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A smart city is an urban development vision to integrate information and communication technology (ICT), machine to machine (M2M) automation and the Internet of Things (IoT) in a secure fashion in order to manage a city's assets. It is a practical city that uses information collected from every sphere of the city, analyses it and performs all functions more efficiently than it did before. This, to make a city safer, more efficient and more enjoyable for its inhabitants.

Public lighting plays a role in smart cities. Because it's already installed where people live, work, play, and travel, it can serve as the backbone for a common services management infrastructure. LEDs are semiconductors and easily linked to cameras, sensors, microprocessors and wireless communications. The spectrum of applications ranges from allowing LED lights to be individually monitored and adjusted, to using them to transmit site-specific data on weather, traffic, air quality, etc. Since every lamp is an independent hub and a digital link, LED can revolutionise a city.

All the institutions and services that make up smart cities need lighting and light management and, as explained by Retief Coetzer in *Smart cities and lighting design*, road lighting has entered the phase where it has become more than simply illumination. Using smart luminaires integrated into control systems, roads become 'information highways' that can monitor the installation and the use of the road. Although road lighting is an obvious first step in the design of smart cities, the technology can be applied to many public spheres, including public transport; water; sanitation; urban mobility; citizen participation; IT connectivity; power supply; solid waste management and E-governance.

Lighting control can also be used to improve people's health – Paul Pamboukian in his article, *Contemporary trends in lighting design* explains that by bringing movement of colour into a lighting installation, one can improve the working conditions of people who work in environments where there is no natural light. The Boeing 777 Dreamliner uses changing warm to blue light to limit jet lag during inter-continental travel. The lighting in Sun International's Times Square Casino incorporates lighting effects and light synchronisation designed, in the words of Ryan Ashford-Smit, to keep the energy and vibe continuously emotive throughout the day.

As Coetzer points out, lighting is the great enabler and lighting designers will fulfil roles that require much more than simply lighting. Lighting practitioners need to evolve and embrace technology in order to move forward and our public sectors need to become more efficient. Smart cities are about people and their empowerment and it is time to start planning and implementing in readiness for the future.

Karen

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Circulation: Karen Smith

Cover: Virgin Active Classic Collection Health Club Photograph courtesy LED Lighting SA

Published by Crown Publications cc

PO Box 140, Bedfordview, 2008 - Tel: +27 (0)11 622 4770 Fax: +27 (0)11 615 6108 - Website: www.crown.co.za

ABC 1st quarter: 3 678

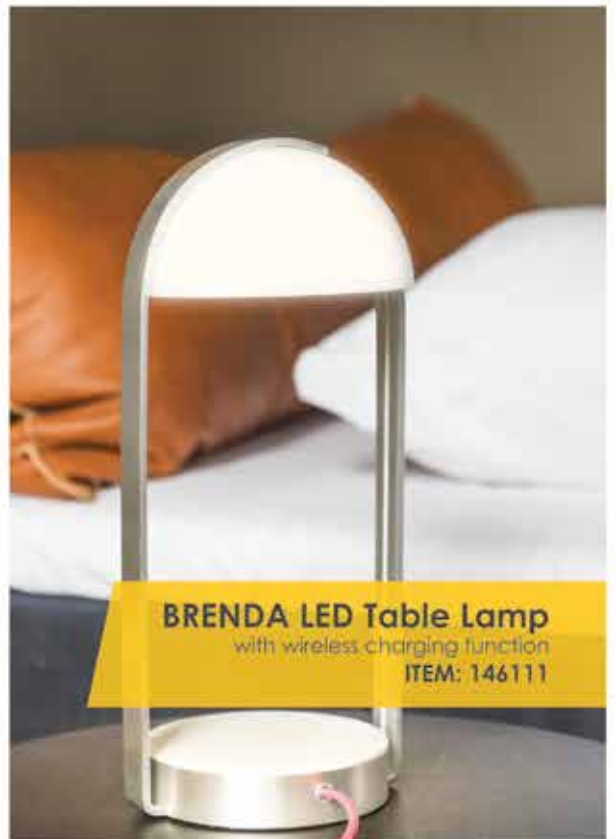
Printed by: Tandym Print

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Inside ...



EDspace

Editor's comment.



Smart cities and lighting design

Road and urban lighting are the backbone of the development of smart cities, and it is time to start planning and implementing in readiness for the future. So says Retief Coetzer of BEKA Schröder.



LED development in Africa

Luminaire manufacture is about evolution and to survive we need to advance continuously. If we do not evolve and embrace technology, we will cease to exist. Randal Wahl of Regent Lighting discusses the development of LED in Africa.



Lighting as a component of outstanding architecture

Italian architect Michele De Lucchi designed the UniCredit Bank, together with Gruppo C14 lighting designers, in the form of an oversized lantern: constructed from timber and glass it appears to radiate from within.



Contemporary trends in lighting design

For Paul Pamboukian, how human beings relate to light is the most current trend in lighting, and the subject is topical because of modern-day technology around LEDs.



Developments of the DALI interface

DALI has become one of the dominant interfaces in the lighting industry. Henk Rotman of Philips Lighting outlines the latest developments in this field.



Introducing a balance in window-blind automation

The double-skin glass façade layout is typically designed to host motorised window-blind systems. However, proper use of these blinds is at the mercy of users inside the offices. Avi Klein of Control Applications proposes a solution.



Sun International's Times Square Casino

Sun International's dazzling Time Square Casino opened on April 1 this year. *Lighting in Design* spoke to Ryan Ashford-Smit of Triac, the company responsible for lighting control throughout the casino complex.



31 Products



Smart cities and lighting design

by Retief Coetzer, BEKA Schröder

A combination of internet connectivity, population growth and substantial urbanisation create the perfect environment for the city of the future. Johannesburg is one of six African cities that is projected by the UN to become a megacity by 2050. A smart city is an urban development vision to integrate information and communication technology (ICT), machine to machine (M2M) automation and the Internet of Things (IoT) in a secure fashion in order to manage a city's assets. Practical smart city concepts point to the use of sensors, IT systems, software, and narrowband and broadband communications infrastructures to address the challenges and opportunities for modern urban life and, based on the data, improve the efficiency of services for the benefit of people.

A smart city is therefore a practical city that uses information collected from every sphere of the city, analyses it and performs all functions more efficiently than it did before. This makes for a safer, more efficient and enjoyable living and working environment for the inhabitants of the city.

According to Juniper Research, based in Basingstoke in the UK, the top five smart cities in the world currently, are: Singapore, Barcelona, London, San Francisco and Oslo. The Smart City Playbook, a report commissioned by Nokia to research the strategies and progress of 22 global cities, in September 2016 listed Cape Town as one of them. Johannesburg ranked 35th out of 41 on the 2016



Ericsson Networked Society City Index. The institutions and services that make up smart cities are public transport; water; sanitation; urban mobility; citizen participation; IT connectivity; power supply; solid waste management and E-governance. Lighting and light management is needed in all of these:

- Road lighting for public transport.
- Lighting for water treatment plants and their offices and reservoirs.
- Lighting for sewerage treatment plants and their offices and reservoirs.
- Urban mobility requires lighting for parks, high streets, malls.
- Citizens who have smart LED lighting in their private residences.
- IT connectivity for GPS/data enabled drivers and hardware.
- Lighting is essential at power stations, plants and offices.
- For solid waste management, at landfills, recycling centres and offices.
- E-governance: light management is required in all areas where spheres of government want to save on electricity.

Lighting design for transport

In a smart city (which, according to Caragliu and Nijkamp 2009, is defined as 'smart' when investments in human and social capital and traditional and modern communications infrastructure fuel sustainable economic development and a high quality of life), a well-run public transport system and well managed transport infrastructure in general are essential. People coming in and out of the city on a daily basis, 24 hours a day, will undoubtedly lead to traffic congestion, potentially unsafe road conditions for motorists and pedestrians, an increase in pollution levels and decreased productivity owing to time wastage and high levels of stress and tension.

Good road lighting is essential to facilitate the growth and convenience of smart cities and to ensure that their citizens are safe. Road lighting, however, has now entered the phase where it has become more than simply road illumination. Using smart luminaires integrated into control systems, the streets/roads become 'information highways' monitoring the installation itself as well as the use of the road. This allows municipalities to efficiently save electricity and the environment whilst providing knowledge and useable data in order to plan and make these areas more efficient for all users. Examples include, street lights that switch on as you walk/drive along a pavement or road and off again after

you have left the vicinity of these smart luminaires; traffic lights that adjust to accommodate traffic flow; accident alerts; indications for parking spaces and monitoring of pollution levels – the list is exhaustive!

Intelligent lighting and lighting design is needed for BRT routes, feeder routes into and out of smart cities and all streets within the smart cities.

Currently, there are standards (SANS10098-1/2 – Lighting of public thoroughfares/Lighting of certain specific areas of streets and highways) to ensure lighting installed in these areas offers safety for motorists and pedestrians, but the approach to smart city lighting design will be very different as the vision becomes realised. It will include sensors, cameras, charge points, PA systems and WiFi/LiFi.

Lighting design that complies with standards is evolving within the dynamic environment to achieve so much more than what the standards require. With

increased progression towards smart cities and their inherent additional functionality, the lighting designer will be designing for much more than lighting only. Luminaires are becoming smart and control is





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essential. Naturally, in my view the road lighting infrastructure will be the backbone for enabling smart cities.

Programmable drivers as part of smart luminaires

A programmable LED driver can be pre-programmed at manufacturing level with different dimming profiles, taking into account night variation according to seasons. This means that once installation has been completed, the luminaires can do the following in a 12 hour period:

1. From 18:00 switch onto full power.
2. From 22:00 to 00:00 dim to 50% of full power.
3. From 00:00 to 04:00 dim to 10% of full power.
4. From 04:00 to 06:00 go back to full power,
5. By including sensors, the luminaires can go to full power when sensing movement, remain at 100% and then fall back into their dimming profile after no motion has been detected for a period of time.

Intelligent drivers integrating optimum five-level dimming programs can be incorporated into luminaires. The drivers work autonomously by taking switch-on and switch-off times as reference points.

This saves electricity consumption, prolongs luminaire lifetime, reduces carbon emissions and enables smart cities to grow. Over time, the savings can be used to install active lighting control systems that enable better planning by making municipality officials aware when a light is malfunctioning; when an accident has occurred; when cable theft is taking place and how a particular stretch of road is used, all in real time.

In conclusion: we tend to believe that smart cities are a thing of the future but, in fact, they are here now, and it is vital that the public sector becomes more efficient. IoT and other integrating technologies are essential to enable smart city growth. Lighting is the great enabler and lighting designers will fulfil roles that require much more than simply lighting, at least in the road and urban environment. Road and urban lighting will be the backbone of the development of smart cities. Smart cities are about people and their empowerment and it is time to start planning and implementing in readiness for the future. **LID**

Retief Coetzer presented this paper at the 2017 IESSA Congress held in Cape Town from 15 to 17 May. He was the winner of the Junior Professional Best Paper Award 2017.





LED development in Africa

by Randal Wahl, Regent Lighting

Light is the energy that sustains life; it is why we get up in the morning. Light is about contrasts and colour contrasts are food for the soul.

