

Habit-Learning Device will Lower Energy Bills Under New Clean Energy Cashback Scheme

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Wattbox

(PhysOrg.com) -- Smart control units that learn householders' energy habits and provide immediate feedback on consumption could give home energy savings of up to 20% without compromising comfort.

The new energy-saving 'Wattbox' device is part of an innovative approach to [energy efficient home](#) improvements supported by a £2.1 million grant from the Engineering and Physical Sciences Research Council (EPSRC).

As well as working with standard energy supplies, the Wattbox will help people get the most out investments, such as [solar panels](#), made in line with the recently-announced feed-in tariffs for small-scale renewable schemes.

Working with householders, an earlier project found that existing home heating controls, such as timers and thermostats, often make it difficult for people to cut [fuel costs](#) because they are too complicated to set correctly. But by designing an intelligent, [automated system](#) that takes the complexity out of the controls, the team found that [energy use](#) on heating and hot water alone could be reduced by up to 14%.

The Wattbox's heating controller sets its own schedule by learning householders' habits according to the times they use hot water and switch on [electrical appliances](#). From this, it sets the thermostat to suit the householder's lifestyle taking account of the outside temperature.

The device has a simple display with buttons for 'More Heat' or 'Less Heat' when the automatic decision doesn't meet the user's needs. It also shows how much more, or less, energy is being consumed as a result of their choice. Hot water is provided just before its normal time of use to save energy, with the display turning red to show that the water is ready.

"These devices work because we put people at the centre of our research," says Peter Boait of De Montfort University, who designed the intelligent heating controls as part of a multidisciplinary project investigating ways of reducing energy while maintaining comfort.

There is strong evidence to suggest that giving people immediate feedback on their energy consumption encourages them to make savings.

LCD displays showing electricity consumption are not new, but they usually only show the total electricity used in the home. The team is now planning to work with householders to design stylish and intuitive controls that will tell them how their home is using energy at a particular time and what choices they can make to result in lower energy use. A key part of the design is that they will be fun to use.

Allowing people to save energy without needing to understand the science is one of the key benefits of the Wattbox. This makes it particularly useful for encouraging people to adopt green technologies, such as heat pumps and solar hot water heating, which can be alienating in their complexity.

“Influencing user behaviour can be challenging,” says Dr Boait, and he points to a decade of campaigns urging consumers to save energy.

“Involving people in the design of technology and in developing energy reduction strategies offers a new opportunity to make real cuts without undermining comfort.”

Provided by Engineering and Physical Sciences Research Council

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