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Stutterheim's excellent initiative

Lighting in times of darkness

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Earlier this year, the suburb in which I live was subjected to two separate power outages of 40 hours each. Now, as South Africans, we handle four-hour load-shedding stints in our stride but 40 hours, apart from defrosting your freezer and depleting any battery back-up systems you have in your home, gives you the incentive to consider, seriously, what light is best when you have no power. Candles are pretty, but also pretty useless; light running off a gas bottle is brilliant but a bit noisy and a bank of LEDs is brash, but exceptionally effective if school and varsity going children have upcoming projects or exams.

I was chatting about this to Gavin Chait and he decided to do an article on what it costs us to keep lights on and other basic necessities running when we have no electricity. The piece, *Lighting in a time of darkness*, is interesting and a bit unsettling, but what gave me pause for thought was his conclusion where he notes that, without a reliable power supply, clients are no longer as much interested in the fluid and creative illumination of their buildings as they are in keeping costs down and lights on. This has stifled the opportunity for South African lighting designers to be creative and artistic in their approach and, art – as he says when he signs off – will have to wait for "a better age of enlightenment".

We know the impact of inefficient and costly energy, but to see it stated so matter of factly highlights the devastating consequence of a lack of power on all industries in this country. We are aware of the impact on mining, manufacturing, banking, etc because problems in those areas affect the country's economy immediately and are highlighted in the news, but many smaller businesses run the risk of becoming redundant as a result of mismanagement of such a vital resource.

Of course, an inconsistent power supply does give other companies the opportunity to come up with different, if less attractive, solutions and they can be creative in an engineering sense, but individuals and small companies that are artistically creative in the field of lighting will be given fewer and fewer opportunities to show their worth if we don't soon get our power situation back on line.

On a more positive note, Crown Publications, which has 11 business-to-business magazine titles, recently launched its new website and *Lighting in Design* now has its own domain, lightingindesignmagazine.co.za. The aim of the updated and improved website is to give you regular, targeted news and the opportunity to interact with the online content in between reading the printed magazine when it comes out each quarter. This offering is soon to be augmented by a newsletter that we will email to our current database. These embellishments will strengthen our presence in the digital space, allowing us to reach more readers in Africa. If you haven't already done so, please go onto our new site; I am interested in hearing what you think of it.

Till next time ...

Karen

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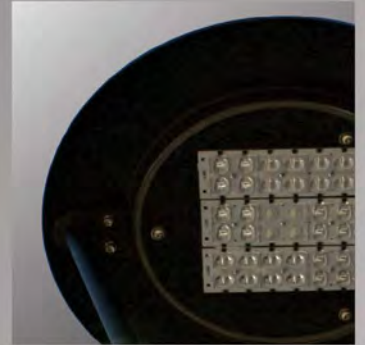
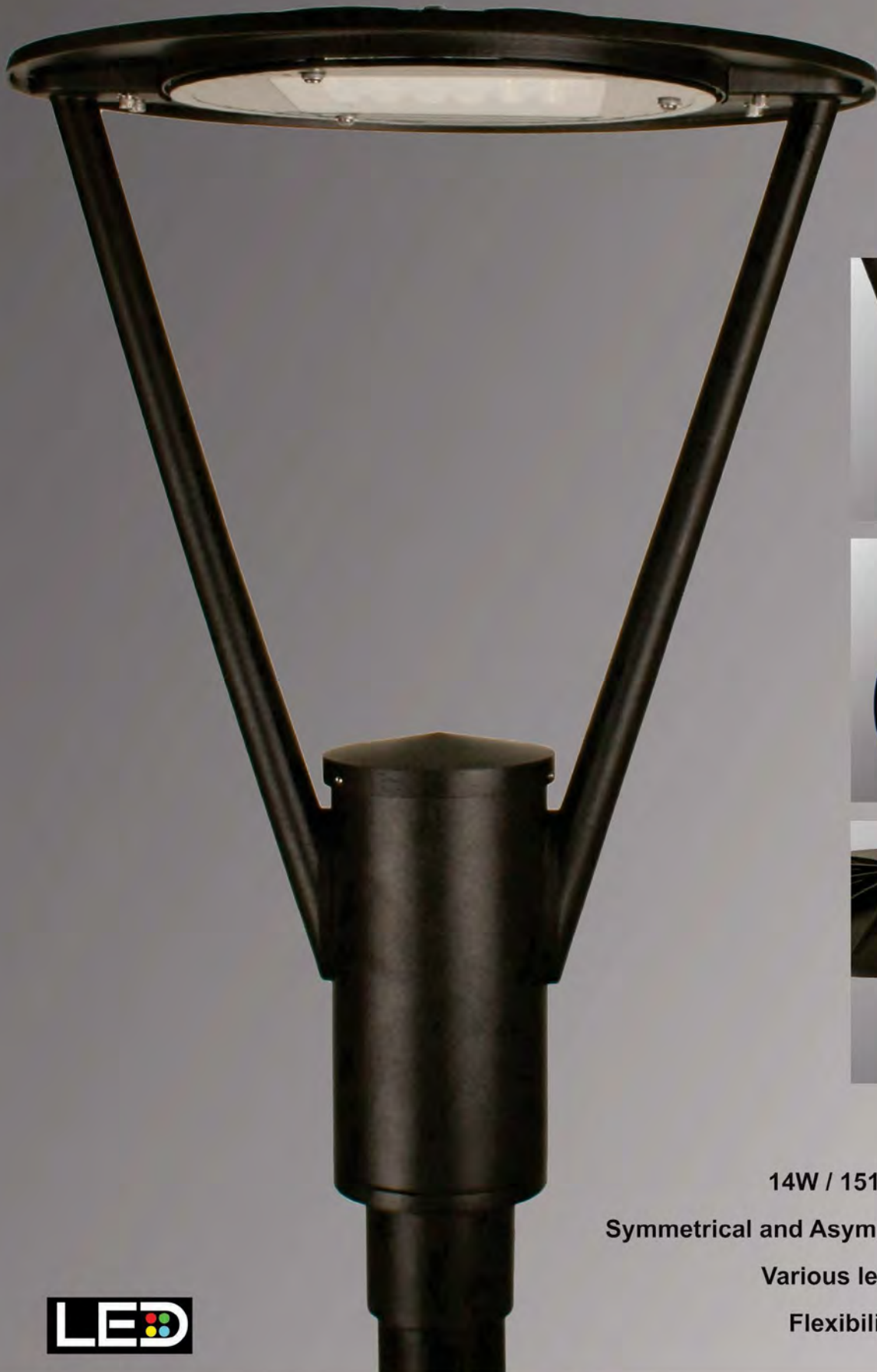
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Inside ...



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Editor's comment.



Illuminating Western Cape's first 6 Star building

In the design of No. 1 Silo, attention was given, wherever possible, to using natural lighting. A DALI lighting system with lighting and movement sensors was installed to control lighting levels and augment daylight when necessary.



Cango Caves in a new light

Greg Segal of Professional Illumination Design was part of the team that worked on the electrical and lighting upgrade of this magnificent natural wonder in the Groot Swartberg mountains of the Western Cape.



Lighting in a time of darkness

When energy supply is reliable, lighting can be about art and design. Gavin Chait laments that for South African lighting designers art will have to wait for a better age of enlightenment as the focus at the moment is on having any light at all.



Healthy light for Discovery's store

Anthony Tischhauser of Pamboukian lightdesign gives a brief overview of the lighting installation at Discovery's new store in Sea Point.



Lighting and energy audit for Redefine Properties

Drew Donald of Genstar Lighting was part of the team that conducted the audit on Redefine's prestigious office block, Commerce Square, in Rivonia.



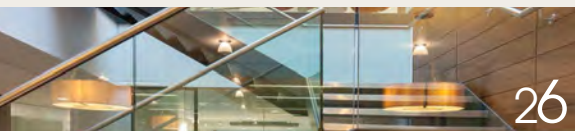
The key to emergency lighting effectiveness

Emergency lighting is a vital safety feature in any building or development. Rob Head of Hochiki Europe suggests how installers can support organisations to select the right emergency lighting equipment.



Contained light

The winning design of the 2014 Haute Lumière Light Award was recreated inside a container on the V&A Waterfront. Pierre van Helden of LED Lighting SA explains how the structure was transformed.



Products



Illuminating the Western Cape's first 6 Star building

No.1 Silo in Cape Town is the result of a collaboration, between developer V&A Waterfront and tenant Allan Gray, to develop one of Africa's most intelligent green buildings. The V&A Waterfront gives an overview of the lighting in this award-winning project.

No.1 Silo was the catalyst for a mixed-use urban development in the Silo District, home to the historic Grain Silos which are in the process of redevelopment into the Zeitz Museum of Contemporary Art, Africa or MOCAA. Designed to be the new headquarters for Allan Gray, the 18 400 m² GLA building was the first in the Western Cape to achieve a 6 star 'As Built' Green Star rating from the Green Building Council of South Africa (GBCSA). The GBCSA rating followed the South African Property Owners Association (SAPOA) Awards, which ranked No. 1 Silo as the best building in South Africa, and its sister residential property, No. 2 Silo, as the greenest and best place to live.

