



Light is the solution
ENCELIUM™ adds more
to your light

Light is OSRAM

Official campaign partner: **GREENLED**

OSRAM

Welcome to the next-generation lighting solution

The ENCELIUM™ Light Management System

As the lighting market continually reinvents itself, light management systems are becoming more and more important. To meet this challenge, you need one thing above all: an expert partner. OSRAM fits the bill with over 100 years of experience in the lighting market and with particular expertise in innovative light management for comprehensive control of buildings.

Working together with OSRAM, you receive dedicated personal support to assist you with whatever you need and to help you plan and install a light management system tailored to your requirements. To do so, OSRAM has a wide variety of products for all applications and thus can offer customised lighting solutions from a single source.

The highlight of our light management range is ENCELIUM™, a scalable networked lighting control system that enables complete lighting control for buildings, can be set individually to meet your needs and has many advantages: more flexibility, more control and more energy savings are the main ones. But there is even more to it than that: while the lighting market is constantly changing, ENCELIUM™ is leading the way into an innovative, cutting-edge future.



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Facing the future with innovation

Trends in the lighting industry



Digital standards

Now it's time for lighting to push energy savings even further. In the not-so-distant future, building owners who manage to drastically trim energy usage by implementing advanced lighting control schemes will inevitably have an edge when it comes to cost savings, sustainability, and possibly even compliance with certain codes and standards.

Today's lighting equipment increasingly has network communication capabilities. The different networks are cross-platform systems that are compatible with each other so

that you are no longer locked into a single, proprietary system – a basic requirement for any lighting installation.

All you need to embrace these trends in lighting is ENCELUM™. The integrated light management system not only helps you keep up with the continually changing needs in the world of lighting, it also provides a variety of possibilities for every area of application.

Solid-state lighting

Another trend clearly visible in the lighting industry is the transition towards solid-state lighting – or, in other words, LED. Luminaires with LED technology are becoming increasingly important and are already in use today in nearly all applications.

Most LEDs cannot just be switched on and off, but are also dimmable and controllable and therefore provide access to new applications where non-dimmable light sources have been used up to now. Furthermore, they create new lighting applications thanks to their versatility and compact size. In this sense, lighting control and the transition to LED technology are two new trends that complement and enhance each other, delivering the maximum value to customers and end users.

LEED and BREEAM

Particularly when it comes to energy efficient thinking, the construction industry plays a key role in global climate change. As lighting usually represents a large proportion of a commercial building's energy consumption, it is imperative to reduce overall energy usage, and thus to avoid inefficient expenditures on lighting.

Technology-based lighting control is a major focus topic industry-wide, particularly in the accreditation of new buildings and assigning new and renovated buildings a rating determined by how sustainable they are. This system originated in the early nineties from the UK accreditation system BREEAM.

With LEED, Leadership in Energy and Environmental Design, another system was set up in the US in 1995. Both have helped introduce stronger regulations for new buildings in terms of energy savings and CO₂ emissions.



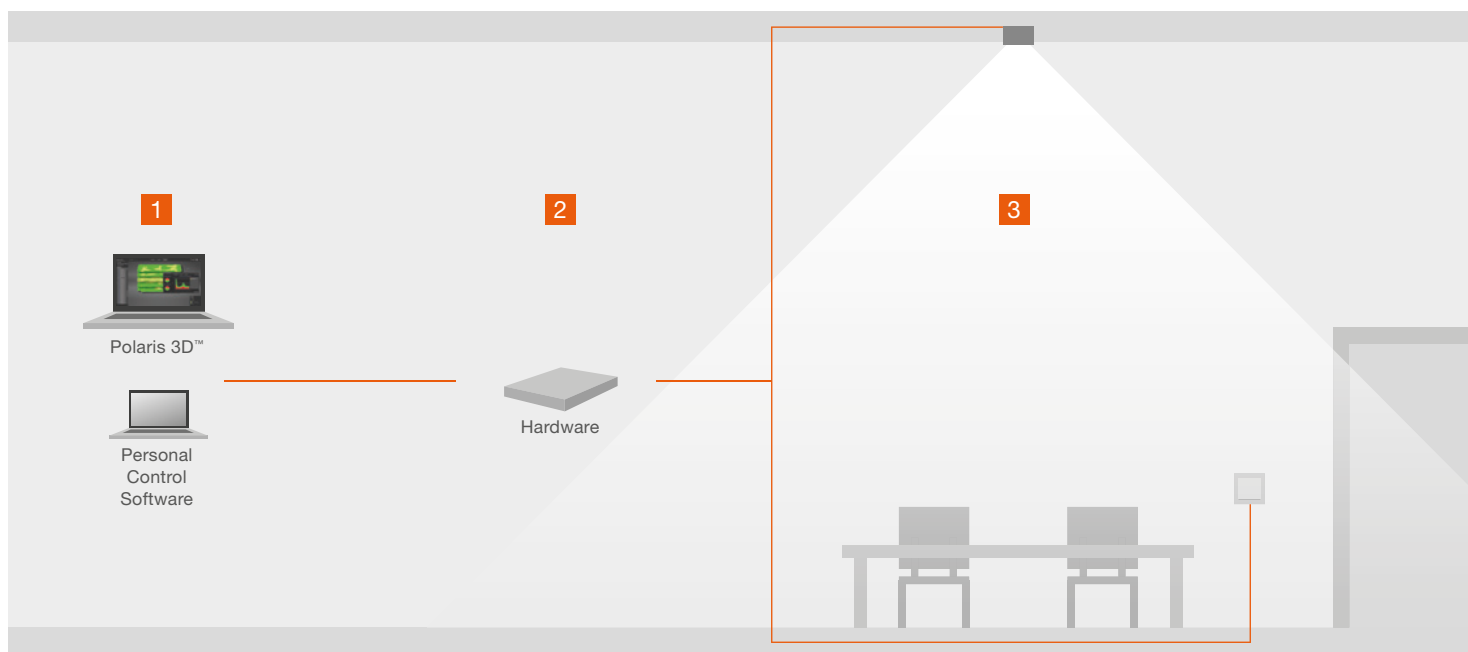
ENCELIUM™ – adds more to your light

More flexibility, more control, more energy savings

Lighting scenarios change every day. What you need is a flexible lighting solution that adapts to these conditions. OSRAM presents ENCELIUM™, a light management system using a wireless mesh network based on the ZigBee standard and DALI (digital addressable lighting interface) for entire building lighting control. It allows for energy savings in a highly versatile and most convenient way. Thanks to the scalability of the system architecture, it works with any building size and is easy to integrate into existing building management systems.