Traditionally, the lighting industry in South Africa was inward thinking and inward looking. Relatively few companies invested in design or partnered with specialist suppliers to ensure they were able to develop products that were relevant to the future.

This has changed substantially. The commercial lighting industry has become an electronics business and there are many new entrants to the market, which is good for the industry as a whole. Newcomers have less historical costs and are often not subject to the restrictions that applied to the traditional industry. Although this is disruptive, it forces change and innovation; we either adapt or cease to exist.

The development of luminaires stimulates trading throughout the entire supply chain, which is the

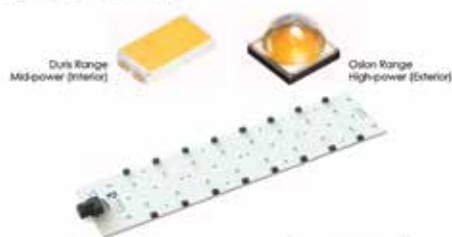
backbone of any developing country or continent. Stimulating trade in Africa is important as we upskill individuals and in turn create much needed employment across the supply chain. Ensuring that the correct components are sourced means we engage with and learn from world class companies and this results in the transfer of product and knowledge.

Luminaire design in Africa

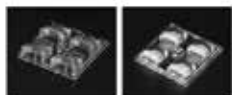
'It is easy to be different, but difficult to be better'. Many companies do not have a clearly defined approach to luminaire design. In order to be better, the correct staff and a planned methodology are essential.

Application: With LED, application is everything. It determines how we will design the luminaire – is

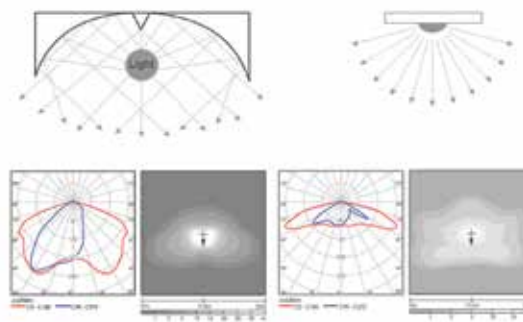
LED PCB DESIGN



Current	Power	Temp	Mounting
700mA	30W	4000K	143.00 Luminaire
1000mA	40W	5000K	143.00 Luminaire
1000mA	40W	5000K	127.00 Luminaire



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it for industrial, retail, commercial, landscape or entertainment? Is it for outdoor applications such as stadia, street lighting or security? Do we want a car park post top that can mount between 3.5 and 5 m, or a bollard? The application will affect the choice of LED, light distribution, power supply, surge protection, lighting control and the lumen output required.

Relevance: Will the fitting serve a purpose in the market and create a need?

Market segment: What market segment do we want to target? Are we aiming at the corporate commercial sector or for more general domestic use? Different quality components allow us to enter different markets.

Bespoke lighting: For Regent Lighting, bespoke lighting is critically important. Designing specialised light fittings challenges our business and our designers and what we learn, we apply to other areas of lighting.

We spend time choosing light sources, surge protection, power supplies, optical lenses, light management features and flexibility and mounting options, the latter being particularly relevant in Africa where flexibility is essential so the fitting can be used for different options.

Lighting fittings should, in many applications, be as small as possible. This reduces costs without compromising quality and has many other benefits, including aesthetics and wind loading. Longevity is key. It is possible to run LEDs for any number of hours, depending how you drive them – an impor-

tant consideration when you are offering warranties and guarantees. Finally, since much of our business is electronic and there are so many suppliers, it is important to select the correct supplier with the relevant technical support.

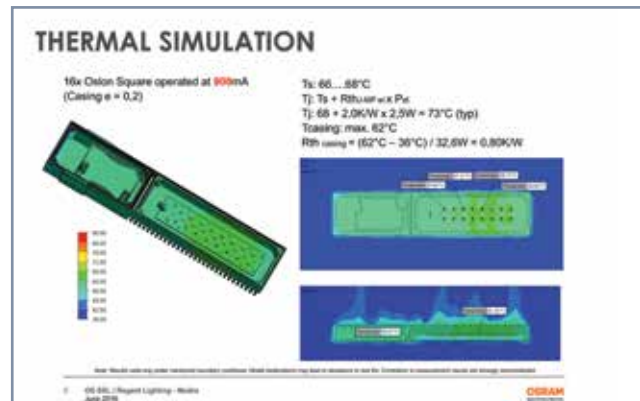
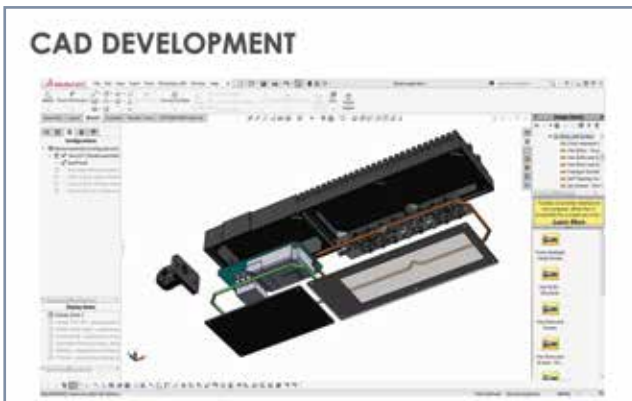
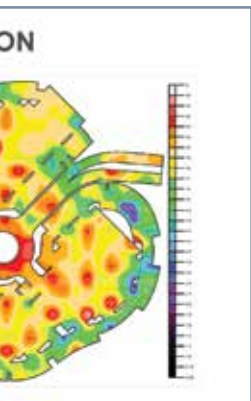
Designing a light fitting

These days, before we design a luminaire, we choose the LED and design the LED PC board since it determines where the LEDs will go in the fitting. We also select the lenses and know how the light will be distributed in-house goniometer tests.

Before we have made the luminaire, we know to a 98% certainty whether or not its performance will meet our requirements because we know the lumen output and the distribution at a specific mounting height. In other words, we have a virtual simulation before we have the luminaire. This could never have been done in the past.

We design to the highest lumen output or wattage possible and the power supply and surge protection determine the size of the luminaire because the housing has to house these. Once all this has been determined, the product design starts.

The design is undertaken in a 3D design package, which will provide a full rendering of what the fitting will look like, including how it will work and how it will finally be mounted. This is sent to the LED supplier who runs the thermal simulation according to the drive currents specified. Any changes required to the casting can be done before the die is made. The tests still have to be run, but there



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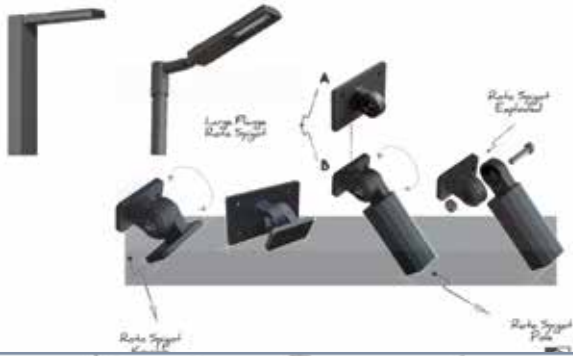


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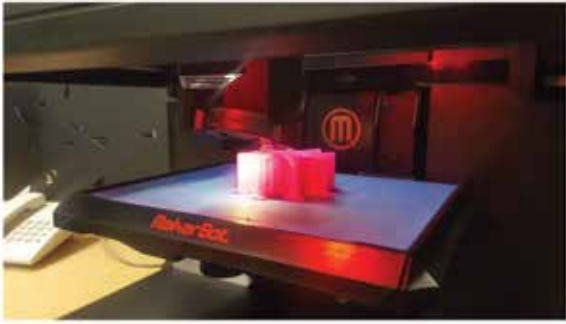
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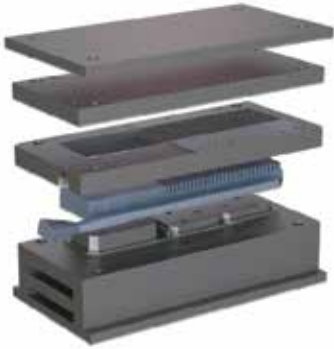
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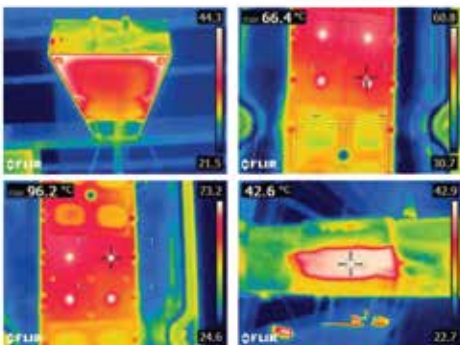
3D PRINTING



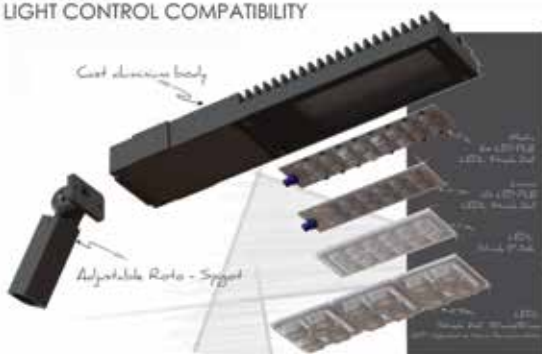
TOOLING



THERMAL TESTING



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are unlikely to be many changes at this stage. 3D printing has also changed the design process significantly. It is possible to print components that will ultimately be cast in aluminium and a fitting can be printed for approval early in the process.

Once the design is approved, the design software is sent for tooling, which can be done in-house or outsourced. When tooling is completed, the fitting is cast and internal testing starts: thermal testing on all the LEDs; junction temperatures in the fitting; and IP testing if required (exterior fittings require a lot more tests). From start to finish the entire process, depending on the fitting, can take anything from six to 12 months.

Key to manufacturing is the need to embrace technology, innovation and design. Without these, Africa will not have relevant luminaire manufacturers. We need to invest in technology including testing equipment, laboratories, goniometers, solid works software, and design software. Along with technology we need people: designers, people with technical skills; people who are passionate about lighting design.

Lighting is no longer seen as a purely functional element and design plays a huge role when clients want façade lighting, terrace lighting or glow of light. Although architects and electrical engineers may design a concept fitting, they rely on lighting companies to execute their ideas and the lighting companies, in turn, need to interact closely with shopfitters, electrical contractors and lighting suppliers.

Luminaire manufacture is all about evolution and we need to evolve all the time. If we do not evolve and embrace technology, we will cease to exist. **LID**



Lighting as a component of outstanding architecture

When lighting designers and architects work in unison, the result is buildings of outstanding spatial and constructional quality in urban contexts. The organically shaped pavilion designed by architect Michele De Lucchi and commissioned by UniCredit Bank was designed in close collaboration with lighting experts from the Milan consultancy Gruppo C14. The building soon became a magnet for the public and the poetic hub of Milan's prestigious new district of Porta Nuova. Highly professional LED lighting tools from ERCO

illuminate the façade and interior spaces of the multi-purpose pavilion where meetings and conferences of the bank, as well as public concerts, theatre productions and exhibitions take place.