Working with the environment, the building in-

corporates sustainability initiatives in line with the GBCSA rating, which is awarded to buildings that not only incorporate sustainable principles in their design but can also offer proof that these design principles work in practice long after construction is complete.

The architectural lighting brief for No. 1 Silo was to create a P-Grade office building that responded intelligently to external variables to create different lighting moods throughout the day and night; to guarantee that the office floor plates maintained a minimum lux level at all times using the minimum amount of energy; and to ensure that the feature atrium space was as dramatic at night when viewed from the outside as it was during day time hours when inside the building.



The architect and interior designers worked closely with the developer and tenant, and the electrical consultants, to develop a lighting scheme for the building. The primary constraints were budget and the sustainability requirements. The building, which ultimately achieved a 6 Star As Built rating, was initially briefed to achieve 5 Stars under the Green Building Council's Office Design Rating Tool.

A great deal of attention was given to using natural daylight wherever possible. The office areas are all open-plan and have direct views to the outside. An atrium cuts right through the building and its shape was emphasised by including lighting to the perimeter and feature structural steel elements. Additional daylight was brought to the centre of the atrium via large skylights.

The architectural concept called for large areas of glass and, according to Arup façade engineer John Abbott, the glass facade was studied in some detail using energy and lighting simulations and

drawing on the experience of colleagues with other highly transparent buildings in similar climates. The solution was to use double skin facades on the northeastern and northwestern elevations, which were most vulnerable to solar gain. These facades have an outer skin of clear glass, spaced 700 mm outside the main facade. The latter is double glazed for thermal control and forms the building envelope.

Automatically-controlled blinds between the inner and outer skins track the sun as it moves across the building. When the blinds are open, the floor-to-ceiling glazing allows good day lighting of the space, with a daylight modelling study indicating that 37.5% of the usable area has a daylight illuminance of higher than 250 lux. The majority of the lighting in the office space was specified as T5 fluorescent lamps with high frequency ballasts. These have proven to be as efficient as LEDs and have guaranteed life spans of up to 18 000 hours.

Since a primary focus of the lighting design

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was maintaining sufficient task light at desk level, a DALI lighting system with light and movement sensors was installed to control the lighting levels and augment daylight when needed. Each lamp is individually addressable with data from the iBMS constantly adjusting its lighting level through the course of the day.

In addition to controlling the lighting, the sophisticated building management system controls other systems to best save energy and provide in-depth reporting. It monitors the external weather and sunlight conditions, automatically controlling the blinds to maximise the natural daylight penetration whilst limiting solar heat gain and glare. The data collected allows the tenant to fine-tune the building energy use over time.

The lighting control that is possible using the DALI protocol offers the ability to support mood lighting by varying brightness, colour and colour temperature across large lighting arrays and to

provide pre-set scene control in specific areas such as the auditorium and the meeting pods. The protocol can also report on the status of ballast or lamp failures.

The external lighting of the building is subtle, both to save energy and to maintain an effect that is restrained and elegant. The columns at the entrance are illuminated top and bottom and the fountains are simply illuminated to create an appealing effect. External fittings on the piazza provide light for safety and to extend enjoyment of the space after sunset. Also in the public realm, the lighting of the old 'cyclone', a feature retained from the historical Grain Silo building adjacent to No.1 Silo, offers an effective moment of attention on historical detail.

All external light shines to earth and light spill from the building is controlled to prevent light pollution. What light is visible creates a warm nocturnal ambience.

The developer and the client insisted, from the

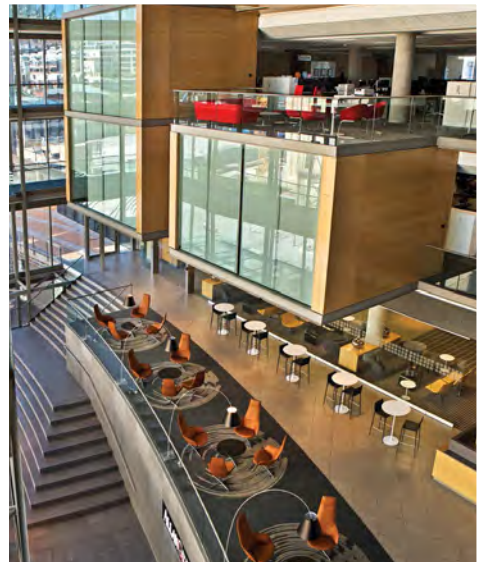
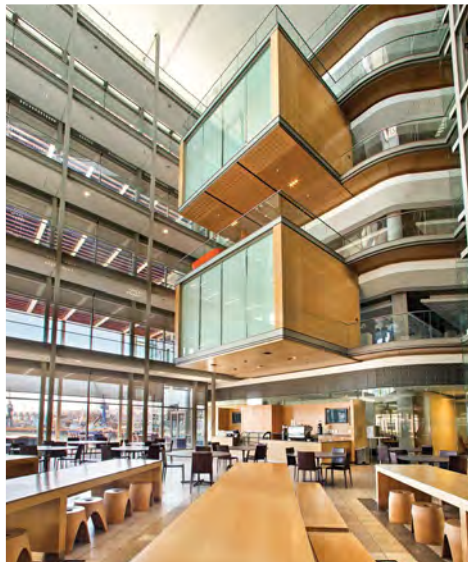


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outset of the project, on an energy efficient building that exceeded industry benchmarks; and every design decision taken had this in mind. In terms of lighting in particular, this included the DALI lighting system with lighting sensors to dim individual lights based on available daylight in the space. Eighty-seven electrical sub-meters measure lighting, HVAC loads, tenants' power, basement power use and lifts.

Overall, the reduction in lighting offered by DALI and the BMS system allowed the lighting engineers to focus lighting in areas where it was needed and not wasteful. While it would, according to the lighting designers, have been aesthetically exciting to have been able to up-light certain building features, such an inclusion would have contributed to light pollution and have been wasteful of energy.

The professional team understandably is very pleased with the final lighting scheme, especially the visual experience of the night time mood setting which has been particularly successful. LiD

Awards:

2014:

- 6 Star 'As built' Rating by the Green Building Council of South Africa
- SAPOA Innovative Xcellence in Property Development Awards: Overall Green Award
- SAPOA Innovative Xcellence in Property Development Awards: Overall Winner
- SAPOA Innovative Xcellence in Property Development Awards: Corporate Office Development
- Awarded 'Highly Commended' in the WAN Sustainable Building of the Year Awards
- Winner of the 2014 Energy Efficiency Awards
- Highest Rated Building for 2014 in the Green Leader Awards
- SAISC Awards Winner – Architectural Category

2013:

- 6 Star 'Design Rating' by the Green Building Council of South Africa
- International Property Awards: Arabia and Africa 2013 Winner: Best Office Development

Developer	<i>V&A Waterfront</i>
Client	<i>Allan Gray</i>
Architects	<i>Rick Brown Architects + VDMMA</i>
Electrical Engineer	<i>Solution Station</i>
Interior Designer	<i>Collaboration</i>



Cango Caves in a new light

by Greg Segal, Professional Illumination Design

Whilst there are many show caves scattered around the world there are few as impressive as the Cango Caves. Nestling in the foothills of the Groot Swartberg mountains near Oudtshoorn in the Western Cape province of South Africa, the caves are a national monument and should be on everyone's 'bucket list' at least for a once in a life time visit.

Discovered by modern man in 1780, the caves have been occupied by small populations since the Stone Age, though with the impenetrable depths and lack of light, folk in that era were unlikely to have ventured far from the entrance.

The caves on the farm *Combuys aan de Cango* were first entered and explored by settler farmers in 1806. By 1820, regulations were in place to protect a priceless national asset and in 1888, the opening of the Swartberg pass made the caves accessible to many more visitors as they could be reached from Cape Town in two days.

Today, that journey, on the famous 'Route 62', takes just six hours.

In 1926 the first guides were employed and electric lighting was installed. Incandescent fila-

ment lamps were all that was available in those formative lighting years. Previously only candles, flaming torches or magnesium ribbon provided visitors with the opportunity to be awed. All of these sources of light carried with them some form or other of environmental risk, such as heat or smoke.

Modern technology introduced the tungsten halogen filament lamp or, in more recent years, the compact fluorescent lamp; improvements relative to the state of the art.

The electric lighting system was upgraded in the late 1950s and also in 1999. These were around a 30 year cycle, which has since been reduced to approximately 15 years.

Tourist volume increased as well, adding to the potential for degradation to the caves environment.

The extremely well managed caves of the 21st century have just begun a thorough electrical and lighting upgrade. New electrical reticulation and lighting has been completed in the first phase of what will be a total refurbishment of these systems.

Needless to say, from a lighting perspective, the energy future and the need to be 'green' means



that LED lighting is mandatory and this certainly brings energy efficiency as well as environmental benefits. Thermal and electrical loads are dramatically reduced and lower maintenance also means less human intervention.

The new lighting systems installed thus far are of two principal types.

The first is safety and orientation pathway lighting, which guides visitors and staff safely along the walkways and stairs. Custom designed and manufactured galvanised steel luminaires are fitted with very low wattage GU10 220 Volt lamps. These have a CCT of 2700 Kelvin with wide beam distribution. They provide a soft but adequate level of brightness, allowing low glare comfortable pedestrian navigation.

