

dynalite

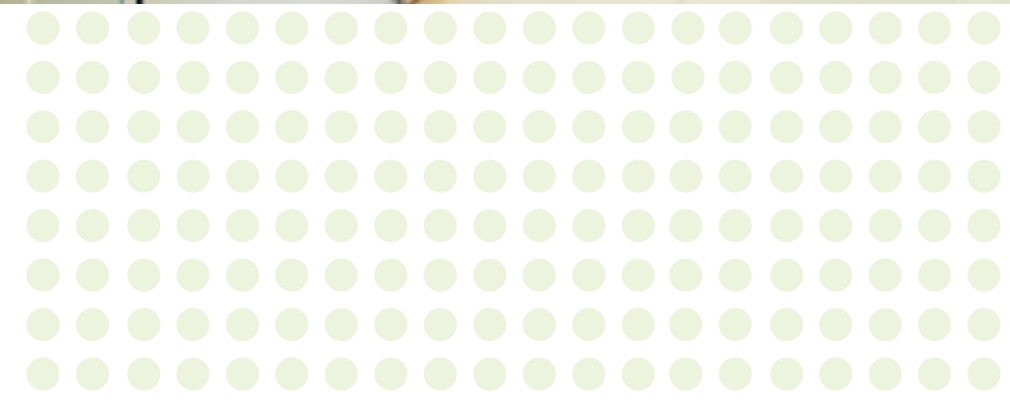


energy management for
commercial buildings





introduction This guide has been prepared to assist both designers and managers of commercial buildings to appreciate the potential for positive change. It is important to be aware of all issues that affect the lighting of a commercial environment including; existing infrastructure, available technologies and the livelihood and well-being of the occupants.





As a manufacturer of energy management solutions, Dynalite is committed to continually assessing the environmental credibility of our product.

Surveys in Australia indicate that approximately 75% of construction professionals have been involved in 'green building' projects.³ This may vary from region to region, but there is clear recognition that an increased focus on green building will be accelerated by the drive to achieve best practise environmental and sustainable standards in building design and construction.

The emergence of regional 'green' market based voluntary schemes and associated rating tools in the built environment is evidence of a global recognition of the need for change. Such regulators include Australia's Green Star and NABERS energy rating for buildings, the British-based BREEAM and EU Energy Performance in Buildings Directive, the United States LEED rating for major renovations and the ongoing evolution of Green Building Councils around the world.

In addition to these specific environmental rating tools, increasing legislation and the development of new directives govern the manufacture of product used in a commercial or residential environment, as well as its eventual disposal. These include specific environmental ratings such as Minimum Energy Performance Standards (MEPS), a mandatory system of legislation and regulation overseen by individual Australian states in accordance with Australian Standards, and the Restriction of

Hazardous Substances (RoHS), a directive that prohibits or restricts the use of six hazardous substances in the manufacture of electronic and electrical equipment including lead, mercury, cadmium and hexavalent chromium. Linked closely to the Waste Electrical and Electronic Equipment Directive (WEEE), which sets targets for the collection, recycling and recovery of electronic and electrical goods, the development of RoHS signals a global commitment to more than a reduction in energy use alone, but to the development, production and disposal of goods in a manner that minimises impact on our planet.

As a manufacturer of energy management solutions, Dynalite is committed to continually assessing the environmental credibility of our products. This means considering the carbon impact of mining and processing materials, the cost of transporting those materials, the efficiency of the developed product and the life span and eventual removal of the product at the end of its serviceable life. This commitment extends beyond our design and manufacturing processes and enables us to offer solutions that assist in specific category attainment within each of the global green building environmental rating schemes.

³ Source: BCI Australia: Green Building Market Report 2006, Page 12, Market Demand for Green Building.

global energy demands >>>

Based on current global energy consumption, world energy demand is set to increase by 50% before 2030.¹ On average, buildings consume just over 30% of world's resources, including 12% of the world's fresh water and up to 40% of world energy. It is estimated that 85% of a building's gas emissions is caused by lighting and HVAC consumption¹ and that commercial buildings produce approximately a third of energy-related CO2 emissions worldwide.²

Artificial lighting contributes to around 30% of electricity consumption in a commercial building or tenancy. An energy management approach to lighting control and design in the built environment is imperative to ensuring a sustainable future.

Dynalite provides a comprehensive control solution that ensures lights are only used when needed, at a level that minimises energy consumption without jeopardising occupant comfort. Dynalite also provide a vast array of integration technology that enables a facility manager or building operator the ability to have one system that interfaces with third party building devices such as blinds, BMS or HVAC.

¹ Source: (2007) CSIRO & The Natural Edge Project, Energy Transformed: Sustainable Energy Solutions for Climate Change Mitigation, pp 6

² Source: Assessment of policy instruments for reducing greenhouse gas emissions from buildings. Report for the UNEP-Sustainable Buildings and Construction Initiative, pp 3

Rating tool	Region	Organisation	Rating scale	Range of tools
Green Star	Australia	Green Building of Australia www.gbcaus.org.au	One to six stars. Four through to six for formal certification.	Office design, office interiors, office as built, retail centre, education pilot programmes include industrial, multi-use residential, mixed use, healthcare, office existing building
Breeam	UK	Building Research Establishment Environmental Assessment Method - www.breeam.org	Pass, good, very good, excellent	Healthcare, retail, schools, homes, offices, prisons, multi-family residential, and industrial
LEED	US	US Green Building Council www.usgbc.org	Certified, silver, gold, platinum	New construction, existing buildings: operational & maintenance, commercial interiors, core & shell, schools, retail, healthcare, homes, neighbourhood developments
NZ Green star	NS	News Zealand Green Building Council - www.nzgbc.org.nz	Four to six stars for formal certification	Office design, office as built, pilot programme office, existing buildings
LEED	UAE	Emirates Green Building Council www.emiratesgbc.org	Certified, silver, gold, platinum	New construction

The green demand goes beyond just energy efficiency of an installation. While it is an integral part of the Dynalite control solution delivery, we are also conscious of the need to meet and assist the other green global demands that include:

- Indoor Environmental Quality and Occupant Comfort
- Materials, Management and Resource
- Life Cycle Assessment and Sustainability

With this view, we address all global green drivers and encourage a holistic approach to lighting control design and energy conservation for today's commercial building environment.

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energy & emissions

We address energy and emissions through the development of green building technologies that continue to be effective for the life of the installation. Ongoing energy saving and emission minimisation is achieved through leading design, product innovation, effective commissioning, and by meeting the most stringent regulatory requirements.

Our products perform superior energy management functions through presence sensing and daylight harvesting, superior dimming and switching capability and enhanced control management.