De Lucchi designed the pavilion on its central site as a stark contrast to the cool, technical architecture of the mirrored high-rise buildings located on the Piazza Gae Aulenti. The office tower of UniCredit Bank, the Torre UniCredit, stands tall at a height of 218 metres as the most striking architectural element of the new Milan skyline. The organically



shaped pavilion constructed from timber and glass is reminiscent of a pebble or seed, and the vertical timber-ribbed construction with horizontal larch wood beams envelopes a glazed core with an auditorium on the ground floor, a gallery on the mezzanine and a lounge below the round roof. Differentiation is made between the adjacent high-tech architecture and the pavilion not only via its organic form and natural construction materials, but also with the 3000 K warm white light specified for all the indoor and outdoor lighting.

To implement the concept of a warmly radiating, accessible 'lantern' visible from afar, professional lighting designer Alexander Bellman with his Gruppo C14 consultancy developed some clever construction details together with the designers from Studio Michele de Lucchi: Grasshopper projectors from ERCO, for example, were concealed from view and installed into recesses within the vertical timber support structure on the outside, in front of the glass façade. "These maintenance-free, high-efficiency projectors with precisely matched light distribution were recessed across the complete building shell between the wooden structure and glazing within the horizontal wooden beam

structure," explains Bellman. "They accentuate the façade with overlapping beams of light from above and below, giving the impression that the building radiates from within."

The decision was also made to use efficient and innovative ERCO LED lighting tools for the interior spaces. Light Board 48 W recessed floodlights in warm white installed in the lateral trusses illuminate the convex interior of the pavilion canopy with wide beams of light. The wall panels surrounding the core of the pavilion on all levels and positioned to the rear of the glass façade are uniformly illuminated with ceiling-integrated 24 W and 32 W Compact lens wallwashers in warm white, also enabling a view into the small but architecturally dramatic building at night. The opening exhibition in the new pavilion displayed 70 works of art from the UniCredit art collection. As pioneers in the museum lighting sector, ERCO lighting tools feature outstanding colour rendering, and with interchangeable lenses, Optec spotlights create rich-contrast accenting or floodlighting on artworks, uniform illumination on walls or crisp-edged light beams for striking light effects. Pollux contour spotlights precisely light exhibits for magical art displays. **LID**



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Virgin Active Silo - lighting that suits the feel of the club



Classic Collection Health Club and LED Lighting SA joined the project later.

Lighting objectives

Emphasis on the lighting design and layouts was evident from specification through to execution, the idea being to use lighting as a feature rather than as a purely functional requirement. The atmosphere of the club required various settings for each area to ensure the correct ambience would be created to coincide with time of day, season and function. In order to achieve such a heightened level of control and lighting detail, the LED Lighting SA team recommended a cloud-based lighting control system.

Overall ambience, lighting design and heightened level of control were just a few of the requirements to be met. The most important objective was to ensure a minimum of four-star Green Star SA rating was achieved according to the green building council's specification.

Lighting solution

Throughout the health club, extensive cove lighting has been combined with complex linear recessed light lines to create large features. This not only gives the different sections of the gym the required light sources, but also provides an aesthetic that continues throughout the health club. In areas where downlights have been included, fittings have been placed in clusters for varying ratios of light throughout the facility.

To ensure that the different spaces flow easily from one into another, LED Lighting SA specified the ConnecDim cloud control system from Tridonic. This cloud-based DALI control system allows flexible control using QR codes to recall scenes in certain venues. The club management team has control through smartphone apps and remote smart time scheduling is possible. The system further allows for maintenance predictions, energy consumption reporting and a seasonal scene recall function.

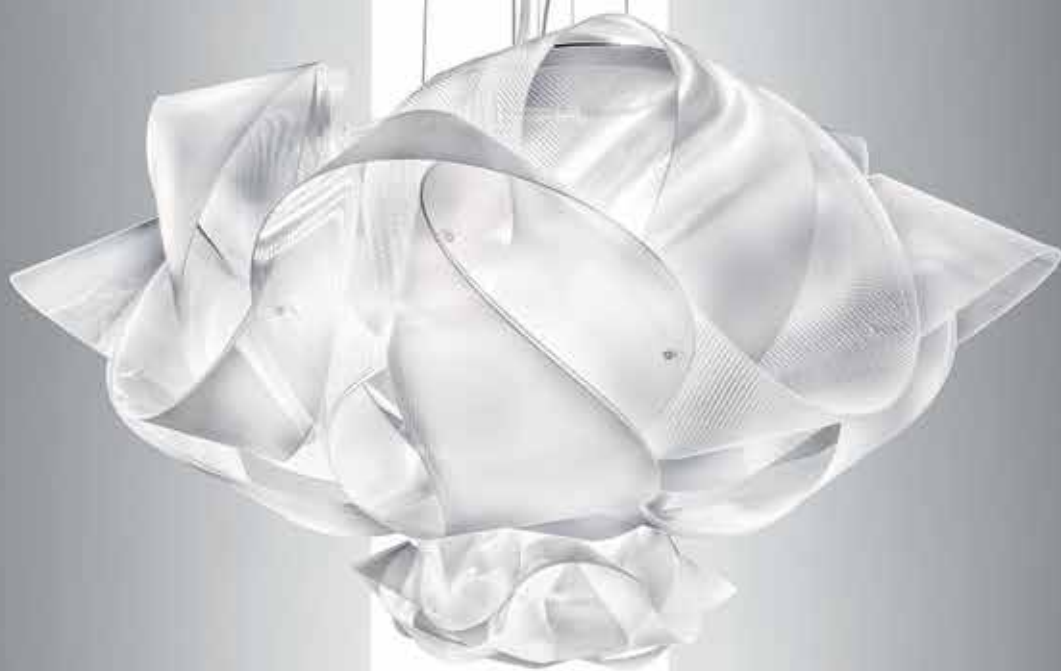
Results and benefits

The lighting is functional and yet plays a crucial role in the overall design of the club. The complex array of lighting designs enhances the prestigious nature of the luxury health club. Smart time scheduling, flexible lighting management, reduced wiring and scene selection through the use of QR codes and enhanced easy-to-understand control systems allow for further control over the atmosphere of the new Virgin Active Collection Health Club. [LiD](#)

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NEURO NOUVEAU



Euro Nouveau presents a curated selection of luminaires by some of the foremost European lighting designers and manufacturers. This unique concept is presented by local lighting experts Eurolux and aims to offer the discerning buyer more options when it comes to luxurious lighting. Euro Nouveau presents a variety of pieces: from bespoke chandeliers to statement pendants, representing top brands like Fontana Arte, Slamp, Inarchi, Maroqi and Panzeri. The Euro Nouveau collection caters to every taste and style, from sophisticated old-world inspired pieces in crystal and glass, to modern architectural styles in marble, chrome and steel.

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Designer Lighting



Contemporary trends in lighting design

by Paul Pamboukian, Pamboukian lightdesign

What are the contemporary trends in lighting? Essentially – and I've been involved in lighting for the past 25 to 30 years – not much has changed in terms of lighting design; Richard Kelly's principles remain. So what is contemporary about lighting design other than the technology?

Our industry is young and in its hundred and thirty odd years there have been relatively few sources available, barring the incandescent lamp, which was the prime source for much of that time. Then the solid state revolution arrived. Like a whirlwind, it has taken over all lighting technology and, within a few years, we find that all those wonderful light sources, particularly incandescent lighting, have been swept away or are in the process of becoming redundant.

LED has changed our lives. In some ways for the better; flexibility, control and all those wonderful things. However, we are still to understand more about what it does for, or to, our health. For me, the most contemporary trend in lighting is how human beings relate to light, and the subject is topical, largely because of LED.

We take light for granted. Few of us consider that light is invisible or that, as a mysterious visitor from the cosmos, it should be spoken about with reverence. We know the effect of light and how it affects us. As practitioners, we tend to forget the lofty elements of light. How magical it is, the

immediate effect on our moods it has in the way we respond to a dark overcast morning, a brilliant sunset, a bright sunny day, the dramatic sunrise, a wintry blue Norwegian or Scandinavian feel – those long blue hours which are incredibly beautiful.

As lighting practitioners we tend to be involved with the technology of light, which of course is a means to an end. But we often forget that the end is applying light for people and for biological life. So I will concentrate on this aspect of sensing light and how we relate to it. Lighting inspires us, it inspires attention, but it also wakes us up and gets us feeling, 'this is fantastic!'

Isn't this what we should be doing with our projects, our interiors and exteriors? Has modern life numbed our senses? We wouldn't go to a restaurant and eat a meal that is inedible, and we'd send back corked wine. Yet, we tolerate interior and exterior spaces where the lighting is intolerable, even though we appreciate and are inspired by daylight.

Does utilitarian lighting have to mean ugly light? Why do we have ugly light when we can have pleasant light? There is a history involved in this. There is a norm that external lighting doesn't have to be of the same quality as internal lighting.

Pamboukian lightdesign was approached to look at the lighting at Biel Station in Switzerland. It had been renovated two years before but, according to public feedback, was only 80% approved or

acceptable, so the railway authorities thought more action was needed. There was nothing really wrong with the station square, but they were worried about security, safety and the general atmosphere of the station, which was not a great space.

The external lighting of the neo-classical station building was dull so we added light, picking out the station from the square so that on approach it felt more like an urban space, with more intimacy. We added light to the façade, lifting the architecture and encompassing the square with human scale light columns to close off the space. In the dreary big main hall we created an up-down solution to light up the ceiling, which is beautiful, lit the barrel vault, and introduced some down lighting to lift the floor.

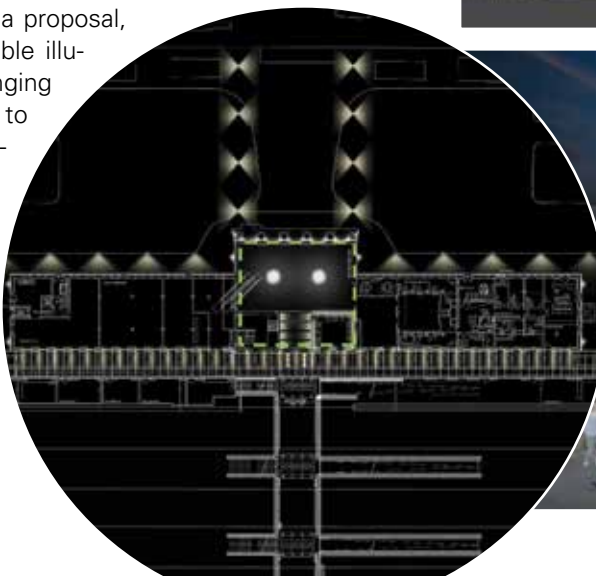
The waiting room had a beautiful mural, but was dead. We lit up the walls to bring reflected light into the space and lighten it up. The concourse was also dull so we lit the columns and did some work on the façades, introducing red lines (same as the SBB red) in the ceiling. In the concourse they had rather nice downlights, low glare and locally manufactured. We animated the space by adding strip light along the glazing to brighten it up and humanise the space.

