

Dynamic lighting for **Tashas** in the square

Light + Building 2016

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Numbers vary according to the source but it is clear from any research you care to reference that the number of devices which communicate via the Internet is in the billions and is set to increase to between 24 and 35 billion by 2020. The impact of this new 'industrial revolution' on lighting is significant and was evident at the Light + Building Fair in Frankfurt earlier this year.

Lighting is no longer just about illumination. Traditional manufacturers all unveiled systems that offer compatibility: lighting *with* a professional service – light management, location-based messaging, broadcasting, electric vehicle charging or all of the above. When visiting client stands or listening to their presentations it was something of a relief to hear that some of the technology is still used for 'human-centric' lighting with developments allowing for control of own office lighting or, within the home, the modern switch enabling people to adjust their light – pushing to change colour, rotating to dim. It was even more pleasing to visit stands that focused on the design and appeal of the luminaire. Technology has become key to lighting design and designers, whether they be lighting designers, architects or engineers, will have to educate themselves as to how a lighting design can be developed.

Light is a clock generator and without it and the timing it provides, our internal clock goes out of order. Even brightly illuminated interiors can, from a biological point of view, be dark and therefore unable to regulate our internal clocks. Targeted changes of the light colour during the day enhance our well-being and consequently improve our performance and comfort. In line with this, all the lighting in the new Tashas restaurant in Nelson Mandela Square is programmed to an astronomical clock. The interior lighting is aligned with local solar time and adjusts accordingly throughout the day.

This alignment with the natural circadian cycle of light is comforting, and especially inviting and relaxing in a restaurant environment, but is by no means the only reason why the lighting in Tashas is excellent. In this installation, by Pamboukian Lightdesign, the lighting design was part of the interior design process from the start and the client, represented by Natasha Sideris, appreciated the importance of good lighting. The result is that the lighting throughout is effective, appealing and comfortable; in other words, just right.

The lighting solution at the Zeitz Museum of Contemporary Art Africa on the V&A Waterfront in Cape Town also plays an important role in defining visitor experience. Arup and Heathwick Studio, making the most of natural light, have followed a 24 hour lighting philosophy for the atrium space, carefully balancing and combining daylight and electric lighting to provide a subtle transition to electric lighting only once the sun has dimmed.

Technology played a key role in both these installations. It can be complicated, and the Internet of Things will undoubtedly be the next big wave of disruptive innovation, but many innovations have a steep learning curve and in a few years what is now arcane will become commonplace.

Till next time...

Karen

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Editor's comment.



Setting a new benchmark in lighting design

The new Tashas restaurant in Sandton's Nelson Mandela Square encompasses four different zones and there is a lighting scenario for each. Leigh Darroll spoke to Paul Pamboukian about the thought that went into this installation.



Smart lighting and beyond

Gianni Minetti of Paradox Engineering SA takes a look at how cities can become smarter in managing their resources. By framing Smart Lighting in the IoT perspective, cities can take steps towards building a smart urban network.



Façade lighting for The Towers

The Standard Bank building in Cape Town's CBD has been revamped. Christine Binedell of QDP Lighting & Electrical Design was part of the team responsible for creating façade lighting for the building and an engaging open space for the public.



Teaching old lighting systems new tricks

Lighting manufacturers need new business models and connected lighting 2.0 has arrived at a time when creativity is required to add value to long-lived LED products that rarely need replacing. Chuck Ross explains.



The future of lighting

A brief overview Light + Building 2016 and a look at the innovations and products some of our clients had on display in Frankfurt.



Bathed in soft light

The *Musée Bourdelle* in Paris has been given a lighting upgrade to enhance the dynamic style of Antoine Bourdelle's monumental sculptures, both inside the museum and in its landscaped gardens.



Products



Setting a new benchmark in lighting design

by Leigh Darroll

Located at the south-west corner of Nelson Mandela Square, adjacent to the thoroughfare that leads from the open piazza into the shopping mall, the new Tashas Café claims its space as an authentic 'street-side' café. The outdoor terrace is open to the square and the outdoor elements. Inside, the café opens to the mall and the passing pedestrian traffic.

Pamboukian Lightdesign was appointed to undertake the lighting design for this new Tashas. Lighting designer Paul Pamboukian points out that this iteration of Tashas differs from others in the chain in that it includes a fine dining area (with its own separate menu), as well the bistro-type café and bar for which Tashas is best known. The fine dining area, known as The Flamingo Room, is set back from the open café and the passing parade, occupying its own defined space though clearly part of the unified whole and forming the pivot between the indoor café and the outdoor terrace.

"Essentially the restaurant encompasses four different zones: the outdoor terrace, the entrance area, the fine dining area and the café," says Pamboukian. "We undertook an analysis of these areas and developed lighting scenarios for each which we proposed to the client."

Pamboukian notes that Natasha Sideris, who conceived the original Tashas before selling it on to Famous Brands to become a limited franchise chain, where she is still the CEO for Tashas and very much involved, holds a strong personal interest in the Mandela Square venture. She maintains a hands-on approach in the business and every detail is considered.

Tashas already has a distinctive design ethos, with each café drawing inspiration from and responding to the context in which it is located. Regarding the Mandela Square project, Pamboukian says it was refreshing to work with a client who recognises the value of good design and

A wash of light on the back wall creates an immediate, warm connection between this tiny cubicle and the passing trade.

tashas
NELSON MANDELA SQUARE

appreciates the importance of good lighting. He emphasises that lighting is particularly important in the hospitality environment. It can make the difference that invites people to sit down and feel comfortable and at ease in a restaurant rather than hassled and uncomfortable. "Natasha understands this," he says.

Consequently, the lighting design was very much part of the whole interior design process from the start. Nadine Bak was responsible for the interior design and Pamboukian Lightdesign worked closely with her as well as the other designers, artists and contractors involved in the project. "It was very much a cooperative process," says Pamboukian.

"The successful integration of lighting in any space needs this kind of cooperation, which makes the space work as a unit rather than an amalgamation of bits." In effect, the whole becomes greater than the sum of the parts.

The entrance

The entrance to Tashas from the thoroughfare to the mall is celebrated by an eye-catching almost fluid, sculptural installation, designed by Michael Hyam of Smelt Glass Studios. Conceptualised as a representation of the baobab in flower, with its curving branches formed in dark steel and the flowers in folding discs of opaque white glass, this is suspended above the entrance.

A lot of thought went into the positioning of this sculptural piece within the space and how it should be lit.

"We used profile spotlights which are mounted in niches high up on the walls (seven metres up in this double volume) and focused across the space to light up the installation," Pamboukian explains. At first glance, the sculpture itself appears to hold the light source, but it is catching and reflecting the projected light.

During the day, this is complemented by natural light coming through the clear glazed entranceway to the mall and the glazed arches at the upper level of the building's façade.

"We also used gobos here, which break up the light," Pamboukian adds, "so that at night the projected light from the profile spotlights throws shadows as well as light across the entrance installation and creates the effect, for people in the restaurant, that they are sitting under a tree.

"Very softly coloured light is introduced – a soft steel blue and pastel pink – to emphasise the shadowy effect and add to the night-time mood



change. We spent a lot of time testing and selecting the right colours and the client was very involved in deciding what worked best."

The Flamingo Room

In The Flamingo Room the vertical surfaces are emphasised, lighting up the walls to create an intimate space enclosed by warm light. Low glare pin spots are positioned over each table.

All the lighting in the restaurant is programmed to an astronomical clock, so that the interior lighting is aligned with local solar time and adjusts accordingly though the day – from the brighter morning to midday light, through the softer afternoon to dimmer evening and night-time light. Pamboukian explains that this tracking or alignment with the natural circadian cycle of light is very comforting. The human body's natural rhythm is attuned to it and it is therefore especially inviting and relaxing in a restaurant environment.

The pin spots were selected to accentuate the intimate feel for each table, avoiding a general wash of light and rather punctuating the space with focus points, making each table come alive. The pin spots are positioned for a set table arrangement and even if this changes for particular sittings, the distribution of the spots is designed to work effectively.

Pamboukian emphasises that warm light has been used throughout the restaurant, with colour temperature at nothing less than 2700 K and accents up to 3000 K. "Warm light is essential to creating a space where people can relax," he says.

"In this context, it is especially important in differentiating the restaurant space from the shopping mall where cooler white light predominates."

The street-side café

In the general seating area of the café, which is really an extension of the mall, more general lighting is used, creating a soft wash of light over the tables. Some spotlights light up plants at corner placements and other elements which help to demarcate the café space. The table lamps on the bar counter, standing on brass feet with hooded shades in the same opaque white glass as is used in the entrance sculpture, were designed by Bak.