Decorative feature lighting is provided by LED flood lighting luminaires in three wattages and two colours temperatures. The 20 to 50 Watt floods are installed. There are three of 4000 K Neutral white for every one of 3000 K warm white. In this way, colour is seen naturally and textural depth is revealed without any false impressions, for the first time ever.

Coloured light and the notion of colour changing systems that may have been considered are now being rejected worldwide as unnatural and fortunately this was the case here. Several lighting mock-ups were presented and, whilst laborious in terms of times and access, they were the only way in which to achieve a good result and 'buy in' from the various parties and professionals involved.

Carting dozens of fittings hundreds of metres into the caves and doing so at night was the only way to go from paper to finished result. A full set of drawings was produced by the engineers both as-built and proposed designs. Creatively speaking, no drawing was going to help and the only way was to experiment laboriously.

The electrical contractors 'MDL Electrical' from George were fantastic in their willingness to assist and they worked nights-only for months so as not to affect the high daily tourist traffic.

The lighting component of the upgrade was a joint venture between electrical engineer Pierre Conradie of Clinkscales Maughan-Brown, George and the author, Greg Segal of Professional Illumination Design, Cape Town. **LID**

Lighting

in a time of Darkness

by Gavin Chait

In the beginning, there was Zuma. And darkness was upon the face of the deep. Or, perhaps it was Eskom. It's so blamed impossible to see anything at the moment.

With winter on its way, going off-grid is starting to seem very attractive ... if it's a deliberate choice, that is ... instead of the alternative. One can install gas for cooking and hot water, but there are a host of things where electricity is essential. If you flip over to the cover of this journal you'll spot the focus of this narrative.

Our mission today, should you accept it, is to replace the lighting in your home or office with LEDs, along with the infrastructure to support it during random outages and weather interruptions.

At the outset, let's also consider various constraints and requirements.

Solar panels are fine, but how many? Not every day is sunny. And energy storage is great, but how much power?

A few friends have replaced their existing low-energy lamps with LED downlights, but the result is somewhat cold. Both GE and Philips produce much warmer, albeit pricy, 2700 K lights which run at about 8 W and fit into standard fittings.

LEDs can be selected in a variety of shapes and Kelvin values for the appropriate house feel. At 15 000 hours of rated life-span, you'll probably get about eight to ten years out of them (although the glossy brochures say 15).

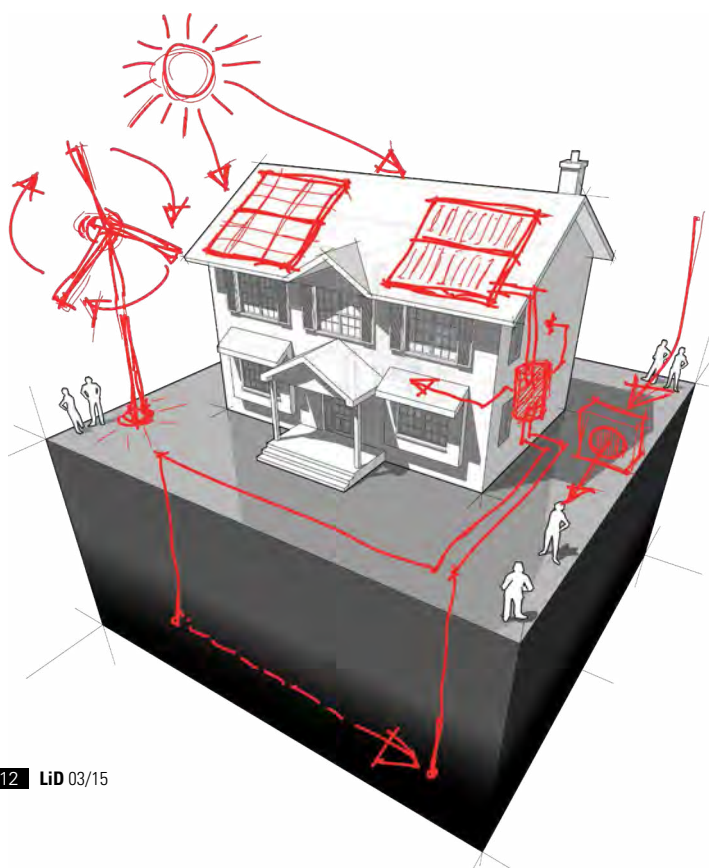
We will start by estimating the size of the average home and its lighting energy requirements. A report by J Palmer and B Boardman of the Oxford University Environmental Change Institute provides a useful set of numbers for us.

The average European home – which tends to be smaller and more efficient than those in South Africa – has 24 lamps, which consume 240 kWh to 920 kWh per annum or, since the report was written back in 1998 when most lamps were incandescents, about 10 to 40 hours of lighting per day across the different lamps.

Let's choose a number somewhere in the middle and assume that the average middle-class South African uses 25 hours of lighting throughout his or her home (more in winter, less in summer) per day. If you're using 14 W CFLs, then that is about 127 kWh per year. If you spend a little more, you'll be using 8 W LEDs and consuming 73 kWh per year.

Energy pricing across South Africa is somewhat notional. The Amahlati Municipality will charge you 72 cents for your first 50 kWh, while Johannesburg charges 94 cents for the first 600 kWh and Cape Town a hefty R1.34. We'll make our lives, and calculations, easier and assume R1 per kWh.

In the time known as the Enlightenment, figuring





out whether to spend a few rands more on LEDs versus CFL lights when the energy cost difference is about R50 a year probably wouldn't preoccupy you. That was then. For our project, you're going to want to generate those kilowatts from solar panels and charge a battery so you can read something at night.

Or maybe you want to watch *Sevendee Laan* and charge your phone as well? I mean, we're living in the dark ages, but we haven't completely lost our sense of culture. A television is about 60 W. If you watch five hours of 'Lifestyles of the Nkandla Style', that's about 131 kWh per year.

We'll jump ahead a bit. The average phone consumes about 3.5 kWh a year, and the average notebook PC uses about 70 kWh a year.

This is supposed to be about lighting but we'll throw in a few gadgets so you have something to look at.

We are going to specify a battery capable of storing a week's worth of energy, and solar panels capable of generating slightly more than we consume. If we cater only for the lights, you'll need 1.40 kWh for LEDs, 2.45 kWhs for CFLs, and a television, two notebook computers and four mobile phones are going to set you back an additional 5.47 kWh. You may wish to reconsider and stick to entertaining yourself only on the mobile phone.

You'll need about 50% spare capacity on your battery to prevent killing it. Batteries are rated in amp hours (Ah) and run at 6-12 V. We're going to need somewhere in the region of 230 Ah (LEDs), 410 Ah (CFLs) and 1200 Ah (Nkandla-style).

Lithium-ion batteries are some of the most energy-dense commercially-available batteries, but Tesla isn't shipping to South Africa just yet. You're going to be using much heavier and bigger ones. Set aside well-ventilated and fire-proof space for around 100 to 200 kilograms of batteries (about two to three extra people). Bear in mind that you'll be using at least 200 W per day (up

to 1.2 kW for that Nkandla party). Produce an extra 50% of that so you can keep the batteries charged. Right, let's summarise where we've gotten to:

	W consumed per day	Battery Ah (7 days)	Solar panel W per day
LED only	200	233	300
CFL only	350	408	525
LED + TV + 4 phones	598	698	898
LED + TV + PCs + phones	982	1,146	1,473
CFL + TV + 4 phones	748	873	1,123
CFL + TV + PCs + phones	1,132	1,321	1,698

Let's be honest, this isn't going to be cheap. If you stick to reading and your mobile phone, this will be a relatively cost-effective way to supplement any load-shedding. The more devices you add, though, the more it will going to cost you. And I'm not even considering the installation involved.



A single 250 W photovoltaic solar panel will cost you about R3 000; it's 1.7 m x 1 m and weighs almost 20 kilograms. A Raylite solar cell at 530 Ah, for 6 V, is about R8 000 (and weighs 80 kgs, with dimensions 585 x 182 x 460 mm). A cheaper Trojan at 225 Ah, for 12 V, is R4 000. You're going to need a voltage regulator to manage charge between the panels and the battery (about R1 000) and an inverter to go from 12 V DC to 240 V AC power to power your television (about R2 000). Use a pure sine-wave inverter so that you don't get any peculiar buzzing noises.

On a clear, sunny day, in good direct sunlight, you'll still only get about 80% conversion from your panels and six hours of light. To produce 300 W, you'll need a single 60 W photovoltaic panel (costing about R700). You might get away with a single 250 W panel to generate your 1,700 W requirement per day.

Assuming you do most of this yourself and stick to LEDs, you can probably get it all done for about R10 000. Going up to the full Nkandla will cost about R50 000.

Remember that you'd be paying R1 per kWh? The batteries probably won't last 10 years, but you should expect about 20 years from your solar panels. Say we look to amortize the costs over 10 years and recognising that Eskom's prices aren't going to be – how should I put this – 'stable' over the next decade.

At an optimistic 8% compound growth in energy prices, by 2025 you'll be paying about R2.20/kWh at the minimum rate. And your setup will still cost you more; about R12-R13/kWh. A lot of that extra cost is because I've provisioned for a seven-day energy store and the batteries are expensive.

