City of the future
Interview with Chris Luebkeman

Bright garden halls
The Städel extension in Frankfurt am Main

Urban environments
On the way to the city of tomorrow
Looking ahead to future challenges, we have also revamped lightlife in terms of content and design, and allowed the magazine to embrace new topics. The topic of our new issue “Urban Living Spaces” investigates various perspectives and ways of considering the city as a challenge. The portrait of the Singapore-based architecture firm WOHA shows for example how buildings can become landscapes. Harpa, the new concert hall in Iceland, reflects a cooperation of local and global architectural influences, and Copenhagen amazes with a future-oriented mobility and environment concept – its bicycle highways. Chris Luebkeman of Arup explains in an interview why we should think of the future as a story which we are all writing together. Analogous to this, Thomas Schmölz, Director of Product Development at Zumtobel, explains how successful product solutions are created based on a knowledge of trends and requirements. A variety of different architectural projects around the globe finally demonstrates the diversity of forward-looking urban space design. They are exemplary for the new challenges of changing living environments and illustrate how lighting and architecture are meeting their new social responsibility.

The number of people living in an urban environment exceeded the number living in a rural environment for the first time in 2007. The urban population is expected to rise to over 60 per cent by the year 2030 according to UNO figures. It is hardly possible at this stage to assess many aspects of the urban change reflected by this development, such as with regard to the proliferation of megacities, the ageing of the population in many countries and the trend towards mixing private and professional life. Such progressive developments however mean new challenges for the building and lighting sector. Our cities need architectural solutions that meet the social changes taking place and also offer a platform for the pluralisation of lifestyles. Architecture and urban development will therefore gain a new social dimension.

Technologies are generally expected to support people to master everyday life. Planners and architects, but also manufacturers and technology leaders like us, therefore have a social responsibility. Only if we understand global trends and analyse them, will we be able to develop future-proof products that have a long-term positive influence on human living and working environments. We need to understand the developments in urban spaces early enough to be able to generate lighting solutions that offer answers to the current and future needs and requirements of building architectures and people. The role played by light as a design element is outstanding. Ground-breaking developments include adaptive lighting solutions, thanks to the new LED luminaire functionality Tunable White, as well as intelligent lighting management systems. Together with our partners, architects, planners and designers, we are actively seeking solutions that can offer people added value.

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New products and additions Spring 2012
Libeskind and Zumtobel exhibit Masterpiece in Miami

The height of the new Masterpiece eL is 2.70 m. Its outer surface is high-gloss stainless steel, while the inner surface is plated with 23 carat mint gold and fitted with 1,680 specially fabricated LED modules. eL is a fascinating proof of the potential of light and art, combined in the right way, to create a unique experience. The Masterpiece developed by Zumtobel in close collaboration with Daniel Libeskind, was presented to the public for the first time at Art Basel Miami Beach. With eL, the renowned architect has created an architectural structure that offers a new approach to the comprehension of light: its light mimics and reproduces the cosmic light that fills the universe. An algorithm especially developed for this purpose by Noam I Libeskind, an astrophysicist and Daniel Libeskind's son, is transferred to the luminaire. Various light and colour scenarios enacted by the LEDs simulate nothing less than the big bang and the expansion of the universe. The dynamic illumination can be considered as an illustration of the evolution of mass and structure in the universe, with each LED representing a small part of outer space. www.zumtobel.com/masterpieces
Exquisite art – striking presentation of the Holbein Madonna
Following the successful purchase by industrialist and art collector Reinhold Würth, the “Madonna with the Family Mayor Meyer”, a Virgin of Mercy by Hans Holbein the Younger, is now accessible to the public again. Germany’s most expensive work of art is on display at the Johanniterkirche gallery in Schwäbisch Hall. In 2008, Würth had the 12th century church converted to an exhibition hall for his superb collection of Old Masters. To ensure a particularly impressive presentation of the painting in the room, the organisers opted for an illumination with Zumtobel’s modular LED system Microtools. KUNST.WUERTH.COM

Living in the endless city: urban spaces and their quality of life
Approximately 53 % of the seven billion people on earth live in cities. The Urban Age Project is an investigation into the urban and social future potential as well as the risks and chances of the development of megacities, conducted by the London School of Economics with the Deutsche Bank’s Alfred Herrhausen Society. The result of this international study is a book containing an impressive collection of essays presenting figures, analyses and forecasts regarding the quality of life in densely populated urban areas. EDITED BY RICKY BURDETT AND DEYAN SUDJIC, LONDON, (PHAIDON PRESS)