"We persuaded the shopping centre's management to link the warm light selected for Tashas across the thoroughfare to the restaurant strip that runs along the southern edge of the square," says Pamboukian. This ceiling-level 'bridge' of warm light, especially noticeable at night, unites the hospitality suite alongside the square and implies a transitional space – inviting people to slow down – between the bright white light of the shopping mall circuits and the outdoor piazza.

Though very subtle, the physical effects of light and lighting are very real. "This is why colour and intensity are such critical factors," Pamboukian notes.

The outdoor terrace

The terrace has a garden feel to it, with soft light, feature panels on the walls and planting. It invites people to experience the outdoor space, the sun-

light, night-time and the changing weather, rather than shutting itself off from the elements.

Every detail

At Tashas it seems that nothing is left to afterthought, every detail is carefully thought through. Even the bathroom, tucked away to a corner of the outdoor terrace, invites patrons to a walk outside experience and the bathroom itself Pamboukian describes as "something of a fantasy space". It is thoughtfully appointed with sophisticated finishes, subtle lighting, a wall of artworks and a collection of small sculptures.

The Tashas takeaway kiosk, which is positioned around the corner from the main restaurant, also received its share of attention. Here the lighting is very simple – a wash of light up the back wall and LED backlighting to the shopfront signage. This emphasis again to the vertical planes creates an immediate connection between this tiny cubicle (about three metres square) tucked into the wall and the passing trade at this entranceway to the shopping mall. "Lighting the vertical surfaces contains the space and creates a friendly, connecting ambience," says Pamboukian.

Technical specifications

Joao Viegas of Pamboukian Lightdesign was the project leader for the Tashas project, handling all the lighting specifications, sourcing the right lights in terms of colour, intensity, beam angles, dimmability, ensuring that they were compatible with the

General lighting creates a soft wash of warm light over the tables in the open seating area.



control system and working with the consultants and contractors through the installation on site.

In the Flamingo Room, for example, Viegas worked with the ceiling contractor to create cones in the ceiling panels that would allow for the pin spots to be pulled into the ceiling space in order to limit the beam angle and reduce glare to an absolute minimum – even with the high quality, low glare lamps specified here. Pamboukian flags glare as a critical factor to be avoided in restaurants.

As the project proceeded a lot of time was spent on *in-situ* testing and fine-tuning the lighting with the interior design team and the client, testing different colours and different colour combinations to create the desired effect. “In the profile spotlights, for example, after testing stronger and more highly saturated colours, which proved too harsh – creating a kind of Hollywood effect, we finally decided on very subtle colour, which works,” says Pamboukian.

He also acknowledges Imperial Electrical, the electrical contractors that handled the lighting installation. “They were already tuned into the Tashas philosophy and the design demands of the project and were part of the cooperative process. They went beyond the normal scope of work in testing, adjusting and fine-tuning the lighting with us. It’s very rare to find a contractor willing to go to such lengths to get the job right and do it well,” he says.

In the final analysis, Pamboukian says, “The lighting works well, but it’s not noticeable – it’s not a stand-out feature – and this is as it should be. It just feels right. It’s not offensive or obtrusive. It’s dynamic, adjusting with the changing natural

light; it’s alive, not static. Fortunately technology is progressing to the degree that makes it economic and feasible to change the colour and intensity of lighting through the day, as we have done here at Tashas.” **LID**



Profile spotlights mounted on the walls project subtly coloured light across the sculptural installation.



In the Flamingo Room light is used to emphasise the vertical surfaces.



Subtle lighting reveals the sophisticated finishes.

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Smart lighting and beyond

by Gianni Minetti, President and CEO of Paradox Engineering SA

The world's growing population is increasingly moving to urban areas: by 2050, about 70% of people will live in cities and we'll count around 40 megacities with more than 10 billion inhabitants across the globe, most of them in emerging countries. Urban infrastructures will continue to be placed under severe stress as it becomes harder to satisfy people's expectations of quality of life and quality of services. These assumptions form the core of the intense debate around smart city models: how can a city become smarter in managing its own infrastructure and resources, leading the way to sustainable development in a far-sighted perspective?

Street lighting is a domain many communities around the globe have begun focusing on: it represents a major cost item in a city's balance sheet, has a clear impact on liveability and affects environmental performance. The Smart Lighting Alliance estimates there are about four billion street lamps in the world, while latest data from the International Energy Agency indicates that lighting represents almost 20% of global electricity consumption and 6% of global carbon dioxide emissions.

Typically, smart lighting implies switching to LED technologies, which would cut energy use by at least 50%. However, these benefits can be even higher if existing infrastructures are turned into smart networks to better control energy consumption and increase lighting efficiency.

A modular wireless full mesh network platform is the ideal technology for putting this vision into practice as it allows cities to build a self-configuring and self-healing architecture which can easily be managed and possibly scaled over time. By connecting luminaires to an integrated network, these acquire the capability to receive/transmit data and execute commands, thus enabling remote monitoring and control functions.

As a result, municipalities or local service providers are able to define a customised lighting

pattern for single districts, streets and even lamps, managing on/off and dimming actions according to programmed schedules (i.e. combinations of time, daily solar times, specific local circumstances or events, weekly variations for given groups, etc.), environmental inputs (i.e. measured light levels, temperature, motion, etc.) or demand (i.e. in case of emergencies or public security issues). Benefits in terms of energy efficiency, reduction of overall footprint and public money savings are significant, especially if combined with human/vehicle motion sensors and other similar devices.

Evidence-based experience demonstrates that solutions based on open standards stand out as truly future proof investments, since cities are not locked into any proprietary technology, but are granted interoperability and full compatibility with any existing or future field devices, applications and systems. IETF 6LowPAN protocol and IPv6 addressing is advised to ensure network performance, reliability, appropriate data security levels and fast-track innovation.

Finally, a centralised software management suite is recommended for managing distributed networks over large areas. It should enable full control of all network components, monitoring and management of measures and alarms generated by controlled devices, generation of reports and data export.

However, lighting is not only an essential public service: it should be thought of as a citywide distributed communication system, connecting domestic and business users, enabling private or public activity. It is a network of objects producing and consuming data – and data is value, a key resource to be transformed into actionable intelligence to feed decision making.

By framing smart lighting in the Internet of Things (IoT), cities can go a step further and leverage street lighting as the backbone of a genuinely smart urban network. The IoT makes it possible



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to transform luminaires as well as a multitude of objects that are distributed around cities (meters, parking lots, solid waste bins, etc.) into smart nodes of a wider network, supporting narrowband and broadband bidirectional communications to enable a number of applications, from public lighting to parking, from energy distribution to video surveillance.

Even though the IoT-based approach to Smart Cities may seem arduous, it has already been successfully developed by several cities.

Turning Chiasso and Bellinzona into smart cities

A Swiss municipality in Ticino canton, Chiasso has around 8 500 inhabitants. The city is strongly committed to sustainability and innovation, and has been awarded the 'Energy City' title for its forward-looking energy efficiency policies. Together with AGE SA, the local utility managing water, electricity and gas distribution in the area, Chiasso is always looking for new ways to achieve higher green targets.

In 2013, Chiasso started to invest in its street lighting infrastructure to reduce energy consumption, pilot future proof technologies and improve quality of service. The smart lighting project kicked off by replacing existing lamps with LED devices and implementing the PE.AMI advanced system for remote monitoring and control. Further deployments were made in the summer of 2015 in *Via Dante Alighieri*, a prominent arterial road in the city centre, and the smart lighting infrastructure now covers multiple areas of the city, including the ring road, a portion of the city centre, some municipal buildings and sports facilities.

Corrado Nosedà, a director at AGE SA, confirms that the investments it is shouldering to improve street lighting are paying relevant benefits back to Chiasso citizens and businesses, as well as to local

government and AGE itself. "Thanks to the transition to LEDs and the possibility of calibrating each light point remotely, we estimate a 70% cut in daily energy consumption in *Via Dante Alighieri*, and similar results in the other areas," he says, continuing, "as for service quality, we can ensure that every street, crossroad and crossover is properly illuminated with the light intensity required. Management and maintenance costs have also been reduced".

AGE and Chiasso decided to leverage the same network platform to manage other urban applications, such as public Wi-Fi in some city areas, traffic video surveillance along the ring road through IP cameras, and a pilot smart metering project. Discussions are in place to extend the PE.AMI network to a smart parking project and test some pioneer drone applications in the same area, thus pushing the idea of a smart city even further.

A similar transformation is under way in Bellinzona, capital of Ticino canton with more than 18 000 inhabitants.

