A review of smart electricity meters - Grant Awarded £48,645

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Summary

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, energy security and fuel poverty, polices and mechanisms are needed to reduce it, with the provision of information one element of these policies. In the Government's recent review of energy policy, 'smart meters' are highlighted as potentially useful means of providing this information to building occupants, and thus help them to reduce their consumption.

Some "smarter" smart meters are proposed by researchers that can be connected to a display system such as a PC, or television set and can provide information concerning energy consumption of a number of electrical devices. There are a number of ongoing studies that are assessing the potential for simple smart meters, but there is little work to date on the smarter smart meters that are more complex, communicating meters that show energy consumptions for individual appliances. 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.

The aim of the proposed research is to review what has been done regarding these smarter meters and what the state-of–the-art is. 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. However, little data exist on the accuracy, added to which there are few such meters in existence. This work will establish what meters actually exist and their stage of development, the accuracies of smarter meters that exist and determine in more detail how the meters work and how they may be improved.

University of Manchester researchers will work with MIT, (which is developing an intelligent smart meter), EA Technology and Northern Design (Electronics) on this project.