The ENCELIUM™ system has already proven its value: it has been impressing customers around the world for the last decades and has demonstrated excellent reliability both when retrofitted and when used in new construction projects – from single floors starting at approx. 1,000 square meters to complete buildings with over 4 million square meters.





Two essentials for lighting control – software and hardware

The success of the light management system is mainly due to two things: hardware and software. While it is based on DALI and a wireless mesh network based on the ZigBee standard and uses standard lighting control components, the core element of the system is the innovative Polaris 3D™ software, which provides comprehensive control of the whole lighting system from anywhere via remote access. And with six energy management strategies, it is even possible to increase energy savings by up to 75 % (for further information see page 19).

As you can see, with ENCELIUM™, changing and enhancing your lighting has never been so easy. More information about the hardware and Polaris 3D™ can be found on the following pages.

1. Polaris 3D™ software

The Polaris 3D™ software is the core element of the ENCELIUM™ system. It facilitates the commissioning, usage and data analysis of the lighting installation. The 3D colour gradient visualisation shows how efficient your installation is and immediately reports the savings achieved.

2. ENCELIUM™ hardware

Networked system devices process and translate the control commands and define the rules to manage the inputs and outputs in the installation. By using the standard network rules, the system can be enhanced and scaled to be suitable for any application or building size.

3. Field elements

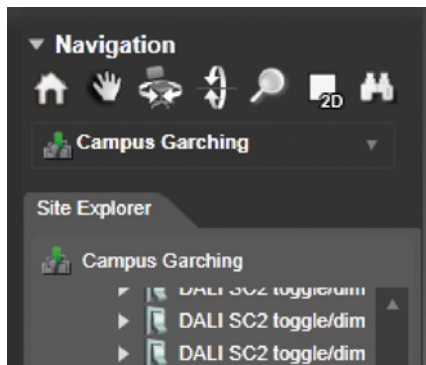
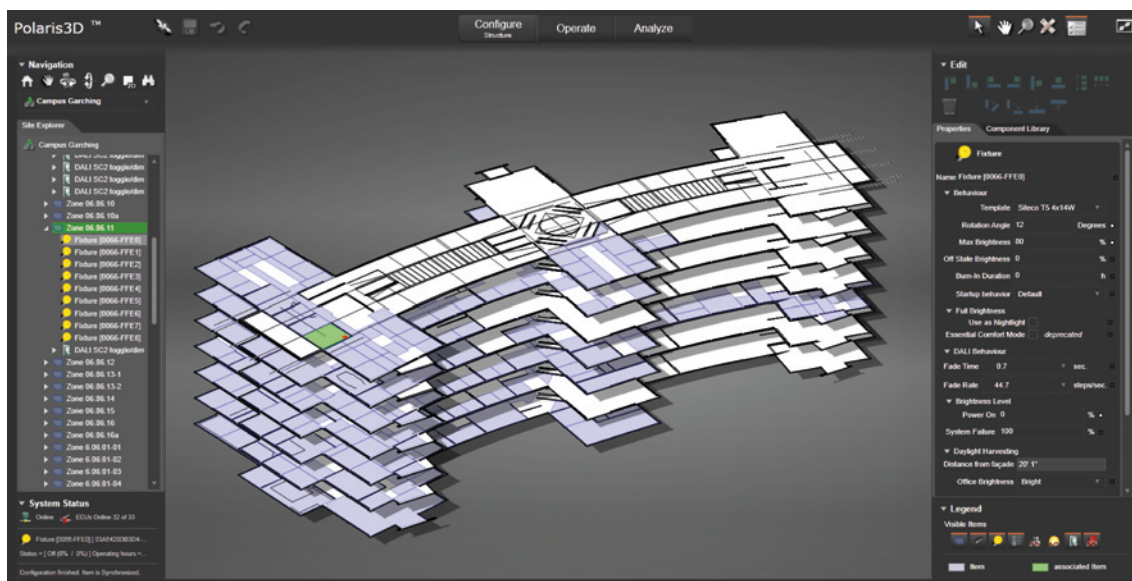
The field elements in the ENCELIUM™ system allow individual control and monitoring of each single luminaire, sensor and light switch. The components are available as independent units, flush or luminaire-mounted, and react to instructions sent by the ECUs.



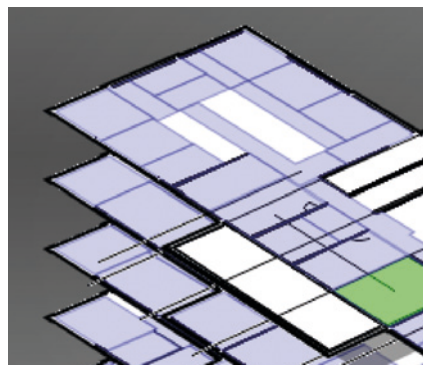
Lighting control of entire buildings at your fingertips

With the Polaris 3D™ software and easy-to-integrate hardware

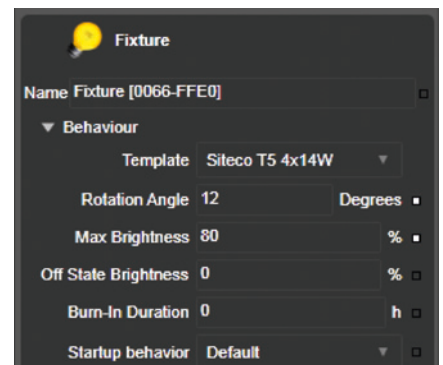
You can survey, check and verify the lighting in your building – or several of them – in 3D with Polaris 3D™. Zooming, panning or tilting the view at the touch of a button helps you to optimise the lighting performance of your building.



