Case study: Intelligent buildings

- Institution: University of Reading with Newera Controls Ltd and Carnego Systems Ltd
- Funder: HEFCE and University of Reading
- Sector: Buildings
- Project Type: Research & development

It is estimated that non-domestic buildings were responsible for 18% of UK total greenhouse gas emissions (582 Mt CO_2e/year) in 2010. Of non-domestic building emissions, 34% (36 Mt CO_2e/year) was due to lighting, office equipment and catering and 46% (49 Mt CO_2e/year) was due to heating.

A team consisting of researchers at the University of Reading, the University's Facilities Management Directorate, Carnego Systems Ltd. and Newera Controls Ltd. conducted two separate investigations to measure and demonstrate the potential for two important and complementary approaches in achieving energy efficiency and greenhouse gas emission reductions in buildings. The first focused on influencing user behaviour, in an office building on the main campus. The second considered an interventionist approach in an accommodation block at the Henley Business School using intelligent monitoring and control systems. To date, the first investigation has demonstrated a 20% saving in lighting, office equipment and catering energy use, largely through user awareness and behaviour change.

The second has indicated that savings in heating energy of the order of 24% can be achieved by enhancement of legacy Building Management Systems (BMS) using a Building Energy Management System (BEMS). There is also scope for further savings if the BEMS system is extended to other services such as lighting.