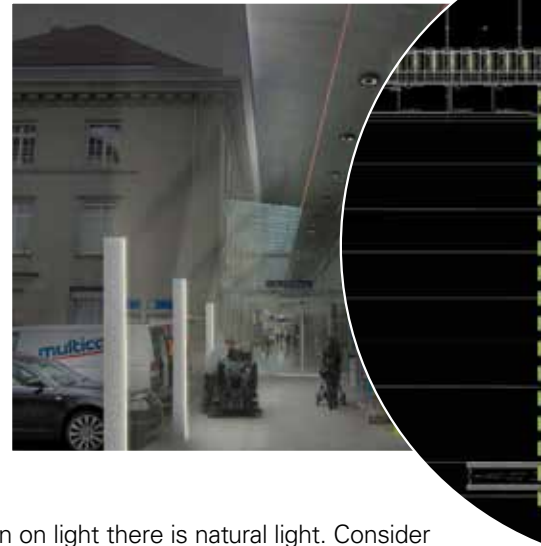
There were dropped ceilings at the platform accesses which we used as a basis for our intervention. We gave the authorities the option of having a time related colour change, so that during night and day they could have different colours. In the night time scenario, the light shifts towards the warmer tones and during the day the light is cooler. On the accesses to the platforms we added light into the hand rails to lift the spaces.

In the junction of the underpass, which is particularly dead at night, we clad the columns in glass and created ambient light sources. These serve as a visual cue down the axis so commuters see the glowing elements. We simplified the wedges of light on the walls of the intersection space with an uplight component.

In essence, it was a proposal, in a perfectly acceptable illuminated space, of bringing light that related more to the people who commute on a daily basis, at all times of the day – from early in the morning to late at night. The idea was to keep the light moving all the time.

In 1973, Dr John





Ott wrote a book called *Light and Health*. A banker and part-time stop frame animator, Ott did all the live stop-frame animation for the Disney movies, including *Living Desert*, in which he showed flowers opening in slow motion. Working with plants in a hot house, he would have to wait a whole season before he could start filming them. He would set up his equipment, be at the ready, and the plants wouldn't flower. He discovered it was to do with light and began experimenting with short-wave ultra-violet and infra-red light. He got incredible results. This was in the 1950s when health and light started becoming a topic to be explored. It had to do with an understanding of how daylight affected us, how it set our clock, how we related this to artificial lighting and what artificial lighting was doing to us.

I had read the book and had an idea of circadian lighting when we illuminated Biel Station. Then I went to visit the Lighting Research Centre at Rensselaer Polytechnic Institute in Troy, up-state New York. The researchers there investigate the effects of health and light covering many, many subjects. Circadian lighting and the circadian clock have become the mainstay of their research. One of their projects was to develop the dynamic circadian light for the Boeing 777 Dreamliner – the constantly changing warm to blue light in the aircraft helps to reset travellers' circadian clocks during inter-continental travel.

As designers working in this field, how do we question our responses to light? At the start of any

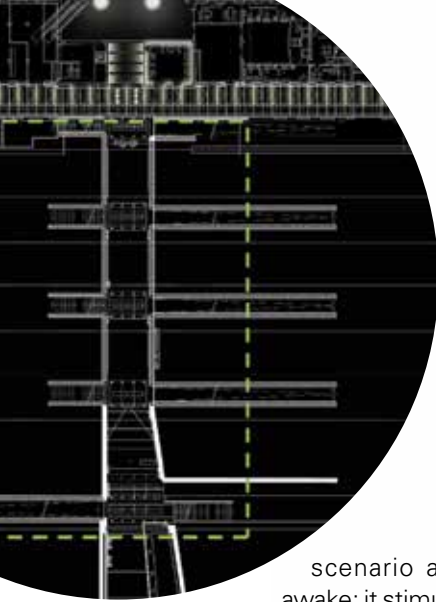
conversation on light there is natural light. Consider sunset, where does the term 'happy hour' come from? Interestingly, it is the light as we go from a predominantly blue-spectrum daylight into the warmer tones of the evening when light levels drop. The warm light is the trigger for the development of melatonin, the feel good sleepy hormone that brings us down and makes us tired. Happy hour is exactly that, we feel relaxed, we feel like a drink. We are happy.

Why is candle light romantic? Why is fire light so entrancing? The predominantly warm spectrum of fire light brings us into a more meditative state which is why people talk and tell stories around a campfire and the wonderful thing about candle light as we all know is that it is romantic, we feel good, we say things we wouldn't normally say in daylight. We are not the same people at night. Lighting people know this. It is fantastic chatting to like-minded people, but we normally speak to people who are adding up a sub-total whilst we're talking.

When we mock-up hotel rooms and people say let's look at the night setting, draw the curtains and switch on the lights, I explain that this is not going to look the same tonight. We have to look at it with our night eyes because we are different people at night. Night is the beginning of a daily cycle of renewal.

Our normal vision is tuned, it is most sensitive. We have non-visual ganglion cells in our eyes which are sensitive to blue-green, which is in the region of 480 nanometres. This is our state of wakefulness. The reaction to blue-green light is our daytime

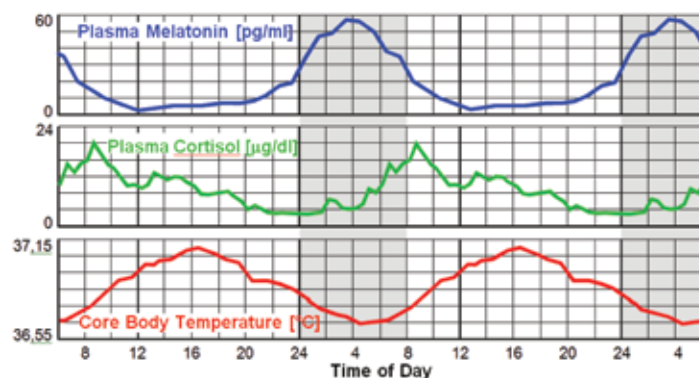
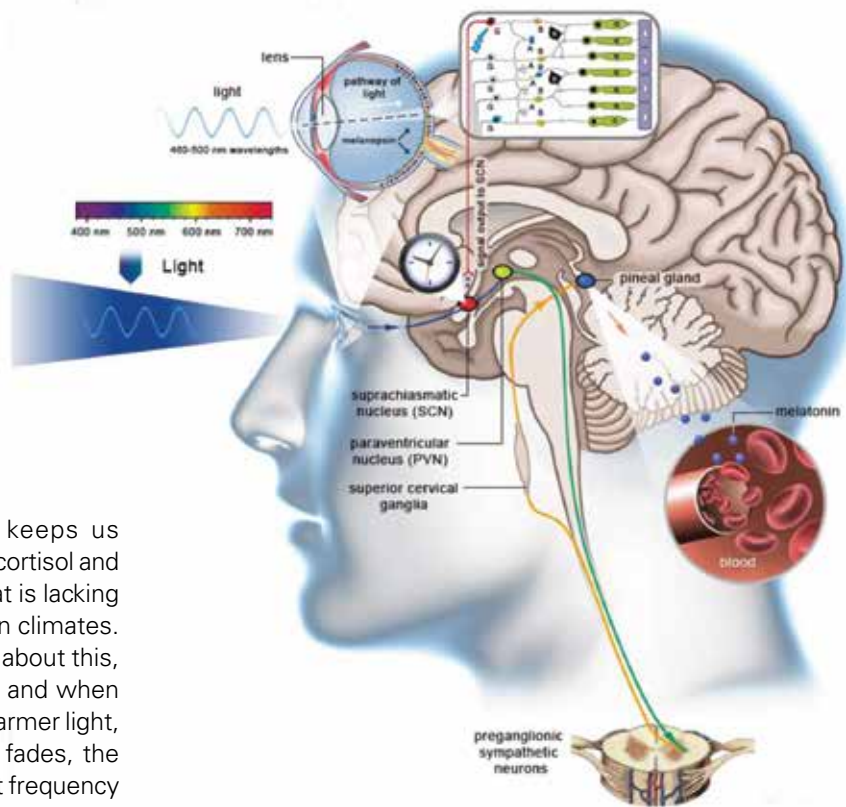




scenario and what keeps us awake; it stimulates the cortisol and serotonin and serotonin is what is lacking when people get depressed in Northern climates. It is called SAD syndrome. We all know about this, but do we think about it? We're awake and when the evening comes we're exposed to warmer light, the intermediate just after the coolest fades, the light levels drop and there is a warm light frequency that comes in before darkness, which triggers the circadian system. This happens around 540 nanometres, which is sleep-inducing.

Consider the graph alongside. The melatonin level is down at midday and starts to rise in the evening, peaking at around four o'clock in the morning. We often wake at that time to pull up a blanket as temperature levels have dropped. Our cortisol and melatonin work inversely. In the morning, as the melatonin starts to drop we get a spike of serotonin, which is stimulated by daylight. It is entrenched in our hormonal systems. What they found at Rensselaer is that when our circadian clock goes out of sync, all sorts of illnesses can result. The more we disrupt our melatonin cycles, once we've interrupted them, the longer it takes for them to pick up again. If this happens regularly it can have serious consequences. Blue rich night light sources in children's bedrooms are a particular no-go.

How do we bring colour and movement, which are intrinsic to natural light, into our built environments so that light flows naturally with colour change? How do we bring a new breath, a new



impulse to interior lighting that uses LED technology which is controllable and, under the right circumstances, colour is not a problem. In the old days it was an effort to mix colour, we had to use filters, etc, but LED has changed that game. How are we going to apply it?



*sunrise/sunset setting – +/- 2700K : 6h00 - 6h30
18h00 - 18h30*



*crossfade setting – +/- 3500K: 6.30h00 - 11h00
18.30h00 - 23h00*



*daylight setting – 5000K: 11h00 - 18h00
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The first circadian system we applied was for the Gauteng Nerve Centre in Kaalfontein for PRASA. The centre operates 24 hours a day and controls the switching for most of the trains in Gauteng. The architect wanted an illuminated ceiling; however, budget kicked in which led to a modified version of the ceiling. The luminaires were fixed to the catwalks. A barrisol-type of luminaire was attached to its underside. Fluorescents of different colour temperatures were placed inside the light boxes, as we were a little unsure of the performance of LED at the time. They were mixed and controlled to create a lighting scenario on a cyclical basis. It was a constantly changing scenario. We had ceiling strips of flat, even light but outside, the sky, particularly with cloud, was changing all the time. A clear blue sky is quite dull – the sky becomes interesting when it is textured and light catches cloud. We programmed the different states and the client wanted everything clean and white.

We ended up with a sunrise and sunset setting, about 2700 K, which occurred between 06h00 and 06h30 when it got into this colour temperature. It then moved into a cross-fade setting of roughly 3500 K. This would progress until 11h00. The same thing occurred at night; they had to reverse day and night as day had to be simulated for night, and night for day once the night staff arrived. When people are most tired they need the coolest light to stimulate serotonin levels so that by 06h00 they get to a sunrise state, which would really be their sunset, to stimulate melatonin. The last setting is the daylight setting, about 5000 K.

