



# eyeNUT

INGENIOUS CONTROL





## Overview

EyeNut is an innovative cloud-based, IoT enabled, remote access, wireless control solution for indoor lighting. It gives users the freedom to commission, configure and completely control their own lighting to maximise energy savings and reduce carbon emissions.

Early generation lighting controls provided energy savings but were difficult and expensive to fit retrospectively, requiring specialist engineers. Once installed, they were difficult to alter and not well suited to respond to changing occupancy patterns in buildings. EyeNut eliminates these problems.

Installation and initial configuration is simple and controls can be altered at the touch of a button to meet a building's changing needs. Comparisons with existing technology are impressive; it is capable of controlling 500 EyeNut-enabled devices from one wireless gateway compared to DALI's 64.

EyeNut will also allow connection to Building Management Systems (BMS) and enable a variety of control strategies to be employed, for example daylight harvesting, occupancy sensing, time scheduling, and scene setting.

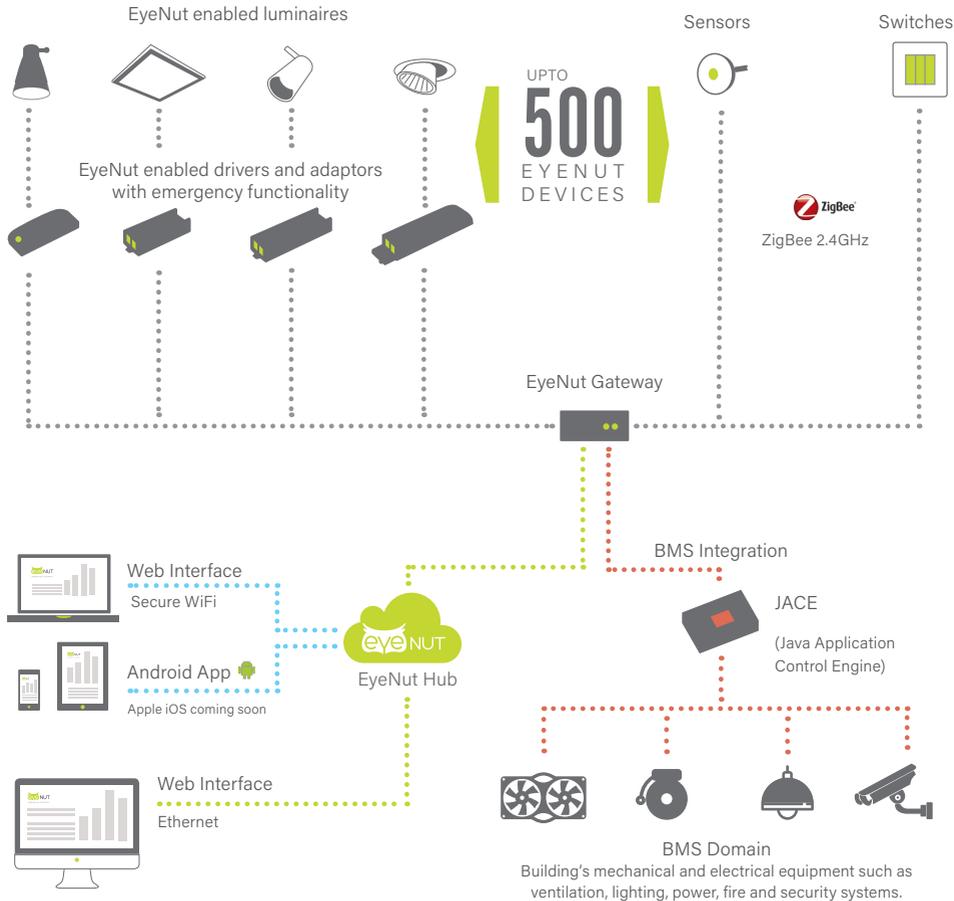
The system's emergency functionality provides additional benefits, eradicating the requirement for monthly emergency on-site tests. Users are able to set up automatic scheduling of functional and duration tests and export results to external systems for audit tracking. Emergency luminaires are enabled for auto-testing using the new EyeNut Emergency Interface Adaptor.

EyeNut continues to be at the forefront of the industry with the latest updates including emergency testing functionality and BMS integration. Future developments include EyeNode; allowing for combined indoor and outdoor control on the same system.

EyeNut has already delivered substantial monetary and energy savings for several blue chip clients including, Oxford Brookes University, Skanska, EON and The White Company. Research has shown that at Oxford Brookes University, the installation of EyeNut resulted in a 48% energy saving, leading to forecasted savings equating to £13,000 per annum.

# HOW IT WORKS

The future of lighting control...