Our commissioning processes follow international guidelines such as CIBSE Code L and building tuning, or health checks, to ensure that the system meets energy management design intent.

energy & emissions

LCA & sustainability

Life Cycle Assessment & sustainability

Our approach to life cycle assessment and sustainability is to provide solutions that enhance sustainable building practices and to future-proof a building through the use of modular product designs, providing an upgrade path in the face of changing technologies. As lighting technology changes, key components can be upgraded without replacement of an entire unit. The modular nature of our designs facilitates the flexibility required for changes in occupant demands and in the use of a building or space.

Indoor Environmental Quality (IEQ) & occupant comfort

Offering control solutions that increase individual occupant comfort promotes a productive working environment. We recognise this essential element and offer solutions that put control back into the hands of the occupants, enabling desktop management of a worker's direct environment.

System integration facilitates simple control of other services including HVAC and window treatments, providing complete environmental control from a single button press or mouse click.

IEQ & occupant comfort

materials, management & resource

materials, management & resource

We carefully monitor our own carbon footprint and continually assess and improve on our manufacturing, procurement and delivery processes; both upstream and downstream.

This involves the development of building control technologies with green-based supply and operational practices that minimise demand on resources and reduce energy consumption through eco-aware product procurement and lean product design and manufacturing.

guidelines for lighting in commercial buildings



Lighting quality must be appropriate to the tasks of the modern office. The ultimate efficiency is derived from a productive workforce; hence the office design (across all disciplines) must optimise visual comfort, perceived safety and a sense of well-being at all times.

- The worker should be empowered, not deprived. Lighting controls must be as transparent as possible and user interaction should be encouraged.

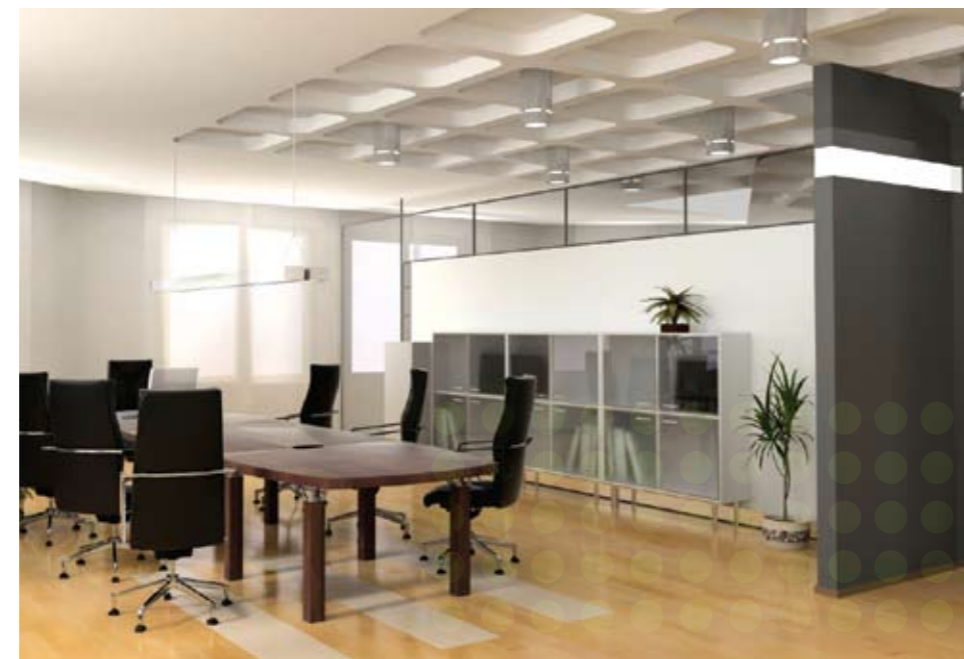
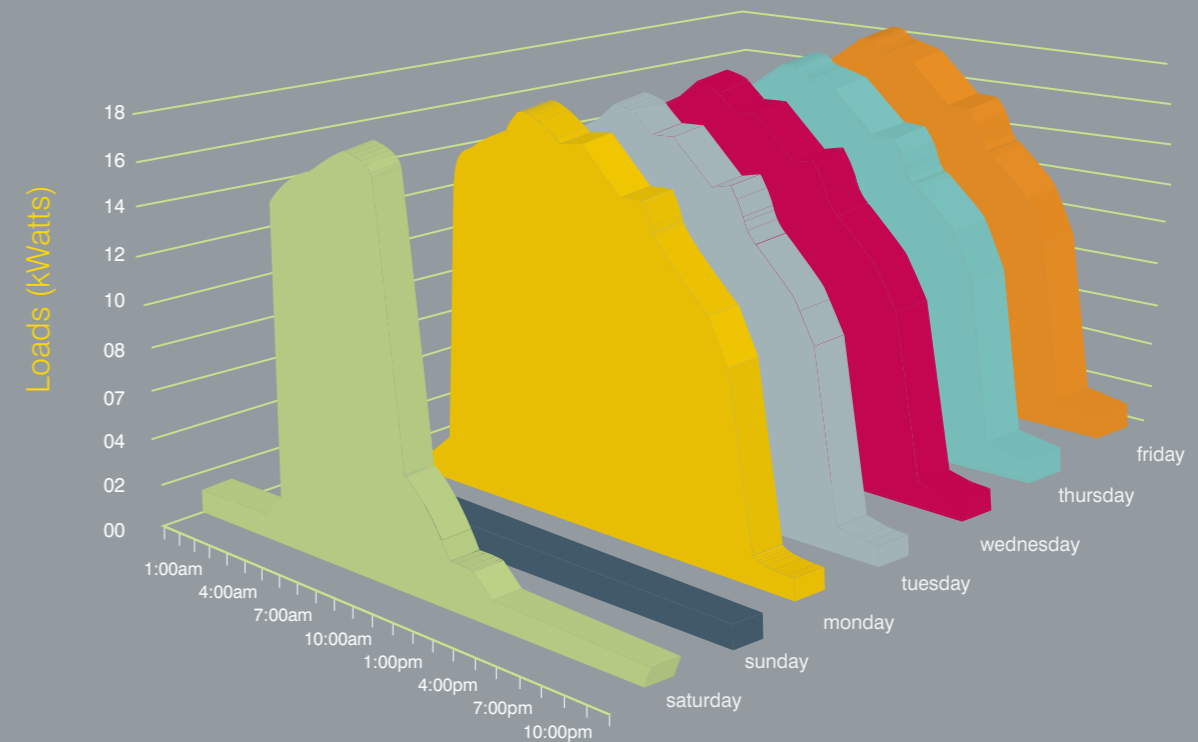
- With due regard to the ergonomic factors above, only then should the lighting system intervene where humans can't or won't. Energy that is not required to satisfy the first two constraints should be switched off or minimised.
- Steps taken to conserve energy must be future-proof. Today's actions shouldn't prevent tomorrow's solutions from being implemented.



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Guidelines for lighting in commercial buildings)))



Environmental paradox

Social and political attitudes have changed in favour of energy conservation. Worker habits have also changed, but towards longer working hours spread across a wider period of time. Office tasks have evolved from isolated, individual processes to technology-based interactive communication tasks. In effect, workers are consuming more energy for longer periods of time.

