

LIGHTS OUT

The last customer exits the building. Tills are cashed up, stocks are replenished, the store is cleaned, the alarm is set and the last member of staff prepares to close up. Out of sight, perhaps unsure of its whereabouts, the main light switch remains on keeping the store illuminated throughout the night. **Charlotte Owen** explores why retailers are starting to kick this once common habit into the past

Beyond aesthetics and functionality most retailers a decade ago wouldn't have given a second thought to lighting management; lighting control was mainly about scene setting and creating atmosphere. Today the picture is changing; lighting is fast becoming a prominent business consideration. Retailers, increasingly conscious of the positive effect of better energy management on their bottom lines, are now thinking twice before leaving the lights on after-hours. With over 25% of a retailers' electricity costs coming from lighting, the business – and environment case – is compelling.

According to Nick Van Tromp, senior specification sales at Helvar lighting: "In the last five years we've seen that it is no longer just the superstores and large chains that are looking at lighting controls but all retailers. With shops having to compete more and more with online businesses the need to make savings is greater than ever."

Sam Woodward, senior strategic business unit manager for lighting firm Havells-Sylvania believes retail interest in turning off lights is due to: "The rising cost of energy, and the need to make our buildings 'smarter' to reduce wasted energy; to conserve the environment – reducing emissions and consuming less of the world's natural resources; the public's demand for companies to demonstrate their commitment to CSR; a wave of new legislation governing energy usage in buildings, and more recently a need to address nocturnal light-pollution issues."

Awareness

That's not to say all retailers are taking these considerations on board. According to Geoff Smyth, head of technology implementation at the Carbon Trust: "Retailers are often surprised to learn how much energy they use during out of business hours. More than 80% do not appear to be managing their out of hours energy use. For these there is no start-up or close-down procedures; many systems are left on 24/7," he says.

The Carbon Trust offers low-cost financing to businesses that want to invest in low-carbon equipment through a £550 million partnership with Siemens. Part of the Trust's role is to analyse data and identify what percentage of energy usage is occurring out of hours. "When this information is identified and communicated, most retailers are quick to respond," says Smyth.

"Energy consumption tends to be treated as a fixed overhead, automatically paid in bills. But when half-hourly data from an energy provider is looked at, retailers are shocked to see how much energy they are using in out of office hours," says Smyth.

An Apple store in Hong Kong this year came under fire from green activists for keeping all of its lights on throughout the night. Friends of the Earth visited all three of the city's Apple stores and found two of the stores kept store lighting on past midnight, long after closing hours. Empty of customers, the stores kept 500 lamps and spotlights lit on all three floors, with the light passing through Apple's signature glass walls onto the pavement.

Walk down your average high street at midnight and you'll find this case isn't an exception. While smart businesses have had sophisticated energy management and lighting systems in place for several years, more often than not in the retail sector there is no one individual responsible for lighting "which can lead to confusion and a lack of proactivity in this area," according to Smyth.

Peter Lawrence, Managing Director at UK lighting company Steinel puts this down to "a tendency to 'stick with what you know' and use inefficient lighting, because that's what's always been there." Moreover, Van Tromp says: "There is always reluctance on anything that is perceived to be a luxury or added extra as retailers won't be able to justify the cost. However, when people begin to understand the investment properties of lighting controls then it becomes all the more desirable."

Bottom line

According to Andy Chell, sales and marketing manager, Greenlite Lighting Solutions: "Many store managers and area managers are not targeted on profitability of the stores, simply the headline sales

numbers – the amount of units sold. Energy consumption doesn't factor into sales numbers, so it is not high on their agenda. This means they are not incentivised to save energy.

"Energy is still too cheap at the moment. Prices have risen, but it is still not expensive enough to make retailers sit up and take notice. Energy prices are predicted to double in price over the next five to seven years and, in my opinion, it is only then that it will become a significant enough factor to force retailers to look to save energy on lighting. But, all the time they are delaying upgrading their inefficient lighting, they are effectively paying for doing nothing," he adds.

Some retailers continue to cite an absence of working capital as a reason to halt the business' potential to implement efficiency measures. But considering the "usual return on investment can be one year, or two and a half at the most, the business case is compelling," argues Smyth. Using only the essential lights coupled with more efficient lighting such as LEDs "delivers significant returns," he says.

Moreover technology, specifically in the form of microcontroller chips, is becoming more powerful and at a reduced cost. Woodward says: "I can buy an IC [sensor technology] for under £1 that used to cost £5 or £10, and with clever firmware I can make it do much more than in previous generations. Increased demand is driving up supply volumes, which in turn is driving down costs."

There is often reluctance to embrace controls technology because of a perception that "it's complicated", finds Woodward. However this need not be the case: "Companies offering the whole package of lighting fixtures and controls, and especially the integration of the two, means that projects don't need to be derailed by compatibility issues. Likewise, it's no longer the case that "smart building technology" is prohibitively expensive, with payback times getting shorter and shorter," adds Woodward.

Controls

One common problem, according to Smyth, is retailers' light switch arrangements. Many employers don't always know where the switches are located; they're either not labelled or it is unclear which switch controls which circuit.