Romance at Times Square – Valentine’s Day heart by BIG
The Times Square Alliance is in charge of marketing issues related to New York’s most famous square, and this is the fourth heart in a row that the organisation has had designed by a selected special architect. This year, the romantic public art installation was designed by a Danish architectural company, the Bjarke Ingels Group (BIG), together with SYMETRYS and Zumtobel. The 3-metre tall heart sculpture “City Pulse” consists of 400 transparent, LED-lit acrylic tubes. These form a cube around the red Valentine’s Day heart, and refract the surrounding city lights. The heart itself seems to float in the air, bundling human energy into a pulsating light show: the more people that stand around the installation and activate the touchpad on the ground, the brighter the light sculpture glows.
iF Awards – Gold for Microtools
As many as three Zumtobel products won an iF product design award in 2012. Both the LED spotlight system Lyon as well as the circular luminaire Ondaria received awards for outstanding product design. The jury was even more impressed by the LED lighting system Microtools: the product won one of the hundred coveted iF gold awards. The minimalistic design language in conjunction with the smallest LED light heads currently available on the market, permits Microtools to set standards for shop lighting characterised by superb light quality and elegant design. All contributions will be exhibited at the iF design exhibition Hamburg – right in the middle of the new HafenCity – in the second half of the year.
Trends of urbanization
Growth and shrinkage – how do cities deal with these challenges and what are the future options for action? In his documentary film “Urbanized”, Gary Hustwit examines the strategies of urban development. Citizens and politicians, urban planners and famous architects like Sir Norman Foster or Rem Koolhaas voice their opinions in the film. The future of the city is discussed by considering various planning objects around the globe. The documentary paints a multi-faceted picture of urban space, while keeping a close eye on a number of specific aspects, such as mobility or environment issues. WWW.URBANIZEDFILM.COM

lightlife – now also available as an app
The customer magazine lightlife has also undergone changes in terms of content and appearance. Apart from the print version of lightlife, the magazine is now also available as an app for tablets and smartphones – complete with videos, additional images and detailed factual information. This can be downloaded free-of-charge in English or German at the iTunes App Store.

Future challenges:
drivers of change
What will the world look like in forty years? This card set, developed by the Foresight & Innovation Team at Arup, explores the leading factors which will affect our world in the future. The 189 cards of the set take into account issues such as demographics and climate change, energy and water, allowing a concrete analysis of future scenarios. The card set is intended for all those with a curiosity about what the world of tomorrow could look like. WRITTEN BY CHRIS LUEBKE-MAN, MUNICH/NEW YORK (PRESTEL PUBLISHING)
Sparkling Magic
Harpa Concert Hall at the edge of the harbour of Reykjavik
The new Harpa Concert Hall rises up like a giant cut crystal in front of the jagged coast of Reykjavik harbour. The honeycomb elements of the façade make up a dazzling sea of multi-coloured highlights. Reflections on the water surface reinforce the association with a natural phenomenon, calling to mind mysterious northern lights. The sparkling Concert Hall and Conference Centre that now adorns the cosmopolitan capital of Iceland was designed by Henning Larsen Architects in cooperation with the Danish-Icelandic artist Olafur Eliasson, who was responsible for the characteristic appearance of the outer envelope. The area in front of the building is bathed in mystical blue light emanating from hidden sources of light, transmitted inside the building through glass fields. Olafur Eliasson and Zumtobel developed a special new type of luminaire, the shape and colour of which permits almost invisible integration in the prism structure of the façade, lighting it up with LEDs. Inside the crystalline outer envelope, visitors can expect to experience music in a new dimension. The large three-tiered concert hall with a blazing red interior is named after one of Iceland's most beautiful volcanoes "Eldborg", meaning "Fire Castle".
City of the future

Which developments influence urban environments?

Chris Luebkeman is Director of Global Foresight and Innovation at Arup. Together with his internationally operating research team, he develops informative scenarios for the world of tomorrow. The architect, geologist and structural engineer considers the future of urban environments to be a fiction composed of many individual stories.
In 40 years' time, 75% of the world's population will live in cities. What are the drivers of change that will influence the future of urban life?

Chris Luebkeman A city is built up of a whole series of systems that enable an urban dweller to, not just survive, but thrive. These include mobility, energy, water, waste, commerce, information, justice, entertainment, nutrition, wellness and learning systems. To think about the future means to analyse the potential resources for each one of these systems. The starting point of our considerations must be the physical infrastructure. Where will all the wood, steel, concrete and other materials for the creation of the world we dream of come from? Can we even begin to conceive how we are going to build cities in a sustainable, durable and sane way in the future? On the one hand we have to imagine how these systems will interact in a resource-constrained world. On the other, Homo sapiens are an incredibly innovative species, so each time the design and engineering community confronts a pinch point, it comes up with a very clever solution. Looking at the future, I am certainly full of both trepidation and optimism. I believe that urban environments could degrade to become increasingly segregated, poor quality ghettos. However, I’m optimistic because we have both the capability and deep desire to create places and spaces in which humans can thrive and flourish.

What about the changes in mobility? How will they affect the development of urban environments?