Symptoms of an under-controlled lighting installation

- A sharp rise in electricity consumption before most workers have arrived.
- No observable energy reduction around the middle of the day when many workers go to lunch and daylight penetration is at its peak.
- Near-maximum energy usage continues late into the evening.
- Excessive energy usage continues overnight.

Health check

Existing occupied buildings can be analysed by professionals to determine the performance of the lighting installation. Connecting a data-logging device to the local distribution board for several weeks provides a snapshot of typical electricity usage. As part of a data logging strategy, a lux meter is placed in an unrevealed location to record occupancy behaviour. It is often asserted that staff turn lights off at the end of the day, but general findings in data logging may indicate that the lights are effectively left on 24 hours a day, highlighting the need to implement corrective action.

strategies that reduce lighting energy consumption



Many devices and systems are intended to reduce the energy consumed by lighting in commercial buildings. Some are incredibly complex and are soon by-passed as workers struggle to retain control. Others are simplistic for the sake of economy. This is sometimes appropriate, but it is often intrusive and a contributing factor in the decline of office morale.

It is possible to achieve significant energy savings using a combination of appropriate strategies. Many can be applied in

isolation, but it is likely that several strategies will be combined to achieve the most beneficial outcome.

A holistic approach to solving the problem considers all factors that contribute to wasted lighting energy. These include the luminaires (new or existing) and some non-lighting factors, such as window blinds and curtains, that might influence the uniformity of natural light entering the space.

control strategies that reduce energy consumption



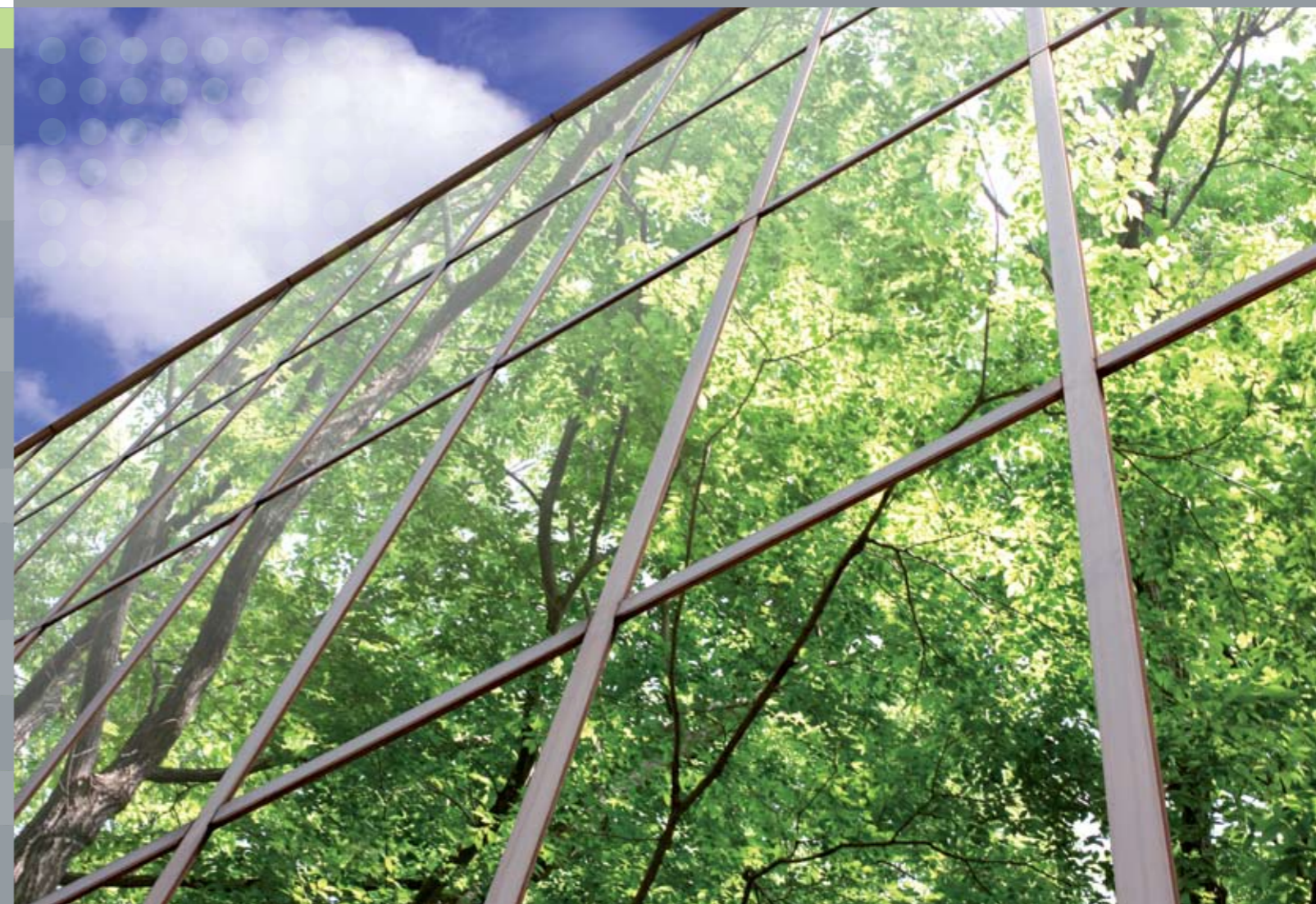
A sophisticated lighting control system can provide significant cost savings in a commercial building environment. A variety of control methods present a solution to suit any setting, ensuring that energy is not consumed unnecessarily, whilst furnishing the user with flexibility and control over their environment.

In recent times, significant advances have been made in lamps and electronic control equipment.

In particular, fluorescent ballasts have rapidly progressed from being current-limiting components to fully addressable electronic processors. When a new lighting design is commissioned, it is imperative that the immense potential of currently available technology is appreciated. Complex factors require an experienced lighting engineer or designer to achieve an optimum solution.



area of concern	strategies applicable
01 Limit time of use Eliminate unnecessary lighting energy use outside 'normal' hours. Lighting that is not required can be switched off or dimmed.	Time control, user control panels, occupancy sensors, dimming, touch screen control, web browser control
02 Optimise light output How much have the light fittings deteriorated since they were first installed?	Luminaire efficiency upgrade
03 Design illuminance Excessive lighting power is provided in new installations to allow for furnishing, partitions, dark colours, lamp ageing and for the accumulation of dirt and corrosion on lamps, reflectors, lenses and louvres.	Grid relocation, de-lamping, illumination management control, occupancy sensors, step dimming
04 Daylight integration Enable sunlight to displace artificial lighting with sensitivity to occupants.	Dimming, occupancy sensors, daylight harvesting
05 Friendly "after hours" lighting management Evening workers detected and given reassuring illuminance of egress path and common areas. Gradual closure after all movement has ceased.	Desktop interface, after hours sweep
06 Life-cycle operating costs Programmed lamp replacement is cost-effective.	Maintenance
07 Acceptable user/manager joint input The facilities manager can globally set broad time-based functions. The user still has access to adjust local light output, and override on or off as required.	Central control, web browser control, hand-held IR control
08 Full status reporting DyNet system monitors individual fixtures for trends, and early detection of component failure.	Maintenance
09 Inter-system communication HVAC, security or BMS can send and/or receive commands to/from lighting zones.	Central control
10 Low utilisation areas What to do with store rooms and amenity areas.	Occupancy sensors, time control
11 Tariff sensitive control Is the control system responsive to changing energy costs (daily) and to maximise demand constraints (monthly)?	Central control



A sophisticated lighting control system can provide significant cost savings in a commercial building environment.