Well-structured: Site navigation with a tree view listing all components related to the zone structure

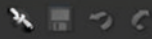


Outstanding: Polaris 3D™ offers a three-dimensional graphical overview of the whole site



Personalised: Great flexibility and customisation due to highly detailed function windows

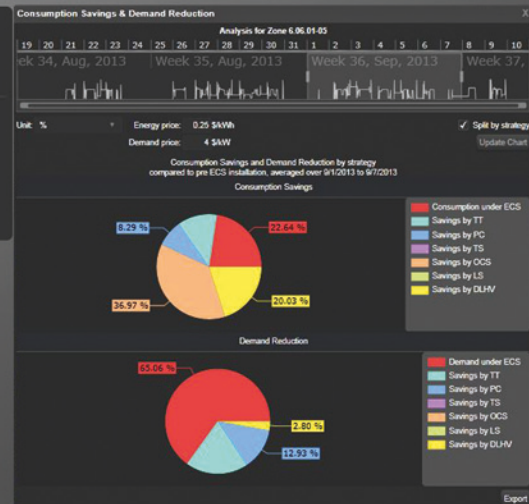
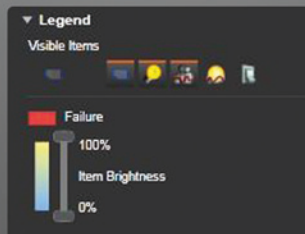
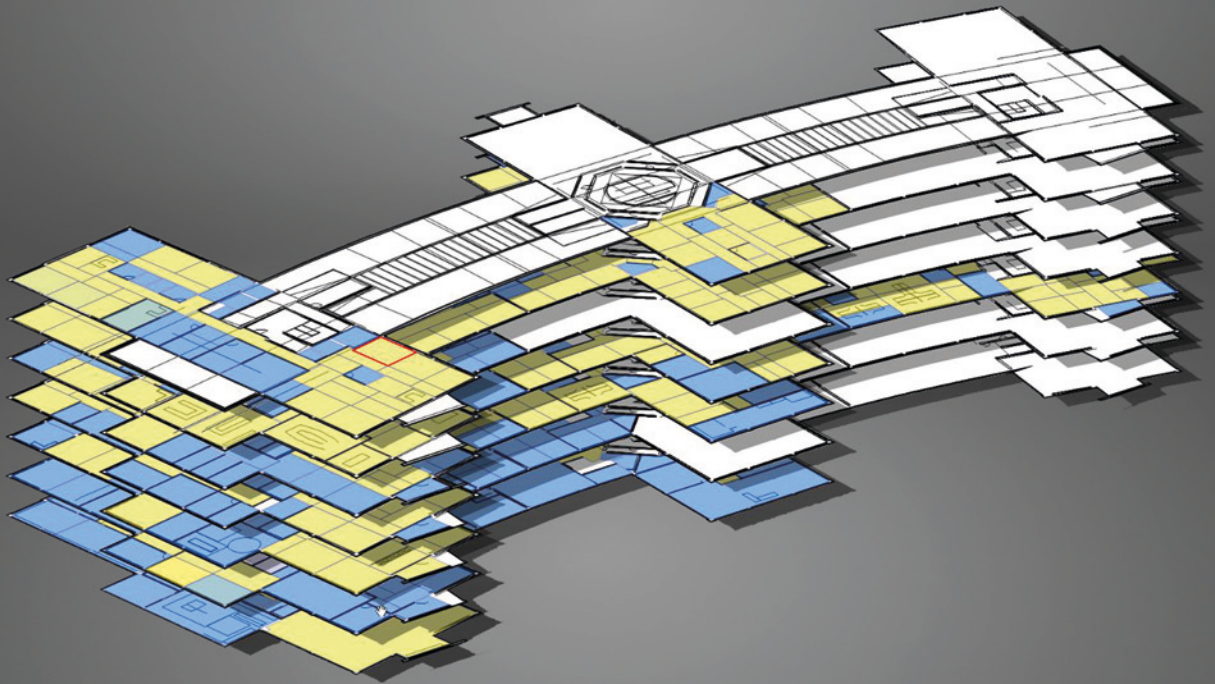
Polaris3D™



Configure

Operate
Brightness

Analyze



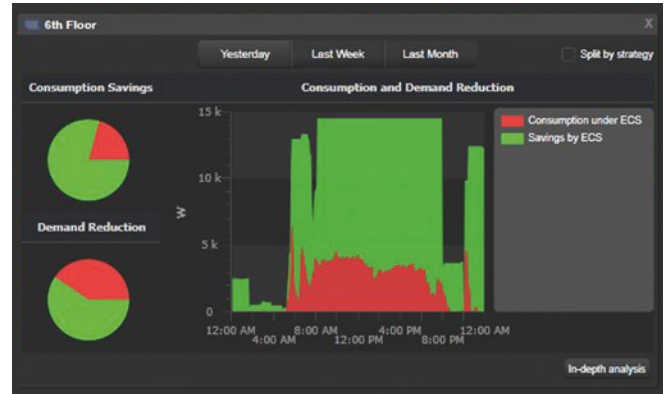
The Polaris 3D™ software

Welcome to the next generation of lighting control from OSRAM: Polaris 3D™ is a web-based application that features an interactive three-dimensional view of buildings or complexes in real time. You are now able to see buildings in a convenient 3D snapshot allowing for faster and easier navigation to desired control zones. Polaris 3D™ offers a unique colour gradient representation of lighting system data that enables the identification of inefficiencies or operational anomalies, focused on lighting status, lighting levels, load shedding status, lighting power density or energy consumption, occupancy status and comparative energy trends.