"Often this comes down to bad practise, which can be easily rectified," argues Smyth. "Retailers should ensure there is an easily accessible master switch, which controls the settings at closing time and could be linked to the security system," he suggests.

Chell similarly argues: "As store managers are not generally incentivised by saving energy, a simpler option may be preferred.

Maintenance

Lighting is essential for providing a pleasant shopping environment so it is important to keep windows, skylights and light fittings clean. Replace old, dim lamps and keep controls in good working order by ensuring timers are set to match trading hours and that occupancy sensors are clean. Without regular maintenance, light levels can fall by at least 50% in two to three years. Establishing a basic lighting maintenance programme can reduce costs by up to 15% as well as improving in-store appearance.

A 'last man out switch' means that, when setting the alarm, a switch is pressed which turns all non-essential electrical equipment off, including the lighting."

"Lighting is only as good as the control and control is only as good as the lighting. If lighting is switched off, 100% of the energy is being saved, so finding opportunities to switch off lighting completely or partially is important. For front of house, lighting needs to be switched on during trading hours to enhance the merchandise; the shop needs to look open and inviting. But, for the back of house, simple presence or absence sensors have a positive return on investment," adds Chell.

Marks & Spencer's says it reduces lighting by 50% after the last customer has left and by nearly 100% after staff have left. "The only exception may be window signage, which can stay lit throughout the night in stores," explains an M&S spokesperson. The retail giant also uses light sensors in a number of stores on the sales floor during stocking hours, periods with staff in store but when it is closed to customers, "which means lighting would only be on in areas where staff are working. This is also the case in back of house areas," he says.

For Van Tromp: "The choice isn't between total illumination and total darkness: dimmable lighting can be deployed at a low brightness level, or lighting can be split into zones such that the majority of energy can be conserved, whilst only the essential areas are illuminated." Helvar, for example, can program lamps to work at a percentage of their maximum, deploy an evening setting where not all lamps are illuminated or work with proximity sensors to keep lighting to a minimum. "If security is a concern for retailers then we can work with them to keep lights on but costs down," says Van Tromp.

Safe as houses

Traditionally, security provided the main excuse for perpetuating after-hour lighting traditions. However, with new technologies on the market this no longer is a valid argument. Light sensor technology has moved on in leaps and bounds in recent years, becoming more reliable and adaptable and therefore a simpler way to reduce electricity bills.

But Lawrence believes retailers often aren't informed enough on the technologies now available: "There are also a lot of misconceptions about lighting and, particularly, presence detectors. There's the myth that, if you stand still, the presence detectors will fail to detect you and the lights will switch off, plunging the room into darkness. In fact, lighting technology is evolving very quickly. This means it can be hard for retailers to keep on top of breakthroughs in lighting technologies and new ways of controlling lighting."

Sensors can immediately illuminate parts of a building where motion is detected, and networks of sensors with controls can be used to illuminate common pathways or routes through the building at reduced lighting levels.

For Woodward, creative use of controls can be used to enhance the security: "Increasingly, people tend to now ignore a ringing security alarm, but a control system can be deployed to flash the lighting in a building when the alarm is triggered," he argues.

Many retailers want to keep their lights on for marketing reasons or to state their presence on the high street and are reluctant to embrace the idea of fully switching off when business shuts down for the night. For Van Tromp the ideal after-hours arrangement therefore has to be a compromise: "At night, when security can be an issue, light offers the implication of presence

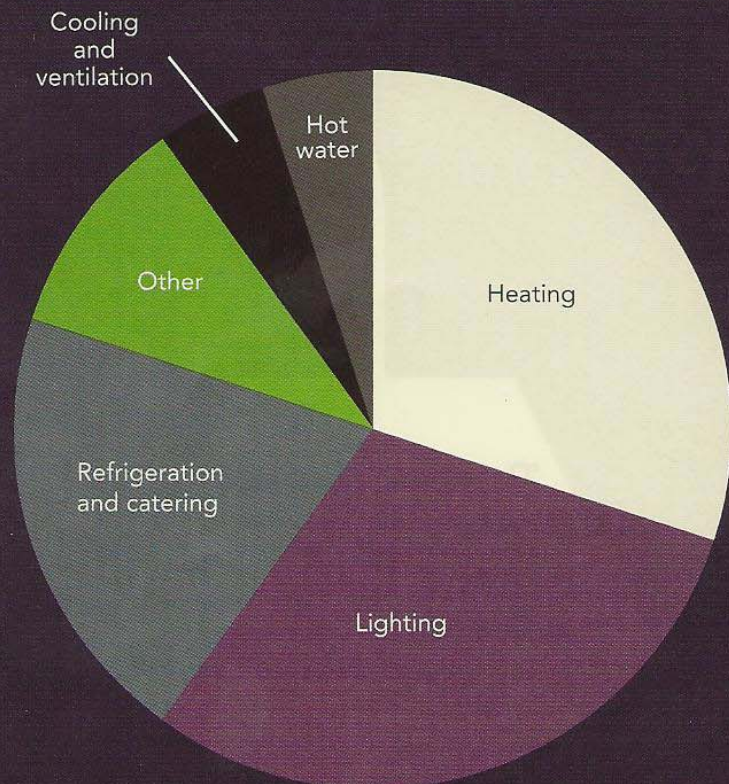
'Occupancy sensors

A store where cleaning or security staff work late would benefit from occupancy sensors. These automatically turn lights on when there is somebody there to require them and turn them off after a period of vacancy. Sensors can achieve savings of up to 30% on lighting costs and are especially useful in: Stockrooms and storerooms; toilets; meeting rooms; areas where lighting is zoned.