Dimming

Existing fluorescent lighting installations can be upgraded in a number of ways. While there is a strong tendency for autotransformers to be fitted to incoming circuits, these offer none of the ergonomic benefits of intelligent lighting control

In fact, the future addition of efficient electronic ballasts will render an autotransformer system ineffective. There are currently three generations of dimmable electronic ballast available for new installations and re-fits.

Detailed information is available in a separate Dynalite technical publication. The significance of newer strategies (DSI, DALI), is that digital control now enables seamless light level adjustment to occur continuously, while being indiscernible to the occupants.

New lighting layouts are frequently designed around a current arrangement in which luminaires are operating at their lowest performance. As lamp efficiency decreases over time and surface dirt builds up on fittings, light output can be dramatically reduced.

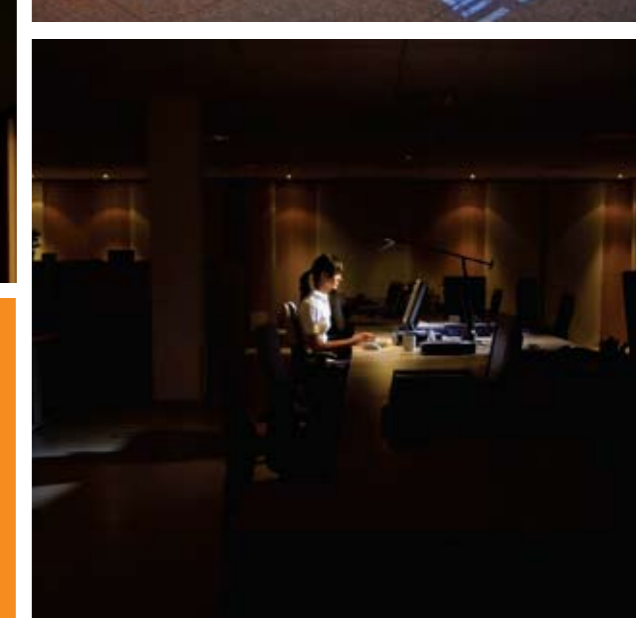
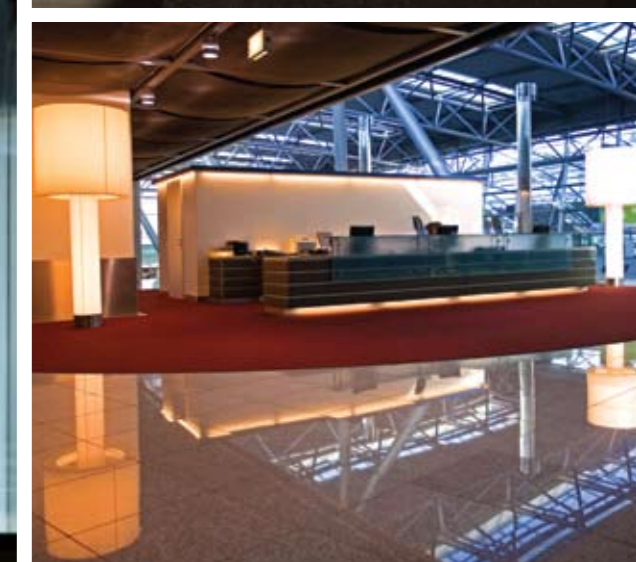
As a result, the design of a new lighting plan that replaces a less than optimal existing layout often leads to workspaces being over lit for the task.

Designed Illuminance Management is a strategy whereby optimum light output is maintained in the work area. Automatic dimming control enables this to be continuously monitored and smoothly adjusted. Without this, many offices are subject to extremely high light levels from luminaires burning at full power output and, not surprisingly, the high energy bills to match.

Daylight Harvesting

In recent years, scientific agencies around the world have been studying the impact of daylight on the working environment. Natural light has an important bearing on the well-being of occupants and is accompanied by their need to be connected to the world outside. Window treatments such as curtains or blinds, as well as glass transmission factors, have a direct impact on how much natural light enters the office environment.

Fenestration (the design and placement of windows in a building) is the creative concern of architectural designers. Technically, it is the domain of mechanical engineers, as they have an interest in the effects of thermal gain or heat loss from the core of a building, but lighting control technology enables us to strategically substitute artificial fluorescent light with natural light, slowly dimming lights parallel to daylight entry and achieving considerable energy savings.



Natural light has an important bearing on the well-being of occupants and is accompanied by their need to be connected to the world outside.

Time control & after hours lighting management

Energy usage patterns for an office should reflect the facility occupancy time profile. In reality, this is rarely the case, as a glance at any city skyline at night demonstrates. Implementing time control practices ensures that lighting and HVAC systems do not operate overnight, wasting energy whilst a building is unoccupied.

Manual user controls

A combined control approach merges acceptable user and manager input. A facilities manager can set broad time-based functions globally and the user can still manually intervene, giving direct control of the immediate environment back to the occupant.

Occupancy detection & egress

Low circulation areas in an office space are a common source of unnecessary energy usage. The reverse of this problem is a system that obeys pre-programmed functions, shutting down lighting at a preset time, without consideration of late night or weekend workers. Occupancy detection eliminates both of these issues, by providing light when and where it is required.

general considerations

Commissioning

80% of a building's energy consumption is operational⁴. Optimum commissioning of the control system is specifically addressed in a number of green building rating tools, such as Green Star and LEED. All projects require development of a thorough commissioning strategy which is focused on the design intent of a building, ensuring the required operational outcome is achieved.

It is also prudent to implement a program of quarterly assessments on the control system within the first twelve months of occupancy, which can be done at both a base-build and tenancy level. This should be followed by a final building inspection at the end of twelve months, to ensure all targeted outcomes in relation to energy management and occupant comfort have been met.

Office and tenancy churn

Constant change in today's commercial world means that a building is continually undergoing occupant churn, at both a staff and tenancy level. A lighting control system that utilises a structured wiring solution or modular control approach, coupled with 'drag-and-drop' configuration and programming software, easily accommodates tenancy changes. An ideal scenario permits lighting grid changes and luminaire group re-zoning without the expense and disruption associated with rewiring a facility.