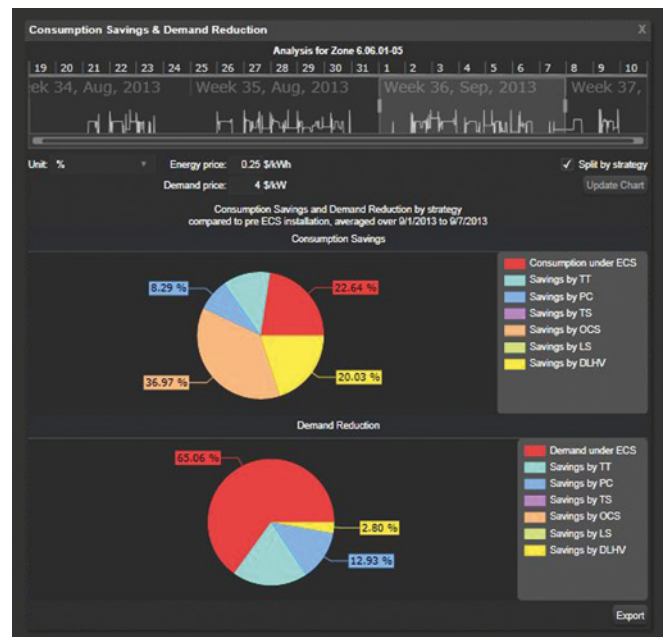
With Polaris 3D™, it's easy to produce energy savings reports for a day, week, month or year by clicking on any floor, zone or fixture. The software enables configuration of every system parameter in a single building or several buildings for each individual user or space, and establishes baseline settings for daylight harvesting, personal control, task tuning, smart time scheduling, occupancy control and load shedding.

The Polaris 3D™ benefits at a glance:

- Interactive three-dimensional view of a building
- Repurpose spaces without rewiring
- Change set points and schedules from your web browser
- User-defined security settings
- Coloured representation of the lighting system for easy collection of data:
 - Lighting status
 - Lighting power density and energy consumption
 - Occupancy status
 - Comparative energy trends
 - Load shedding status



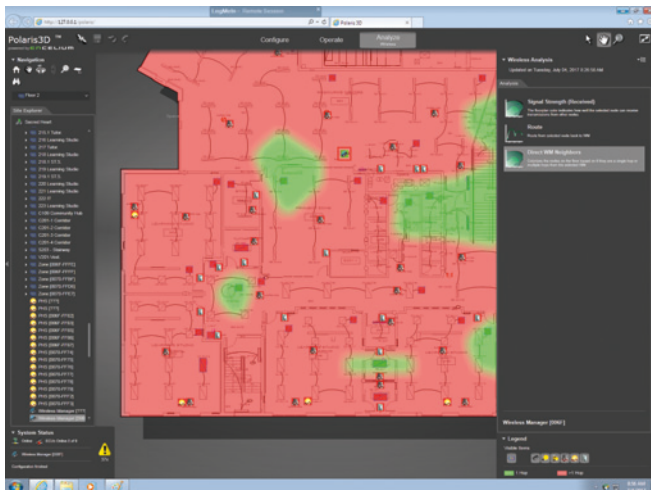
Descriptively: Consumption saving and demand reduction analysis



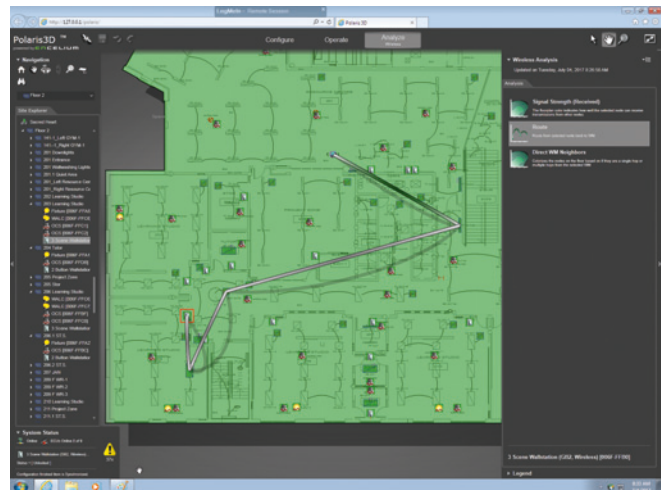
Detailed: Analysis of consumption savings for each energy saving strategy

Benefits of the Polaris 3D™ software for the wireless system

Polaris 3D™ means that the lighting of your building is under control at all times. View, configure, analyse and report on settings and energy usage. The user interface offers a 3D floor plan view as well as instant troubleshooting and is easy to configure. With Polaris 3D™, wireless control is not a risk anymore. Communication path visualisation shows you how the mesh network reacts in real time to any temporary change of signal quality. Battery lifetime real-time statuses enable proactive maintenance, avoiding battery loss. In addition, a signal strength analysis ensures that you and your customer have a professional, high-quality solution and do not have to worry about inefficiencies. Moreover, it is possible to display the on/off status of the lighting and zoom to view space, and a multi-floor-at-a-glance option is also provided.



View of direct WM neighbours: The nodes of the selected Wireless Manager (WM) are colourised based on the routing (single hop or multiple hops)



Analysis: View of route from the selected node back to the Wireless Manager (WM)

Wireless system: enhancements to the software

- Wireless components' battery status
- Wireless components' communication paths
- Multiple floors at a glance
- View of wireless components' signal strength
- View of route from the selected node back to the Wireless Manager (WM)
- View of lamp/ballast failure

ENCELIUM™ DALI Network

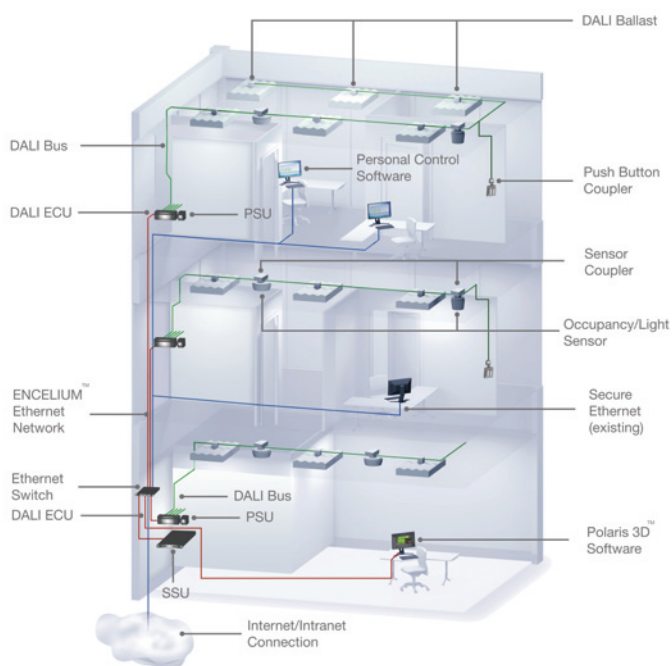
Easy-to-integrate hardware

Thanks to its flexible structure, ENCELIUM™ easily integrates each component. DALI is a daisy chain communication standard that supplies data and power to the system components.