That said, your setup would need to cost R1 200 for LEDs alone, and R7 000 for the full house before you'd see any return on your investment over our ten-year period. Europeans and Americans rejoice

in direct household subsidies to install solar but unless those incentives are substantial, you're going to struggle to fit everything you want in.

But this isn't about saving money. It's about having any light at all.

And that's the tragedy we're experiencing. Where energy is reliable, then lighting can be about art and design. We should be discussing new technologies in display lighting. How flat-panel, solid-state technology is being used in public buildings to transform stodgy architecture into fluid and organic shapes filled with gently shifting ambient light.

We could discuss – as lighting technologies mature and production becomes ever-cheaper – whether such factories will come to South Africa? We know the answer to that. No. There isn't any electricity to power the factory.

Sure, the lighting itself has become cheaper, but now we need to worry about whether the designs we create will ever be lit. Or we need to start bringing in off-grid energy engineers to discuss solar panels, battery stacks, generators and other extremely expensive infrastructure necessary before the lighting can ever work.

The cost of this infrastructure is devastating for new projects. We're living in miracle times. LED lights used to cost thousands of rands. Now they're in the low hundreds. But they don't work unless you spend tens of thousands of rands on power systems.

Our ancestors first lit up the darkness so that they could extend the time given to play and study. Eskom's utter incompetence is reducing us as a people.

For South African lighting designers this means a loss of creative freedom. Clients will want to know the optimum way to keep the most basic of lighting systems on as the electricity grid collapses around us.

Art will have to wait for a better age of enlightenment. LiD





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Healthy light for Discovery's store

by Anthony Tischhauser, Pamboukian lightdesign

In September last year Discovery Health opened a store in Sea Point, Cape Town. The first of its kind in the country, it is a physical manifestation of the Discovery brand, offering integrated Discovery services.

Located in The Point, an upmarket retail complex, but with a street front, the general public and members can literally explore and be advised on Discovery's Vitality programme, in keeping with the company's motto of living a healthy life and being rewarded for doing so.

On sale are trendy Discovery-branded merchandise and wellness products. A fulltime nurse, dietician and biokineticist advise on the principles of a healthy lifestyle in the Fitness Zone. The store also serves as a group meeting point for Vitality members embarking on a run, a cycle or engaging in other sporting activities. During the evenings, Discovery may offer talks around topical subjects such as nutrition or finances. Other events are also envisaged: consultants and finance specialists advise on the different tiers of the Vitality programme and members can also learn how to engage with Discovery insurers online or through programmed self-service tools.

Hotcocoa Interiors & Designers determined the space off the street on ground level for bodily well-being and originally placed all contractual matters up the stairs. On entering between two orange light boxes, the rectangular double volume threshold is crowned by a suspended metal screen. This high-hung curtain gives privacy to the first floor procurement zone and curbs the view off the street. It is lit with continuous RGB LED strip either side

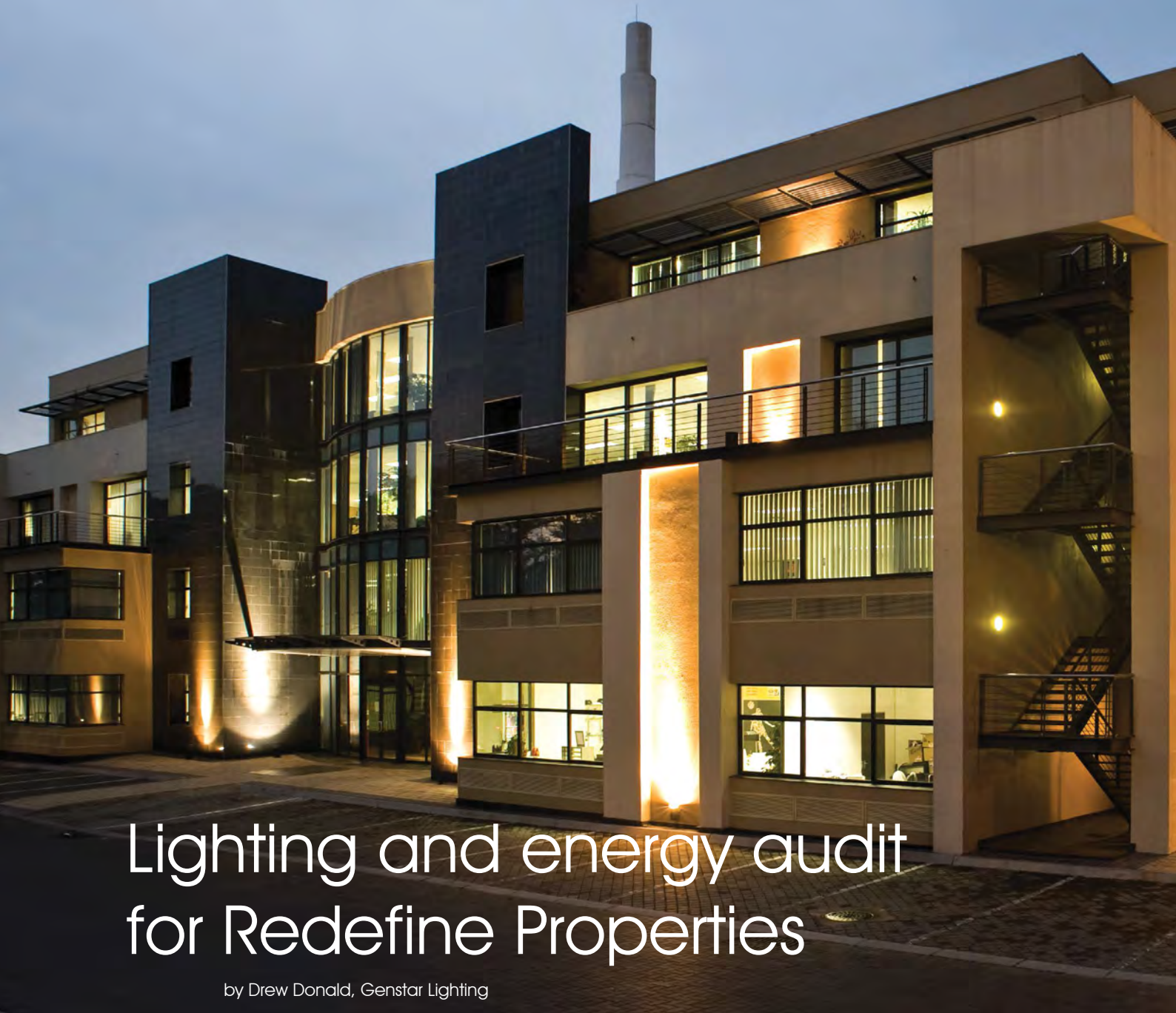
of the fixed edge. A shuttered projector on top of the boxes adds mood to the warm white curtain, throws shadow and adds depth to the logo-mesh.

The frosted decal glass partitions of the fitness assessment booths transmit the changing shades of white LED light recessed either side in the ceiling. The Circadian system is centrally and automatically controlled by an astronomical clock. None of the incidental ambient light sources that create the changing atmosphere are visible to the eye, only the light is seen. By contrast, semi-recessed off-set squares of custom RGB LED strip pattern the informal waiting area and fitness zone. These graphic elements were first conceived to radically convert the space into a studio for a session in yoga, jogging or cycling. The pre-set moods are blue, red and yellow respectively.

The retail zone, against a cove washed background with steps as display surfaces glows under six dimmable and adjustable AR111 luminaires. Vibia standing lamps, Moooi table lamps and Luce Plan work lamps add to the atmosphere. Circular Barrisol discs of different circumferences demarcate the functions in the office zone.

Pamboukian lightdesign's brief called for dynamic lighting and light in flux that would change the mood and feeling by day and on into the night. The look should vary and be different every day according to activities and functions planned.





Lighting and energy audit for Redefine Properties

by Drew Donald, Genstar Lighting

Redefine Properties recently appointed Genstar Lighting to conduct a lighting and energy audit on its prestigious office block, Commerce Square, which is situated at 39 Rivonia Road in Sandhurst.

The complex consists of five individual blocks, housing approximately 44 clients.

The lighting upgrade coincided with the extension of the underground parking areas, a programme that took 11 months to complete. GENSTAR's brief was to improve the level of lighting in all the common areas of each block, and to simultaneously reduce the amount of energy consumed in these areas.

Each building consists of an atrium at least seven metres in height covering three levels of office space.

The common forms of lighting previously installed consisted of 50 W halogen low voltage fixtures, CFL downlights and an array of CFL internal and external bulkheads.

All of the existing fittings were either retrofitted with LED lamps or converted to LED fittings.

The 50 W halogen lamps were replaced with ROBUS 4,5 W EMERALD LED lamps, providing a saving of 89% in energy and substantially improved lighting levels.

The 2x26 W downlights installed were replaced with ROBUS 25 W LED ETERNITY Downlights, not only offering a 54% saving in energy, but guaranteeing a maintenance-free installation; 50% of the CFLs in the atrium had failed and owing to the difficulty of access, had been out of action for a number of months.

The stairwells, using 2x18 W CFL bulkheads were replaced with ROBUS 10 W LED GOLFS, again offering an energy saving in excess of 75% and a guaranteed maintenance saving.

The new underground tunnel, which links the various parking basements, was totally relit using ROBUS VULCAN vapour-proof 1x40 W LED luminaires.

