

Project Title: 'A review of smart electricity meters.'
Principle Investigator: Professor G Levermore (University of Manchester)
Project duration: 07/01/08 – 08/01/09
Grant Value: £48645.00

According to Government statistics, 27% of UK energy is consumed in meeting demand in dwellings and 19% in non-domestic buildings, with offices/university buildings contributing a significant proportion. Given that energy consumption is a key factor across a range of issues, including climate change, policies and mechanisms are needed to reduce it. One of the key elements of these policies is the provision of information to both consumers and government. A recent innovation, which can be used by consumers to monitor how much energy they are using and where in the property the energy is being used (specific appliances, lights etc), is the 'smart' or Smart Occupant Feedback (SOF) meter. These were highlighted as potentially useful means of providing this information to building occupants. It is hoped that by providing consumers with an accurate picture of how much energy they are using SOF meters will result in a reduction in the amount of energy we use. Work to date suggests that feedback of information could save up to 10% of energy demand, yet studies also caution that savings may decline over time. Another similar device is the Smart Plug which allows the user to monitor individual electrical appliances wirelessly through a



laptop or phone. There are also some Smart Occupant Feedback Disaggregation (SOFD) meters on the market which allow users to see how much energy each appliance has consumed. This would make it easier for users to save energy because they will know exactly where the largest savings are to be made. However very little data exists on the accuracy of these meters and current reports suggest that some meters can monitor simple loads such as a domestic lighting quite accurately but a number of items of equipment less well.

The aim of this project was to review existing academic and non academic literature on SOF and SOFD meters, to test the meters both in a lab and in university buildings/houses then assess their performance and examine what further work can be done to improve the meters.

During the project a number of SOFD devices came onto the market, however none of them have been a success in the UK partly due to their complexity meaning users required training to utilise them properly. A number of monitoring devices, such as Smart Plugs, also came onto the market and these were tested in homes and were found to be reasonably accurate and useful. It was found there are no disaggregated smart (SOFD) meters available yet but useful Smart Plugs and SOF's are available. The team also believe further research in to the mathematical models or algorithms used by the devices could yield improvements in their performance; collaborators are being consulted over possible grants to carry out further research into this.