Each light fixture, sensor and push button controller is daisy-chained back to the Energy Control Unit (ECU). This central intelligence node collects, processes and distributes lighting control information from photo sensors (light levels), occupancy sensors (occupancy status) and push buttons to the inputs and outputs over the DALI network. It then determines appropriate brightness levels or the on/off status for each fixture and zone.

Each ECU has Ethernet connections for communication with other ECUs and the System Support Unit (SSU) on the ENCELIUM™ network and for communication with a facility or tenant LAN to allow secure communication with ENCELIUM™ equipment for access to the ENCELIUM Polaris 3D™ or Personal Control Software (PCS) applications.

The SSU serves as the database server for all data related to an ENCELIUM™ system. It stores all system settings and parameters, including attributes for zones, fixtures, sensors and push buttons. Additionally, it maintains multiple set points, including those for light levels, time schedules, occupancy sensor timeouts and demand response or load shedding features. The SSU logs historical data regarding the system's operational and energy savings results.



ENCELIUM™ system infrastructure

DALI

DALI is an international standard, firmly established all over the world. Created specifically for digital lighting control, it provides a single interface for all electronically controlled light sources in an easy-to-install and versatile system. It has almost unlimited scalability, is easy to manage and is very cost-effective through energy savings.



All suitable components at a glance:

More information can be found on page 26

The hardware benefits at a glance:

- Installation is quick and simple with standard DALI or RJ45 connections
- Integrates occupancy sensors, photo sensors and relay-based controls into a comprehensive, programmable lighting control system
- Makes it possible to integrate with other building automation systems, such as HVAC, fire and security
- Little programming effort required

ENCELIUM™ Wireless Network

Easy-to-integrate hardware

The ENCELIUM™ Wireless Light Management System is based on open and interoperable ZigBee standards. This allows you to install sensors and wall stations in hard-to-reach areas because no wiring is required. Each Wireless Manager (WM) can control up to 100 nodes, giving you the flexibility to provide cost-effective control for a variety of locations. The new wireless system includes enhancements to the ENCELIUM Polaris 3D™ software such as battery status view for wireless devices and signal strength analysis. The highly flexible network can integrate multiple technologies on the same platform. The addition of the wireless system also allows you to have a hybrid system using both wired and wireless hardware components.

The ENCELIUM™ Wireless Light Management System communicates via a mesh network based on the ZigBee standard. The Wireless Managers (WMs) are powered using Power over Ethernet (PoE). Each WM must be connected to an Ethernet (PoE) Network Switch using standard Cat-5 or greater Ethernet data cabling. Each Wireless Control Module (WCM), sensor and wall station uses a wireless mesh network to relay data back to the WM. WMs typically control individual floors and are linked back to the System Support Unit (SSU) via an Ethernet network. Internet or LAN connection allow floor-plan-based control software to be operated anywhere on the network.



All suitable components at a glance:

More information can be found on page 26

The hardware benefits at a glance:

- Complete flexibility in projects, providing access to hard-to-reach areas
- Self-healing wireless network with secure AES 128-bit encryption
- Versatile: control of a variety of luminaires
- Seamless installation into the space, easy to install
- Ability to mix products for multiple applications with one light management system
- Upgradable with new technologies
- Individual dimming control of thousands of luminaires
- Wireless mesh network based on the ZigBee standard
- Award-winning sleek, aesthetic hardware
- Multiple mounting options including tool-less options
- Can be networked with ENCELIUM™ products for hybrid system

Why ZigBee?

- Consumes a low amount of energy
 - Great for battery-powered devices
- Fast communication
 - e.g. switching lights on/off
- Reliable
 - Mesh networks are “self-healing”
- Long distances
 - Low data bandwidth
 - Sufficient for lighting

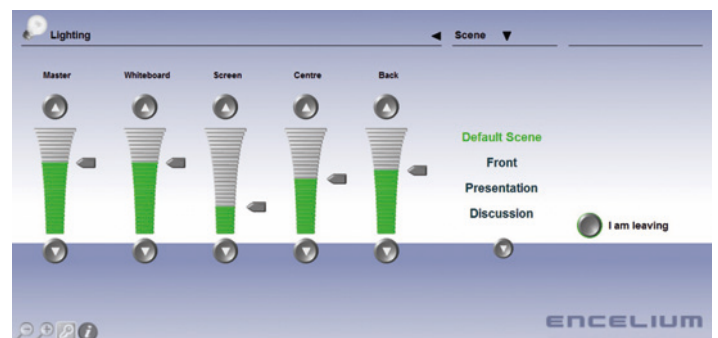
Lighting has never been so flexible

With the ENCELIUM™ Light Management System



Lighting control is all about flexibility. A well-designed light management system like ENCELIUM™ ensures that all the components are responsive to changing conditions. When it comes to interoperability, the best basis are DALI and ZigBee wireless systems, especially flexible systems that can be extended using other components. This opens up completely new possibilities, especially in terms of functionality, design and installation.

Even more convenience comes by the fact that changes in lighting are manageable without rewiring, not just with ENCELIUM™ Wireless, but also with ENCELIUM™ DALI: Simply access and use the software from anywhere and with no need of dedicated expertise in programming or commissioning.



Individual Control: Personal Control Software for workplace lights to let the user control his own environment



BMS systems

By connecting the three big communication standards, DALI, ZigBee and TCP/IP, ENCELIUM™ gives you a real boost in terms of flexibility in lighting. Flexibility now meets scalability enhancing the design and installation experience. Integration of DALI or a wireless mesh network based on the ZigBee standard with a building management system becomes simple and flexible.

The lighting control system could also be a sub-system of a BMS. Through BACnet IP interface ENCELIUM™ responds to commands from the BMS control and DALI ballasts feed lighting system information back to the BMS, allowing automatic identification of failed lamps and ballasts as well as central monitoring of ballast power and dimming levels. A number of alternatives are possible, one being a pure sub-system within the BMS; another being a stand-alone system where important information (fault status, central switch functions etc.) is exchanged with the BMS.