## Hardware/Software



**Hub** - Hosted by Harvard Technology in the cloud, the Hub acts as the central controller for the entire system.



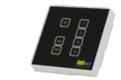
**Gateway** - Controlling up to 500 EyeNut devices, the Gateway provides local control and security for the lighting network.



**Adaptor/Driver** - The adaptor allows luminaires to become EyeNut enabled, converting wireless messages to DALI or Analogue



**Emergency Interface Adaptor** - Allows emergency luminaires to be enabled for auto-testing, with results reported in the dashboard.



**Switches** - Available in eight options from a simple on/off switch to an eleven button switch, in two styles, the switches allow you to switch between personalised settings.



**Sensors** - Allows occupancy as well as daylight and corridor linking functions to be easily applied to EyeNut enabled luminaires.



Award-winning



Wireless and ideal for retrofit as well as new build



Easy to install without hiring an expensive specialist engineer and easily configurable



Intuitively controllable through a Graphic User Interface (GUI)



Suitable for multi-building or multiple site control as well as for small installations



Able to give a clear view of your energy consumption through a monitoring and reporting capability with sophisticated energy mapping



Able to integrate with Building Management Systems (BMS)



Compatible with other control gear

## Dashboard

EyeNut puts lighting control at your fingertips with its intuitive user dashboard, which can be accessed via the internet on a laptop, tablet or even smartphone. The solution's intuitive Graphic User Interface (GUI) provides an overview of any installation or indeed multiple installations across multiple sites.

Key real time data including energy consumption and savings, energy hotspots, as well as potential lamp failures is displayed, allowing for a quick and easy visualisation of the system's status. While luminaires can be switched or dimmed collectively, or individually and scheduled to activate lighting when needed.

## Central Multi-Site Control

Monitor lighting fixtures and energy usage across multiple buildings or sites from anywhere in the world using a computer, laptop, tablet or smartphone, helping to reduce overhead costs.

## Mapping

The mapping tool allows personalisation of map views and means devices can be added onto an imported floor plan to allow control through mapping and the identification of high energy usage 'hot spots'. A list of all devices connected to the EyeNut system allows control of individual items and for new devices to be added.

## Profiling

Set switching and dimming profiles for 24 hour periods, then assign them to individual light points or luminaire groups. Assign profiles to run at times of your choosing using the Microsoft Outlook calendar-style interface. Plan in regular profiles, plus holidays and special events, which can all be synchronised through the calendar feature.

## Data reporting

Customised reports show real time energy usage patterns of specific luminaires or groups of luminaires. Fault reporting shows lamp failures or abnormal behaviours, allowing prompt investigation.

## Emergency

Set up automatic scheduling of functional and duration tests and export results for audit tracking – eradicating the need for monthly emergency on-site tests. Use the EyeNut Emergency Interface Adaptor to enable emergency luminaires for auto-testing and to control them in regular operation mode.