Metering and sub-metering

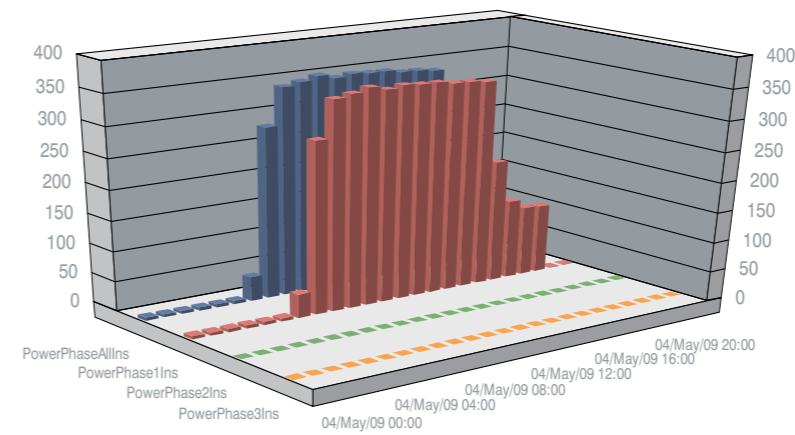
Placement of meters and sub-meters to monitor power consumption by individual tenancies, departments or floors, is an increasingly common practice in commercial building applications. Sub-metering is awarded a green building rating credit in the 'Energy' category under schemes such as Green Star, BREEAM and LEED.

Evaluating notional (anticipated) load to actual load highlights differences between real world outcomes and design intent – in essence, determining if the control system is delivering target performance outcomes. This has particular significance where energy modelling has been used in the design phase in order to reach energy targets upon practical completion and occupancy. This is particularly applicable under building energy rating schemes such as the Australian NABERS energy (previously ABGR) or European based Energy Performance in Building Directive (EPBD).

It is equally important to consider placement of meters for accessibility and where possible provide separate reads for varied energy distribution such as lighting, heating, ventilation and air-conditioning (HVAC), IT/data and hot water.

⁴ Source: (2007) CSIRO & The Natural Edge Project, Energy Transformed: Sustainable Energy Solutions for Climate Change Mitigation, pp 6

Power Consumption (kW)



Luminaire efficiency upgrade

Light output from luminaires can be increased by using the following methods:

- Lamp replacement with tri-phosphor tubes
- Addition of a high purity add-in reflector
- Replacement of lay-in panels with louvres
- Replacement of conventional control gear with electronic ballasts, or one of the several digital ballast technologies

De-lamping

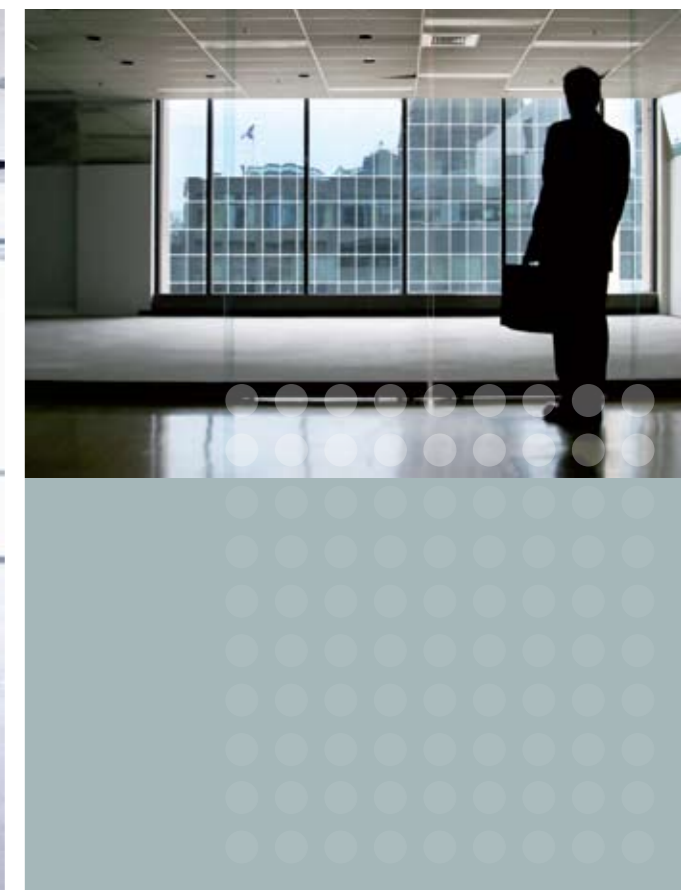
Debate continues about the merits of removing lamps from multi-lamp fixtures; a quick way to cut energy costs, but one that should be applied only to fixtures with three or more lamps. In a two lamp fixture, photometric distribution is severely affected unless the remaining lamp can be relocated to a central axis point. A drop of 50% light output across an entire office will inevitably generate insufficient light in some areas.

Grid relocation

To align with floorplan layout, it is often necessary to transplant fixtures from their initial array. Within the constraints of available lighting sockets in the ceiling, it is beneficial to create a higher density of lighting around workstations than in corridors. If the circuit is subsequently dimmed, it is then practical to maintain acceptable illumination levels at desks whilst reducing unnecessary corridor lighting.

Programmed lighting maintenance

Most installations neglect the cleaning and re-lamping of fluorescent lighting, opting to change only failed lamps. It is advisable to clean and re-lamp every few years.





the dynalite energy management system



Network Architecture

The Dynalite system utilises a true distributed processing architecture, where a range of devices are interconnected over an RS485 network to form a complete control solution. Command and status information passes to all devices over the network using the event-based DyNet protocol. The system was developed primarily for lighting control, although it is integrated extensively with systems including HVAC, BMS, security, fire detection, access control, blinds, motors and other electrical loads to provide a comprehensive solution. Dynalite control devices incorporate an integral microprocessor and non-volatile memory. All configuration data required to operate is stored within the memory of the device. In most instances, each network component operates autonomously and simply responds to or issues messages that relate to the device's configuration.

Dynalite's distributed architecture dramatically improves reliability over systems that incorporate centralised processors, where malfunction of one device could result in total system failure. Should a single device fail in a Dynalite system, all other devices will continue to operate as normal. This distributed architecture also supports a wide range of interfaces, manufactured by Dynalite and other system vendors, to offer a robust flexible approach to control of lighting and other systems. The broadcast event-based network provides complete flexibility and ensures that alterations or additions can be made after installation, without the need to re-configure or rewire the entire system. It also dramatically simplifies direct network integration with other systems.

Sensors

Sensors have traditionally been used to switch off lights in low circulation areas, such as storage or amenities locations, but advances in sensor technology have resulted in 'smart' sensors that behave dynamically, depending on time-based and environmental factors.

Dynalite multifunction sensors offer a great deal more than simple on/off control. The devices incorporate motion detection, PE (ambient light) detection and PIR (passive infra-red) receive capability. The light level and motion detection functions can be configured to work together to provide conditional logic control. For instance, the sensor can be set up to change lighting levels when motion is detected, but only if the current lux level for the controlled area is below a specified value.