The smart evolution started in 2013 with its public lighting infrastructure. To date, about 600 mercury vapour lamps have been replaced with LED-based devices and 900 more will be substituted by the end of 2016 to further reduce light pollution, achieve greater cost-savings and offer a better quality of life. Having implemented PE.AMI as the remote management and control platform, local utility AMB managed to better calibrate lighting intensity and reduce it by 50% in selected streets. Without impacting quality of services, this enabled the city to significantly cut energy consumption and spending.

The project has also involved a smart metering pilot initiative, using the same PE.AMI platform to control a portion of the power distribution network and a set of electrical meters, and an ambitious FTTH – Fiber To The Home – plan, aimed at bringing optical fibre to all homes in Bellinzona and surroundings. LID



Façade lighting for The Towers

With the re-development of the old Standard Bank Building in Foreshore, now called The Towers, a more social and eco-friendly ambience has been introduced to Cape Town's central business district. QDP Lighting & Electrical Design (Pty) Ltd was responsible for the lighting and in this article Christine Binedell gives an overview of the work covered.

The primary objectives relating to the re-development of the old Standard Bank towers on the Foreshore in Cape Town were the provision of additional parking and a facelift for the existing two towers to introduce a more contemporary feel. When we were approached to be a part of the team responsible for upgrading this ageing building, the main objectives were to create a modern building with integrated façade lighting and an engaging public open space for the public.

Façades

The façade lighting solution was to be bold, yet conservative, and to take cognisance of green building requirements, whilst retaining the historical story of the older buildings in Cape Town and the natural surrounds. Further to this, aspects such as ease of maintenance, low running costs and longevity of the

installation also needed to be taken into account.

After researching many options and numerous design iterations, it was apparent that the solution was to use low wattage LED strip lights, mounted into aluminium channels which were in turn clipped onto the edge of each 'image-depicting' fin. The fins were then specifically designed to accommodate the LED channels and provide integral wireways to LED strips further along each fin. The fin design allowed us to reduce the profile size of each LED channel, in turn making the installation barely visible during the day.

When the façades were initially designed by the architects, a series of fins was incorporated onto each façade. These act as shading mechanisms, define the horizontal façade lines and create the various 'façade images'. The configurations of the fins on each façade were conceptualised by the various topographical features facing them, for example, Lion's Head, the Peninsula, Robben Island, Table Mountain, etc. It is these images that are emphasised at night by the LEDs mounted onto the fins.

By using LEDs rather than other lamp sources, the installation deals with most of the design criteria we set out to achieve. These include longer lamp life, lower wattages, high luminous intensity



and defined beam angles. The result is a high impact, low energy design with minimal spill light. To conform to Green Building requirements, the fins are also angled slightly downwards, preventing the LEDs from creating sky glow.

The 'clip-in' installation method of the LED strips allows them to be replaced easily if required (there are no mechanical fixings on the outside of the building). The power supplies that feed the strips are all housed remotely within the central lobbies on each floor of the building. This results in ease of access as the lifespan of the power supplies is generally less than those of the LEDs.

Since the aim of the façade lighting installation was to accentuate and complement the various façade images, or topographical references, being portrayed, the layout of the LEDs was dictated by the outline of each image, so the 'story' being told could be appreciated during daylight hours as well as at night.

Landscape/public open space

The second area of importance to be addressed was the public open space at the main entrance/piazza area. The intention for this space was to be vibrant and inviting, whilst 'reinforcing' the linear

feel of the various façades. The lighting design was limited to various pockets or areas of use, with the balance of circulation spaces relying on spill light from the surrounding areas. With the exception of a few fittings, all the lighting elements in this area were also LED. The combination of warm white, visible, vertical linear LED elements and concealed LEDs under stairs and timber decks creates a sufficiently lit space for evening use, which successfully acknowledges the design intention.

This vibrant public space is enclosed at high level with a canopy or 'eyebrow' that embraces the space. As a slight contrast, cool white LEDs have been used on the eyebrow to define it above the warmly lit public space and to allow visitors to clearly read the two very different elements at night.

The lighting intentions for the façades and the public space have both been effectively achieved. The building and image-depicting façades are clearly visible at night and from every main freeway into the CBD. People are drawn into the public open space, and it is a hustle and bustle of activity from early morning until late at night, with the combination of striking and subtle lighting effects complementing the vibrant activities and overall lighting design. LID

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Teaching old lighting systems new tricks

by Chuck Ross

In the not-too-distant future, the time may come when electrical contractors entertain their grandchildren with tales of lighting fixtures that existed for the sole purpose of illumination. Moving beyond novelty lamps that perform smartphone tricks, connected lighting 2.0 has arrived, bringing new notions of the role interior and exterior luminaires can play in larger, building-wide (and even city-wide) operations. For manufacturers facing a need for new business models, these changes cannot come soon enough.

Looking beyond the apps

Just a couple of years ago, tech reviewers were wowed by app-controlled lamps that users could

dim and colour-shift using a smartphone touchscreen. As such products have become more commonplace, developers have begun looking at lighting systems with an appreciation of a previously overlooked fact: along with its accompanying power sources, lighting is almost everywhere in today's built environment. As a result, the innovation of solid-state lighting based on light-emitting diodes (LEDs) has, in some ways, made individual fixtures less important when compared to what a collection of fixtures can offer as a networking platform.

Such rethinking is critical because manufacturers need creativity to add value to long-living LED products that rarely need replacing and could quickly become commoditised. With features such as zero-to-100-percent dimming and colour-temperature shifting into the mainstream, companies are now looking at the large-scale lighting upgrades going on in commercial and office buildings, along with city streets, as an opportunity to pivot their business focus from manufacturing lamps and fixtures to facilitating data gathering and communications. In fact, some of the most sophisticated



offerings now are using light as a communication medium.

Old systems, new tricks

Researchers at Rensselaer Polytechnic Institute (RPI) recognised this evolution in the recent renaming of the cutting-edge research facility housed on

Troy, N.Y., campus. Funded in large part by the National Science Foundation, along with a number of leading lighting and technology companies, this national Engineering Research Centre replaced the phrase 'Smart Lighting' in its name with 'Lighting-Enabled Systems and Applications'. According to its director, Robert Karlicek, the name change was well-warranted for a facility looking to create "lighting systems that think".

Leaving questions of lumens and light output to the Lighting Research Centre, also housed on the RPI campus, the newly retitled Lighting-Enabled Systems and Applications Engineering Research Centre (LESA ERC) is dedicated to, in Karlicek's words, "teaching old lighting systems new tricks". Many of these tricks are technologies to help enable the multiple, connected building systems collectively labelled the Internet of Things (IoT).

"They all need sensors, and sensors need power, and what's distributed all over buildings that has power?" he asked. "Lighting. Every IoT company in the world has its eye on lighting."

Visible light communications (VLC), a technology that uses rapidly modulated light transmission for data communication, is a top research topic for Karlicek's team. Retail chain Target is said to have deployed VLC systems paired with its Android app in 100 US stores to provide in-store, GPS-like maps (a feature called 'geolocation') and to beam location-based coupons and other incentives directly to shoppers' smartphones. Sensors in store lighting fixtures can track individual phones (and their users), while product information is relayed back to the phones, through their cameras, in a process similar to that used with fiber optic cable.

"LEDs are electronic light-emitters that can be turned on and off many tens of thousands of times per second," Karlicek said, adding that emitters are controlled by direct-current drivers that can add modulation faster than people can see.

While retail stores currently offer the best busi-

ness case for this technology, Karlicek sees a far broader range of possibilities in locating visitors in complex facilities, such as hospitals, or even making life easier for a mechanical or electrical technician called in to examine a boiler or breaker panel in that hospital's basement. "The service history could be downloaded directly over the lighting to a tablet," he said.

