

BTS ÉLECTRONIQUE / ÉLECTROTECHNIQUE

SESSION 2005

YOUR COUNTRY NEEDS YOU

Rather than rebuilding vulnerable electricity grids, Robert Pratt at the Pacific Northwest National Laboratories (PNNL) at North Richland in Washington State reckons he has a better way to keep the current flowing. But if his plan is to succeed, we will all need to do our bit.

Pratt wants to install a special processor chip in every domestic appliance - washing machines, tumble dryers and so on. Developed at PNNL, the chip monitors the mains supply and if it detects that the grid is becoming overloaded, it reduces the energy load sucked up by the appliance.

This small measure could go a long way, he says. In the US, appliances like fridges and dishwashers account for about 20% of the grid's electrical load.

The chip works by sensing fluctuations in the frequency of mains electricity. In the US, this is usually maintained at 60 hertz, plus or minus 0,03 hertz. But if there is a sudden increase in demand for power, or a generator fails or there is a major distribution problem, the frequency can drop below 59.97 hertz. It may only take a few seconds for the electricity generators to correct this, but that can be enough to shut down whole sections of the grid.

However, when Pratt's chip senses a drop in mains frequency, it switches off the appliance. The chip can respond in less than half a second, much faster than generators can react. Put a chip in every fridge and dishwasher, and the nation could help keep the grid stable.

Initially the chip will be fitted in plugs so it would only be able to switch an appliance on or off. But Pratt hopes they will eventually be integrated into appliances to also adjust power consumption less crudely - keeping a washing machine's drum tumbling, for example, but turning off the heating element. He is currently conducting trials to show manufacturers that the chip won't damage their machines.

The chip could be used to take the strain when supply outstrips demand - when loads are suddenly removed, for example. In theory, the PNNL chip could prevent this by switching on dishwashers and washing machines across the nation to soak up the excess power until the grid recovers. Who would pay the electricity bill, however, is another matter.

TRAVAIL À FAIRE

1 - COMPTE RENDU EN FRANÇAIS (12 points)

Mettre en évidence les informations les plus importantes contenues dans le document (180 mots +/- 20%).
Indiquer le nombre de mots utilisés.

2 - TRADUCTION (8 points)

Traduire en français le passage encadré : de « However, when Pratt's chip... » jusqu'à « ...the chip won't damage their machines. »

Dictionnaire bilingue autorisé - Tout autre matériel interdit

Durée : 2 heures