

A different kettle of fish

The new control system for Concord's Officelyte luminaire takes its inspiration from nature. **Ben Cronin** asks whether it provides a hassle-free alternative to more-complex centralised control systems

What does the lighting control system in Concord's Officelyte luminaire have in common with a school of fish? The answer, you'll be surprised to hear, is more than you might think.

The company has adorned the brochure for its new product with images of aquatic vertebrates, not so much as a marketing gimmick nor as a protest against EU fishing policies, but rather because it provides a neat way of explaining the distributed intelligence of the system.

"The amazing solution you've got in the natural world is that when you've got a big number of fish together, you zoom out and look at the whole school of fish and they're somehow solving this problem [of where to go] together," says Sam Woodward, strategic business unit manager for lighting controls at Havells Sylvania. "They don't have a leader who decides the destination for the day and whether the school needs to turn left or right to get there. Instead, every fish says 'okay, we're going in this direction now, and I can see what my neighbour is doing and I'll follow suit'."

A similar logic lies behind the Officelyte system – a sensor embedded in each individual luminaire allows it to make lighting decisions based on the presence of occupants in its immediate vicinity, ambient light levels and information it receives from its neighbouring luminaires. It then sends information back to the luminaire community so others can also make more informed lighting decisions. So, although the



Fishy goes on Each Concord Officelyte luminaire works in sync with its neighbours, like a school of fish

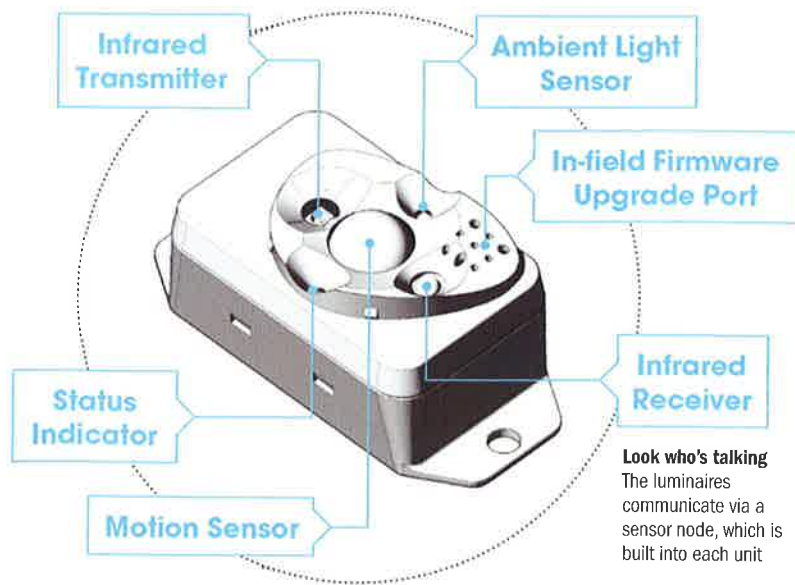
lights make decisions individually, this system of 'distributed intelligence' means all the lights in a defined space act as a coordinated community.