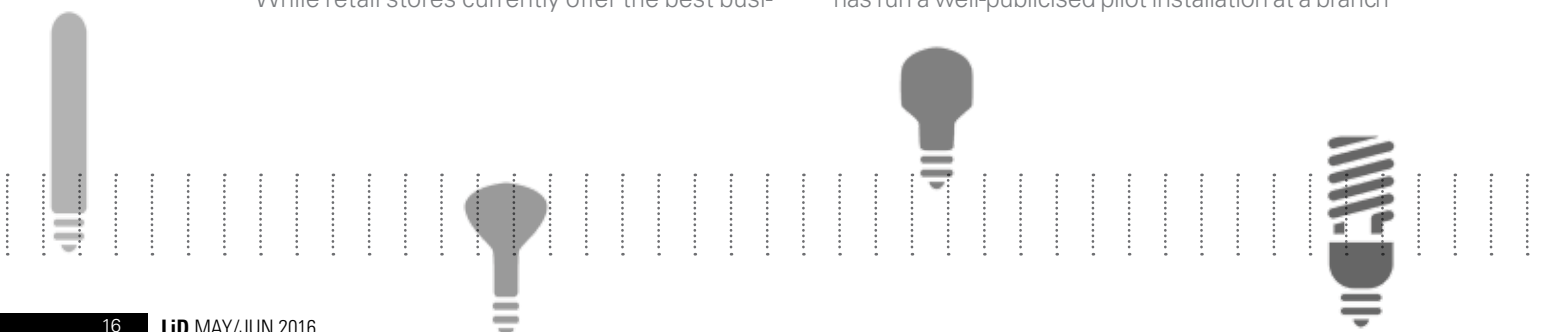
Indoor GPS offers strong ROI

For manufacturers, these technology advances are coming at an important time. Many are seeking new business models for lighting products, such as lamps, ballasts/drivers and fixtures, with lifespans that now may reach a decade instead of a year or less. Acuity Brands—which is said to be the supplier involved in Target's pilot installations, though neither company will talk—made a large investment in this rapidly advancing market with its acquisition last year of the Boston-based start-up ByteLight. This company has developed technology that uses Bluetooth low energy (BLE) communications to pinpoint a shopper's location even without direct line-of-sight access to that user's smartphone camera, which is what senses the light.

ByteLight has deployed VLC systems across 92 903 m² of retail space, according to Dan Ryan, the company's co-founder and former CEO and now Atlanta-based Acuity's vice president of IoT products. He said the company is learning that the applications for such interior geolocation systems might be much broader than those for such outdoor directional aids as Google Maps. "A lot of the initial theories were focused on the idea that there's a blue dot on the map," he said.

This concept is not dissimilar from what one might find on a typical outdoor GPS application. However, retailers have come to see value in location-specific content, which could be delivered during a shopping trip or after, that is related to products a VLC system has identified to be of interest to specific customers. "There is great interest in leveraging location-specific content to educate the consumer [like] a lot of the content you might find on a website like Amazon.com," Ryan said.

Of course, Acuity Brands isn't alone in pursuing these opportunities. For example, Philips Lighting has run a well-publicised pilot installation at a branch



of *Carrefour* (France's answer to a Super Walmart) for more than six months. According to Philips spokesperson, Jonathan Weinert, the company has a number of projects deployed or in development for other European customers, though information on possible US installations is still under wraps.

Unlike Acuity's BLE-enabled system, Philips' approach relies entirely on a line-of-sight connection with a customer's phone, which could be particularly effective, as the company now has a patent pending for its method of encoding the data transmitted in LED light waves. More than just providing a vehicle for in-store directions and promotions, Weinert sees such installations as a research tool for retailers. Marketing departments can aggregate anonymous data from hundreds or thousands of shoppers to create bottom-line improvements.

"Indoor positioning systems have a dual objective: to support location-based services on one hand and to learn about customer behaviour on the other," he said. "Anonymous data of special interest to retailers includes customer routing through the store, dwell times per visit and at specific locations ... and statistics on requests for help from sales associates."

Networking in the great outdoors

VLC is less useful in exterior lighting applications because there's too much competing, uncontrolled light in the environment. However, manufacturers still see tremendous opportunity in working with the enormous number of roadway and area fixtures installed across the United States, especially as many municipalities now are undertaking large-scale LED upgrade programmes. Building value-added security and networking capabilities into new products can mean higher near-term sales and the possibility of an ongoing income stream providing monitoring and other services for municipal customers.

In these applications, the fixtures become a platform – in both a literal and figurative sense – for mounting cameras and other sensors, along with communications equipment, to create networks for surveillance and other security functions, among other uses. Among the fastest growing sensor options in this category is gunshot detection. Hubbell Lighting's Spaulding Lighting division launched a version of its Cimarron fixture equipped with an

Internet-protocol (IP) camera and gunshot detection (in partnership with TOTUS Solutions) in late 2014.

"It really becomes a platform to all our customers to do what would never have been possible to do five to 10 years ago," said Andy Miles, director of product marketing for Hubbell Lighting's outdoor offerings in Greenville, S.C. "It brings a solution in a single offering that would previously have required multiple products and vendors."

LEDs' controllability provides additional advantages to security applications, enabling a capability Hubbell calls 'active deterrence'. Fixtures equipped with IP cameras can respond with rapid, even strobing flashes to drive intruders away and direct first responders. In addition, IP cameras can gather visual data that can be analysed to better understand operational issues, such as people and vehicle traffic patterns.

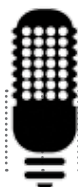
This kind of analytics is at the heart of an effort GE Lighting recently piloted in Jacksonville, Fla., and San Diego, dubbed GE's 'Intelligent Cities' initiative. A commercial launch of compatible area and roadway fixtures, along with cloud-based intelligence, could be used to enable such future app-based services as identifying parking-space availability and traffic monitoring and rerouting.

"City planners today struggle with getting data on originations and destinations," said Austin Ashe, GE's Intelligent Cities product manager, Cleveland. "It's very expensive. This is the kind of data they'll be able to get instantly. To be able to calibrate the speed of every road, block by block, can help cities become more efficient"

However, GE isn't planning to develop all these capabilities on its own. Instead, the company is modelling its program on the one used by Apple and its app-development community. Just as Apple has flourished as it has evolved from a closed-system hardware maker into an open-system development community, Ashe said GE is looking more at services and less at individual parts and pieces as it charts the future for its outdoor lighting offerings.

"Where we want to go, it's not just about the sensors in the streetlight," Ashe said. "It's about building an ecosystem of partners we can leverage." **LiD**

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the **FUTURE** of lighting

Light+Building 2016 has come and gone, having confirmed itself once again as the world's leading trade fair for lighting and building-services technology. This year, growth was recorded in number of visitors, number of exhibitors and area occupied and, as anticipated, the trade fair was exciting, inspiring, fascinating and exhausting.

What did differentiate this year from others was the clear indication that lighting, whether through apps, mobile solutions, gesture control or professional lighting control, has arrived in the digital age. At certain press events one could be forgiven for being confused as to how much some of the topics had to do with lighting, particularly when presentations focused on connectivity, Smart Cities, energy efficiency and the Internet of Things (IoT).

Much of the technology is complex and difficult to explain. This was highlighted at a press event hosted by Voltimum – a panel discussion of the IoT, described as the 'next big wave of disruptive innovation', with speakers from ABB, Osram, Legrand, Philips and Schneider. One of the issues grappled with was, "How do you explain complex products and concepts to the end consumer?" I have to admit at this stage that much of the discussion was in German, though I can safely argue that it may not have made much more sense to me in English. What I did understand from the bits that were in English and through conversation with a fellow journalist was that, in future, knowledge of 'the possible' will be essential for designers, whether architect, engineer or lighting. Clients should access a wide base of experts in order to

acquire knowledge. Rather than consult only the representative of a single company it is better to have a discussion with someone who has general knowledge of software configurations and is able to advise consumers on what can or cannot be achieved with a system that exists independently.

The consensus was that within five years lighting will be connected and there will be a move away from silos towards interoperability at data level and via connectivity. This higher level of integration will be required to provide the smart systems that users or tenants of buildings will come to expect.

Smart is complex but many innovations have a steep learning curve. In a few years what is now arcane will become commonplace. Different products will be packaged together, something that has already begun, so there will be no need to install components separately to make them work. Individualisation will be a major trend amongst consumers and one trusts that the required technologies will interact seamlessly.

World-Architects organised and conducted 16 guided tours at Light+Building. These were led by lighting experts who each visited a series of manufacturers for a presentation of lighting solutions and new technologies and to give an overview of general trends in the industry. I joined the tour led by Birgit Walter and thoroughly enjoyed being led through the trade fair by professionals for three reasons: First the speed with which we got from one stand to the next by virtue of the fact that Renato Turri, CEO of world-architects.com, knows the venue inside out so is able to travel by the quickest



Image courtesy
Messe Frankfurt
Exhibition GmbH
/ Pietro Suter

route, secondly because it is quite delightful to be shown things you would not see if you visited the stand on your own and thirdly to hear a product questioned by a designer who knows her stuff. At each of the stands we visited, and we visited seven, we were given insight into the design of the products and an understanding of the effect and appeal of the luminaire that would not have been

clear had we simply walked onto the stand. I would highly recommend this option, which is offered free of charge, to visitors to the fair and am only sorry that I only joined one tour and that on my last day at Light+Building.

