



Intelligent Control of Energy consumption

Government is leading by example in the drive to promote sustainable development, seeking new ways to drive down the carbon footprint of the Government estate. Commercial buildings are already active in this area. Jon Batt, Building Manager, 20 Old Bailey, explains how the Intelligent Control of Energy (ICE) system from Lightwave Technologies has enabled significant energy and cost savings to be made.

Over the last decade, commercial buildings worldwide have experienced massive growth in energy costs. The use of air conditioning and artificial lighting, along with an increased demand for IT services, has all contributed to higher spend on energy.

The environmental impact of this increase in energy consumption is also on the rise. Commercial buildings are responsible for a major share of the energy consumption of the built environment – 40 per cent.

Existing Building Management Systems (BMSs) have generally failed to fully

optimise energy consumption. This is because they lack control systems that can react intelligently and automatically to anticipated changes in ambient weather conditions and the many other environmental variables typically associated with large buildings.

Before we installed ICE in 20 Old Bailey, we used a 15-year-old BMS system with a graphic front end (screen) that was networked to the entire building services. This system was very good, it gave us good cost savings and was maintained by the manufacturer, but I still felt that there was potential

for better management options and greater savings.

I'd been looking around the market for environmental initiatives for some time. Richard Burl of OCS Engineering (who was 20 Old Bailey's maintenance contractor of the time) recommended Lightwave Technologies to me.

Farebrother manages the expenses of the building on behalf of the tenants, so I have a moral and legal obligation to run things efficiently and make savings wherever possible. Gas and electricity costs for 20 Old Bailey had been increasing by 18-20 per cent per year

for three years – in three years our expenditure on gas and electricity had risen from £250,000 to £370,000. We were keen to cut these costs.

Apart from the fact that Lightwave had been highly recommended to us, I was taken by the infectious enthusiasm and professionalism of Nicholas McNulty. Lightwave has taken a new approach to an old problem – how to successfully control the climate of a building by having air conditioning and/or heating on for the shortest amount of time possible yet still achieve a comfortable atmosphere.

Existing BMS systems require an operator's input to vary settings and tend to focus on optimum times for starting and stopping heating and air conditioning. ICE goes further and takes into account the ambient temperature inside and outside the building, the weather conditions of the day and the most economical way of achieving the desired temperature in the building. System components compile and analyse this data to suggest on/off times, setpoints and other controllable parameters back to the system. This allows ICE to learn about the building's characteristics, such as the heating and cooling behaviour, and enables the CI techniques to optimise control systems for the building.

Our original role in the arrangement with Lightwave was purely as a guinea pig. 20 Old Bailey was the first building in the UK to install ICE, so the arrangement I negotiated with Nicholas was that they would install it free of charge and use the building to tweak and modify the system. ICE was installed to run alongside our old system – the idea was that it would shadow it for 18 months while things were improved and altered. Within nine months I could see savings on the shadow system and allowed Lightwave to patch ICE in to take over the running of the building from our old system. It was a learning curve for both companies.

Lightwave has been superb at every step of the project. ICE was first installed in mid 2006 and for the first 18 months we worked hand in hand while the system was debugged. During the changeover a representative from Lightwave was on-site at 20 Old Bailey for three weeks in every month.

On average we're saving 14 per cent of the cost of our electricity and between 15-16 per cent on gas (which fluctuates seasonally).

ICE's dashboard shows savings as they happen and stores data for one month. It is also possible to print out reports,



which can be broken down into various systems. Some of the buildings systems save 25 per cent, some 9 per cent, which averages out across the whole. At the moment we're saving about an hour a day in running time on air conditioning as the units come on approximately half an hour later in the morning and shut off half an hour earlier in the evening.

Lightwave is introducing new software packages to fine tune the system and save on further systems within the building. The agreement I have with Lightwave includes free updates, which is mutually beneficial as Lightwave can trial new packages before rolling them out to other clients, while we gain extra knowledge and savings by agreeing to be a guinea pig.

Lightwave is very proactive, and constantly approaches us with new ideas. Fran Brophy, our Lightwave IT guru, will fly in from Dublin for a nine o'clock meeting having got up at the crack of dawn – he is always there when we need him and is extremely dedicated to getting things right for us.

Another big benefit is that we are making huge savings without lowering the conditions in the building. One of my prerequisites for any new environmental system was that it had to be invisible to the tenants. Normally, an office lease will guarantee comfortable conditions for the duration of the working day. My job is to ensure that this happens and that any new system does not affect the tenants' comfort.

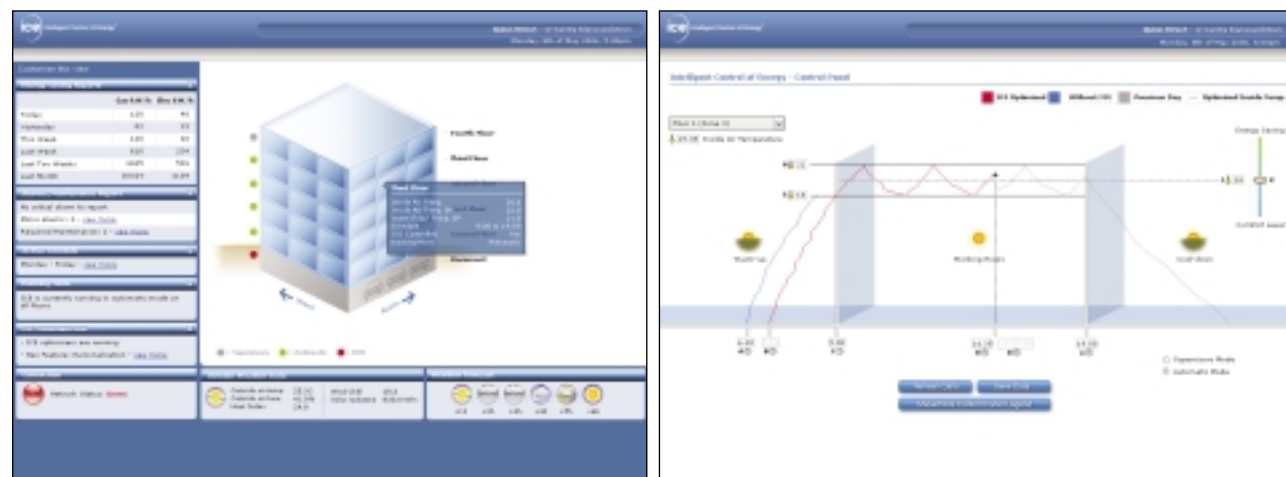
We are saving huge amounts of money and also carbon, which is also extremely important to our tenants, many of who must keep up their green credentials.

Now that we have worked with Lightwave to improve the technology,

it is basically plug and play. The cost of installation will pay for itself through savings within seven – nine months, which is great for decision makers working to a yearly budget.

Farebrother manages 30 commercial buildings in London. In the next year we will be rolling out ICE to at least two buildings owned by the same client as 20 Old Bailey. Then we'll be installing it in at least three or four others. The system is most effective in buildings where there is loads of air conditioning, so where the system fits, I'll buy it.

I was shocked at how well ICE works and the immense savings that are made. The selling point for me was that it sat on top of our existing system, so I didn't have to make the risky move of ripping out a working system to install something new, just in case. As it happens I needn't have worried. I am incredibly impressed with ICE, the service that we receive from Lightwave and the updates that are installed. I would recommend Lightwave and ICE without reservation. ■



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