The motion detection function can perform different routines according to the time of day. For example, during normal office hours, a sensor might enable a workstation to dim by just 20% when no occupants have been present for five minutes. After hours, however, the same sensor might enable a gradual fade out and switch off for the same workspace.

Evening workers who are detected can be given a reassuring illuminance of their workspace, their egress path and the common areas. Gradual closure after all movement has ceased ensures that energy is not wasted after their departure.

The PE detection function is used to implement daylight harvesting, enabling artificial lighting to be displaced by sunlight as it enters the office, ensuring that energy is not consumed unnecessarily.

In recent times there has been further development in ultrasonic detection. Ultrasonic sensors use high-frequency sound waves which can reflect off surfaces over large areas and therefore do not require 'line of sight' operation. Such sensors are ideal for use in offices, stairwells and areas where permanent obstacles may hinder detection.

Multifunction sensor tasks can be overridden by a Dynalite remote control, or generic learner remote, via the IR receive capability.

Temperature sensors measure ambient temperature and provide data to other Dynalite devices, such as relay controllers, which are used to switch heating and cooling plants. For example, in hot summer months, a temperature sensor could be employed in conjunction with motion detectors to send a message to shut off the HVAC when the temperature reaches a predetermined level, but

only when no motion is detected in that zone. This reduces the risk of expensive air-conditioning being left on overnight, whilst still considering the needs of late-night workers and the provision of a comfortable environment.

High and low setpoints are determined during system configuration, or can be dynamically set via other devices on the network, such as a touch screen. Conversely, a touch screen can be used to interrogate the temperature sensor and display the current temperature in real time.



Dynalite multifunction sensors offer a great deal more than simple on/off control.

DLight III Server

DLight III Server is designed to provide high level integration and control options to a DyNet network via Ethernet. The DyNet network is connected to a server PC's COM or USB port and information can then be exchanged via client software running on the server PC or clients connecting remotely over the Ethernet network using TCP/IP. Integration to other services is made simple via the use of a set of calls for an industry standard DCOM interface. It is an inexpensive solution for providing occupants of open plan space with control over their local environment.

TrayPan, client software provided with DLight III Server, resides in the tool tray of desktop PC's and uses the existing LAN to communicate with DLIII Server. It enables an occupant to control the switching and illuminance level of his or her workstation without leaving the desk. From a facility's perspective, the provision of lighting energy to the workstation can be regulated by the status of the occupant's PC. Lighting is initiated when the user logs on and fades out shortly after log off, as well as being synchronised with the PC's screen saver.

Apart from the benefits to the user, implementation of this facility requires no local hardware, providing a cost benefit in a small-scale installation over the provision of local control panels that would otherwise be required.

As well as control and status reflection of the lighting system, alarm events such as circuit breaker trips and lamp failures can be automatically forwarded to the BMS. Diagnostic and maintenance data such as lamp burn time is readily available.

Once connected to a network, DLight III Server can be configured to automatically scan the network and build and maintain a database containing a model of the network and all connected devices. This architecture removes any network latency and allows clients to exchange information instantly, without the need for the client to communicate directly with devices in the field.

MapView

Building occupancy and staff churn has become a regular challenge for today's commercial interiors. Operating on the DLight III Server network, Dynalite MapView control management software enables a facility manager to simply re-zone luminaires via their PC without the need to physically re-configure the space.

The standard of system commissioning can be the difference between a control management solution that delivers real energy management outcomes and one that fails to operate at all. MapView is optimised to "program in" the most advanced control settings that Dynalite energy management technology can offer. This includes ease of enumerating DALI controlled light fixtures, defining lighting zone areas, placement of Dynalite controlled specified "loads" such as lighting, fans, pumps, AV or HVAC equipment and setting of presets and tasking.

Efficient on site operation of a lighting system can be quite extensive depending on the size of the facility. Automatically highlighting lamp and system controller issues is a key feature of MapView software, enabling facility management to keep "ahead of the game" when it comes to monitoring the daily requirements of occupant sensitive office lighting. In addition Dynalite provides energy management reporting capability in relation to lighting consumption via notional load reporting as part of an ongoing building tuning and system maintenance program, ensuring that the installed lighting system via Dynalite control is delivering required energy management performance outcomes.



Dynalite multi-purpose controllers deliver a solution that meets the specific needs of any commercial space.



Load Controllers

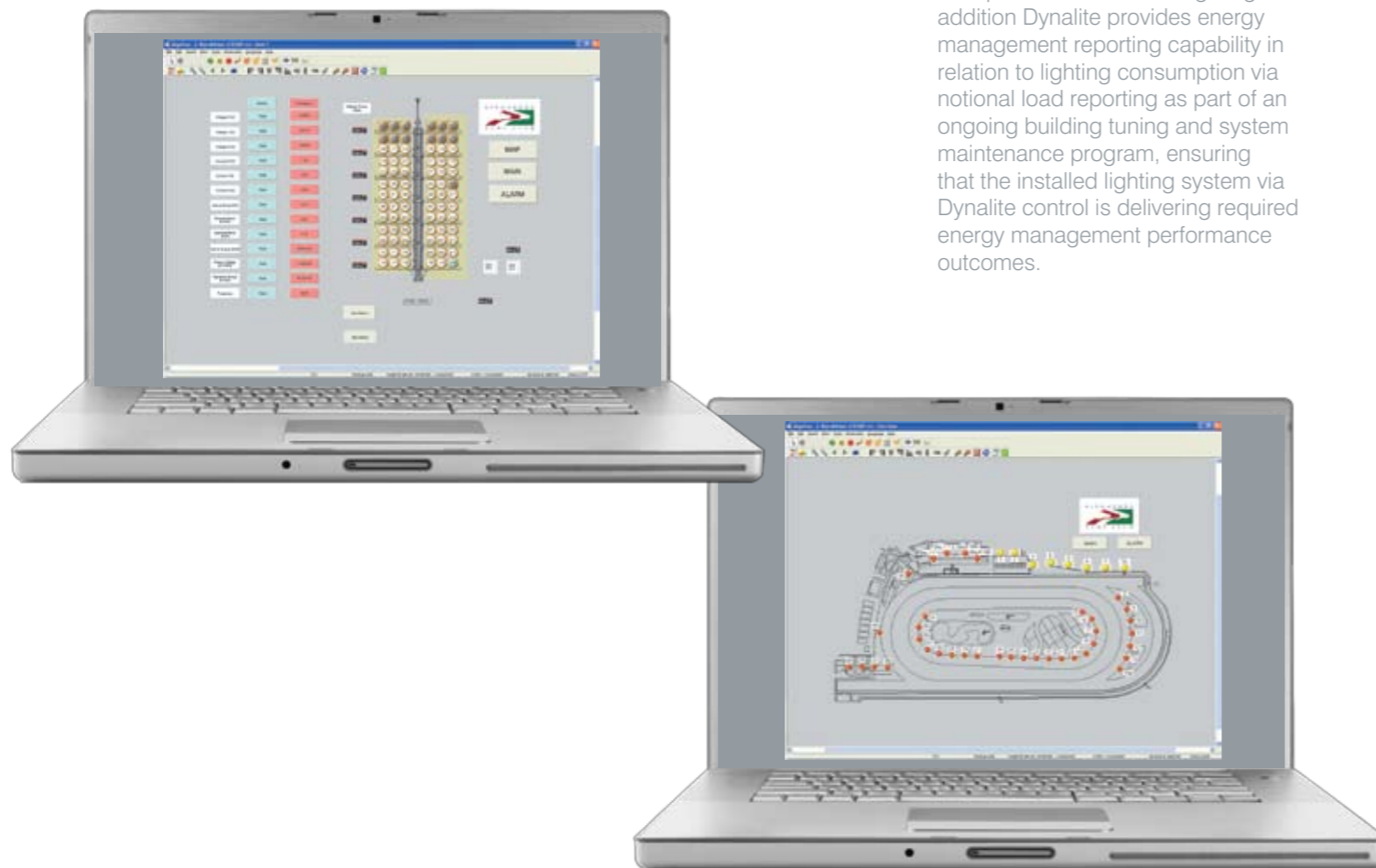
Dynalite manufactures a range of ballast, relay, leading or trailing edge dimming controllers suitable for a commercial building environment. Load controllers are available in 1, 2, 4, 6, 8 & 12 channel configurations, ranging from 1A to 20A per channel.