As always after Frankfurt, in this issue of Lighting in Design we look at the innovations and products of some of our clients.

Beka Schröder

Schröder's smart solutions are aimed at easing its clients into the digital era, whether they manage a campus, city centre, motorway, industrial hall, tunnel or sports stadium. The smart column of the Shuffle lighting system can integrate up to five different modules incorporating features such as control systems, loudspeakers, surveillance cameras, hotspots, electrical vehicle chargers and signage.

On the stand at Light + Building, this connectivity was illustrated on a TV screen by a camera that filmed and broadcast live images of the visitors who sat down on a bench beside it. The light ring switched on to indicate that the bench was taken. A loudspeaker in another Shuffle broadcast a message when visitors sat beside it while yet another offered guests free WiFi to catch up online. The light ring on the Shuffle fitted with an EV charger changed colour when the charger was being used.

Understandably, visitors were delighted by the Shuffle, which can be activated by various sensors to provide important safety features and entertainment services for living spaces while offering operational benefits for managers.

Still on the stand, the Schröder Tunnel demonstrated how its Advanced Control Solution enables tunnel operators to control every lighting point for complete safety along with energy savings and operational benefits. Visitors could see how the con-

trol solution dimmed or increased lighting levels as the luminosity outside the tunnel altered or as the speed at which the traffic was travelling changed. Thanks to an open communications protocol, this solution can interact with other tunnel equipment such as fire detection devices, traffic management systems or emergency exits to program responsive safety scenarios for optimal safety.

The entrance, exit and aisles of the Schröder industrial hall were fitted with sensors. Managed by a control system, the lighting levels changed according to the presence of the visitors. As they moved in one direction, the lighting levels in that area increased while the luminaires behind them were dimmed. Finally, the Schröder stadium showed visitors how they could create smart sports venues with lower operating costs that deliver a first-class experience for players and fans with a second life as a business, community or entertainment hub.

The Axia 2, which offers all the advantages of LED lighting but without the high costs associated with LEDs was launched at the fair while the Zela and the Kazu, which provide indirect and direct lighting solutions to create ambience in pedestrian areas, were also on display. Schröder is represented in South Africa by BEKA Schröder.

BEKA Schröder: +27 (0)11 238 0069

Fagerhult

Fagerhult, which is represented locally by Lighting Innovations, develops, manufactures and markets professional lighting systems for indoor and outdoor environments. It had the following products on view at Light + Building 2016.

Dino, a new energy efficient LED light engine, enables flexible, cost-effective and customised lighting solutions in shops and public environments. The body can be coloured in white, black, graphite, orange or turquoise and a wide range of reflectors and shades in different materials can be added to create more versions.

The decorative Sweep & Scoot luminaires offer an innovative way to light activity-based offices. Both luminaires combine indirect general light with direct working light. They thus fulfil all basic lighting requirements in a single solution. The luminaires are available in standard colours and can be complemented with TunableWhite and the e-SenseTune control system, which enables personal light control via a phone or tablet.

Alfa, with its slim 78x78 mm design is discrete. Available for continuous or single mounting with both indirect and direct light, it is the ideal choice for workplace lighting. Equipped with a micro-prismatic Delta louvre, Alfa provides superior light treatment.

Touch is a spotlight with a clean and classic design. The luminaire has an energy efficient LED module, passive cooling and good light comfort. It is available with a number of accessories such as honeycomb louvres, barndoors and cap cones.

The minimalistic Relay Spot G2 spotlight illuminates the small details in retail environments. Its integrated accent lighting enhances the interior, creates attention and gives a sense of space, even in the smallest inaccessible spaces.

Vialume is a growing family of post top luminaires with an organic shape that has clear links to the Nordic design tradition. The luminaires are optimised with advanced glare control lenses, offering unparalleled visual comfort. Vialume 1 is ideal for city streets, walkways, cycle paths and car parks, while the new Vialume 2 is a powerful version with high light output and advanced optics ideal for road lighting and larger car parks.

The Beacon bollard is a Fagerhult classic and is perfect for footpaths, entrances and parking lots. The new generation with LED includes a complementary design with a flatter top. Beacon LED offers a symmetrical light distribution with a high-quality colour rendering.

Lighting Innovations: +27 (0)11 444 1168



Fagerhult stand at Light + Building.

The decorative Sweep & Scoot luminaires from Fagerhult.



The Dino for flexible, cost-effective lighting solutions in shops and public environments.



Osram

The focus at the Osram booth was on intelligent and efficient lighting solutions for cities and buildings.

Thanks to optimal illumination, an infrared sensor in a smartphone can scan the iris of the eye and unlock the mobile device for the registered user. This method is currently considered one of the most secure biometric access control processes and Osram is the only company that offers these infrared transmitters. This type of application will be refined – for such purposes as creating a further link between the user and device, the human-machine interface. When technology is capable of identifying the iris and following its movement, users will be able to activate icons and scroll image content on notebooks and smartphones via eye contact.

Osram Lighting Solutions presented the latest generation of its Street Light Control System, which wirelessly connects luminaires in a network on the basis of the open internet standard IPv6. The system will initially be installed in Osram's Streetlight 10 and 20 as well as DL 50 models. Through the integration of additional sensors, the streetlights provide efficient illumination, and also identify and report open parking places, facilitating efficient parking space management and other services. Ready for series production is the flexible luminaire Omnipoint, which was named the most innovative product at the 2015 Lightfair in New York. The 61 LEDs in the dome-shaped luminaire are individually controllable via an app for the flexible illumination of individual areas. For stadium lighting, Osram presented the 20 Maxi LED Floodlight with an output of 100 000 lumens. It features flicker-free lighting for TV transmission in HD quality and super slow motion. Also shown were efficient lighting and control solutions for industrial and office applications.

The Digital Systems division presented the Prevalad Core Style light engine for vivid colours in shop lighting. With its specially developed light spectrum, it features a high feeling of contrast index of 138, a colour rendering index of 88 and luminous flux of 3 000 lumens. For light designers, architects and luminaire manufacturers, the Ultraflat system delivers maximum design flexibility. Its profile of only 11 mm holds an Optotronic LED driver as well as presence and daylight sensors. The driver is flexibly programmable with LEDSet, DALI or wireless technology. Osram also demonstrated its Luxeye light management system, which can be installed via plug-and-play and configures itself automatically. With the Luxeye app, up to 20 luminaires can be controlled via smartphone.

As a premiere, Osram presented intelligent transmission units for location-based services called Einstone, which can be seamlessly integrated into lighting technology. They operate with Bluetooth technology and make a wide range of applications possible. Also presented was the Einstone navigation system, which will make it easier for visually impaired people to find their way in new environments. In addition to building navigation, Einstone is ideal for special applications in department stores: as someone approaches the store, he or she can get information about the store's specials via a smartphone app.

Osram SA: +27 (0)11 207 5600



To commemorate the long tradition of Osram lamps, the division which will operate as Ledvance in the future presented its edition 1906 of modern luminaires and appropriate lamps in the design of the early 20th century. They are available with LED, filament or halogen technology.

Omnipoint for flexible illumination of individual areas.



Philips Lighting

Philips Lighting announced a global partnership with Vodafone to help drive widespread adoption of wireless connected street lighting in cities across the world. To date, Philips CityTouch has reached 530 implementations across 33 countries, providing high quality light, energy savings and operational cost savings to form a digital backbone for smart cities. Enabling cities to benefit from LED lighting and migrate to connected street lighting at their own pace, the company unveiled Philips DigiStreet, the first LED street light that is 'future-proofed' with slots for sensors and wireless connectivity.

The company is also extending its portfolio to provide a complete capability, comprised of lighting infrastructure and professional services. Accordingly, it announced a partnership with US company Aisle411, a leader in digital store mapping, product search and shopper analytics. Working together with Aisle411, Philips Lighting will deliver the first connected lighting indoor positioning system in the Middle East for aswaaq, the UAE-based community retailer.

For offices, Philips Lighting provided an update on how its partnership with Cisco is helping to create more comfortable, sustainable and productive environments that benefit building owners, facility managers and office workers. Philips Lighting and Cisco are integrating connected lighting into the IoT for offices through a combination of Philips Power over Ethernet (PoE) connected lighting systems with Cisco's secure IT networking infrastructure.

Philips Lighting launched lamps that reinvent the halogen spotlight, the classic filament lamp and the dimmable LED. The Philips classic LED spot range is the first glass LED spot range that truly replaces the popular halogen spotlight. It has the same look and feel as a classic halogen spotlight but is 90% more energy efficient than classic halogen technology. The arrival of this breakthrough product will coincide with the EU phase out of GU10 halogen spotlights in September 2016. The SceneSwitch LED lamp range combines three light settings in one lamp, allowing users to select the right light for their needs by switching their existing wall switches on and off. The classic LED range with filament has a nostalgic look and has been extended to include DimTone, i.e. the more it is dimmed, the warmer the light effect.

