

A Laboratory Energy Specialist

Biology research and teaching at the University of York used £600,000 of electricity and £173,000 of gas in 2008/09, and accounts for approximately one third of the institution's electricity use. The Department has 600 staff and postgraduates who work in a dedicated complex of 19,360 m² (nearly half of which is laboratories). They have made the university department into one of the UK's leading centres for life science research and teaching.

Dawn Cartwright, the Department of Biology's Head of Infrastructure and Facilities, felt that "our local knowledge allowed us to identify many opportunities to make energy savings. We also expected rising energy costs, and moves towards devolved budgeting." Hence, in 2008 she established a part-time Departmental Energy Manager, a unique position for a UK university laboratory. The appointee, Jo Hossell, developed the role to include benchmarking and tracking energy use; monitoring equipment; raising awareness of energy amongst lab users; and providing energy efficiency guidance for new purchases. She liaised closely with the University's Estates Department, and in 2011 transferred to the central Energy and Environment Team, with a broader remit of working for the Energy Manager to provide specialist support for all labs.

Practical actions taken in the Department since 2008 include:

- Voltage reduction equipment;
- Metering of different ages and makes of equipment and development of league tables based on energy use;
- Wall insulation panels in cold spots;
- 22 permanent sub-meters and additional spot metering;
- Time clocks on equipment e.g. drying cabinets;
- Reduction of excess lighting;
- More use of cheap night tariffs e.g. growth cabinets; and
- Development of energy efficient procurement guidance (accompanied by performance data – see example below)
- A £200 subsidy for purchase of energy efficient freezers.

Growth Cabinet	kWh	Running Cost p.a.
Cabinet 1	20.6	£549
Cabinet 2	36.4	£968
Cabinet 3	62.0	£1,814
Cabinet 4	92.9	£2,711



*Dr. Jo Hossell, Departmental
Energy Manager, Estates Services*

Key Points

- Unusual position of dedicated specialist providing a source of expertise on energy and environmental issues for all laboratories within the University
- 8% reduction in laboratory energy consumption since specialist post was created
- Better understanding of laboratory operation, and ability to bridge between scientists and Estates, enables energy improvements that are hard to achieve by other means
- Specialist knowledge gives higher profile to energy efficiency in equipment procurement discussions
- Many non-energy benefits from increased efficiency including equipment consolidation and better working conditions for staff
- Subsidy for energy efficient freezer procurement

S-Lab Case 3 – Laboratory Energy Management

Key Benefits

Reduction in energy use and costs – Annual energy usage was 3% less in 2008/9 than the previous year, despite increased activity. An even greater reduction is anticipated in 2009/10. The voltage reduction equipment alone is expected to save £45,000 annually, and the fan inverters £13,700. Smaller measures also add up, such as £605 a year from two groups sharing an oven rather than having two, or £200 plus annually from installing time clocks on equipment. It is estimated that the cumulative savings by 2011 will cover most or all of Jo's salary since her appointment, with an expectation of continuing 'dividends' as increased awareness and information enables further efficiency improvements. This will be supported by data from a very detailed footprinting of laboratory energy consumption, being conducted in collaboration with the S-Lab project.

Reduction in carbon –The Department produces over 5,000 tonnes CO₂ per year which translates into an estimated departmental carbon footprint (per staff/postgrad) of around 9 tonnes annually. It is estimated that over 250 tonnes of CO₂ have been saved in the 2 years since Jo started.

Raised awareness – Jo has developed a dedicated website which is updated weekly and provides feedback to researchers, technical staff and postgrads on overall lab performance, and individual corridors/blocks. Other measures include regular seminars, labels on equipment and tips in the weekly Biology Bulletin.

Improved laboratory operation – Benefits include identifying under-utilised equipment (and opportunities to save money through consolidation); improved job satisfaction for technicians through opportunities to 'make a difference'; and a better working environment through improvements in room temperature control.

Enhanced university capacity – Jo's experience and knowledge are now increasingly being made available to other university departments, through informal networks and formal events.



Dawn Cartwright, Head of Infrastructure and Facilities

Views

"It's hard to reduce energy consumption in labs without a detailed understanding of how laboratories function. Jo and her colleagues have this understanding, and are using it to implement efficiency improvements. I'm sure that a model of lab-specific energy expertise will play a big role in the reductions in laboratory energy consumption and carbon emissions we need to meet sector targets."

Dawn Cartwright

"At a time when staff are more aware than ever before about the high use of energy in research department, Jo has come along to inform and inspire us to make little changes to our everyday routines."

Lucy Hudson, one of the Chief Technicians, Biology Department

Further Information – www.goodcampus.org or jo.hossell@york.ac.uk Version 2.0 Oct 2011.

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