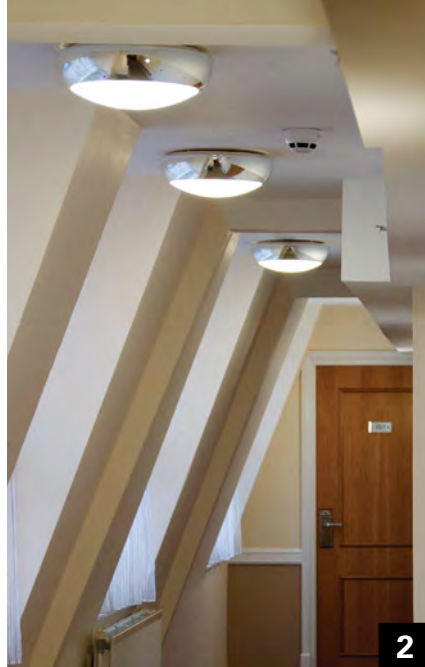


Figure 1: Commerce Square in Rivonia, Sandton.
 Figures 2, 3 and 4: The ROBUS GOLF, ETERNITY and VULCAN light fittings used in the Commerce Square installation, but shown in other settings.

These replaced the 2x36 W traditional vapour-proof luminaires, resulting in improved light levels and a 66% saving in power consumption.

All external bulkheads, previously 2x18 W CFLs, were replaced with GENSTAR's 18 W LED wall mounted fittings. The emergency fittings selected were either ROBUS dedicated 1x3 W LED Emergency downlights in a non-maintained version or ROBUS 10 W LED INFINITY downlights as a maintained installation.

On average, a reduction in power of over 70% was achieved in this project.

Prior to converting the total complex to LED fixtures, GENSTAR advised the client to examine some of the myths connected with LED technology and to satisfy themselves that the products selected complied in all respects to their standards.

What follows alongside is a list of some of the questions that should be asked of any LED luminaire suppliers:

Question 1: What LED chip is used in the product?

Question 2: What lifetime is claimed for the product and what is the warranty period?

Question 3: Are full photometric files (LDT, IES etc.) available for the product?

Question 4: What is the colour binning range for the product (e.g. 4000 K +/- 5%) and what are the specific colour bins used.

Question 5: Does the product have the relevant certification approvals for the application?

Question 6: If it is a dimmable product, what dimmers is the product compatible with?

Question 7: What is the CRI (Colour Rendering Index) of the product?

Question 8: What is the product's Power Factor? LID



The key to **emergency lighting** effectiveness

Rob Head, Africa regional sales manager at Hochiki Europe, explores how installers can support organisations to select emergency lighting equipment that upholds the well-being of building users and ensures maximum life safety system efficiency.

Emergency lighting is a vital life safety feature in any development, and essential for the modern-day built environment. In the case of an emergency, such technology is there to illuminate escape routes, enable building occupants to see their way clearly and avoid obstacles in order to evacuate the structure as quickly and safely as possible. Without lighting equipment in place, people are far more likely to lose their lives in a fire.

With these benefits in mind, a growing number of organisations in Africa have, in recent years, begun to incorporate emergency lighting technology into their buildings. This growth in use is both to optimise the safety of employees and visitors and to ensure compliance with legislation, such as Part T (Fire Protection) of the National Building Regulations [1] in South Africa, and similar laws being implemented across the continent.



To help organisations meet these increasingly stringent regulations, many installers are recommending and specifying fire safety and emergency lighting equipment that has received certification to European performance guidelines, such as those issued by the British Standards Institute (BSI). Such marks of third party approval are rightly seen to demonstrate the quality and effectiveness of the life safety technology to which they have been awarded, helping to reassure organisations that their buildings will be compliant with even the strictest legislative requirements.

So how can installers ensure they recommend and install the most appropriate emergency lighting equipment for the needs of their customer's building?

Compliance with standards

When advising on these types of systems, it is crucial for installers to consider whether the solutions offered and the design of the emergency lighting meets the requirements of key international standards.

The BSI's BS 5266 code of practice for emergency lighting, for example, has strict guidelines on the positioning of luminaires, minimum light levels, acceptable glare levels and minimum routine testing schedules. These codes are increasingly being used by installers and organisations across Africa as a baseline for best practice when it comes to choosing fire safety and emergency lighting systems and fitting them in buildings.

There are clear recommendations provided by the BS 5266 standard regarding the 'points of emphasis' within the building – mandatory locations within a structure where specific hazards need to be highlighted with luminaires, as well as safety equipment and signage. These include areas near stairs, changes of level, at each change of direction on the escape route, near firefighting equipment and manual call points. The final exit, first aid points, exit doors and safety signs also require illumination.

It is imperative that any emergency lighting system selected for the building be suitable for use at all points of emphasis.

Consider light levels

Achieving the correct light level from emergency lighting equipment is essential to comply with fire safety regulations and optimise the well-being of building occupants. BS 5266 recommends a minimum level of one lux in escape routes, and 0.5 lux in open areas at floor level to help people navigate through the building, even in heavy smoke. It also suggests positioning luminaires in such a way as to reduce glare, which can also reduce visibility.

For non-domestic, multi-storey buildings primarily used by disabled occupants, BS 5266 also advises that refuges for anyone unable to easily use emergency exits or stairs be lit to a higher level of illumination than the rest of the escape route - to make sure they are clearly visible in the event of a fire. It also suggests that kitchens, first aid rooms, treatment rooms, plant rooms and reception areas all have emergency lighting fitted that offer higher lux levels.

No two manufacturers' products are the same and will offer slightly different levels of illumination. As such, installers will need to fit their chosen luminaires at different locations and in different quantities depending on the manufacturer, to ensure the correct lux level for each area of the building. Many manufacturers provide spacing guides to help installers calculate the minimum number of products they need to be compliant and establish what the system design should look like.

Maintaining optimum safety

At the same time as considering compliance with regulations, installers should also think about the maintenance and aftercare requirements of the emergency lighting equipment they recommend for their customers. All emergency lighting systems need to be regularly and correctly maintained by the

organisation in charge of the building to minimise the risk of a lighting failure during a genuine emergency. However, irregular maintenance can lead to premature degradation in system performance, which can require components to be repaired or replaced more regularly than otherwise necessary. This simply increases downtime further, raising costs and impacting on safety and business efficiency.

With all this in mind, it is imperative that installers consider the maintenance requirements of their chosen emergency lighting solutions over their lifetime. Systems that require additional maintenance will end up costing more to look after than those that need less care. Similarly, products that have not been built to withstand environmental conditions will degrade prematurely, requiring extra care and costly repairs. All of this will adversely affect process efficiency for building owners and increase the system's Total Cost of Ownership (TCO).

It is also crucial to think about system reliability, as this too can have an impact on TCO. A less reliable system, for example, may suffer from unexpected problems, which will cost organisations time and money to repair. Replacement components may also vary in terms of price, particularly if the emergency lighting system is not easily compatible with technologies from different suppliers, further impacting on the cost of aftercare. Selecting a system produced by a manufacturer that offers a comprehensive warranty can help installers mitigate the effect and costs of unforeseen repairs on their customers.

Consider emergency consumption

Another key consideration for installers seeking to support customers in reconciling safety with efficiency is the energy consumption of the emergency lighting system in question. A system that requires more electricity to operate will end up costing considerably more over its lifetime than one that consumes less.

In addition, organisations operating in rural, or emerging economic areas, may find themselves vulnerable to brown-outs when mains electricity is significantly curtailed for at least part of the day, relying on personal generators to mitigate the economic impact. In such circumstances, systems that consume a lot of electricity will be a considerable drain, impacting on the performance of other equipment in the building.

With these considerations in mind, installers should look carefully at the energy efficiency ratings of the emergency lighting systems they intend to install for customers. There are emergency lighting solutions that incorporate low-voltage cabling and energy-efficient light emitting diodes (LEDs), which together consume less electricity than standard lighting. Some surveys suggest an energy reduction of up to 95% utilising luminaires featuring LED technology compared to those with standard fluorescent tubes*. Using new technology such as

this can go a long way towards reducing operating costs and minimising the organisation's reliance on mains electricity.

Seek specification support

There is plenty of help available to installers to enable them to select emergency lighting solutions that meet the particular needs of their customer's building and its occupants while also optimising efficiency.

For example, Hochiki Europe, has developed an online Efficiency Calculator to support installers in accurately assessing an organisation's existing equipment. The tool quizzes users on performance status of the building's current fire detection or emergency lighting technology, and provides guidance on methods of improving it to maximise efficiency and uphold regulatory compliance.

Many fire safety system manufacturers provide Continuing Professional Development (CPD) training programmes for installers to give them the knowledge and skills they need to fit emergency lighting equipment to the latest international standards. A number also have technical experts on hand to offer guidance when designing the most suitable lighting solution for the safety and efficiency needs of the building in question, as well as meeting local legislative requirements. Taking advantage of this help can enable installers to support organisations in protecting the well-being of their building's occupants as efficiently as possible.

The secret of effective emergency lighting

Having emergency lighting installed across their buildings is crucial for organisations to ensure compliance with South African fire safety regulations, as well as legislation in a growing number of countries across Africa.