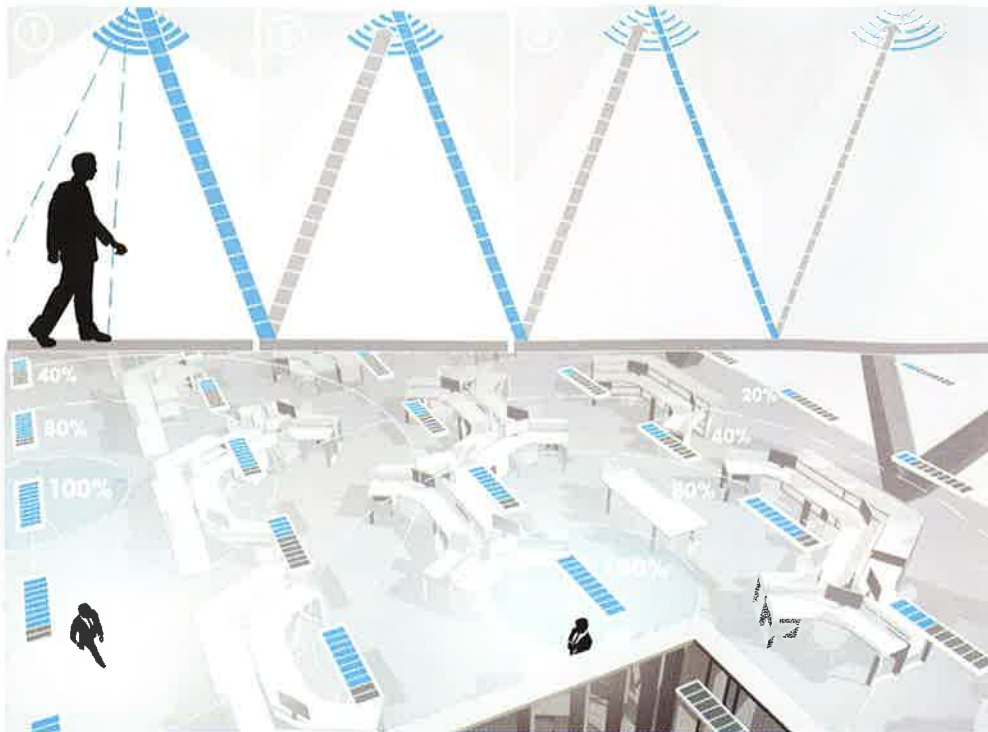
Woodward says the advantage of the product – which is the first to be launched out of Havell's partnership with Australian wireless controls firm Organic Response – is that it does away with the need for the extensive installation and specialised wiring that is synonymous with more centralised control systems.

"Having a central brain means there has to be a number of central things that have all of the intelligence and need to be taught about the system. This is why normally every ballast and sensor would have an identity and an address," he says. "You've got the complexity of having to define the behaviour and the geography but, to make those things happen, you've also got the complexity from the point of view of installing the infrastructure."

The Officelyte luminaires, on the other hand, dispense with this wiring by relaying information to one another by beaming an infrared message down onto the floor, or another surface, which is then picked up by the sensor embedded into the closest neighbouring luminaire. When asked whether there are any surfaces that might impede the transmission of the signal, Woodward admits that it doesn't work well with black asphalt, "but you don't get much of that in commercial spaces".

Look who's talking The luminaires communicate via a sensor node, which is built into each unit





Go your own way The top image shows how the infrared beam is transmitted from one luminaire to its immediate neighbour and how the light levels are staggered accordingly. Different lighting zones might overlap depending on the position of occupants in the room (bottom image)

SENSOR OCCASION

The moment a sensor node detects occupancy, it switches its luminaire on at a predetermined level and, using proximity-limited wireless infrared, communicates with its immediate neighbour, telling them it can see someone. On receipt of this signal, the neighbouring sensor node switches on its luminaire to a specified level and relays a signal to its own neighbours, telling them one of its immediate neighbours can see someone. This propagates rapidly throughout the floor, with each sensor node receiving a signal indicating an individual's proximity and emitting a pre-programmed light level based on that occupancy information, after adjusting for ambient light.

Installation

Havells thinks the ease of the installation will be a key selling point for the product, not only for contractors but also for specifiers and end users. Each luminaire merely requires an electrician to connect live and neutral, and the default settings within the control system will begin to save energy from the moment it is switched on – without the need for commissioning by a controls specialist.

“The default setting means that if you are next to a fixture it will come on to 100 per cent brightness. If you're one away, it will go to 80 per cent brightness. If you're two away it will go to 60 per cent brightness and then all the way out to being 15 fixtures away – they sit at 20 per cent brightness,” says Woodward.

“From an occupancy comfort point of view, you don't want anyone to feel they're in an isolated box of light and beyond that it's pitch black. When you have multiple occupants, those areas overlap and you get 100 per cent light across the space.”

He argues that having a sensor in each luminaire also provides a more responsive and nuanced daylight-detection system than the normal arrangement whereby a small number of daylight sensors control a large number of light fittings in a space.

“One of the issues with traditional systems is you tend to put a standalone daylight sensor somewhere in the room and



App happy Each OfficeLye luminaire incorporating the sensor can be configured and controlled with a smartphone app

you designate the window row as being the one that dims, and nothing else. But of course, at different times of the year, the angle of elevation of the sun is such that you might actually have light penetrating several rows into a building. Organic Response responds to that fixture by fixture.”