More than 80% of retailers do not appear to be managing their out of hours energy use, according to the Carbon Trust



Breakdown of energy use in the average retail environment



Credit: The Carbon Trust "Energy management — the new profit centre for retail businesses"

and acts as a deterrent. In short, there is a space between on or off which effective lighting control fills, saving money and looking good while doing it," he says.

Multi-tenancy

The predicament becomes trickier when it comes to controlling after-hours lighting in shopping centres as most owners do not have control over individual store lighting. Most, however, do encourage shops to turn lights off at the end of the day and save money. This is largely because most store utility bills go direct to head offices for payment meaning the individuals in the stores onsite tend to have no idea of their electricity costs.

Shopping centre Brent Cross says its entire management suite has PIR lighting sensors and is working on a project to upgrade its multi-storey car park and back of house lighting with more energy efficient T5 lighting and lighting sensors. It has also invested in a system to control lighting for the whole mall, which was due to be operational in July.

The North London shopping centre encourages retailers to turn their lights off but largely finds the problem out of its hands as stores have their own electricity supplies and have full control of their lighting systems and energy usage.

"As a landlord we have a tough carbon reduction target (25% reduction by 2015, based on a 2010 baseline) and we encourage similar behaviour for stores — stores are issued with a sustainable

shop fit guide which details best practice and encourages energy efficient stores,” according to a Brent Cross spokeswoman. Only “in some instances” does head office request stores actually keep their lights on, she says.

“With an evening and morning deep cleaning regime, and out of hours maintenance to front of house areas, large parts of the public areas of the building are inevitably lit at the night. The level of lighting at this time can be controlled via DALI control systems,” says the spokesperson.

Regulation

While government schemes such as the Carbon Reduction Commitment (CRC) and Energy Performance Certificates (EPCs) tend to nudge businesses to use energy more wisely, there is no overarching lighting control regulation. The Department Energy and Climate Change (DECC), says: “It is for individual organisations to decide how best to improve their energy efficiency in accordance with their business needs.”

According to Brent Cross: “EPCs do not take into account operational performance of the centre, only theoretical energy use and [display energy certificates] DECs do not translate well to shopping centres. Hammerson [which owns Brent Cross], as part of the Better Buildings Partnership are looking at a voluntary industry led standard.”

Across the channel, the French government has taken a far more hands-on approach to after-hours lighting. From July 1 all non-residential buildings in France are obliged to switch off their lights at night in a bid to save energy and cut light pollution. France’s minister for ecology, sustainable development and energy, Delphine Batho earlier this year announced all shops and commercial properties would be forced to switch off their lights one hour after staff leave the premises.

The ban applies to both interior lighting that spills to the outside of the building, such as store fronts, and the external lighting of building facades. It excludes lighting installed to protect the property - provided they are controlled by motion or intrusion detection sensors. It also orders lighting in shop windows and commercial premises to be turned off between 1-7am; and façade lighting to be turned off no later than 1am. The government expects the move will save around two TWh per year of energy – equivalent to the electricity consumption of around 750,000 households – and save 250,000 tonnes of CO2 a year. The only exceptions to the new law will be holidays and Christmas illuminations and certain tourist attractions.

While this kind of intervention may not come to the UK anytime soon, there are enough incentives now for retailers to join the big after-hour switch off. The technology is there – cheaper and more adaptable than ever before, the rate of return is getting shorter and shorter and the business and environment case is starting to make retailers not rethinking lighting management look dated and imprudent. Though opportunities for store promotion will likely continue to play a part in keeping some lights on at night, it looks likely to be a subtler feature – made more acceptable by the continuing growth of greater efficiency lighting.

'Switch off' policy

Staff at all levels should be involved in making savings — this can be achieved by conducting regular meetings, placing stickers above light switches and posters around in-store service areas (available from the Carbon Trust website). Failing lamps should be reported by staff and replaced. This will help maintain the desired light output and in turn, provide a safer working environment.

Daylight sensors

Light sensors or 'photocells' can be used to control artificial lighting when there is sufficient natural daylight. As daylight hours vary throughout the year, sensors help to provide closer control and thus, substantial savings. They can be particularly useful externally for lighting car parks or signage and can often pay back their costs in less than a year. Both types of control are sometimes combined with time switches.

Label light switches

Light switches should be clearly labelled to help employees to select only those lights they need for the work being carried out (for example when cleaning or restocking the store out of hours). Lights in unoccupied areas should be switched off but remember to consider health and safety implications, particularly in corridors and stairwells.