However, there is no 'one-size-fits-all' emergency lighting solution. Each building has its own particular safety and design needs that must be taken into consideration by installers to ensure they choose the most appropriate technology for their customers. Installers should talk to their life safety experts to ensure they get the support and guidance they need to choose the right emergency lighting technology for their customers. Doing so, they will ensure they provide optimum safety for customers' building occupants, while maximising the efficiency of their emergency lighting equipment.

[1] National Building Regulations and Building Standards Act, South Africa, 1977: http://www.thedti.gov.za/business_regulation/acts/building_standards_act.pdf

*Based on a maintained system of 100 LED luminaires compared to 100 traditional fluorescent tube light fittings. **LiD**

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Contained LIGHT

The *Haute Lumière Light Award* was established by Paul Pamboukian of Pamboukian lightdesign some years ago to reflect the need to explore and stimulate discussion on light as a design medium. Fashioned and designed environments require imaginative light solutions that convey meaning, mood, atmosphere and visual appeal.

Key sponsorship to the competition has in the past allowed the winner to attend the renowned annual 'Lights in Alingsås' workshop where students to the Swedish town are guided by professional lighting designers.

The annual award focuses on young design talent in an attempt to stimulate and encourage entries that demonstrate experimentation by pushing the edge while considering the environmental dimension.

Never was this more important than in 2014, when Cape Town held the position of World Design Capital and the competition sponsors went the extra mile and recreated the winning design inside a shipping container. This 'light container' was hosted by V&A Waterfront over the festive season.

For interior designers, architects and industrial design students, the application of light is an essential design tool. It is opportunities like the *Haute Lumière Light Award* that give them the chance to rethink artificial light as a crucial, primary aspect of design. Recreating the winning design at the Waterfront gave the winner the opportunity to gain recognition across a large local and international audience as V&A has three to four million visitors over the festive season.

Claudine Parks, a third year student at Greenside Design Centre College of Design, was the winner of the *Haute Lumière Light Award* 2014 and the light container was based on her concept, Vortex.

Physically achieving the competition's objectives of demonstrating experimentation, pushing the edge, seeking essence and working with perception and deception was no mean feat. The internal space was constructed by wooden frame, with marine ply making up the panels. Each light source used 12 colour changing (RGB) LEDs on a circuit board connected in series to complete eight sections wired together. The installation consisted of 32 sections of



eight light sources connected to DMX controllers.

To increase the effect of perception and deception, a large mirror was mounted at the end of the container to double the space and effect. There was a lot of wiring work in a small space and keeping track of which wires were attached to which controllers gave the installers new respect for Telkom technicians who regularly deal with busy street corner telephone junction boxes.

DMX modules offer a great deal of flexibility when controlling light and sound in unison and are currently the optimum hardware for manipulating mood and atmosphere in a space. In the short time available to complete the light container it was not possible to use the DMX controls to their full capacity and in the end the team defaulted to standard sequences.

Over the four week period that the container was on display, thousands of people moved in and out of the space with a variety of responses; children were particularly fascinated, and sometimes a little wary.

Looking at the container from outside it was hard to imagine the sense of depth and movement

inside - sound, colour, patterns of artificial light all moving in an unpredictable vortex. Many visitors felt drawn towards the entrance, some were transfixed and others found it difficult to negotiate their next move. Some felt at home moving between the plays of light that encapsulated them and others were disappointed that the exit was not a portal to their favourite night club!

South Africa has some outstanding design talent. However, unlike the USA or many countries in Europe, we do not always have the resources to support this talent to a point where it is self-sustaining. Young designers need to work hard to gain the recognition necessary to create a market for themselves that can sustain their ongoing efforts and this project was a great opportunity to inspire them.

The sponsors were: ELDC; Gibb Engineering; LED Lighting SA; MDS Architecture; Pamboukian lightdesign; Regent Light Solutions; SA Fashion Week and VISI. [LiD](#)

Article by Pierre van Helden, LED Lighting SA



Scan to view the installation in progress.

Feel-good office lighting for law firm



'The Soloist', an office building in the centre of Belfast designed by Norwegian architect Niels Torp, was opened in the Summer of 2014. Designed as a bipartite structure, a full height glazed atrium connects the two sections, thereby producing striking sight lines onto the street. The interior, as a result, offers an open, airy and light-filled ambience.

In order to ensure optimal visual comfort for its employees, law firm Pinsent Masons opted for high-quality LED lighting from ERCO. The lighting concept devised by the designers is based on highly efficient luminaires offering low energy consumption with a long life.

In addition to high illuminance levels, the lighting tools achieve excellent colour consistency. To allow for concentrated work where necessary, Quadra recessed luminaires provide glare-free ambient lighting for a pleasant level of

brightness on the desks. The same luminaire yet with an oval light distribution illuminates the office aisles precisely. Purposefully placed Compact downlights and Nadir recessed floor luminaires underline the character of the architecture.

The tuned lighting accents thus produced make a feature of individual architectural elements such as columns. In the reception area, Quintessence wallwashers set off the delicate grain of the wood-paneled wall. The decision to opt for ERCO LED lighting tools made it possible to produce the different levels of lighting required in an office environment and thereby create a productive workplace with a distinguished character.

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Best initiatives in sustainable lighting

The winners of the Auroralia 2014 Award were announced at a prize ceremony organised by Schröder and LUCI during the annual Light Festival held in Lyon in December. Over 100 lighting professionals, from city authorities to architects and town planners gathered to hear who the winning cities were. Eindhoven (Netherlands), Malaga (Spain) and Lamego (Portugal) won the top three prizes respectively while the town of Stutterheim, South Africa received a special mention.

Now in its 6th year, the Auroralia Award - organised jointly by LUCI and Schröder - continues to receive a high number of entries from around the world, confirming the increasing commitment of local authorities to minimising the ecological footprint of urban lighting.

For 2014, a total of 17 towns and cities submitted entries: Bucaramanga - Colombia; Cairo - Egypt; Carballo - Spain; Coyhaique - Chile; Dubai - United Arab Emirates; Eindhoven - Netherlands; Heidelberg - Germany; Lamego - Portugal; Lyon - France; Malaga - Spain; Randfontein - South Africa; Salé - Morocco; Savigliani - Italy; Stutterheim - South Africa; Szekszárd - Hungary; Vadodara - India and Venice - Italy.

A distinguished panel of judges, made up of members of the press specialising in urban lighting, town planning and sustainable development, used their extensive experience and insight to single out projects that significantly reduced energy consumption and had a positive social impact on the well-being of the local population.

Special mention - Stutterheim, South Africa

This rural town's lighting plan aimed to fulfill multiple objectives:

- Enhance the landscape.
- Increase safety for residents commuting to and from the town centre to places of residence at night.
- Reduce energy costs without compromising lighting levels.
- Respect dark sky initiatives.

With LED luminaires mounted on poles made from wood sourced locally, this successful relighting initiative lifted the local population's sense of well-being. It also reduced energy costs and CO₂ emissions by an impressive 79%. By acknowledging Stutterheim with a special mention, the jury highlighted its initiative as an excellent example to follow.

1st Prize - Eindhoven, Netherlands

When the city of Eindhoven converted a former industrial site into a 66 acre complex combining residential, working, leisure and cultural facilities, they designed Strijp-S, an urban laboratory dedicated to creating an inspirational living environment. Aiming to become an energy neutral city, the council implemented sustainable smart lighting systems that created optimal experiences for the general public.

The street lighting in Strijp-S is functional, aesthetic and interactive. The luminaires can be controlled individually and are custom fitted with RGB, warm white and cool white LEDs to create different ambiances and can even flash red to warn inhabitants of weather conditions. By downloading



1st Prize went to Eindhoven in the Netherlands for the driving role it has adopted in public lighting of the future.

an app, local residents can adapt the lighting for a few hours every night. The luminaires provide little glare and zero light pollution. They are composed of 100% reusable materials and are low in energy consumption (a reduction of 33% per watt/metre compared to the old lighting scheme).

Eindhoven was awarded first prize for its driving role in building the future of public lighting.

2nd Prize - Malaga, Spain

The Back2Light Soho regeneration project was launched in 2010 after a group of neighbours, entrepreneurs and local businesses presented the city council with a document that exposed the urban decay of its community. This intervention revolutionised the way in which the Malaga council now addresses its urban lighting projects.

Roads were reclaimed to create more pedestrian zones for increased social interaction and to boost local trade. Trees, urban furniture and play areas were installed. The city analysed the latest innovations and technology to draw up a sustainable lighting plan that improved lighting levels and created a warm nocturnal ambience while reducing the city's energy consumption and environmental footprint. They implemented the latest LED lighting solutions integrating motion detection and dimming to create safe, comfortable and fun environments. The city reduced its energy costs and CO₂ emissions by 50% per year. Light pollution was eliminated.

By awarding second prize to Malaga, the jury wanted to highlight the positive impact of this project on the social, economic and environmental aspects of urban life.