Philips Lighting SA: +27 (0)11 471 5000

The Philips stand at this year's Light + Building in Frankfurt.



Tridonic

The existing infrastructure for light is the ideal basis for the Internet of Things. Put another way, the 'Internet of Light' is the most powerful instrument for developing the Internet of Things into the useful tool that it can be in the future.

Tridonic recognised this potential at an early stage and has applied its expertise in electronics, sensor technology, software and LED luminaire control to develop a future-proof hardware and software platform, the net4more toolbox. This consists of LED drivers, communication modules, sensors, routers, software and applications, and was unveiled at Light + Building 2016.

Crucial benefits that distinguish the net4more system from competitor products are its open platform, flexibility and scalability. net4more was designed from the start for interoperability and open hardware and software interfaces. The software architecture is based on the open standard of the IPv6 Internet Protocol, wireless communication uses a low-power version with IPv6, which operates like a low-energy version of wifi with networking capability, and the application and communication layers also use the usual open standards. net4more is the first system that enables both wired and wireless communication – and it is scalable for any size of building or area.

All this makes net4more future-proof, which is extremely important for areas of application that have to operate reliably for many years – i.e. office buildings and factories. It also offers customers the option of integrating their own solutions, whether hardware elements or apps for data analysis or control, in net4more, or using net4more for those solutions. Basic solutions such as a Cloud platform and apps for configuration and operation are included in net4more, but customers and partners can add their own solutions and services. net4more opens up the straightest, most efficient path to the Internet of Light with a large number of services that go beyond light. Tridonic is focusing strongly on the convergence of new technologies, smaller and smaller communication modules and sensors, LED luminaires, apps and mobile internet. This reduces complexity and costs and enables an enormous variety of additional services to be provided in the coming Internet of Things.

Tridonic: +27 (0)11 894 3525

Vibia

Birgit Walter started her guided tour of Light + Building 2016 with the following comment: "By understanding light as matter and allowing for the space to become visible and to reveal itself as intended, integration of lighting schemes within architecture becomes very important. In this sense, adaptability and size of light fitting are of essence to our vision for all lighting projects. The tour will therefore explore lighting manufacturers that enable sculpturing of light through easily interchangeable accessories while maintaining, as far as possible, integration of necessary equipment and required reduced size." One of the stands visited was Vibia and there on display was Toan Nguyen's 'Algorithm', which illustrated her point perfectly.

'Algorithm' is an expression of the mathematical poetry of nature. The lighting design is a constellation of globes that seem to float in space. The scheme offers endless compositions in which the spherical globes can be suspended at different heights from a ceiling anchor of tubular mesh – the network of this metal structure generating its own additional shadows and visual effects.

Individual orbs are made from blown glass and feature a textured striated pattern on their surfaces which allows for the projection of a translucent and constantly changing lighting effect. Each one is fitted with a 2 W LED lamp, which can be dimmed. These tools are offered so that each designer can tailor the orbs to suit his or her own project. The technical aspects can be resolved easily through the creation of virtual online models on Vibia's website.

"The intention," says Nguyen, "was not to design a completely defined and 'finished' product, but rather a tool which allows any customer to create his own lighting system, in relation to the architecture space, the area to light and the desired kind of graphic pattern."

Vibia: www.vibia.com





Bathed in soft light



Antoine Bourdelle – along with Auguste Rodin – is one of the pioneers of 20th century monumental sculpture. The *Musée Bourdelle* in Paris has recently been given a lighting update with LED technology using Erco's photometric precision to enhance the dynamic style of Bourdelle's sculptures for optimised three-dimensionality.

Tucked away on a quiet street near, and yet so far from, the bustling *Gare Montparnasse* in Paris, the *Musée Antoine Bourdelle* is an unexpected oasis of tranquillity and meditation that is reminiscent of a modern ancient temple. This is where Antoine Bourdelle, a pioneer of 20th century monumental sculpture, lived and worked from 1884 until 1929. Bourdelle's work was frequently inspired by mythological themes, which he captured in powerful and dynamic sculptures using such materials as plaster, bronze or marble. The structures on the premises are from a number of different periods. Once the home and studio of Bourdelle, the buildings originating from the 19th century were turned into a museum. The 'Great Hall' was built by architect Henri Gautruche to mark the 100th anniversary of Bourdelle's birth, whilst the extension to the museum was added in 1992, designed by architect and Pritzker Prize winner Christian de Portzamparc.

Recent renovations of the *Musée Bourdelle* included an upgrade of the lighting system with LED technology. The lighting inside the museum was optimised for maximum visual comfort with lighting tools from the Erco Light Board, Logotec, Parscan and Pollux ranges. Designed to overcome distance, the luminaires

bathe the Great Hall in uniform and glare-free light across an impressive height of 10 m, allowing visitors to look at the sculptures from different angles. Using various lenses and different beam characteristics as well as two light colours with 3000 K and 4000 K, the sculptures are illuminated with photometric precision, accentuating their surfaces in varying nuances depending on the texture.

The *Musée Bourdelle* has several landscaped gardens with lawns, bushes and trees that provide a natural setting for Bourdelle's bronze sculptures. Embellished with a green patina, the sculptures blend effortlessly with the lush vegetation. The artwork as well as selected garden features are illuminated effectively from different angles using outdoor luminaires of the Erco Grasshopper range with neutral and warm white light. Designed with a compact housing, the lighting tools remain virtually invisible, whilst precise light distributions eliminate glare for the visitors and neighbours, so as not to detract from the enjoyment of the sculptures or the gardens and night sky.

ERCO: www.erco.com

Photo credits: ERCO GmbH, Photographer: Edgar Zippel



FACTS

about LED Lamps



Some facts:

- There are no **compulsory** local standards for LED lamps
- There are two standards that may be applied voluntarily by suppliers and specifiers: SANS 62560: South African National Standards
IEC 62560: International Electrotechnical Commission
There appear to be very few products that are certified against these standards.
- The “CE” mark appears on many products. This is a manufacturer’s claim to a certain quality standard. **It is not an indication of independent, 3rd party testing.**
- The nature of LED performance claims being made cannot usually be validated by buyers, whether they be resellers, electrical contractors or users - until it’s too late.

A relatively new technology, LED lighting is fertile ground for unscrupulous and opportunistic suppliers to capitalise on the absence of a compulsory local standard for LED lamps and to make performance claims that will not be met, mostly around lifespan and power-consumption.

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

Some consequences:

- The absence of compulsory standards can result in incompatible dimensions between fittings and lamps from different suppliers - a performance and safety risk to users.
- The technology of an LED lamp and its heat-generation encourage shortcuts that compromise insulation in favour of heat dissipation - a safety risk to users.
- Plastic parts are a manufacturer’s cost-saving opportunity. Inferior material will affect heat- and flame-resistance.
- The low volume of certified testing of LED lamps in South Africa does not allow much credible reference to be made to local testing and regulatory authority that will comfort buyers and specifiers.

For more information, please consult the SAFEhouse LED lighting guide available to download free at www.safehousesa.co.za

**SAFETM
house**
Suppliers you can trust

For more information contact:

Pierre Nothard: 083 414 4980 | 011 396 8140

Email: pierren@safehousesa.co.za

www.safehousesa.co.za

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



Outdoor lighting solution for Cresta

BEKA Schröder supplied an LED outdoor lighting solution for Cresta Shopping Centre's recent expansion and refurbishment project. Situated in the north-west of Johannesburg, it is one of the largest shopping centres in South Africa.

Figures from the South African Council of Shopping centres show that at least 25 malls exceeding 30 000m² have been built in the past four years. This brings South Africa's tally of large, regional and super-regional malls to an estimated 180 – more than double the number five years ago. These malls are constantly challenged to optimise their power usage so as not to exceed average maximum demand. The average maximum demand is the highest measured kVA or kW during any 30 minutes, within a designated billing period. If this average is higher than the notified maximum demand, the mall is charged a premium on usage.

One way of reducing maximum energy consumption is to change CFL, HID and other lighting technologies to LED technology, which has been proven to provide up to 70% in energy savings compared to conventional lighting technologies, without compromising on the performance of the luminaires.

Since it is important that people feel safe visiting centres at any hour, security lighting is also a major priority for facility management companies. Specific lighting levels are required as prescribed by the relevant SANS lighting specification for different lighting areas.

