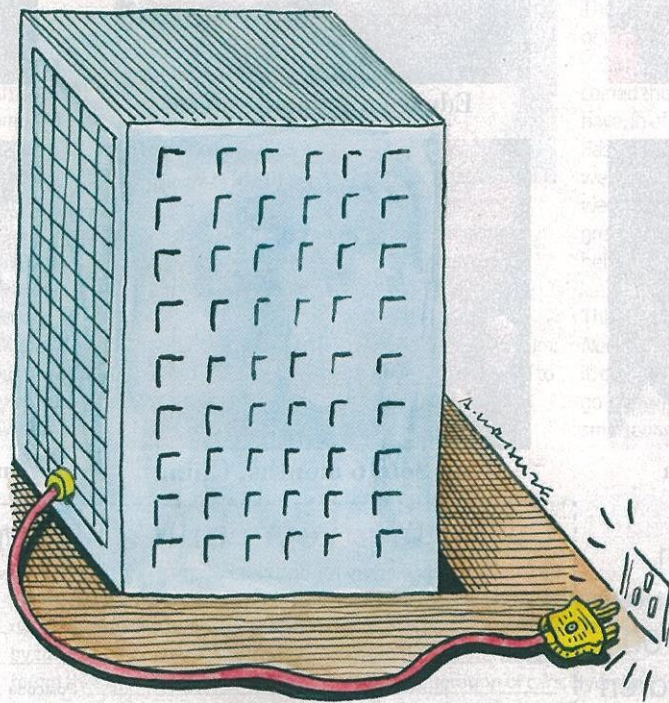


# The sixth sense

If we could see the energy we use we wouldn't be so wasteful. Technology can help, says **Joseph Giacomin**

ROUGHLY 30 to 40 per cent of global energy use occurs in buildings. Given the fundamental importance of this source of carbon emissions, great efforts are being made to lower consumption. The challenge is difficult, however, because several factors are at work, including the building itself, the energy systems it uses and, above all, human behaviour.

Past efforts to reduce energy use in buildings have been dominated by technical solutions such as improved insulation. Now, however, human behaviour is moving centre stage. Simple actions such as forgetting to turn off the heating when leaving home lead to heat losses that no amount of technology can prevent. In the UK, the new carbon reduction plan by the Department for Communities and Local Government, which provides



guidance for all government-sponsored building projects, emphasises behavioural change. It states: "Many of the actions we are taking... are aimed at securing changes in thinking and ultimately behaviours."

So how can behaviour be changed? One obvious if unimaginative way is through public awareness campaigns and energy-training programmes, which can help save up to 10 per cent on the average home or commercial energy bill. Another is direct consumption feedback, which allows people to see how much energy they are using in real-time displays on smart meters. Many homes and offices are now equipped with smart meters, which have been shown to reduce energy consumption by between 5 and 15 per cent.

Is this really the best we can do? I think not. The modern world is full of gadgets which provide us with information laid out in ways ranging from simple numbers to histograms and pie charts. From our ovens to smartphone apps, we are overwhelmed by a barrage of data. But numbers, histograms and pie charts are not natural or intuitive to follow. They work, but only up to a point.

The answer may be to endow humans with an "energy sixth

sense". Evolution did not provide us with a system for directly sensing energy use, but this can be rectified by designing products that announce their energy usage in natural and intuitive ways.

Various examples of such energy sixth-sense products are already in development, including household goods with power cords which light up in proportion to the current flowing through them, and thermostats with thermal images to visualise energy use. Also in the pipeline are industrial tools which change colour in response to heat build-up, and office tools which visualise the energy consumed by IT equipment.

The products use intuitive feedback methods, such as colour and light intensity, to inform people how much energy they are using. Rather than scientific accuracy, the idea is to stimulate interest and emotional engagement to produce long-term changes in understanding and behaviour. If we are serious about reducing energy consumption from buildings we need to add an energy sixth sense to our everyday lives. ■

Joseph Giacomin is director of the Human Centred Design Institute at Brunel University in Uxbridge, UK