Occupancy is the overriding command to which the fixtures respond, but the system will still dim if there are people in the room and enough daylight. Further savings can be achieved by tuning the settings for each individual luminaire using a smartphone app.

So, for example, individual luminaire brightness could be trimmed to optimal levels for specific tasks or the local environment – corridors, for example, could be dimmed to 80 per cent brightness. Alternatively, relay configuration, using the infrared communication described above, allows a whole floor to be configured by using the app.

Havells Sylvania's partnership with Organic Response is not exclusive so there is the potential for other luminaire manufacturers to incorporate the controls technology into their products in the same way. But for the time being, the manufacturer is one of just two strategic partners reaping the dividends in the UK. And only two months after signing an agreement with the Australian firm, it has already completed an office project for an undisclosed client in south London. ■



Ben Cronin
Editor

It's all about control

Journalists make themselves hostages to fortune when they attempt to predict the future, but that rarely stops them from indulging in the annual pastime of announcing what the big trends will be for the coming year. This scribe is no different but, for once, it seems there is very little risk in predicting one thing: wireless control will be a major theme for the lighting industry in 2014.

In this issue we test the credentials of two companies, Harvard Engineering and Havells Sylvania, who have set their stalls out early (see page 34 and page 37) with products that try to take the biggest impediment out of retrofitting lighting controls, or even installing them in existing premises – the expense and inconvenience of chasing cables, and the disturbance this causes to the fabric of a building. Harvard's own figures suggest that 75 per cent of all controllable lighting sold in Europe isn't controlled, which gives you an idea about how difficult this market is to treat and why wireless might be the way to go.

That the Harvard and Havells products differ so significantly shows there is more than one way to control lighting wirelessly. And they won't be the only companies to bring out products of this type in 2014. Shortly before we put this issue to bed, Philips announced at a press event that it will do a soft launch of a "connected lighting" system for the commercial lighting market at Light + Building in April. The product, which it describes as a professional version of its Hue consumer lamp, will turn the lighting in a building into a wireless IP network, feeding information

back to a user who will be able to control light levels with a smartphone or tablet app.

All of these companies have been quick to spot the fact that there will be an increased emphasis on lighting controls when the new Building Regulations finally come out in April 2014. But, by developing apps to accompany the products, they have also realised the inevitability that a lot of things will be controlled by smartphones and tablets in the future.

"Companies have realised the inevitability that a lot of things will be controlled by smartphones and tablets"

Each of the products – to a greater or lesser degree – points to the Internet of Things predicted by technologists and futurologists, whereby all objects are controlled by, and feed information back to, the web. So it would have caught the interest of the companies involved when Apple, the manufacturer of one of the interfaces they would all like to use to control their products, recently signalled its intent by patenting the idea for its own home automation ecosystem (see page 6). The technology giant wants us to use its smartphones to automatically control all the gadgets in the home – including the lighting.

The publishing industry will tell you about the hefty commission Apple levies for delivering their content, so it will be interesting to see whether the iPhone manufacturer takes a similarly proprietorial attitude to delivering our building services once it launches its own control system. For lighting controls to be effective, we all know they need to be as simple as possible but the tech giant has the potential to complicate things just a little.

WHAT'S ON TWITTER @LightingMag



Iain Macrae FSLL

@maclighter (28 Nov)

UK #PartL is published, are you practising the new LENI method or just trying to tick the efficacy box? #lighting <http://bit.ly/1cye1d5>



Mark Cooper

@mclight0112 (29 Nov)

Fighting fear by lighting streets <http://bbc.in/1aKxbdd> In Africa they are investing in #lighting to fight fear of crime, we #switchoff



Philips Lighting

@PhilipsLight (2 Dec)

Did you know that you can light an #LED by using just a lemon? Its not lemonade, its science. <http://ow.ly/rmkKX> via @Lighting_Jedi



Pontus Hammarbäck

@p_hammarback (11 Dec)

When the #LED option has a pay-off period of 396 years I think it's fair to say that #T5 isn't dead, just yet.



Andy Bull

@MDULighting (11 Dec)

Something as simple as adding a dimmer will begin to give you control over your lighting and energy saving. Start with small steps.



Iain Ruxton

@iainlightsstuff (11 Dec)

Work all done in Doha. Whenever I say "Doha", I have to fight hard to refrain from Homer-Simpson-ising it.