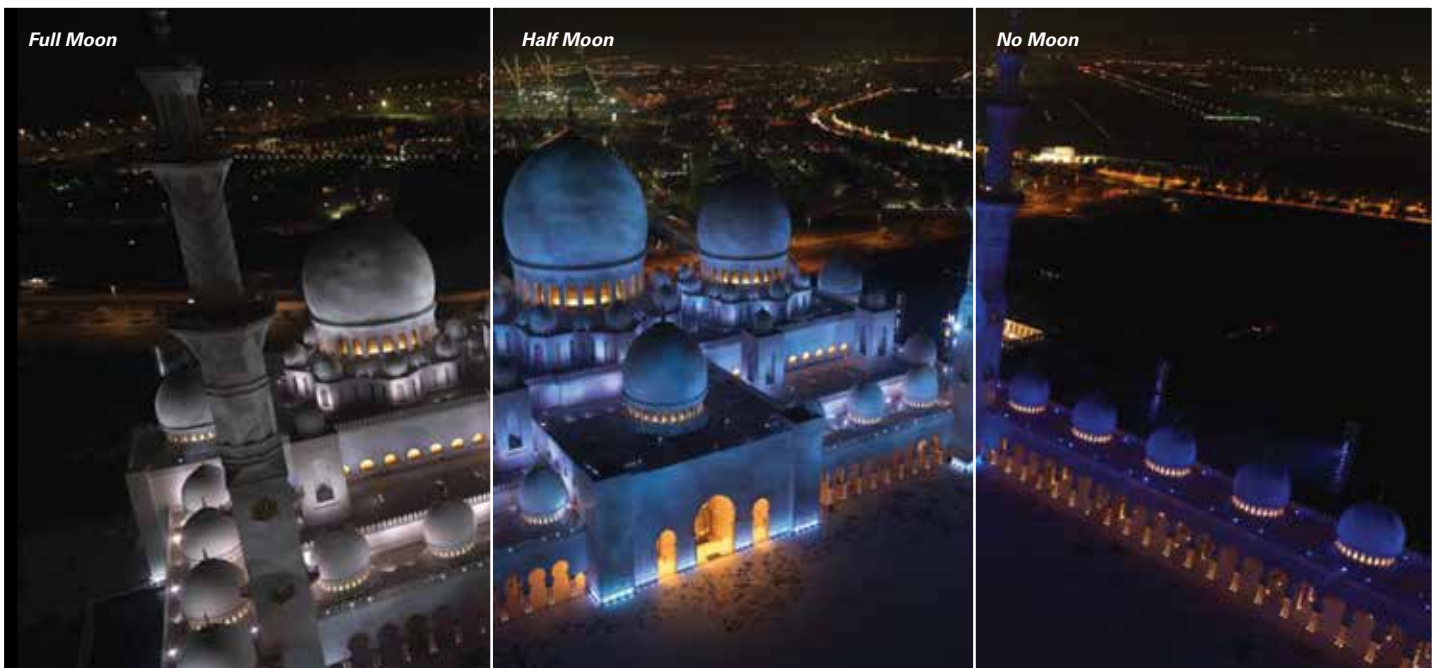
This was an interesting experiment for us because of the isolated space. There was no daylight

and the artificial lighting simulated some kind of movement. Just the movement of the light made staff feel something was 'happening' and they were not sitting in capsules. There was a time when the mood of casino lighting was constant night; even that way of thinking has changed.

I heard Jonathan Speirs give a presentation on the Grand Mosque in Abu Dhabi. It deals with what I call the poetic movement of light. Again it's got to do with dynamic light. The exterior lighting concept is based on the lunar cycle, which is very important in the Islamic calendar. They created a gobo-type broken-up light on the domes. The moon-like features are motivated by the direction of Mecca and all the patterns give consistency of movement. There is an element of direction and time. At full moon the building is white and as the moon waxes or wanes, the light moves more into a saturated blue. The last setting happens on the 14th of each month after the full moon, when there is no moon. The setting goes blue. This is an old theatre trick – blue light is closest to darkness, it is dark, but you can see. The cycle continues repeating with the warm inner spaces which are amenable, contrasting with the blue. Speirs and Major often contrast blue with warm colours contrasting the spectrum, because warmth includes and embraces.

To get back to contemporary trends in lighting, I'd like to suggest that we are approaching the stage where we are inextricably linked to the question: Lighting design, effect or necessity? **LID**

Paul Pamboukian presented this paper on 15 May as the keynote address at the 2017 IESSA Congress in Cape Town.





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Designers to watch for in the future

Light is a technically difficult yet magnificent medium which requires mastery of a number of disciplines. Lighting design integrates the arts and sciences and, while technical skill can be taught, talent cannot. Fashioned and designed environments require imaginative light solutions that convey meaning, mood, atmosphere and visual appeal.

The office as we know it has undergone a dramatic transformation, moving away from standard open plan to a mixture of hot-desking zones, private booths and tech-driven meeting rooms to accommodate a variety of working modes and personality types. The home office has also evolved into a more sophisticated space, rather than a desk in the corner.

A shift in office lighting is imminent. Personal light space will become more important. A desktop luminaire should integrate into the rest of your desk space and adapt to different tasks without impacting on the visual effect in a large office.

It is important to consider the application of artificial light as a crucial, primary aspect of design and as an inventive medium that extends beyond the functional requirements of illumination. For this reason, it is vital to encourage lighting designers in South Africa. The Haute Lumière Light Competition, managed by Pamboukian lightdesign, strives to do just this and, in 2016, identified four talented young designers to watch out for in future.

Biance Barnard's Articulight creates a dialogue between the contemporary user and actions at hand, hiding and revealing light as needed. The cordless (trans)portable design addresses a user's ever changing tasks and environments. From

hot-desking, lounge working to relaxed tasks, Articulight has a suitable scale and form to adapt to the moment. The tunable battery powered LED segments are articulated to different positions to obtain direct, indirect and ambient light.

Make-up is best applied in plenty of cool light. **Deirdre Holtzer** designed the Egoist as a fold up, lightweight, portable LED luminaire for make-up artists. Powered from the mains, solar energy or batteries, the light can be angled to reach a face in any position. A mirror is optional and especially useful when the light is being used by a hairstylist or for personal make-up. When off, only the frame is visible and when on only the face is seen.

The Sunrise Lamp designed by **Idalina Silva** is an elegant solution of a task light combined with mood lamp, providing functional light as well as ambience. A hidden clock is integrated into the base, giving the user the time of day. The base also has a USB port for the easy charge of most devices. The Sunrise Lamp is manufactured with environmentally friendly material and finished with a durable outer coating. Woodteck Design helped Idalina with prototyping.

Unlimited is a desk lamp and standing lamp at the same time and unrestricted in its function. Designed by **Jon-Peer Bouwer**, the LED luminaire can shine in any direction since the slim lampshade rotates 360° in both the vertical and horizontal planes. The dimmable circular lamp shade permits a bright light for drawing and a softer light for computer work, with a view through the shade itself. The dimmer control is on the top of the support. **LiD**



Developments of the DALI interface

The Digital Addressable Lighting Interface (DALI) has become one of the dominant interfaces of the lighting industry. This article by Henk Rotman of Philips Lighting, reflects on the latest DALI interface developments.

With the development of the first dimmable electronic ballasts for fluorescent lamps, in the 1980s, came the need for control devices able to tell the ballast to dim up or down and a 'language' for communication between dimmable ballasts and control devices. Since the technology was in its infancy and there was no standard, the main ballast suppliers looked into using their own interface. This, however, caused confusion and was seen as a road block in the development of the dimming market and the need for a standard interface became apparent.

Philips Lighting decided to look into interfaces offered by other applications and chose to base its interface for dimmable electronic ballasts on the 0-10 V control used in theatrical lighting but change it from a current source (the theatrical dimming standard) to a current sink (the dimming ballast interface). The decision to opt for a current sink interface created the opportunity to use passive control units, such as a simple potentiometer, and eliminated the requirement for a current source outside the ballast. The simplicity of the current sink along with the fact that it was used by a major player ensured that the current sink 1-10 V interface from Philips Lighting became the *de facto* standard in the market and eventually an IEC standard (IEC 60929 Annex E) as well as a standard in the USA (UL 935).

Although sufficient in many applications the 1-10 V interface does have some drawbacks:

- It offers power setting only and switching must be done by a separate control circuit.
- Control circuits must be hard-wired because ballasts cannot be addressed.
- Ballast feedback is not possible.
- There is signal degradation on long lines.
- Poor definition of minimum light levels (different ballasts can give different light levels at the same control voltage level).

Tridonic was the first company to address some of

these drawbacks when it introduced its proprietary Digital Serial Interface (DSI) in 1991. Building upon this interface in 1996, a group of European lighting companies began working on a digital interface in a COMEX workgroup. The key objective to make each ballast addressable while connecting them in parallel on the two control lines.

Birth of the DALI interface

Because the digital interface was intended for the lighting fraternity and able to address ballasts individually, DALI (Digital Addressable Lighting Interface) was born. When defining the standard, a firm decision was taken not to develop a complex building-control system with maximised functional capabilities, but to create instead a simple system with clearly defined structures. DALI is not designed to be a complex BUS system, but rather for intelligent, high-performance light management in a local zone. These functions can of course be integrated into a building management system by means of suitable interfaces.



Figure 1: Luminaire based components using the DALI interface.



DALI standardisation

Since its inception in the mid-nineties the DALI interface has developed into a widely accepted standard for lighting applications, including specification in the IEC standards 60929 (DALI version 0) and IEC 62386 (DALI versions 1 and 2). Bringing the DALI standards to the market, managing the DALI trademark, logo licensing and promoting the right conditions for growth did not fall within the remit of IEC, and was managed instead by the DALI AG working group. With a membership of about 140 lighting manufacturers, DALI AG was housed in the German Electrical and Electronic Manufacturer Association (ZVEI).

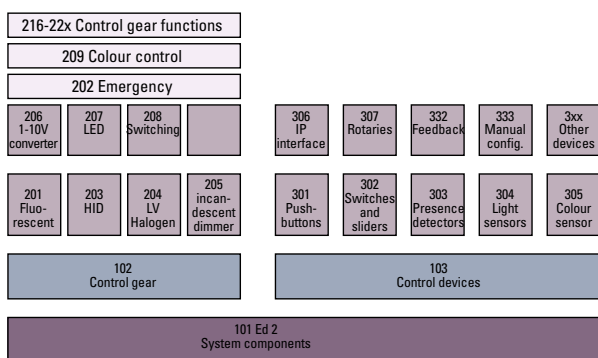


Figure 2: The parts of IEC 62386 standard that define DALI; control devices on the right, control gear on the left.

The growing use of DALI, however, increased the occurrence of field issues and undesirable system behaviour created by:

- Lack of knowledge of the standard by manufacturers developing DALI products.
- Ambiguities and different interpretations, resulting in
 - Commands implemented differently amongst different products
 - DALI timing aspects implemented differently

- Interoperability of controls and ballasts was not covered in IEC 62386 (DALI V1).
- No formal arrangement to address interoperability through DALI AG.