Easy to handle: Spaces can be rearranged in the ENCELIUM™ system at the click of a mouse

Lighting has never been so easy to control

With the ENCELIUM™ Light Management System



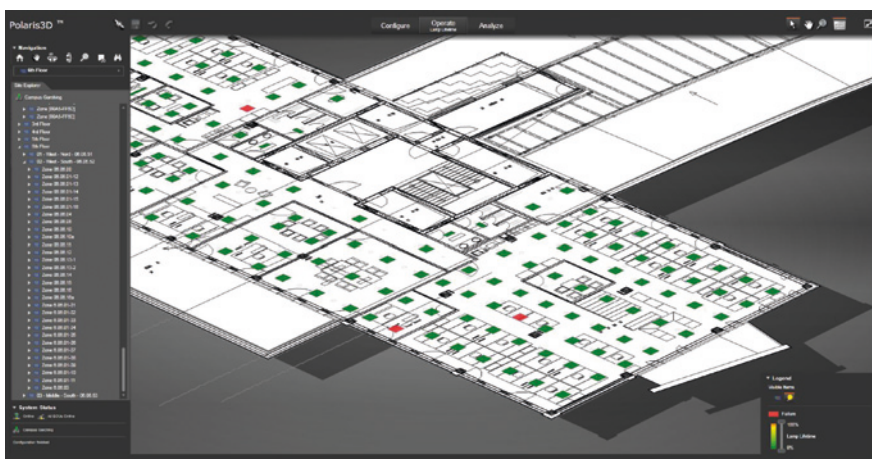
It's no secret that reducing energy consumption is good for the bottom line as well as for the environment. However, those responsible for making the decisions relating to building efficiency solutions are often not aware of all available options. These decision-makers place great importance on energy reduction and corporate social responsibility, but often the data and energy information is not available and if available not in an easy and comprehensive format.

Monitoring the energy use is a proven solution that makes a tangible and visible impact. That is why more and more building owners are switching to energy monitoring solutions that let them automatically collect masses of data. In other words: useful information that helps them to understand and manage the energy usage.

Polaris 3D™ is the ideal software for this task. It ensures centralised control of the whole facility lighting and provides real-time monitoring of lamps, burning hours and faults. And to make it to use as convenient as possible, it has an extremely simple navigation and system configuration, and shows floor plans and colour gradient.



Integration: Automatic functional and duration tests and reporting functionality of emergency lighting systems



Useful: Graphical overview of the lamp and ballast failures to allow immediate and targeted maintenance

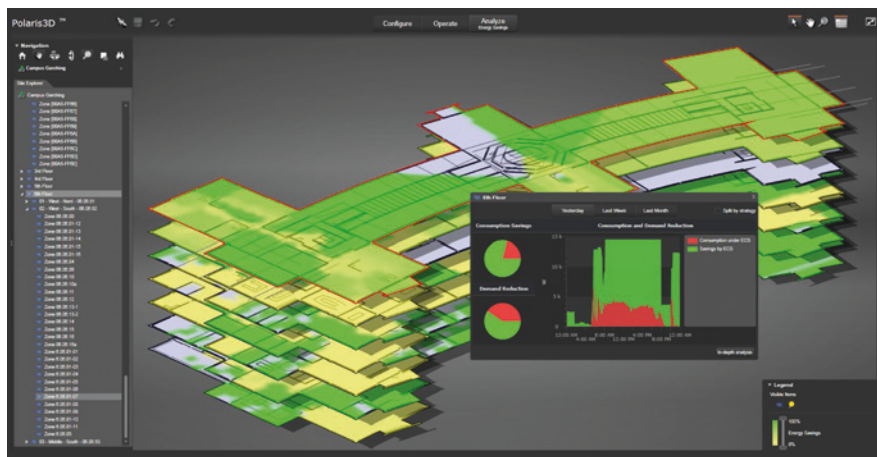
Lighting has never been so energy-efficient

With the ENCELIUM™ Light Management System

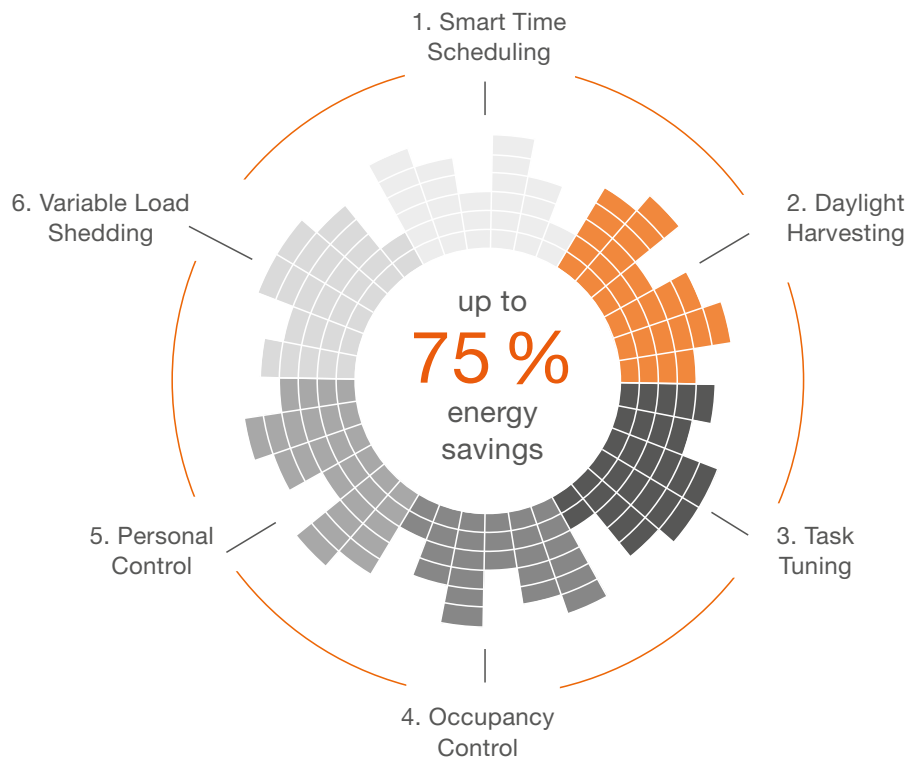


When it comes to light, there is a strong need for energy in every sector of life: from offices to schools, hospitals and commercial buildings. In fact, nearly 20 % of energy consumption worldwide is due to lighting. It is therefore hardly surprising that energy efficiency in this area is a major environmental priority.