Our ballast controllers are suitable for control of fluorescent and incandescent lighting fixtures fitted with electronic 1-10V, DSI or DALI dimmable ballasts or transformers.

Dynalite multi-purpose controllers deliver a solution that meets the specific needs of any commercial space.

Our wall-mounted controllers are designed as 'mini distribution boards'. The units are supplied as a complete assembly and do not require any additional circuit devices, enclosures or internal wiring.

For integration with other control equipment, Dynalite also manufactures an extensive range of cost-effective DIN-rail mounted controllers, suitable for installation within switchboard enclosures.



Time Clocks

Dynalite system time clock controllers are intelligent devices that store 'events' in their memory. These events can be triggered by the time of day, sunrise or sunset, a specific day of the week, or a specific date. Most often, the time clock's role is to advise downstream devices of the broader time category, such as 'Weekday After Hours' or 'Public Holiday'. From this information, the local intelligent devices on the network can modify their behaviour pattern.

User Control Panels

Dynalite offers an unparalleled range of wall mount user control panels, available in an infinite combination of colours, architectural finishes and styles. The functionality of the panels extends from simple preset scene selection, through to advanced sequential and conditional logic.

Custom panels can be easily designed to include any or all of the following components:

- keyswitches to lock out functionality or unauthorised users
- mechanical faders for manual control over individual channels
- button faders
- network sockets for connection of a computer to the DyNet network
- infrared input to provide IR receive capability
- custom engraving to clarify functionality using words or diagrams

In a commercial office tenancy situation, wall mounted control panels can be used in a number of ways.)))



))) Prominent Entry Panels

Most offices have an array of switches near the main entry, as the intention is to allow individuals to manage the lights in their local area. The reality is usually that the first person to arrive switches them all on and the last to leave forgets to turn any of them off.

A more elegant solution is a single control panel, comprising two buttons. When the 'DAY' button is pressed, the system knows that someone is now in the office; corridors and amenities are illuminated, and the behaviour of other devices changes to suit the requirements of a normal working day. The 'NIGHT' button enables the last person leaving for the day to activate an orderly lighting shutdown. If this button is neglected, a less aggressive hibernation sequence will eventually be activated.

))) Discrete Access Panels

In some circumstances, such as small commercial tenancies operating on low overheads, it is often not cost-effective to provide local control panels for individual offices. A single multi-button panel provides control of multiple offices and open plan spaces. An example of their application may be for use by the cleaner. Pressing each button consecutively might be programmed to give 15 minutes of illumination at 50%. A second press would turn off that zone.



Touch Screen

A touch screen is an alternative to a push button user control panel and is appropriate where a large number of control devices would otherwise be required. The Dynalite range of touch panels features powerful LCD touch screen control incorporating a real time clock, sequencer and a minimum of 100 pages of display to enable custom user control functions.

Displays such as logos, button configurations, floorplans and diagnostic icons can be enabled to perform simple or conditional logic tasks. Selection layers enable a large number of control panels to be accessed from the one device. The touch screen is also a visual programming and execution tool that can be used to control and diagnose any product on the DyNet energy management network. PIN password protection prevents accidental reprogramming of the system. Precise time-of-use limitation can actually combine a variety of devices within the control system including occupancy sensing, PC slumber linking and push button or touch screen control for individual zones.



Full status reporting

The DyNet system monitors individual fixtures for early detection of lamp failures, etc and intersystem communication is readily available for HVAC, Security or BMS to greatly extend the control functionality of the installation.

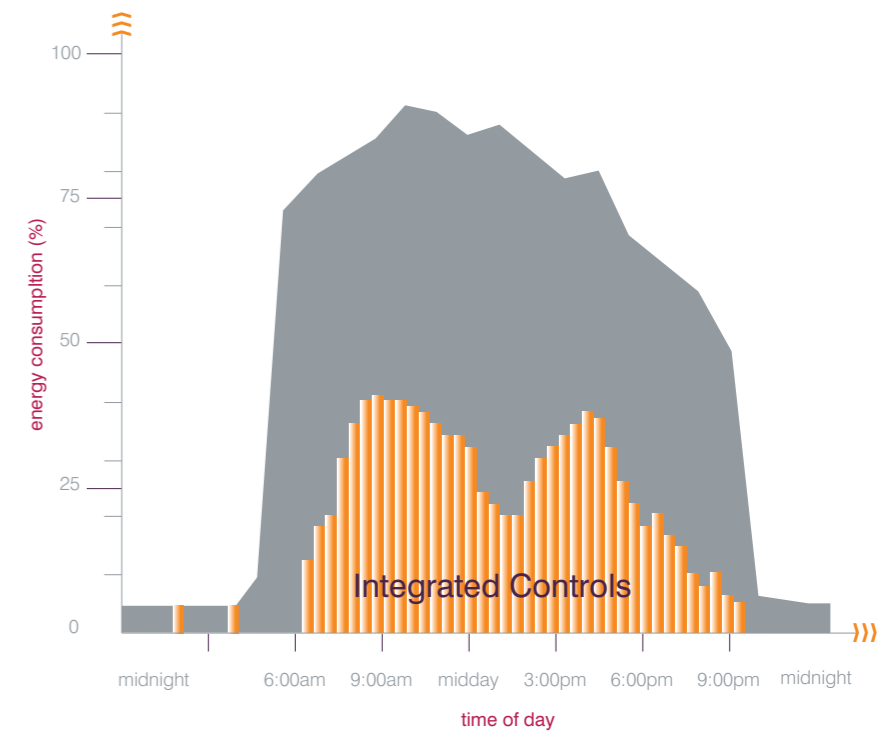
Device programming

At the time of installation, a trained commissioning engineer connects a laptop to the DyNet network and configures the various devices installed throughout the building. Some clients prefer to have their own staff trained in this process, in order to manage subsequent amendments to the programming in-house.