In 2014, the relevant IEC standard IEC 62386 was restructured, including:

- A major update on Part 101 (system components)
- A major update on Part 102 (control gear)
- The addition of a new Part 103 (control devices); other parts are planned, like dedicated input devices and additional functionality

Along with the restructuring of the standard came a broadening of scope through additional controls functionality; a systems approach to application controllers, sensors and switches; backward compatibility; and improved interoperability.

All-in-all, the 2014 restructuring of IEC 62386 resulted in a more robust, simplified, flexible and future proof DALI standard including additional functionality. What remained was the lack of an independent certification process to address interoperability.

DALI product compliance used to be based on self-declaration by the manufacturer, which carried the risk of inconsistencies and interoperability issues in the market. The latest DALI standard with its additional functionality, complexity and global outreach made it clear that an independent certification system was required to resolve the growing interoperability issues. This proved impossible to realise under the statutes of the ZVEI, and the DALI AG board decided that a new, independent organisation was needed; one with its own executive powers and control over strategy. It was the only way to speed up decision making and the implementation of new activities, including the much needed certification system. The DALI AG board therefore requested its own dissolution and as of March 30 this year, DALI AG no longer exists.

DiiA and DALI 2.0

The Digital Illumination Interface Alliance (DiiA) has been established as the new, open, global, industry-led consortium. Its stated aims are to grow the market for DALI lighting controls solutions, set up an independent certification scheme and work collaboratively with IEC to accelerate the development of new functionality in the IEC 62386 series.

The new body's first task is to create an independently verified testing, certification and logo licensing programme that gives the assurance of interoperability for products using digital addressable lighting interface technology. Part of the DiiA certification work will be to create and maintain test specifications according to the IEC 62386 series and develop test sequences on approved test equipment, for manufacturer's use. Product test results can be submitted for verification and approval on the DiiA website and will then be eligible for certification and licensing. Only certified products will be able to carry the certification mark, and only DiiA members will be able to certify their products. All certified devices will also be listed on the DiiA website to show which DALI products are interoperable.



Figure 3: The DALI v2 logo.

At the end of March 2017, DiiA had 24 members and this number is expected to increase rapidly owing to the dissolution of DALI AG and the fact that only DiiA members can certify their products using the approved tester. It is expected that luminaire companies will join DiiA as community members and will be able to use the DALI v2 logo if their luminaires contain DALI v2 certified components.

An indicative timeline for DiiA and DALI v2:

Feb - 17	Test sequences for Parts 101 & 102 available for download by developers
Mar - 17	DALI AG dissolved
Apr - 17	Cerification process for DALI v2 established for parts 101, 102, 103, 207
May - 17	DALI Trademark transferred to DiiA
Jun - 17	First DALI v2 certified products on the market – on-going process
Oct - 17	Certification process extended with parts 209, other relevant 2xx, and 3xx
Dec - 17	All relevant DALI AG members have become members of DiiA

Given recent developments and the advantages of DALI, it could be asked if there is still a place for the 1-10V interface in the market. The South-African market appears to have converted to DALI years ago; however, this is not the case for all markets. In Europe 1-10 V is still used in a limited number of outdoor applications in combination with stand-alone controls or in municipalities which, years ago, choose to standardise on 1-10 V.

A market where 1-10 V is still dominant and where DALI never really took off, is the USA. As a result of its lower cost and simple installation, the 1-10 V remains the leading interface in the US market. LID





Introducing a balance in window-blind automation

by Avi Klein, Control Applications

Double-skin glass façade buildings are becoming a fixed feature of the contemporary urban skyline. This trend, which involves an architectural shift to glass-based exteriors, considerably hastens the completion of building projects and provides energy-efficient solutions for modern structures [1].

This efficiency is owing to the full exploitation of natural sunlight and the isolation provided by the air sandwiched between the two glass layers, which helps keep out the heat or cold. During winter time, insulation is provided and the sandwiched air, warmed up by the sun, is thrown back into the facility's ventilation system [2].

The double-skin layout is typically designed for hosting motorised window-blind systems, providing superior climate control by letting in sunlight while blocking direct radiation. However, proper use of these blinds is at the mercy of users inside the offices or living spaces. When unattended, the blinds might inadvertently remain in the up position, enabling the ingress of unwanted direct solar radiation, or might be left down in the evening, preventing needed sunlight the next morning.

Taking advantage of its extensive experience in the design of DDC controllers and control systems for Building Management Systems (BMSs), Control Applications has designed the Sun Light Tracker (SLT) controller for motorised window-blind automation which, as its name suggests, 'tracks the sun'.

Sun-tracking is accomplished by programming the controller with the precise location coordinates and bearing of each of a building's facades. Using these parameters and thus factoring the building's position as a point on the globe, the SLT's advanced algorithm, running Cartesian equations, calculates the exact angle at which the sun strikes each side of the building at any given moment of the day. This allows the company to determine the optimal aperture needed for the window-blinds system.

Using extraordinarily precise motors, the SLT

enables an infinitesimal level of precise control over aperture, allowing the full utilisation of the SLT's smart algorithm. Notwithstanding the automatic solution, users can manually override the control at any specific window.

Equipped with a standard RS485 communication port, the SLT is integrated into the BMS infrastructure, supporting Modbus and BACnet protocols.

Green construction and energy efficiency are not just buzzwords in today's world of depleting resources. Costs spent on climate-control and lighting, especially in public and industrial facilities are significant, and solutions that optimise economising on both simultaneously are rare.

The SLT is designed to block the direct sun on hot summer days, saving significantly on HVAC expenses [1], while at the same time making sure to allow in the optimal amount of natural, indirect light.

Beyond the obvious economic considerations, having an entire building exterior operate automatically affords a few additional bonuses, one of which is within the realms of aesthetics. Instead of a building's façade being a hodge-podge of open and shut blinds, an automated system gives a clean and neat appearance of aesthetic uniformity.

Having integrated controllers close to every few motorised blinds on a building's façade has an additional upshot: fully, detailed control infrastructure for the layout of external LED illumination of a building's façade. LED lighting layouts allow for the creation of intricate patterns, or even shapes and text. Using the SLT's wiring layout provides a built-in infrastructure for the control layout of such LED lighting, eliminating the need for extra wiring and installations. **LID**

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Sun International's Times Square Casino: altogether striking



Sun International's dazzling Time Square Casino opened to great fanfare on April 1 this year. It is Sun International's largest investment in a casino development in 15 years and, being part of the green Menlyn Maine precinct, it was important that its considerable and jaw-dropping light installation was seamlessly managed. *Lighting in Design* spoke to Ryan Ashford-Smit of Triac, the company responsible for lighting control throughout the casino complex

The casino floor spans over 7530 m² on two levels and makes way for the time-themed, futuristically-designed casino with 988 digital screens that are used to generate evolving mood experiences.

At its widest point, its massive roof spans 85 m and covers over 10 000 m².

According to Ashford-Smit, the project pushed the boundaries of LED dimming technology, incorporating special lighting effects and light synchronisation throughout the day so "the energy and vibe is continuously emotive"

In an installation that is altogether striking, what stands out upon entry to the casino are the matrices of LED channels that form patterns of light on both floors of the casino and about a mesh of fibre optic lighting that hangs above the bar area. Each of the channels links to a downlighter, of which there are many to ensure the correct lumen levels to the gam-



Photographs by Quintin Erasmus.



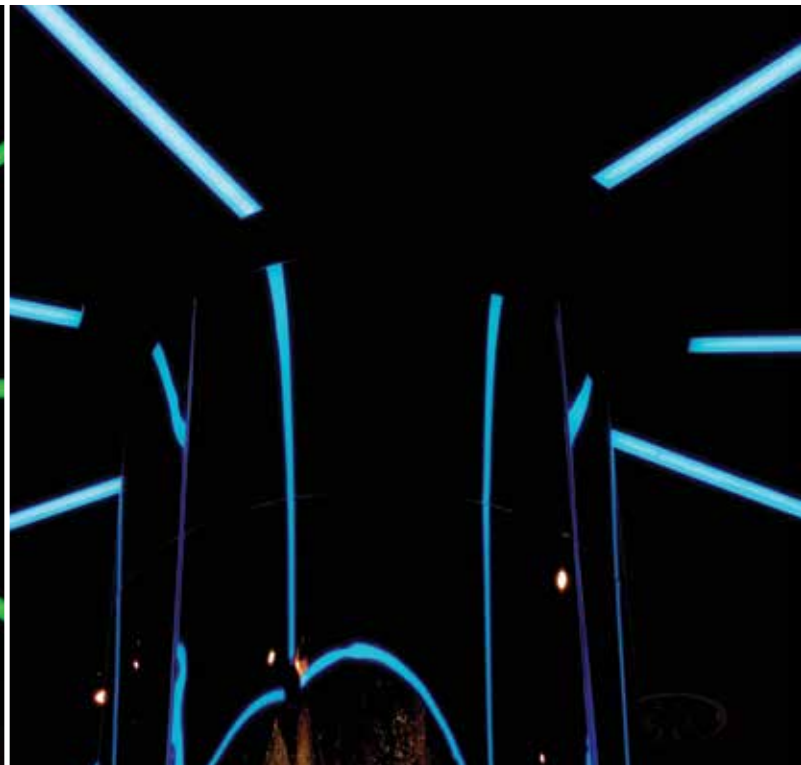
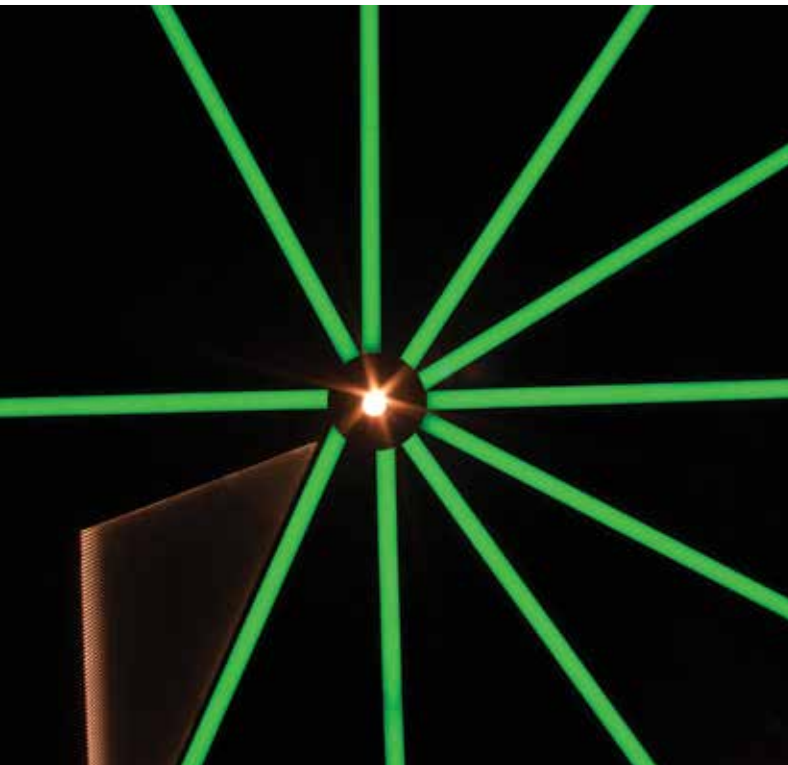
ing tables, while strategically placed infinity mirror tunnel LED lamps add to the extraordinary effect. This portion of the lighting installation was by Giantlight.