A lot of options are available in the market, from the cheapest single dimmer solution to the complete automated building control. But only ENCELIUM™ enables complete building lighting control with up to 75 % energy savings and can be set individually to your needs.



Impressive: Colour gradient 3D view of the building, consumption saving and demand reduction overview



The six strategies to save energy

ENCELIUM™ offers six strategies for saving energy, which are coordinated and optimised using sophisticated software algorithms. As a result, your lighting's energy consumption can be reduced by up to 75 % without compromising light quality. And of course, this also helps you gain points for building sustainability certifications like BREEAM or LEED.

1. Smart Time Scheduling

In areas of a building where occupancy control is not appropriate, time schedule switching or dimming of lights can be employed for zones as small as a room or even an individual light fixture.

2. Daylight Harvesting

Through the use of photo sensors, light levels are automatically adjusted to take into account ambient natural sunlight. To save energy appropriate light levels are maintained and artificial lighting is dimmed.

3. Task Tuning

Eliminates “over lighting” by setting default (maximum) light levels to suit the particular task or use of a workspace.

4. Occupancy Control

Through the use of occupancy sensors, lights are automatically turned on or off or dimmed based on occupancy detection.

5. Personal Control

Through the use of ENCELIUM™ Personal Control Software, individuals can control the light levels in their workspace to suit their personal preferences from their desktop.

6. Variable Load Shedding

The automatic reduction of electrical demand in a building by shedding lighting loads dynamically (through dimming or switching) either to shave peak demand or reduce energy consumption. Load shedding can be done selectively by lowest priority areas first.

Lighting solutions for every need

The application areas of ENCELIUM™

Different facilities call for different solutions in terms of energy management and cost reduction. To match the unique requirements of every commercial building, ENCELIUM™ provides a wide range of combination possibilities that cover every different application – to enhance the quality of light while also maximising your energy savings.

Office

On average, lighting accounts for nearly 40 % of a commercial building's electricity consumption. These facilities therefore offer the largest opportunity for lighting energy savings while working with your existing lighting system. Quality office lighting control can increase a company's profits while simultaneously improving employee morale.

Challenge:

Reduce lighting energy consumption while providing the flexibility to adjust light levels for a wide range of tasks, personal preferences and office hours.

ENCELIUM™ solution:

- **Flexibility:** Zones can easily be reconfigured with the click of a mouse when the use of a space is changed.
- **Control:** Employees can set default lighting scenarios from their computers with ENCELIUM™. Thus they are able to tune and optimise the light level based on activity type.
- **Energy savings:** Time schedules are set to turn lights on/off at designated times. During the working day, the strategy is supplemented with occupancy control through dimming and switching. Networked occupancy sensors turn the lights on to preferred levels only when movement is detected. Daylight harvesting then rises the energy saving to the highest levels.



Healthcare

Lighting impacts on every aspect of human health and performance. By bringing quality lighting into healthcare facilities, patients, visitors and staff benefit while the facility's bottom line improves.

Challenge:

Reduce lighting energy consumption in areas that operate 24/7, while individual patients recover on unique schedules. Strategically lower light levels in adjacent corridor areas to encourage quiet at night.

ENCELIUM™ solution:

- **Flexibility:** System integration options can link patient call button systems with lighting to provide remote control of dimming and scene selection.
- **Control:** ENCELIUM™ allows users to quickly select a preset lighting scenario that provides the right amount of light. Occupants and caregivers can adjust light levels with ENCELIUM Polaris 3D™ software. Employees can set and alter light intensity from their desktop PCs with ENCELIUM™ control software.
- **Energy savings:** ENCELIUM™ assures the lights are only on during occupied periods. Networked photo sensors enable the system to reduce electric lighting energy when natural daylight brightens the space. In addition, smart time scheduling uses dimming and switching to turn lights on/off based on the time of day.



Education

Education facilities typically consist of a large array of buildings, each with differing uses and lighting requirements. Most of these facilities require long operating hours and rely on lighting to support a variety of functions.

Challenge:

Reduce the lighting energy consumption of specialised multi-functional areas on campuses that facilitate peer interaction with teaching staff maintaining a productive environment for students, that encourages concentration. Enable easy scene setting to support the wide variety of presentation and learning modes.

ENCELIUM™ solution:

- **Flexibility:** ENCELIUM™ groups fixtures into zones and allows to dictate time schedule switching or dimming. Zones can be programmed to reduce the use of electric light with the presence of natural daylight.
- **Control:** ENCELIUM™ can maintain customised lighting scenes from a desktop PC through the Personal Control Software. It stores preset scenes so faculty can easily modify light levels. Appeal to different personal preferences and study habits by creating areas with different illuminance levels. Well illuminated “secure zones” are created for spaces such as restrooms, lounge areas and exits to ensure safety at night.
- **Energy savings:** Dimming strategies may be deployed together with occupancy-sensor-based control of discrete rooms so that lights are switched off when not in use.



Parking facilities

The need to address safety and security requires many parking facilities to operate their lighting systems 24/7. No other building type in commercial or industrial real estate has such continued usage outside of normal working hours. As lighting accounts for 95 % of a parking garage's electricity load, these spaces are ideal for lighting controls, which can reduce electric bills and promote sustainability.

Challenge:

Reduce lighting energy consumption in a space that is normally brightly lit for safety and personal security 24/7.

ENCELIUM™ solution:

- **Flexibility:** Time scheduling may be incorporated where volume varies by time of day or between weekday and weekend hours or to set curfew schedules.
- **Energy savings:** Strategically placed networked occupancy sensors to guarantee a drive aisle is illuminated as movement is detected. For crime prevention, bi-level switching triggered by occupancy sensors may also be used as a way to highlight activity. ENCELIUM™ provides the ideal illumination for every task: for example, higher light levels are needed where activity is frequent or at crossings. ENCELIUM™ can initiate load shedding by either automatic command or by a manual trigger through the ENCELIUM Polaris 3D™ software.



