EFFICIENT HOUSEHOLD APPLIANCES STUDY

EXECUTIVE SUMMARY

UNIVERSITY OF SURREY

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Headline findings

In all instances of appliance replacement, savings in energy use were achieved

Some disconnect evident between largely pro-environmental attitudes, and both stated behaviours and appliance usage

Replacement of an existing appliance with a new energy-efficient model in all cases yielded improvement in terms of energy consumption. Changed practices in most cases also enabled reduced energy consumption with both existing and newer appliances.

Even greater savings should be achievable by combining some behavioural change with the purchase and use of new energy-efficient appliances

What the study involved

The programme of work was structured around a research field study of the contribution of appliance replacement and consumer behaviour to reducing energy use. The research comprised a four-month study of five households in the Borough of Woking in order to ascertain what the role and interrelationship between technology and education might be in driving more energy efficient consumer use of modern domestic electrical appliances. Energy consumption and user behaviour were monitored and a selection of the appliances replaced with newer models that were rated to have lower energy usage. The study had three complementary objectives: (1) Assessing the inherent energy efficiency of the appliances; (2) Exploring opportunities to use energy-saving features; and (3) Investigating opportunities and challenges to changing habits and practices around particular appliances.

Key findings

In all instances of appliance replacement, savings in energy use were achieved: fridge-freezer (and combined fridge plus freezer) replacement yielded savings between 39% and 66%; for dishwashers and washing machines the savings were between 8% and 21%; and 39% was saved for a tumble-dryer. The study identified some disconnects between largely pro-environmental attitudes, and both stated behaviours and appliance usage - some of which are not currently maximizing efficiency. This was qualified, in part, by a range of practical issues (effectively 'barriers') that in the consideration of some participants, limits their ability to use certain appliances in more energy efficient ways, e.g. disability, old age, young children etc.

In the 'test week' participants carried out a range of previously untested energy-efficient appliance practices. It became apparent that some of those barriers could in fact be quite easily overcome, with results that exceeded the expectations of some participants. For example, changing to a lower temperature wash, with an appropriate detergent, yielded reductions in energy use for washing machines of between 35% and 59% and for dishwashing of 19% to 34%. Overall, replacement of an existing appliance with a new energy-efficient model in all cases yielded improvement in terms of energy consumption. Changed practices in most cases also enabled reduced energy consumption with both existing and newer appliances. We postulate, therefore, that even greater savings are possible by combining some behavioural change with the purchase and use of new energy-efficient appliances: a case measured in this study, for example, showed combined savings of 48% when a 14+ year-old washing machine was replaced, and a low temperature wash and premium brand detergent were used. A larger study would be required to explore this area further, allowing incorporation of control groups and segmentation of the trial. **View or download at www.amdea.org.uk or www.t2c.org.uk**