how to meet their requirements efficiently.”

In its entirety, the University of Reading’s Extracting Carbon Savings from our Science Labs project also included: replacing 98 extract fans with high efficiency equivalents; re-ducting 49 chemical storage cupboards to reduce ventilation speeds and enable the attached fume cupboards to be switched off when not in use; installing PIR sensors on fume cupboards, with associated alarms reminding users to close the sashes when the cupboards were not in use.

Added Fernbank: “The science laboratory initiative also generated significant improvements in the thermal comfort of the spaces, keeping them warmer than before and demonstrating that sustainability can go hand-in-hand with safety and comfort.”

The laboratory sustainability project is just one of the university’s seven carbon reduction themes, which also include: the installation of energy-efficient lighting and heating management equipment; the introduction of an energy-efficient building management system (BMS); the implementation of new, greener, building-design and travel policies. Behavior and awareness also formed a key strand to Reading’s carbon-reduction strategy. The university hosts an annual “green week”, presenting an opportunity for staff and students to better understand the contribution they can all make by adopting better usage habits.

Following the success of the university’s five year programme, and based on UK government targets, the University of Reading set a new target of 45% carbon reduction by 2020/2021.

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