Ashford-Smit says the concept of using geometric patterns of light and colour sequencing to transport visitors to a radical new world is very successful. The different colours and contrasts subtly change the atmosphere; chromotherapeutically stimulating a variety of feelings, moods and emotions; disrupting circadian cycles and keeping people awake and stimulated. This is the opportunity a casino affords, and is what differentiates Times Square from all the others.

The LED channels are populated with RGBW

LEDs on a circular download. The installation cycles through 26 scenes each day to create the chosen spectrum and, according to Ashford-Smit, the cross-fade between colours is so seamless it is barely noticeable.

Lighting control was central to the success of the installation, not only for the scene changes and dimming control but also to achieve the maximum energy saving. Triac used the Intellibus system, a South African designed and manufactured digital lighting control system. Bespoke PWM dimming panels control the RGBW LED channels, whilst Intellibus LED low power dimmer modules control all the LED downlights. The four-channel PWM dim-



mers offer direct linear LED control for precise and predictable control of each channel simultaneously.

With over 800 channels, the installation is large. There are in excess of 40 dimming panels, neatly divided into eight board locations, each controlling a particular segment of the casino floor on both levels. Each segment has a 'commander', and all the controllers are linked on their own dedicated networks to create one robust prevailing integrated system.

On top of this, Triac incorporated an Axiom controller and touch screens to manage the network and integrate various third party systems, such as audio-visual. It also interfaces with the casino's main control system to create special effects

at certain times – such as multiple flashes and sounds to celebrate a jackpot win – or for certain occasions i.e. red for Valentine's Day. The system also incorporates the lighting around the periphery, including restaurants, to ensure these light levels are maintained and controlled to benefit the tenants while complementing the casino floor.

Lighting design was by Gabriel Hugo of LYT; CKR's Ryan Moolman was the principal electrical engineer; Giantlight was responsible for manufacturing and installing the matrix of luminaires and Triac managed the lighting control throughout. With this team and countless other contributors, the fantasy that is Times Square Casino was realised. **LID**

Classic Victorian LED luminaire

BEKA Schröder, Africa's leading manufacturer of energy efficient luminaires, has introduced a classic LED luminaire into the South African Market.

During the Victorian era, major improvements in the fields of science and engineering led to huge expansion in the lighting industry. Having previously been restricted to candles and firelight, the effect of introducing controllable light to society was enormous. The Victorian passion led to the creation of oil and gas lamps.

The Valentino LED's aesthetic design reflects this era in our history. Under its classical exterior, the luminaire incorporates leading-edge LED technology.

The Valentino LED is stylish, highly efficient and contributes to the well-being and safety of people in public spaces. This luminaire is particularly suited to lighting parks, squares, pedestrian areas, city centres and residential areas. It is also suitable for decorative lighting of business parks, golf estates and wine farms with a sense of Victorian charm.

The Valentino LED is designed to operate LED light sources of up to 75 W. It can be offered with a classic Gardone column in cast steel or with a wall bracket for suspended or post-top mounting. An embellishment conceals the mounting nut while providing a smooth finishing surface at the base of the luminaire. Different protector options, namely

clear, structured or opal, are available for various effects. It is offered in most RAL or AKZO colours to help create an atmosphere that is elegant.

Its use of LEDs minimises power consumption and permits low height installations without generating intrusive light for the inhabitants of buildings. With no upper flux, the Valentino LED limits light pollution. Its long lasting design of recyclable materials guarantees responsible use of natural resources. It can operate with a photocell, a scheduled dimming system, a Constant Light Output or a complete remote Owlet management system. It can also be equipped with a motion detection unit.

BEKA Schröder's ambience selection provides efficient lighting systems in cities to help improve quality of life. Lighting must fulfil not only aesthetic criteria but also requirements related to photometric performance. The company offers an extensive range of highly efficient decorative luminaires, ranging from contemporary to traditional designs, using conventional or LED light sources.



BEKA Schröder: +27 (0)11 238 0162

Valeto Smart automation system

SLV's extensive range of lighting products – available locally through the Magnet Group's SLV Pro-Partners – has been enhanced with launch of a new home automation system, designed to offer improved safety, comfort and energy management.

The SLV Valeto Smart wireless lighting and home control system has a modular design, with the flexibility to control selected luminaires, a single room, or the entire house. An important feature of the control system is that it is compatible with existing installations and has the adaptability for components to be added or changed, without the entire system having to be replaced.

SLV continuously expands its features for each system and will soon be launching an App for time switching functions and the simulation of a presence in the house. Motion and window/door closing sensors will also form part of the system to provide greater home security.

The Valeto Smart system is based on Zigbee radio frequency protocol wireless technology for home automation, which uses the existing electrical infrastructure and therefore requires no special or additional wiring. The Valeto works in conjunction with Zigbee technology to perform switching and dimming functions for lighting via remote control.

SLV lighting products are also available through the SLV online store which provides the ideal platform for safe and convenient online shopping.



SLV: www.slv-lighting.co.za

Lighting control system at Torbay Hospital

Open Technology's intelligent lighting control system, LiGO, is fully operational at Torbay hospital's new 14-bed intensive care unit, which opened earlier this year.

LiGO's features include circadian balancing, which ensures that the colour temperature of the lighting matches the times of day and night. This function is helpful in ensuring that intensive care patients have better sleep patterns to aid their recovery.

The lighting control system also makes the work of hospital staff easier. Lighting in all areas of the ward, including bed bays, offices and corridors, can be controlled locally and configured to the clinicians' needs. The system is controlled by easy-to-use touchscreen interfaces located in each of the two nurses' stations in the unit.

The LiGO lighting control system was easily integrated with the hospital's Trend Building Management System (BMS), which was installed by Trend's approved partner Colton Controls. Overall system design was carried out by Hoare Lee in Plymouth and installation was completed by Totus Engineering.

According to Open Technology's managing director Chris Bedford, the system was integrated within a day, before the unit was completed, and after the staff had an all-important opportunity to see how the specified operations worked for them. Minor but important changes were required and LiGO was able to achieve these in real-time. "In fact," said Bedford, "in the time it took the commissioning team to have a coffee break, the changes were implemented and demonstrated to the team's satisfaction."

The installation of the DALI System by Totus Engineering was fault free, ensuring commissioning was straight forward.

Open Technology:
www.opentechnologyuk.com



Glitter, gold and great awards

Not all that glitters is gold, but a touch of sparkle never did any harm. Euro Nouveau's collection of bespoke lighting from top European brands and manufacturers includes a number of products that have been awarded some of the world's top design prizes.

Time and again brands like Slamp, Fontana Arte, Inarchi and Karboxx are awarded among the most coveted forms of recognition in the industry for their innovative design, superior functionality and cutting-edge innovation.

While awards are not the sole motivating factor for including the lights in the Euro Nouveau collection, they do offer insight into the prevailing sentiment around trends and customer needs and desires.

The awards are typically judged by an all-star cast of design and innovation experts who lend the necessary gravitas to the prizegivings.

While the aesthetics of the lights are a key consideration for recognition, none of these prizes is awarded on visual appeal alone. Structural functionality, incorporation of the latest technology and considerate use of materials are also considered before a design is awarded a title.

The Euro Nouveau collection has received awards across the world, from Brazil to Spain, Italy, the UK and China, which means that Euro Nouveau really does offer discerning South African clients a world-class, award-winning selection of luminaires.

Brightest stars

Some of the more noteworthy awards Euro Nouveau products have received include the Red Dot Design Award, the ArchiExpo I-Novo Award and the Wallpaper Design Award.

The i-Novo Awards, for example, seek to reward creativity, recognise innovation and celebrate sustainability by awarding those products that improve the architecture and design industry's standards through innovation. In 2016, Italian brand Karboxx's ZERO1 Suspended Lamp, designed by Princic and Righi Architects, was awarded third place in the design category of this award.

Presented by the Design Zentrum Nordrhein Westfalen in Germany, the Red Dot Award is arguably one of the best-known and most significant awards in the international design industry. Euro Nouveau is thus proud to count a number of Red Dot Winners, including Inarchi's Ray Wall Lamp, among its lights.



Serien Curling Light



Ray Wall Lamp



ZERO1 Suspended Lamp

Euro Nouveau: +27 (0) 21 528 8400



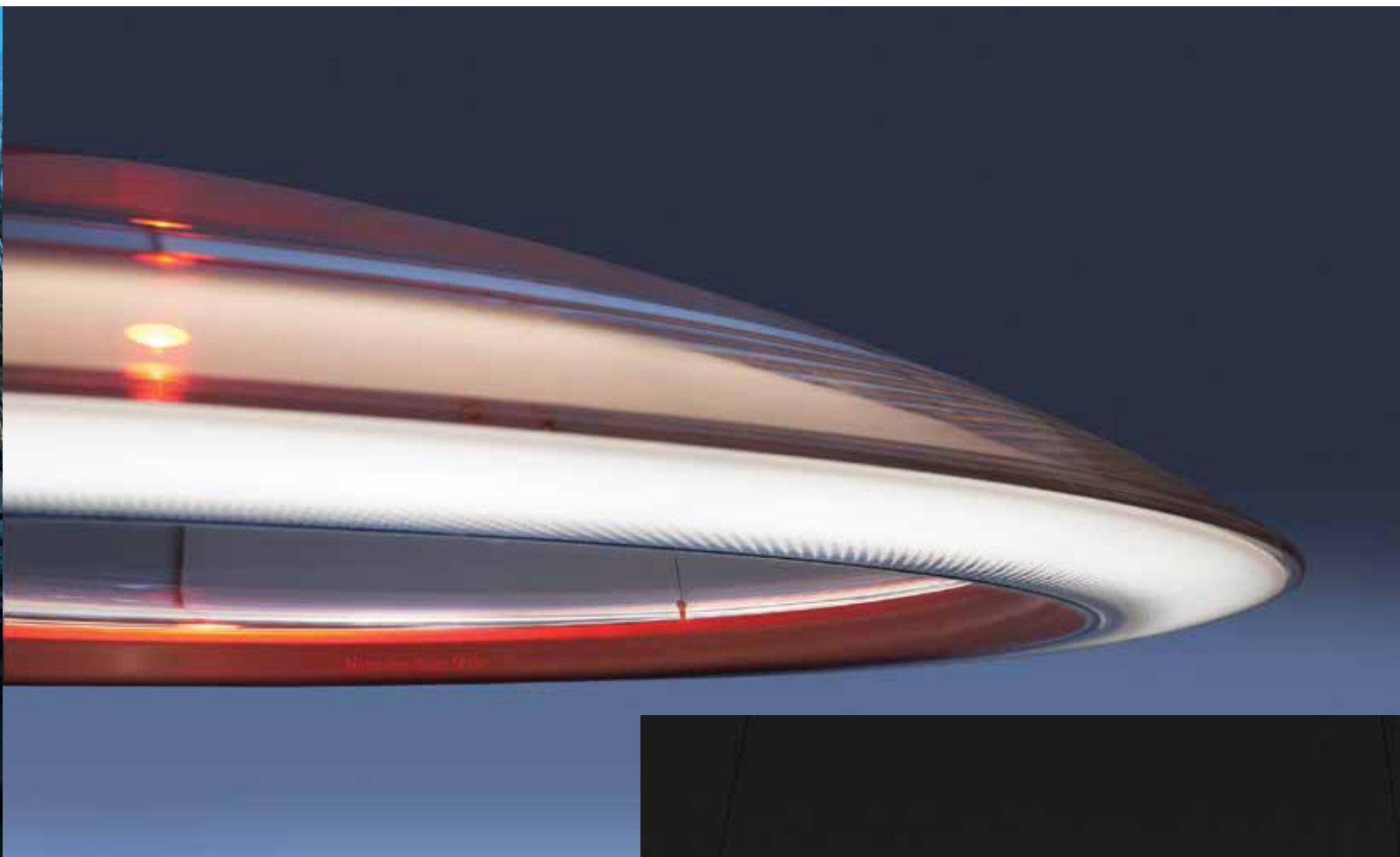
Images courtesy: Artemide.