Warehouse

Warehouse facilities are typically constructed to store as many goods as possible in the available space to keep building occupancy expenses low. The results are high storage racks and tall, narrow aisles that are difficult to illuminate. In addition, there is a low amount of incoming daylight. Due to these facts, it is important to find a light solution that ensures safe vehicular traffic and good working conditions.

Challenge:

Reduce lighting energy consumption in a space that is normally brightly lit during working hours, especially for the employees' safety, without compromising light quality and find a lighting control system that does not require installation planning experience (e.g. because of wire length restrictions in large warehouses).

ENCELIUM™ solution:

- **Flexibility:** The ENCELIUM™ Light Management System responds to the changing characteristics of a building by providing the right amount of light when and where required.
- **Energy savings:** Tall warehouses make it difficult to replace luminaires. Battery-powered (15+ years) and energy-harvesting devices enable low power consumption with lighting energy savings of up to 75 %. Strategically placed networked occupancy sensors guarantee that an aisle is illuminated only if movement is detected.



Comprehensive needs require comprehensive advice

Service and support by OSRAM

If you want more information how ENCELIUM™ can help you to save energy in your building, OSRAM and its partners support you across all areas. No matter how big your expectations are, we will provide you with the best system design, assisting you in every single implementation step.

Even better, when it comes to light, OSRAM is your reliable partner that offers you over 100 years of experience with a comprehensive portfolio of lighting solutions, from components to luminaires and lighting controls.

Don't hesitate to contact us. We look forward to help you to light up your building.

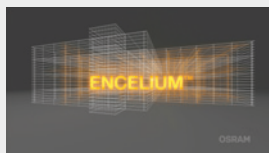
Further information about Digital Lighting Systems

www.osram.com/ds

Further information about ENCELIUM™

Find out more about the light management system and watch the product video:

www.osram.com/encelium



Any questions?

If you need support for ENCELIUM™ projects, please contact us:

ims-support@osram.com

All suitable components at a glance

Software and hardware for ENCELIUM™

Controllers

Image	Product reference	Product description	Product number
	ECU DALI	DALI Energy Control Unit (software included)	4052899016842
	EN-SSU	System Support Unit – Server PC for rack mounting installation	4008321791535
	EN-WM-ZB-P3D	Wireless Light Management System	4052899957336

Sensors

Image	Product reference	Product description	Product number
	LS/PD MULTI 3 CI	Light and presence sensor for ceiling installation	4008321916648
	LS/PD MULTI 3	Light and presence sensor for luminaire integration	4050300802138
	LS/PD MULTI 3 A-W	Light and presence sensor for luminaire integration with clip mounting	4008321653604
	LS/PD MULTI 3 B	Light and presence sensor for luminaire integration, with movable head	4050300803081
	LS/PD MULTI 3 FL	Light and presence sensor for luminaire integration, flat profile	4008321047342
	HIGHBAY	Motion sensor for high ceilings	4008321410078
	VISION	Motion sensor for large areas and corridors	4008321957047
	DALI LS/PD LI	DALI light and presence sensor for luminaire integration	4052899043954
	DALI Pro Sensor Coupler	DALI Sensor Coupler for LS/PS MULTI 3 family	4008321379269

	DALI Sensor Coupler HF LS	DALI Sensor Coupler for HF LS sensor	4052899141728
	HF LS LI	Light and presence radar sensor for luminaire integration	4052899921481
	DALI HIGHBAY ADAPTER	DALI Highbay adapter with lighting detection function integrated	4008321774132
	DALI LS/PD CI	DALI light and presence sensor for ceiling installation	4052899930292
	EN-SCPPH-0450-ZB	Wireless light and presence sensor for surface mount	4052899957343
	EN-SCPPH-1500-ZB	Wireless light and presence sensor for wide areas	4052899989337
	EN-SCPPH-HB-ZB	Wireless light and presence sensor for highbay areas	4052899989344
	DALI Sensor Coupler E	DALI Sensor Coupler for third party sensors	4052899230491

User Interfaces

Image	Product reference	Product description	Product number
	DALI Pro PB coupler	DALI button coupler	4008321496461
	EN-WS-2B-ZB-WH	Wireless wall switch 2-button controller	4052899989290
	EN-WS-ZC3-ZB-WH	Wireless wall switch 3-zone controller	4052899989306
	EN-WS-ZC6-ZB-WH	Wireless wall switch 6-zone controller	4052899989320
	EN-WS-SC3-ZB-WH	Wireless wall switch 3-scene controller	4052899957367
	EN-WS-SC5-ZB-WH	Wireless wall switch 5-scene controller	4052899989313

Integration Accessories

Image	Product reference	Product description	Product number
	BACnet License	BACnet Software key	Ask your local OSRAM sales partner

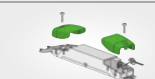
Actuators

Image	Product reference	Product description	Product number
	DALI SWITCH SO	DALI-controlled 3 x Switching Actuator module	4008321533364
	EN-WCM-ZB-EU	Wireless luminaire control module	4052899957350

Converters and Repeaters

Image	Product reference	Product description	Product number
	DALI REP LI	Repeater DALI and signal amplifier (luminaire or ceiling installation)	4008321292599
	DALI REP SO	Repeater DALI and signal amplifier (snap-on installation)	4008321301093
	DALI CON 1...10 LI	Converter from DALI to 1...10V (luminaire or ceiling installation)	4050300638973
	DALI CON 1...10 SO	Converter from DALI to 1...10V (snap-on installation)	4050300639802

Accessories

Image	Product reference	Product description	Product number
	LMS CI BOX	Strain relief	4008321083692
	ECO CI KIT	Strain relief	4008321392091
	PS 30	Power Supply for ECU DALI and DALI SWITCH devices	4008321555311
	LS/PD AP KIT	Ceiling mounting adapter for the DALI LS/PD LI Sensor	4052899173385
	EN-WS-USB	Wireless mapping tool	4052899286597

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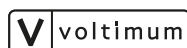
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