Dynalite offers a suite of powerful software solutions to achieve the maximum benefit from a variety of installed devices.

The savings

A well-designed energy management system combines a range of strategies, dependent on the layout, design and use of a building. The graph below illustrates the dramatically different energy usage patterns that can be achieved by implementing strategies such as those outlined in the previous pages. Timed events, substitution of artificial light with daylight and occupancy-based detection methods can substantially reflect on a facility's bottom line.



Dynalite offers an unparalleled range of wall mount user control panels, available in an infinite combination of colours, architectural finishes and styles.

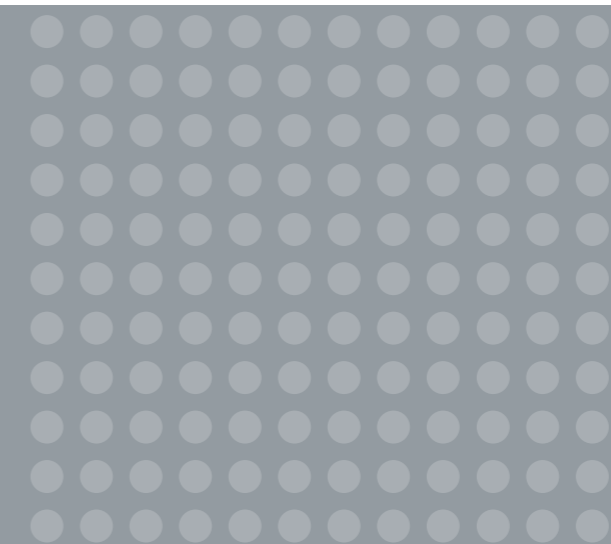
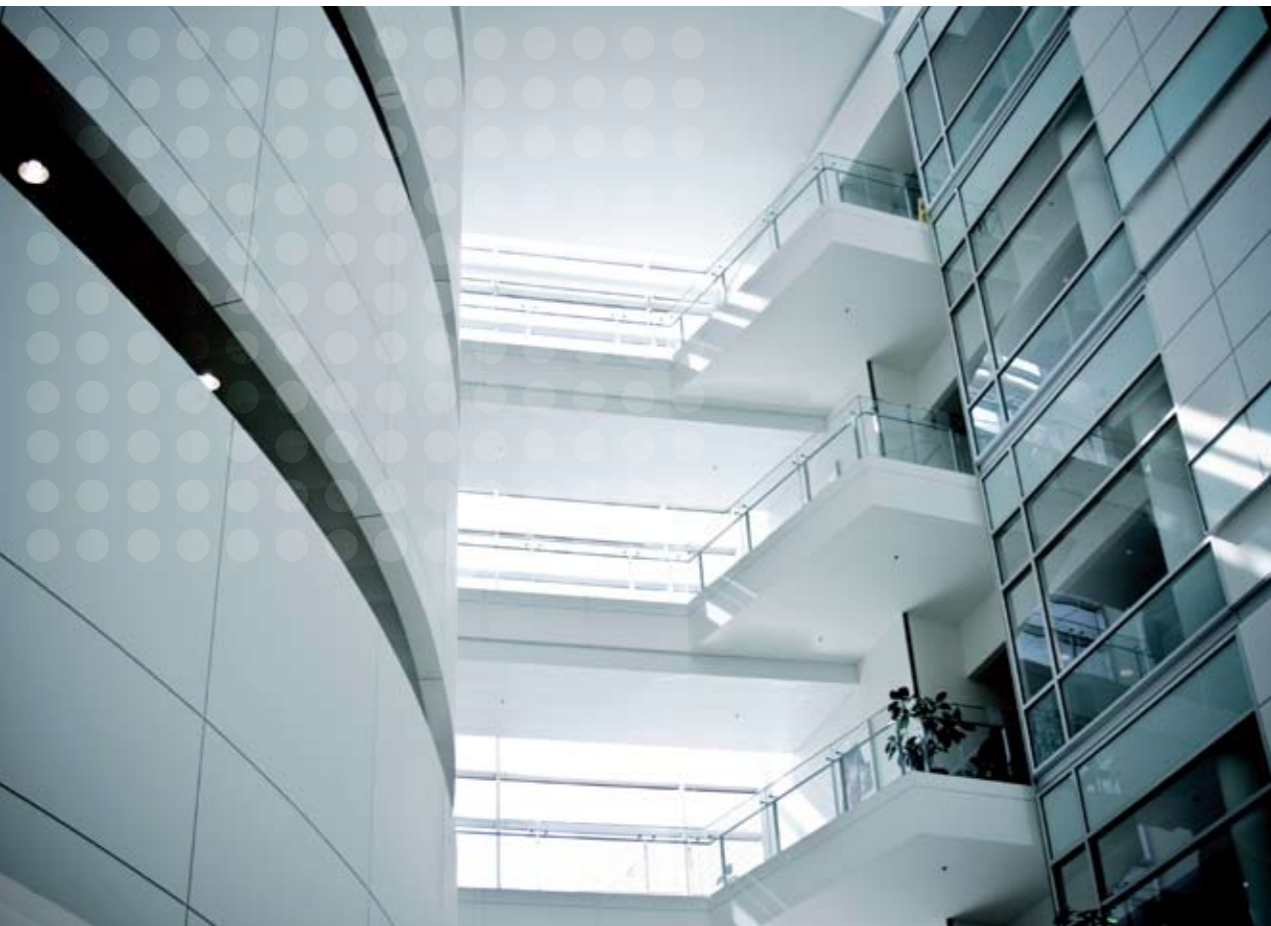


Dynalite the intelligent choice >>>

expertise

Dynalite enjoys an international reputation for quality product, service and support as a solutions provider for difficult or challenging projects. Our state-of-the art production facility is constantly being upgraded to ensure the highest quality and performance standards are maintained. Manufactured to ISO9001:2000 standards, our range of products

have gained a solid reputation around the world for their reliability and rich feature set. Our distributors worldwide undergo extensive factory training and are familiar with all aspects of system design, configuration and operation. Distributors and dealers are selected for their ability to provide the highest level of engineering, sales and warranty support.



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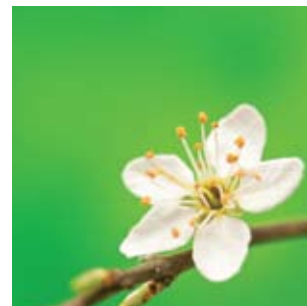
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