## EyeNut is Perfect for...

Retail



Office



Education



Industrial



Ice Rinks and Sports Courts



Social Housing



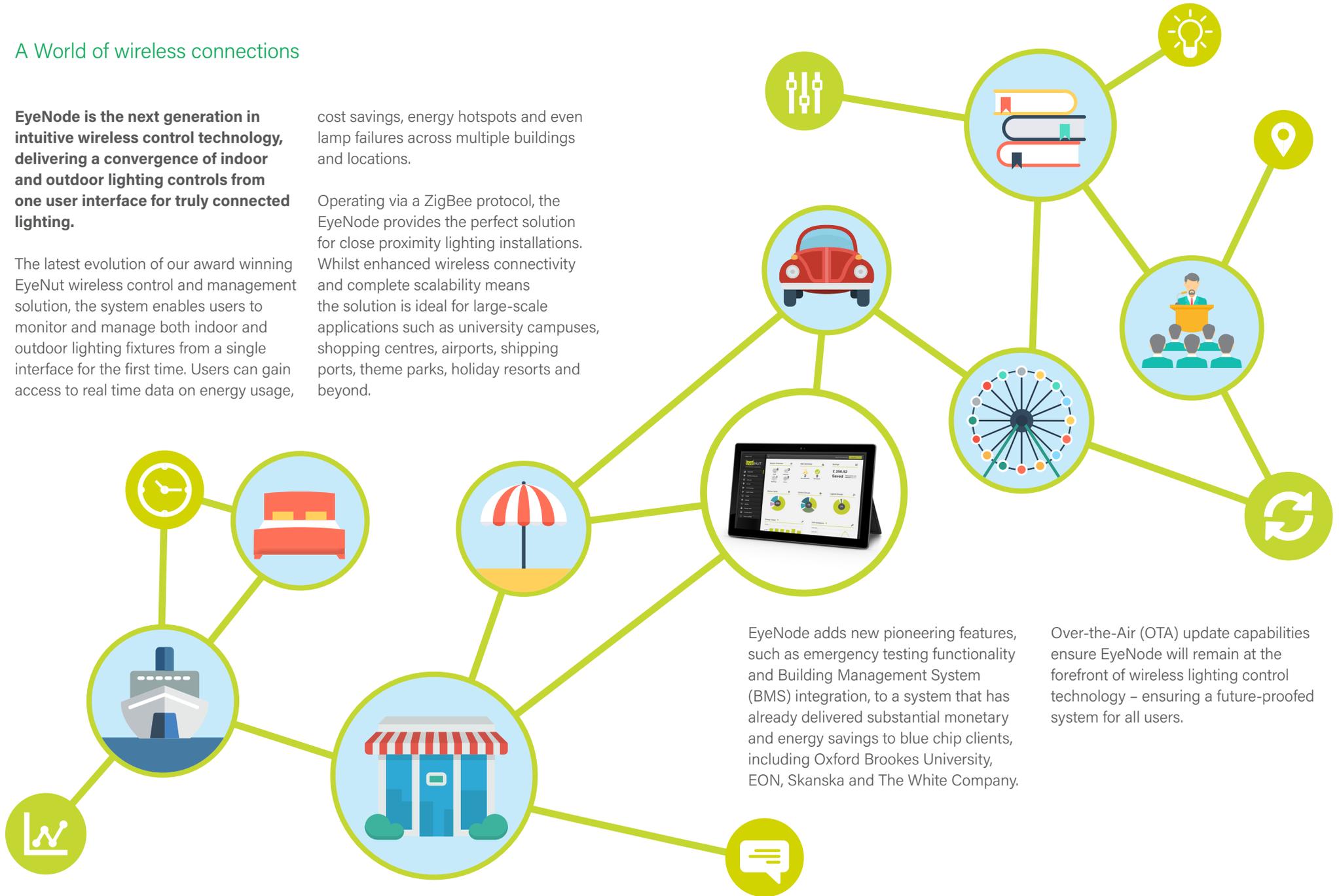
## A World of wireless connections

**EyeNode is the next generation in intuitive wireless control technology, delivering a convergence of indoor and outdoor lighting controls from one user interface for truly connected lighting.**

The latest evolution of our award winning EyeNut wireless control and management solution, the system enables users to monitor and manage both indoor and outdoor lighting fixtures from a single interface for the first time. Users can gain access to real time data on energy usage,

cost savings, energy hotspots and even lamp failures across multiple buildings and locations.

Operating via a ZigBee protocol, the EyeNode provides the perfect solution for close proximity lighting installations. Whilst enhanced wireless connectivity and complete scalability means the solution is ideal for large-scale applications such as university campuses, shopping centres, airports, shipping ports, theme parks, holiday resorts and beyond.



EyeNode adds new pioneering features, such as emergency testing functionality and Building Management System (BMS) integration, to a system that has already delivered substantial monetary and energy savings to blue chip clients, including Oxford Brookes University, EON, Skanska and The White Company.

Over-the-Air (OTA) update capabilities ensure EyeNode will remain at the forefront of wireless lighting control technology – ensuring a future-proofed system for all users.



## EyeNode for the Connected Campus

EyeNode, an intuitive wireless control interface for the campus ecosphere, enables users to monitor both indoor and outdoor lighting fixtures from one interface, with access to real time data on energy usage, cost savings, energy hotspots and even lamp failures across multiple buildings and locations campus wide.



Our state-of-the-art wireless control technology has been developed with the Connected Campus in mind and the latest improvements mean it is ready for the Smart Connected Campus of tomorrow. The next generation in connected campus technology, EyeNode, implements enhanced wireless connectivity to allow users complete control of their campus lighting from lecture theatres to car parks and much more.

Through the solution's intuitive Graphic User Interface (GUI), which can be

accessed via the internet on a laptop, tablet or even smartphone, operators can dim and switch off luminaires collectively, or individually as well as schedule lighting to activate when required.

As a wireless cloud-based solution, EyeNode can be easily installed in even the oldest university building, with minimal downtime – all without a specialist engineer. A particularly useful benefit for universities comprising historic and listed buildings.



With EyeNode, campus lighting systems have the potential to become the nerve centre of the Smart Campus. With enhanced wireless connectivity, EyeNode-enabled lighting can revolutionise communication across campuses – enabling wireless communication at dramatically increased speeds, safely and securely.

EyeNode remains at the forefront of the industry with the latest updates including emergency testing functionality and BMS integration.

- One system for indoor and outdoor lighting
- Real time data reporting
- Single intuitive wireless control for the campus ecosphere
- Complete scalability
- EyeNut Emergency and EyeNut BMS bolt-ons

*Already deployed at Oxford Brookes University, EyeNut is delivering substantial monetary and energy savings.*

## Finance for EyeNut

We are now offering finance solutions to our customers interested in installing EyeNut.