Artemide recognised for top quality design

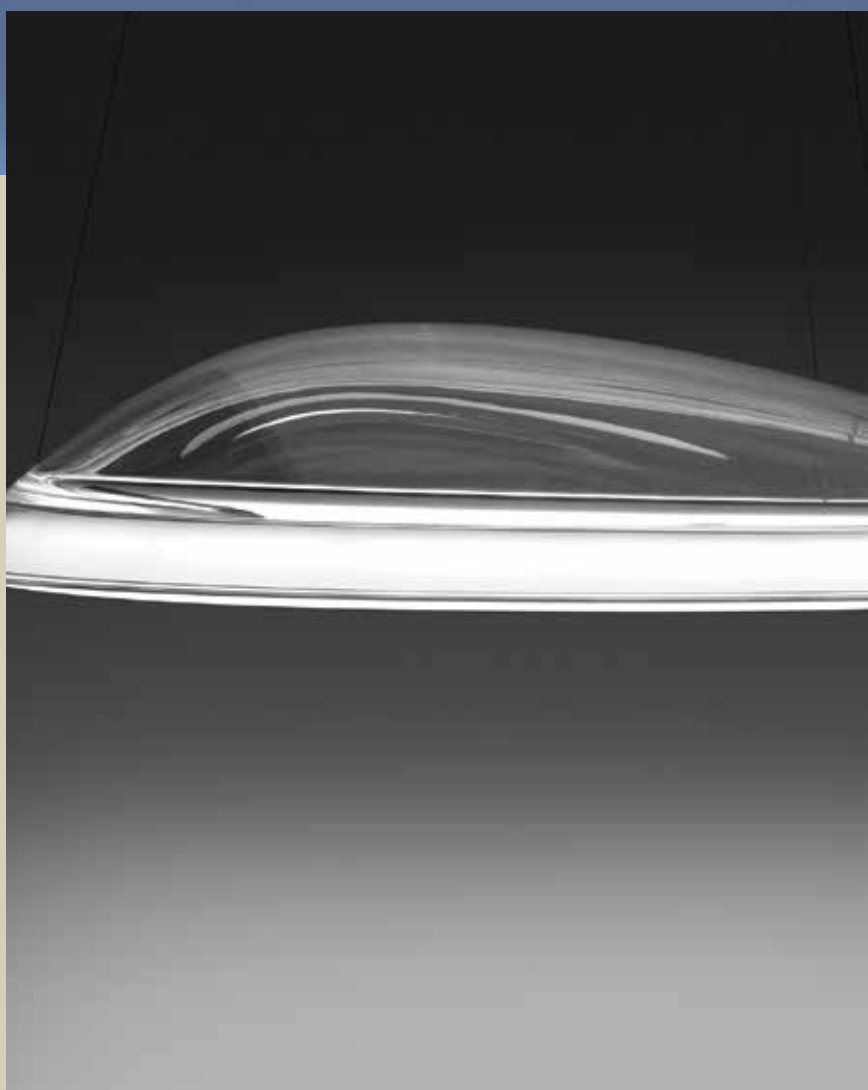
Renowned Italian lighting manufacturer Artemide received a host of distinctions at this year's Red Dot Design Awards. The jury selected Ameluna and Alphabet of Light in the 'Best of the Best' category for top design quality and pioneering achievement.

Alphabet of light: The modular lighting system designed by the Bjarke Ingels Group (BIG) comprises four elements that can be combined as desired. Two linear segments of different lengths generate a variable vocabulary of forms in combination with two segments that are curved at different angles. The individual sections can be connected easily and seamlessly by means of an electromagnetic click mechanism. Its designers Jakob Lange and Bjarke Ingels were inspired by the retro-futuristic appearance of neon tubes. They have replaced the technologically obsolete gas-filled fluorescent tubes with highly efficient LEDs. Influenced by the aesthetics of international modernity and the light art of the 1960s, Alphabet of Light is used to create customised typographies whose playful sense of precision is inherent in Artemide's DNA.



Ameluna: A cooperation between Artemide and Mercedes-Benz Style has produced the futuristic pendant lamp Ameluna, an optoelectronic masterpiece with revolutionary potential. The light is characterised by leading-edge technology combined with dynamic design, and looks something like a mystical bioluminescent deep-sea creature. Ameluna demonstrates the full potential of the two companies who, in their respective disciplines, are among the leading innovators in the combination of functionality and form. Artemide and Mercedes-Benz Style are taking a new path with Ameluna: light is not only conceived as an intelligent design element, but aesthetics and the task of the luminous object are brilliantly fused into a complete work of art. The dynamically convex luminous body, with a diameter of 750 mm and height of 150 mm, opens up into a crown of LEDs that gently surrounds the transparent volume. The possibility of transferring the individually defined lighting mood from the Mercedes-Benz E-Class to the apartment by means of an app on the smartphone combines aesthetics with intelligence and demonstrates a fine flair for cutting-edge technologies.

Artemide: artemide.com/home/



Delta range of architectural luminaires

RT Systems has been in business for 17 years and believes in a multi-vendor strategy in association with a group of well-established, trusted partners. One of these, Taiwanese company Delta Electronics, offers a comprehensive range of LED products and system integration services to meet customer lighting requirements.

The RT Systems Delta lighting range includes office, industrial and outdoor luminaires. Manufactured in Slovakia, to European design and standards, the office range includes three architectural recessed troffers, the Cirrus, the Ridge and the Athor.

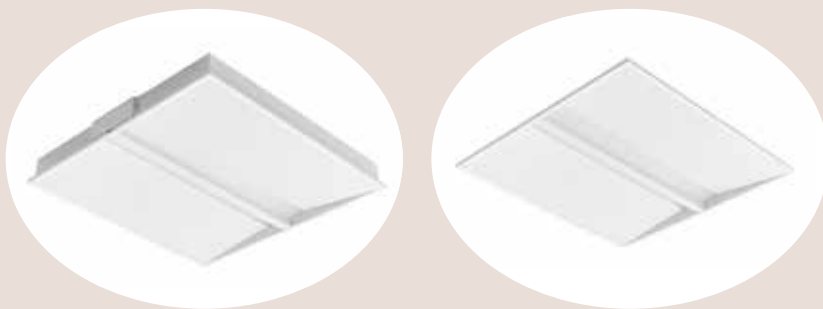
Cirrus is an advanced LED luminaire of minimalist design with an optical system that ensures uniform light distribution of the working area. The product is an optimum solution for offices as it is available in a tunable white version on request. Cirrus is a square shaped, ceiling recessed luminaire that can be used both for plasterboard and 625 x 625 ceiling systems, with the option of either DALI or 1-10 V dimming. It is designed for long-term performance (50 000 hours/L80) and high efficiency (up to 102 lm/W) and is ideal for offices, the retail environment and various other applications.

Athor provides excellent light quality and parameters to guarantee visual comfort and optimal efficiency. Built around an innovative LED module with integrated thermal management optical system, the light from this luminaire appears to be emitted directly from the ceiling and its low glare (UGR<19) makes it ideal for interior application. It offers a high efficacy of up to 104 lm/W and a lifetime of 50 000 hours/L80. Athor offers the option of either DALI or 1-10 V dimming and is available in square or linear shapes.

The Ridge, also available in linear or square options, has an efficacy of 94 lm/W and lifetime of 50 000 hours/LM80. This luminaire can be recessed, surfaced or suspended and can also be mounted in

plasterboard ceilings. DALI or 1-10 V drivers can be applied to all product versions and it has a heatsink housing with excellent heat dissipation qualities.

RT Systems: www.rtsystems.co.za



THIS IS NOT A DOCUMENT YOU CAN ALWAYS TRUST



A number of electrical products used by consumers and installed in buildings for use by occupants are subject to compulsory specifications in order to protect people. These requirements also have the effect of protecting assets.

The Letter of Authority (LOA), issued in good faith by the National Regulator for Compulsory Specifications (NRCS) on the strength of a product's test report by an accredited laboratory, is usually produced by distributors as proof of compliance with regulations and their safety requirements.

For one or more of the following reasons, and possibly others, this is not always the case:

1. Unscrupulous manufacturers and distributors submit specially-prepared, "golden samples", solely for the purpose of obtaining the LOA.
2. Manufacturers' *quality-control* processes may be, or may become, deficient.
3. Changes in a product's internal *design*, or *materials* and *components* used, may render it non-compliant, whilst its appearance remains the same and compatible with its description on the LOA.
4. *Errors and oversights* by the testing laboratory, whose report is the basis for the LOA.
5. Fraudulent test reports and Letters of Authority produced by unscrupulous suppliers *

This reality and, amongst other reasons, the regulator's inability to conduct *effective surveillance* of the market to monitor compliance, results in the proliferation of sub-standard electrical products.

What to do? See the SAFEhouse website for a Guide to the Regulation of Electrical Products.

*Resellers of products may accept photocopies of LOAs as proof of compliance and not bother to validate them. Validation is difficult if not impossible.

SAFEhouse members have signed a code of conduct: Your assurance of commitment to offer only safe electrical products.

SAFEhouse membership is suppliers' assurance to customers of responsible behaviour and of customers' safety as a priority. SAFEhouse members regulate themselves. SAFEhouse is primarily a communications association that informs customers of safety requirements and occurrences of non-compliance with such requirements.



The SAFEhouse Association is a non-profit, industry organisation committed to the fight against sub-standard, unsafe electrical products.

For more information contact:

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Pierre Nothard: Tel: 011 396 8140 | Email: pierren@safehousesa.co.za

www.safehousesa.co.za



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Product Features and Accessories

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- Colour temperature 4000K (3000K and 6500K on request)
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- Tridonic LED module and driver
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- UV stabilised, self-extinguishing polycarbonate diffuser with photo-engraved interior and smooth outer surface
- Self-extinguishing polycarbonate body
- Anti-tamper polycarbonate snap-lock latches (stainless steel on request)
- Hingeable gear tray
- Complete with mounting accessories
- DALI/DSI and dimmable options available
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Applications

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- Cold storage facilities
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Life/Maintenance

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