Cresta Shopping Centre was expanded to cre-

ate a three level food and entertainment court. As part of this development, a general refurbishment was undertaken, including improvement of the mall's exterior lighting. BEKA Schröder was awarded the tender to supply the lighting solution.

The perimeter and some parking areas have been illuminated by BEKA Schröder's high-performance LEDlume-midi LED luminaires to provide effective security lighting. Decorative and efficient ISLA LED post top luminaires light up the parking area at Entrance 4. LEDflood-maxi LED floodlights have been installed on the roof of the shopping centre to provide area lighting. LEDnova LED floodlights illuminate the signage installed on the centre's exterior walls and various entrances have been enhanced by LEDduo up- and downlighters. Finally, the exterior walkways are illuminated by the Series 42 LED bulkheads.

BEKA Schröder is Africa's leading manufacturer of luminaires and glass fibre reinforced polyester poles. The company offers high quality lighting solutions that are designed to withstand Africa's harsh conditions. Using contemporary technologies, its goal is to offer intelligent and sustainable lighting solutions to reduce energy consumption and the overall cost of ownership. BEKA Schröder's in-house specialists and field application engineers assist to commission projects, provide technical on-site support and offer possible solutions for upgrading and servicing luminaires.

**BEKA Schröder: +27 (0)11 238 0042 or
g.mthethwa@beka-schreder.co.za**



A comprehensive LED outdoor lighting solution for Cresta Shopping Centre.

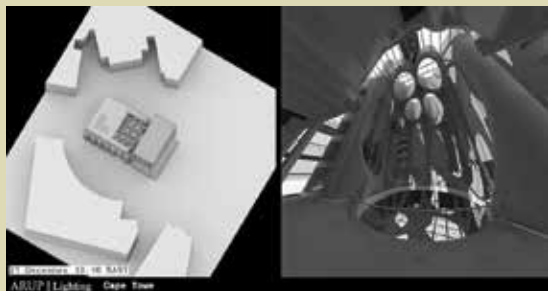
Thoughtful lighting integral to the modern museum

Lighting, both natural and artificial, plays a vital role in defining visitor experience at a museum. For the

Zeitz Museum of Contemporary Art Africa (Zeitz MOCAA), at the Silo district on the V&A Waterfront in Cape Town, this was a primary consideration for consulting engineers Arup.

Following a 24-hour lighting philosophy for the project, Arup developed a holistic lighting solution for the atrium space that carefully balanced and combined daylight and electric lighting. Daylight studies explored how sunlight could animate the space through

the seasons, as well as create a dynamic and visually engaging environment for museum visitors. These studies informed the geometry and material selection of the key atrium glazed apertures.



The electric lighting approach aimed to work with and not against the daylighting condition within the atrium, and has the ability to provide a subtle transition to the electric lighting only once the sun sets. Arup worked closely with the architect Heathwick Studio to develop the architectural lighting scheme to achieve this, ensuring that visitors have a memorable experience at any time of the day and year.

Seen as the fourth dimension of architecture, lighting at Arup is an integral part of intelligent building design, as well as a speciality field. Over the years, the company has consistently won prestigious awards for its innovative lighting philosophies, most notably from The Illuminating Engineering Society of North America; Lighting Industry Federation's Lux Award (regularly from 2008 through to 2015) and the 2015 Darc Awards for Best Interior Scheme for the Fulton Center, New York, NY, USA project.

A world-class museum within a working harbour, the Zeitz MOCAA project is a focal point in the ambitious vision of the V&A Waterfront; turning the old silo structures into mixed-use developments, whilst focusing on quality and sustainability. Arup has been the sustainability consultant on the silo projects.

Arup: www.arup.com

Restoring the glory of China's only female emperor

Five Christie DWU555-GS laser phosphor projectors provide impressive projections on the backdrop of a massive sand table model showcased at a new national heritage park in China - restoring the ancient glory of Luoyang city, China's imperial capital during the Sui (589-618 BC) and Tang dynasties (618-907 AD).

Wu Zetian is the only female emperor to have ruled China. A major highlight is the full-scale reconstruction of two iconic towers that symbolise the splendor and opulence of Empress Wu's reign.

During her political heyday, Empress Wu instructed that these towers, which were described as architectural miracles, be erected. And today, the recreated nine-storey-high Ming Tang houses a spectacular sand table model of the ancient city of Luoyang, which covers an area of 130 m² and is built to a scale of 1:800.

Lifelike visuals such as blue skies, birds in flight, junk ships sailing on the river and endless mountains in the background are displayed on the backdrop using five ceiling-mounted Christie DWU555-GS laser phosphor projectors installed by Christie's partner, Wincomn Technology. Equipped with full HD resolution and an impressive illumination life of

20 000 hours, projections from the GS Series create a stunning contrast against realistic buildings, flora and figurines meticulously put together by skilled craftsmen.

"When it came to the selection of projection systems, the client wanted the best. Eventually Christie projectors were chosen for their impressive performance, outstanding track record in China and numerous accolades," said Tony Chen, General Manager, Wincomn Technology. "In view of the large projection canvas in the backdrop, five Christie DWU555-GS projectors were needed to blend the images seamlessly and form a complete panorama that brings ancient culture and history to life.

"The deciding factor was the units' 20 000 hours of low-cost operation, which was exactly what the client was looking for. At the same time, the GS Series' other advantages such as long-lasting brightness, accurate colour reproduction, image quality, 24/7 reliability, and blending and warping capabilities for curved surfaces, made it the perfect projection solution for such a location-based entertainment venue," he added.

Christie: www.christiedigital.com

RADIANT INDOOR DECORATIVE FIREPLACES



FEATURES

1. Decorative flame options
2. Overheat protection
3. Built-in thermostat
4. Remote control
5. Tinted front glass



LD2000DD

Curved indoor decorative fireplace
1800W



LD200042

Flat indoor decorative fireplace
1800W

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Lighting solutions for healthcare

Legrand works closely with medical professionals and social organisations to provide solutions and technologies that enable sick, elderly and disabled people to live safely, comfortably and as independently as possible.

“Legrand has combined the latest energy efficiency technologies, enhanced aesthetics and modular systems to meet lighting requirements in environments where extra attention to visual comfort is necessary,” says Johan Bosch, general manager, Legrand SA. “Included in this range of integrated lighting solutions are sensors, automatic switches, LED night lights and indoor emergency lighting units.”

Lighting management sensors are used to monitor the detection area for occupancy and control lighting automatically. Sensors equipped with a built-in light level sensor keep lighting off

if there is sufficient natural light. When the area is vacated, the lighting automatically switches off after a pre-set time delay.

Energy saving motion sensors, with an automatic switch on/off facility, are recommended for areas with little or no natural light, including corridors, hallways, staircases and bathrooms.

Legrand’s 230 V night lights, with LED technology, ensure there is the right amount of light when it is needed. The units are fitted with a light sensitive sensor that controls lighting levels according to pre-set light level thresholds.

Another useful lighting device is Legrand’s Arteor miniature emergency lighting unit, which automatically lights up in the event of a power failure. A key feature of this unit is that the light fitting is easily unclipped from the mechanism and used like a conventional torch – a handy facility when a room

is suddenly plunged into darkness. Although this removable lighting unit is small, its illumination is powerful, effective and comforting.

Indoor self-contained emergency lighting luminaires are fitted with high power LEDs, with a low consumption switching power supply. These units have a removable plug-in plate for easy installation and maintenance.



Energy saving motion sensors, with an automatic switch on/off facility, are recommended for areas with little or no natural light.

Legrand SA:
+27 (0)11 444 7971

Make the white choice with one fitting

In stark contrast to previous generations, we spend 90% of our time indoors. It’s been proven that daylight has the ability to invigorate us and promote a sense of well-being, so interior lighting with adjustable output and colour temperatures should be a serious consideration, particularly in residential and commercial environments.