Acclaimed as one of the world's leading wireless lighting control solutions, EyeNut can be purchased with a comprehensive 3rd party finance offering designed to help facilitate investment in innovative wireless lighting control technology in an easy, affordable and flexible way.

High energy saving potential from the EyeNut system ensures a short payback on financed projects – with a payback period of less than three years on average if integrated as a retrofit solution.

Benefits of the EyeNut finance model:

- Short payback period ensures cash flow positive status during the financed period
- Repay the borrowed finance through the savings achieved
- Realise that energy savings per annum are higher than arranged repayment costs, meaning a cash flow positive project



### Retail Outlet Example

(Example taken from a leading specialist high street retailer)



#### CURRENT LAYOUT    NEW LAYOUT

<b>150</b> Fluorescent fittings	<b>135</b> LED fittings*/EyeNut
<b>Total wattage pa:</b> 16,500w	<b>Total wattage pa:</b> 3,800w
<b>CO<sub>2</sub> emissions pa:</b> 27,000 kg/a	<b>CO<sub>2</sub> emissions pa:</b> 3,700kg/a
<b>Avg. energy cost pa:</b> £10,000	<b>Avg. energy cost pa:</b> £1,400

#### SAVINGS

Total wattage:

**77%pa**

Energy cost:

**86%pa**

Payback:

**1.73yrs**

Establish total financing package to upgrade to LED and EyeNut through 3rd party finance house



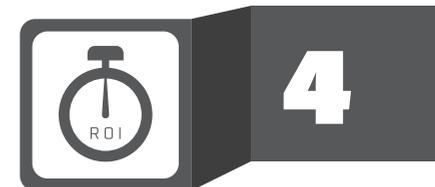
Achieve huge energy savings every year from upgrading to LED and EyeNut



Slashing your energy bill pays the hardware repayment costs, with money left over



High energy saving potential ensures a short payback on financed project



Short payback period ensures cash flow positive status during the financed period





### Solution

When a 10-year refurbishment plan included provision for new generation lighting, Oxford Brookes University (OBU), selected EyeNut to wirelessly control lighting at its five campuses and 14 residential sites across Oxford and Swindon.

The system, initially installed in two buildings, comprised of a cloud-based EyeNut hub, two Gateways, as well as EyeNut Adaptors and 60 occupancy sensors across each building. The solution controlled 82 standard and 31 emergency commercial interior luminaires, comprising of recessed modular, recessed downlights, surface linear and surface circular bulkheads; as well as an assortment of emergency exit signs.

### Results

Energy consumption monitoring, centred on the International Centre, has shown EyeNut initially reduced the new LED lighting load by 30%, when taken as an average over the first three-month period. This is a function of the sensors detecting absence, only allowing lights that are required to remain on. Lighting levels were then reduced to reflect the tasks undertaken within the building.

This exercise resulted in further energy savings, equating to a total saving of 48% of the new LED lighting load. When factoring in the other three buildings currently under refurbishment – based upon the knowledge that they will be utilised in much the same way as the International Centre – savings equate to £13,000 per annum.

Wattage per square metre in the International Centre was reduced from 5.47 W/m<sup>2</sup>, with LED lighting without controls, to 2.84 W/m<sup>2</sup> with EyeNut and the optimised lighting levels applied.

The University has also seen a significant reduction in maintenance costs for lighting, with monthly emergency on-site tests, usually charged at £14.49 per hour, drastically reduced following the EyeNut installation.

Monthly emergency tests and inspections in the International Centre, which took a minimum of two hours prior to the installation of new lighting and controls, have also been substantially reduced to approximately 30 minutes.

For the International Centre alone, this amounted to a reduction from £28.98 to £7.25 per month. When these same statistics are applied to all existing and ongoing building projects, the saving can be estimated to be £371 per month or £4,452 per annum.

On completion of the EyeNut installation, were carried out a review of lighting levels across three buildings to ensure they were in line with the Chartered Institute of Building Service Engineers' (CIBSE) interior lighting guide. Light levels were found to be between 15% and 45% higher than required, across all the areas, resulting in further savings being achieved.

### STAGE 1

£13,000  
SAVED PER ANNUM

48%  
REDUCTION IN WATTAGE  
PER SQUARE METER

£4,452  
REDUCTION IN  
MAINTENANCE COSTS P.A.

48%  
ENERGY SAVED





wireless · connected · lighting

Harvard Technology Ltd. Tyler Close, Normanton, Wakefield, WF6 1RL, UK  
Tel: +44 (0)113 383 1000 Fax: +44 (0)113 383 1010

[www.HarvardTechnology.com](http://www.HarvardTechnology.com)