3rd Prize - Lamego, Portugal

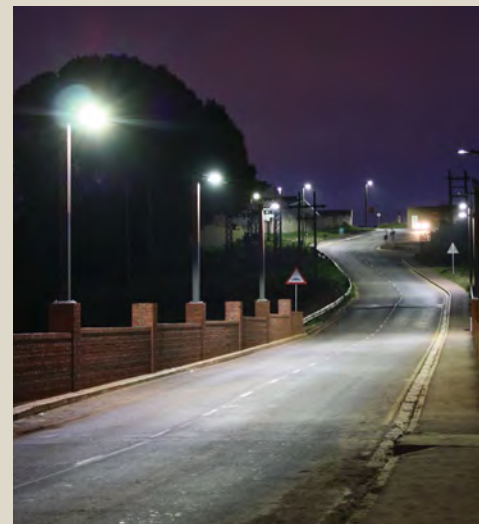
This town in the Douro Valley boasts a rich architecture with the ruins of a 12th century castle, Renaissance mansions and the monumental baroque Sanctuary of *Nossa Senhora dos Remédios*. In 2012, the municipality launched a sustainable lighting renovation project with the goal of enhancing the town's heritage to revitalise tourism and create engaging and secure public spaces for residents.



2nd Prize was awarded to Malaga for its positive impact on urban life.



Lamego in Portugal received 3rd prize.



Special mention was to Stutterheim, as an example of an excellent initiative.

New luminaires were carefully chosen to ensure an aesthetic design in line with the architectural heritage while integrating modern technology to reduce the town's environmental footprint. By installing LED luminaires with a remote management system that dimmed the light during the night, the

town reduced its energy consumption by 70% and its CO₂ emissions by nearly 21 tonnes per year.

This highly praised urban renewal project was awarded third prize.

BEKA Schröder: +27 11 238 0078

Testing light sources and luminaires

Energywise Systems, in co-operation with Magnet, has established a specialist lighting service laboratory in Riverhorse Valley Durban, which offers complete photometric, electric and thermal testing of light sources and luminaires.

The laboratory, with a tunnel length in excess of 12 m, is equipped with the latest photometric equipment and electrical instrumentation, including two goniometers, three spectrometers, a 2,4 m integrating sphere, a digitally controlled thermal incubator oven (450 litre capacity) for thermal endurance and efficiency tests, a scotopic/photopic light meter and a thermal imaging camera.

Energywise also offers remote testing services. Portable goniometers are housed inside standard sized, impact resistant pressure equalising briefcases for offsite luminaire testing. The instruments, which are calibrated with an integrated spectrometer, have a range of 10 – 10 000 lumens from light sources up to 80 mm in diameter.

Energywise mini-goniometers measure lumen, beam angle, CRI, colour temperature, power factor and peak candela, in less than five minutes. Results are compiled in a comprehensive report, which can be printed, saved in PDF format or emailed instantly.

The briefcase automatically factors in ambient background light during testing procedures, enabling the accurate measurement of light sources in virtually any environment.

Energywise is the local distributor of portable mini spectrometers. These user-friendly measurement tools are designed to take readings in spaces that would normally be



difficult to reach, including offices, warehouses and construction sites. The devices, which are controlled by smartphones or tablet software, have the same functionality as larger devices to measure colour temperature, CRI, illuminance, CIE, SP radio and spectrum.

With this investment in the latest photometric equipment and ongoing technical training for the laboratory team, Energywise offers industry a comprehensive testing service for locally developed and imported light fittings. The company also offers the full set of IES and LTD photometric files for lighting computer simulation and thermal analysis, with relative performance for those products exposed to challenging temperature conditions.

Energywise Systems: www.energywise.co.za

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Lighting the Way *Forward*

With more than 1 100 exhibitors from all over the world expected at the Hong Kong Lighting Fair (Spring Edition) in 2015, this literally means a great number and variety of products to lift your business to new heights. More than 18 000 buyers from 112 countries and regions seized this brilliant sourcing opportunity in 2014. The downtown location, in Wan Chai's Hong Kong Convention and Exhibition Centre, is a definite plus, placing the fair in the heart of both commerce and entertainment, with abundant transport options connecting to other parts of the city.

Zones to stimulate sourcing

Hall of Aurora displays almost 200 branded collections of high quality lighting.

LED & Green Lighting services the booming market for energy-efficient lighting products.

Advertising Display Lighting is a specialised source of lighting for advertising, marketing and promotional displays and events.

Avenue of Chandeliers offers classical styles and modern re-interpretations of this established favourite.

Avenue of Inspiration, new in 2014, returns in 2015 with design-driven, ingenious and innovative lighting with an artistic touch.

Other zones include: Business of IP Zone, Commercial Lighting, Decorative Lighting, Lighting Accessories, Parts & Components, Outdoor Lighting and Trade Services & Publications.

New highlight complements Spring Lighting Fair

World of Professional & Industrial Lighting is a new highlight specifically for such products as Emergency & Safety Lights, Architectural Lighting, Hospital Lighting and other situation-specific applications, with LED options.

Happenings around the fair

With each Spring Lighting Fair, the Hong Kong Lighting Design Competition delivers creative, exciting designs. The winning prototypes are on display at the fairground. Seminars and Forums deliver information on markets, trends and technology while offering the chance to interact with peers.

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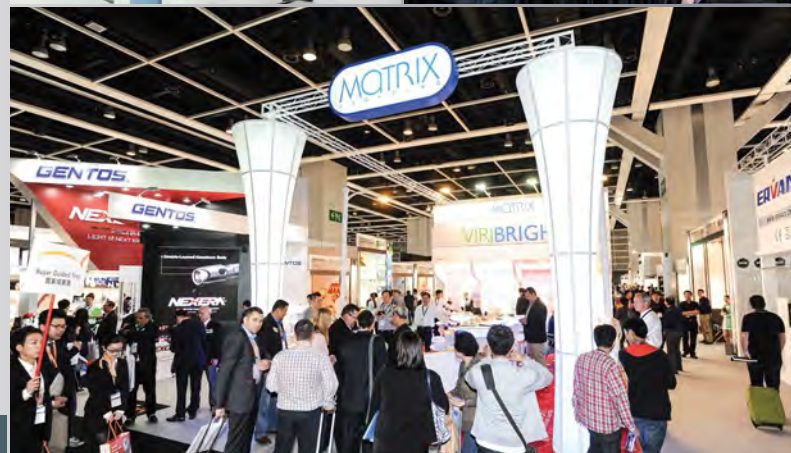
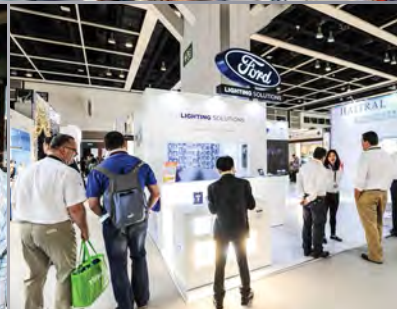
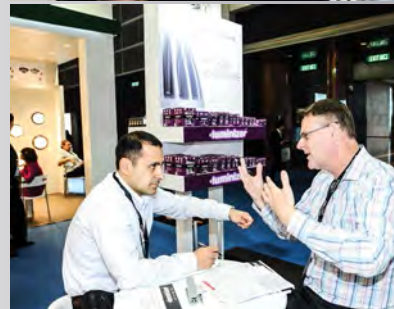
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Province opens Johannesburg branch



Province has opened a state-of-the-art showroom in Eastgate Ext 11, close to Sandton in Johannesburg. Launched in February, the Johannesburg outlet will focus on the commercial, industrial and retail sectors of the market and will enable Province to broaden its customer base and enhance its customer service, in response to increasing consumer demand throughout South Africa for the company's products, solutions and services.

At the launch of the premises, managing director Jurgen Chemelli said that the team had worked on numerous and diverse lighting projects and large scale developments and had serviced some of the biggest names in the industry. He emphasised that the company was dedicated to service and to providing the best possible solutions for its customers.

The new showroom, which provides the latest in lighting and automation technology, has a well equipped presentation room for face-to-face interaction. The focus of the showroom is on light-emitting diode (LED) in its various applications, encapsulated in a specifically designed unit showing the different colours and intensities of LEDs, as well as profiles and ceiling/bulkhead details.

In addition to lighting products, Province has an automation division, which offers a Building Management System that is simple and personalised and, most importantly, allows companies to maximise their energy savings.

The Johannesburg showroom is fully automated and equipped with various interfaces so customers can view the energy management facilities on offer. The automation parameters are:

- DALI lighting control
- Power consumption and energy management
- Remote log-in to external buildings
- Monitoring and reporting on the above
- Alarm interaction
- Audiovisual control

Province has been involved in the lighting and automation of many Green buildings across South Africa into the rest of Africa and the company has an outlet Windhoek in order to extend its footprint on the continent. Established in 1987 in Cape Town, Province is a leading supplier of specialised SABS-approved, commercial, industrial, retail and architectural lighting solutions.

Province Lighting/Automation/Switching: provincelighting.com/



Emergency lighting unit

The Arteor miniature emergency lighting device illuminates immediately there is a power outage, and a special feature of the unit is that the light fitting can be easily unclipped from the mechanism and used like a conventional torch - a handy facility when a room is suddenly plunged into darkness during load shedding.

Although this removable lighting unit is small, its illumination is powerful, effective and comforting in any environment. Light-emitting diodes (LEDs) indicate the mains and charging status.

These mechanisms are available in white, with a selection of 17 cover plate design options, including woven metal, red mirror and marine leather. Other finishes, like plastic, metal, tattoo, wood and brushed steel, are also available.