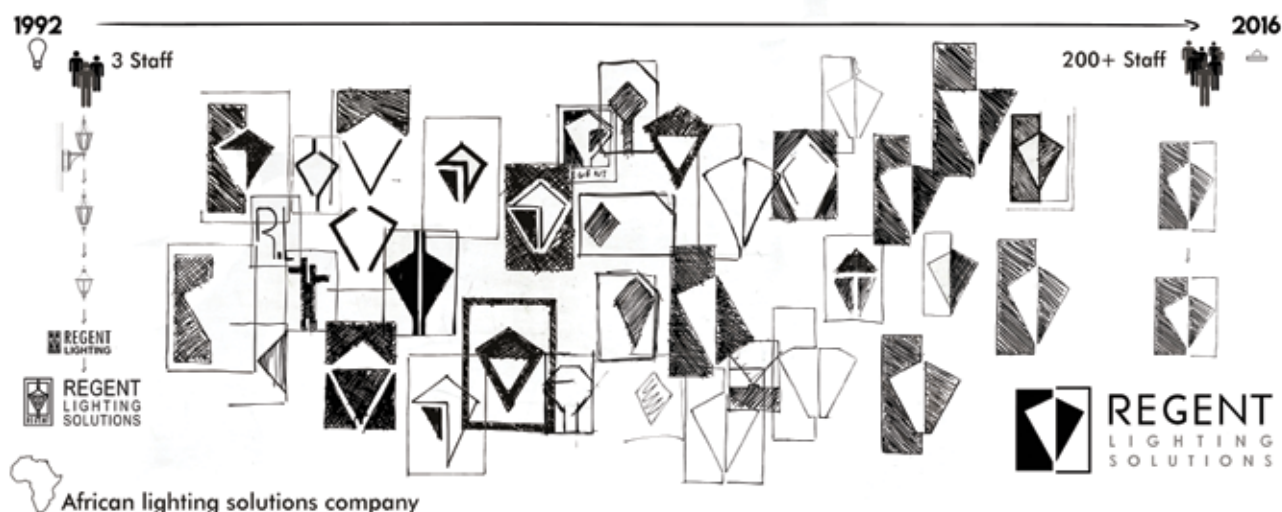
Throughout the day, natural light constantly changes in quantity, directional characteristics, colour temperature and colour rendering. The therapeutic quality of natural lighting has never been in doubt. However, until recently, we have not really understood how or why. One of the most important findings is that light controls our biological or body clock through regular light-dark rhythms, known as circadian rhythms. Creating appropriate indoor colour temperature levels to suit different environments and times of day is therefore essential.

The PolaCX™ colour switching and dimmable

downlight is ideal. It works with a standard rotary dimmer switch so colour temperature can be adjusted as needed. A colour temperature of 2 700 K offers warm relaxed lighting, 3 800 K attains light levels needed for attentive task lighting and 5 700 K delivers an alert task lighting mode.

The PolaCX colour changing LED downlight is ideal for residential, office, educational and communal lighting applications where light colour and output can be adjusted to suit the task and/or mood. It’s also IP54 rated so it’s suitable for bathroom installations. PolaCX has 1.5 kV surge protection to help mitigate the problems experienced from power surges or fluctuation in quality of supply, and comes with a three-year warranty.

Enlite Lighting (part of the Aurora Group):
+27 (0)11 234 4878



A new logo to herald a new era

Regent Lighting has a new logo. The company is part of Wahl Industries and what began as a desire to develop lighting for domestic homes in the early 1990s has evolved into a multi-disciplinary lighting company.

In the early stages of the business, the lighting division employed two staff members who assembled lanterns in the corner of the tool room. As a manufacturer of agricultural irrigation products and supplier of castings to the engineering sector, the first marketing attempts were to lighting manufacturers in the hope of selling castings they could assemble and sell. Fortunately, as it turns out, Regent's castings were rejected by existing market participants, hence the company decision to assemble and sell the lanterns directly to lighting retailers.

The first two lanterns, Capri and Classic, were originally advertised by hand-drawn pamphlets under the Wahl Irrigation name. This was successful and another four lanterns were developed in 1993, with a decorative pole to complement the range. The fledgling lighting company acquired its own identity, Regent Lighting. By year end, 10 additional members of staff had been employed in various areas of production. Regent Lighting Solutions soon rented its own 800 m² factory over the road from the main factory to accommodate its increase in work load.

A shift in marketing approach occurred in 1995 when Regent Lighting Projects was created to target commercial building projects. This proved to be invaluable as the company began dealing directly with specifiers and consultants and was able to develop products for specific requirements. With changes in architectural style away from Tuscan façades, traditional lanterns were losing their appeal and more contemporary lighting products had to be created; Challenger and the Apollo bollard (1996) being the first.

In 1996, the company doubled its factory space to target larger projects. By developing specific products such as for the Westcliff Hotel (Westcliff) and Riverside

Mall (Jupiter) the range expanded continually. The company became convinced this was the correct approach and, to this day, Westcliff and Mini Westcliff lanterns are sold across the world.

Regent's first foray into interior lighting was in 1998 with the Delta indirect range, developed to substitute costly imported technical fittings from Europe; it was also the company's first use of electronic control gear and new lamp technologies.

The Grand Classic fitting and decorative pole, Tuscan post top and Copenhagen were created during the late 1990s to accommodate the flood of casinos being built. In 2000, the entire Wahl operation moved to premises in Longdale. This site (10 000 m² factory and 1100 m²) allowed the group to expand and Regent was able to capitalise on particular opportunities, including the growth of Dubai and the local build-up to the 2010 World Cup.

The single most important event for Regent has been advent of LED as a mainstream light source. The company was able to develop products for applications it would never before have contemplated and, to remain viable as a lighting manufacturer, its design department grew substantially to redevelop existing – and design new – products.

LED allowed Regent to move into the interior lighting market, beginning with its Linear range and complementing it with other LED downlighters and panel lights. Today, the company employs over 200 staff members and has branches throughout South Africa. It continually reinvests to improve its service and product offering.

Says managing director, Randal Wahl: "We believe we are an African Lighting Solutions company equipped with the right people with the correct values to create value for our clients. The rebrand of our traditional Regent logo is an important step as it symbolises our future intent without discarding our past history".

Regent Lighting Solutions: +27 (0) 11 474 0171



Quality outdoor lighting

The Fumagalli collection of quality outdoor lighting fixtures provides a 'fix and forget' solution to a host of lighting requirements. Eurolux is the local distributor for Fumagalli, which recently added some models to its range.

Manufactured in a modern production facility in Varese, Northern Italy, Fumagalli lighting products are produced using high quality raw materials and components, says Shaun Bouchier, director at Eurolux. The specialised resin formulation, used in all its products, is self-coloured and UV stabilised. "This means that the fittings are virtually maintenance free and will not discolour or fade in the brightest sunlight," he says.

The latest Fumagalli LED bulkheads available from Eurolux include the Lucia and Maddi. The round Lucia is available with ring, eyelid and guard covers that are suitable for wall, ceiling and post installation. Its polycarbonate base is available, on request, in black, grey and white, which creates an elegant and customised ambience. The Lucia's printed circuit board is fitted with 150 LED x 6 lm ensuring uniform light distribution and, by adding the Remi Bracket, the fixture can be angled at 35°.

The Maddi is an oval bulkhead, available with the same cover conversions as the Lucia and is also suitable for wall, ceiling and post installation. It is easily used in public spaces and residential areas, both indoors and outdoors. The Maddi bulkhead can only be mounted vertically when used in conjunction with the Remi bracket and provides a lifetime of 30 000 hours.

"In the Lucia and Maddi ranges, the eyelid cover is particularly popular, as the top half of the lamp is covered so light is reflected downwards, thus reducing glare," explains Bouchier.

Also included in the new Fumagalli range are the Danzi and Gelmi LED bulkheads, available in standard white or black finish with an opaque lens. The Gelmi can be used indoors and outdoors and is suitable for wall and ceiling mounting. The product has a protection rating of IP66 and is also available with an E27 CFL lamp. The oval Danzi offers similar features and functionality as the Gelmi, with ring, eyelid and grid cover conversions also available on request.

Bouchier explains that the Fumagalli range of bulkheads is designed to be tough enough to withstand dust, water and the constant onslaught of the sun. "Because of their durable design and impressive lighting ability, you'll often find these bulkheads in underground car parks, on outside walls, and inside warehouses and large commercial buildings. They are ideally suited for use in coastal and harsh environmental conditions."

The Extraleti 100 surface fitting is supplied as standard with a long-life and efficient TUV approved GX53 LED lamp (3 W – 350 lm). Available with four cover options, allowing for a diffused or downwards directed light emission, this fixture is available in cool or warm white. It has a black finish with an opaque lens.

"The LED technology used in this product ensures that it is a cost-effective and environmentally friendly option that can easily be upgraded and its built-in LED lamp makes for quick and easy lamp replacement," says Bouchier.

The Stucchi bulkhead is manufactured from the same shockproof resin material as the rest of the Fumagalli range, offering UV ray stabilisation whilst being rust and corrosion-free. This product is versatile and has a daylight and motion sensor with a detection angle of between 30 and 150 degrees and an adjustable field of detection of up to 5 m.

Eurolux: +27 (0)21 528 8400 or shaun.bouchier@eurolux.co.za



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