The Arteor range of wiring devices enables users to 'mix and match' the design option and type of finish for any control function. An added advantage is that these combinations can be changed at any time to suit requirements.

Legrand offers the local market a choice of modern stand-alone Arteor devices, like simple switches, as well as a combination of many system functions, including the most advanced home automation solutions.

Arteor devices have been designed for aesthetic appeal, flexibility, energy efficiency, quality power



Legrand's extensive range of electrical products includes a miniature Arteor emergency lighting unit, which automatically lights up in the event of a power failure.

supply and optimum safety in renovations and new installations.

Other Legrand products that minimise the negative effects of power outages include home automation devices, a reliable uninterruptible power supply (UPS) system, inverters and DLP LED trunking. This range is available from Legrand and its national distributor network. The company offers a technical advisory and support service throughout Southern Africa.

Legrand: www.legrand.co.za

Turin chooses AEC LEDs

AEC has won a prestigious tender by IREN SERVIZI E INNOVAZIONE, the service utility company that manages Turin's electrical supply, for more than 45 000 LED luminaires.

Like Milan, Turin put in place an exceptional project of modernisation and this bold choice will allow the municipality to realise significant cost reductions and energy savings. AEC Illuminazione will provide the city with ITALO, the luminaire that is giving Milan a new image. It is another success for the Italian company which is confirming its technological reliability and excellence with its LED solutions.

"The city awarded a 100% 'Made in Italy' product, which is a model of technological excellence. We work in more than 40 countries and, just a year after its launch, ITALO has been chosen in many cities around the world. The fact that two of the main Italian cities have preferred it makes us really proud," said Alessandro Cini, AEC General Manager.

Starting in the next few months, almost 55% of the city's luminaires will be replaced with the new



lamps. In line with the needs of the Horizon 2020 European project and the indications of the European Commission in terms of energy efficiency, Turin is a candidate to be one of the next Smart Cities and Communities. This is an ambitious project aimed at resolving the main problems of energy, environment and mobility. The goal is to launch a new model of development that is socially and economically credible and with effective results. AEC gave Milan high-performing solutions, now the company will do it for Turin, too.

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Efficiency, flexibility, security and stability from a single source

LEDs herald the start of an energy-efficient and flexible future, but their numerous benefits can only be achieved in a perfectly matched system, such as Optotronic, from Osram.

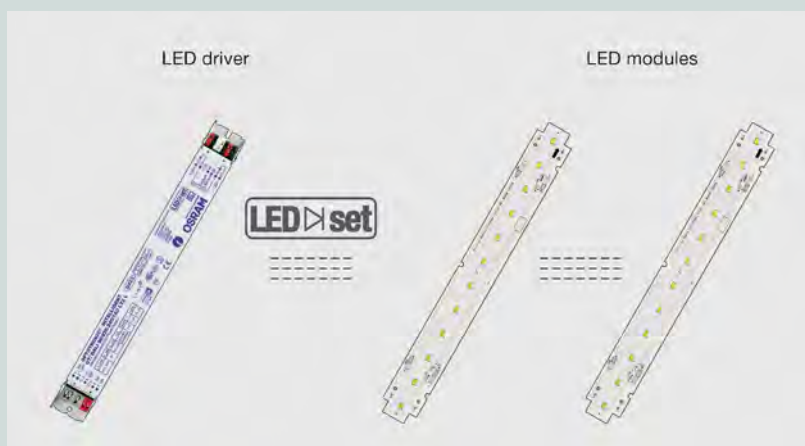
Optotronic is not just an ECG; it is a brainbox with intelligent control functions. It undertakes energy monitoring, system supervision and LED light management – particularly during dimming – and, despite its wide-ranging functionality, is easy to install, and its operation is easy to understand. This LED control gear for indoors and outdoors meets the latest technical requirements and even complies with future requirements of EU directives.

Optotronic units supply an electronically stabilised dc voltage and stabilised current with excellent efficiency. The electrical isolation between the primary and secondary sides and the reversible protection mechanisms on the Optotronic units for overload, short-circuit and over-temperature enable the LED systems to be set up safely and reliably in a variety of applications.

LEDset – simple effective lighting

Optotronic ECGs are future proof. LEDset stands for simple and effective matching of the devices. This means greater flexibility in luminous efficacy; constant increases in lifetime; flexible matching for thermal protection; dynamic adjustment to the environment of the fixture and maximum energy efficiency through simply dimming of the LED module.

New devices with the LEDset interface are ideally set up to meet requirements in terms of flexibility and adaptability. They cover a wide range



of wattages and currents and support future generations of LEDs with their future-proof design.

Key benefits of Osram Optotronic include:

- Future-proof design thanks to advanced technology and short innovation cycles > reduction in cost-intensive upgrades.
- Flexibility in thermal protection, dimmer and sensor compatibility > wide variety of applications in different lighting situations.
- Planning security thanks to full-service offerings of all-in-one solutions.
- Long life thanks to system monitoring and intelligent control functions.
- Cost efficiency thanks to energy monitoring and control of dimming functions.

Osram: +27 11 207 5600

Light fusion technology

Using a combination of innovative design and LED technology, Energizer® is advancing portable lighting. Its range makes use of laser-etched optics, which Energizer calls Light Fusion technology, to reflect the light waves over a large area instead of concentrating them into one point.

Light from several LEDs is spread evenly across the element by hundreds of dots called Light Fusion elements. The elements are created on both sides of the panel by the laser etching process to provide full room lighting and ensure a brilliantly uniform illuminated area. The portable lights deliver the same amount of brightness as comparable products but over a larger surface area and the even distribution of light is easier on the eyes.

The Fusion Folding Lantern offers up to 330 lumens of uniform area light and the 2 in 1 Standing Light has an area reach of 165 lumens while its spot light function emits 125 lumens of light. The lights can use disposable alkaline and rechargeable NiMH AA batteries in sets of four or eight. Products have an IPX4 water resistance rating.



Energizer: +27 81 439 3912

The chandelier reinvented



Willowlamp is an award winning South African lighting company whose creator Adam Hoets uses an original and patented method of attaching ball-chain to laser-cut steel frames. A tiny notch in the metal frame is the ingenious ingredient to creating a fastener-free curtain of chains. The result is a vast collection of intricate lighting designs including vibrant chandeliers and elegantly swaying pendants.

After graduating as an architect, Hoets travelled through Africa becoming increasingly enthused by the complex patterning he found in the continent's natural surroundings. The combination of his acute understanding of geometric shapes paired with his architectural education has resulted in a collection of sculptures that are masterpieces of structure and aesthetics. "Many of my designs are inspired by nature in some way," says Hoets, "whether a direct translation like the 'Faraway Tree' (chandelier) or those that are derived from sacred geometry."

Willowlamp has redefined the chandelier. Hoets' signature pendants emit light and creative energy, and this is a key part of the brand's ethos.

According to Hoets, the company's designs fuse organic forms with high tech materials and processes to create a dramatic new genre of lighting. Each fixture is the result of collaboration between the needs of the user, the creativity of the designer and the skills of the fabricator. "Our responsibility is to harness creativity and transform it into high-quality, beautiful objects for everyday use."

These works can be seen suspended from the ceilings of globally renowned hospitality, retail and commercial sites. For instance, a custom-designed work was commissioned by The Melia Hotel in London, which took form as the 'Fuchsia in Smoke' chandelier. Other prestigious projects include the crafting of 35 large chandeliers for the Ritz Hotel in Dubai, the creation of the 'Flower of Life' chandelier for the Seerose Resort and Spa in Switzerland, a customised 'Protea' installed at the Ritz Carlton Chicago, and a custom-made oversized Flower of Life chandelier in chrome that hangs in the hallway of the Mena House Hotel in Giza, Egypt.

Willowlamp: www.willowlamp.com



Vapour Proof T5 Fluorescent
Cool White
20 000 hours



ALT 7W V3 GU10 LED
Warm White
30 000 Hours



40W LED Wall Washer
RGB DMX
30 000 hours



ALT 38W Growlight
Red & Blue
50 000 hours



Hadar Hazardous Area Fluorescent Luminaire
100 000 hours



Hadar Hazardous Area Floodlight
Cool and Warm White
100 000 hours

EUROLUX PROJECT SOLUTIONS

Enhance your commercial and industrial environments

Eurolux Project Solutions offers a variety of energy efficient lighting solutions. Recent projects include Caxton Publishing House; Windhoek Breweries; the renowned Hotel Verde: The greenest hotel in Africa; as well as the Agulhas Marine research vessel.

Eurolux offers a comprehensive lighting design and specification solution to its customers – all completed by a qualified lighting engineer.

- A project begins with the initial site inspection and customer briefings.
- A detailed lighting design, with full 3D simulation and energy efficiency report, to comply with SANS and OHS, is then presented to the client.
- Detailed cost-of-ownership and lifecycle cost analysis is presented to the client, thus allowing for informed easy decision making.



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innovative LED lighting



Major Tech is pleased to introduce a dynamic and modern range of LED lighting products to the South African consumer. These products have been designed to bring elegance and a decorative flair to one's home, restaurant, hotel or any commercial building. A wide range of LED lumen output is available depending on the type of light or intensity the installation requires, whilst at the same time reducing electricity costs.

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