Chris Luebkeman Mobility is fundamental for the success of an urban world. It needs to be safe, secure and reliable for accessing opportunities for things like work, better healthcare, better education, meeting potential partners and improving yourself. And for many in the world, this means walking, riding or driving long distances every day, this movement being the only way of surviving. But what will mobility mean in another 20 years' time? My 12-year-old son told me that he is not looking forward to driving a car. This was because, in his opinion, by the time he will be able to drive a car, the vehicle will be able to drive itself. He figured that it would be more fun to just chat with his friends than to have the burden of driving. Driving a car was getting a ticket to freedom when I was young. His mental map of what freedom and mobility mean is quite different from mine and that of my generation; he is a digital native. I find it fascinating to
think what mobility could be or will be in an Internet- and social network-based society. I don’t believe we have actually understood that yet, nor have we truly internalized what the city will be like in a multi-faceted, networked world. It will have to create new norms in the way our cities function and in the way we design them.

Do you consider these networks a generational question?
CHRIS LUEBKEMAN I grew up browsing books in a non-digital world. Both my kids browse online instead, clicking everything. I call them “clickizens”. Their perception of proximity, time, place, space and even friendship is completely different. I believe that we are just at the starting point of understanding these influences and their impact on cities.

What about our social responsibility when it comes to dealing with the drivers of change and facing the challenges of the future?
CHRIS LUEBKEMAN The perception of social responsibility is culturally dependent. There are cultures that would never take any kind of action that would go against their fellow citizens or harm their own group. Other cultures focus more on the individual. They define freedom as an individual value that is restricted due to the necessity of living together. I have observed that the perception of social responsibility within the design community reflects that cultural breadth.

“When we think about the likely story of tomorrow, we need to look at multiple versions of that story.”

Is the future in your eyes more about benefits or about dangerous risks?
CHRIS LUEBKEMAN I don’t think about a single future. The normal of today is so varied, there is no singularity at all, and the same is true for the future. When we think about the likely story of tomorrow, we need to look at multiple versions of that story. One is always optimistic. But if a couple of variables are changed, the direction might change completely. What if things don’t go well, what if the world becomes a more difficult place for people to interact with each other? My personal goal is to try and help get to the place we are hoping to get to. An ecological or urban age in which both the human and planetary conditions are improved – that’s my goal. But I feel it’s my responsibility, as someone whose work involves looking into the future, to envisage the world not only as a beautiful place but also as an awful place, and to think actively about how we can prevent it from becoming the latter.

How do communication and connectivity affect the development of urban environments?
CHRIS LUEBKEMAN The smart phone, as a device, has revolutionised information to the point where a massive amount of data has become available and can be analysed and observed for certain patterns. For the first time we can begin to understand how people move within any city because a phone can be easily tracked. This allows us to see where the nodal points are. For instance we can now know where citizens stop, where they purchase items and where they go afterwards or who eats where. And we can begin to analyse why, to try to understand better what makes a place special to certain groups and not to others. The wireless world allows us to sense, activate and push information in ways that we have never been able to before. In our part of the world, a mixture of augmented and virtual reality will create something we call mixed realities. Teenagers have virtual games that very often show more beautiful environments than the ones they live in. Those responsible for creating environments will increasingly be expected to make existing environments better living spaces. In other words, there is a renewed appreciation of space.

One of the leitmotifs of your research is that the future is a fiction and a story written by all of us together. Do you see a happy ending for the next chapter of this story?
CHRIS LUEBKEMAN I have to answer as a futurist and a father. The father in me is very worried and concerned about the world that my children will inherit when I die. The world’s population has doubled and continues to grow, the climate has been changing rapidly since the 60s, and global strife and political tension have also increased. Intellectual and creative competition manifests itself in ways that I never would have dreamt possible. But the futurist in me looks at the progress we have made compared to the past, when we had apartheid and seriously debilitating diseases, when the position of women in many countries was so much worse than it is today. The world 50 years ago was probably no more complicated or complex than it is today. We are just more aware of more issues. I believe in the human capacity to look danger in the face and to confront and react to danger, and to be creative and innovative in solving problems. We have done this again and again in the past and I believe that we will do so again. We will come up with the technologies that will capture carbon, clean water, and allow us to communicate better. We will find ways of empowering social choices that are constructive. We will find a new way to live with 9 billion people. We have no choice.
When cities breathe

WOHA is a firm based in Singapore that designs buildings for a green future
WOHA’s idea of common spaces is that they should inspire social interaction, according to Richard Hassell.

Some of their buildings call to mind visions of a future in which plants reconquer the world. WOHA realise a perforation of buildings and landscape, of interior and exterior spaces, of light and shade. The company was founded in 1994 by the Singapore-born architect Wong Mun Summ and the Australian architect Richard Hassell. They transform traditional architectural designs, plan buildings as open landscapes, green garden follies and wind machines. WOHA offers an entirely new interpretation of the contemporary form of construction in Singapore, the high-rise building, by giving it a tropical permeability together with greenery and energy-saving low-tech. Air-conditioning systems are purely supplementary features in their perforated buildings, because the open building structure allows natural cooling. Vertical greening of houses filters the light as well as shading the façades. Solar modules generate energy for use in the building, communal outdoor areas are a standard feature, and both rain and service water are collected and treated. The green future of vertical cities has already commenced with the architecture of WOHA – and it offers amazing quality of life.

Take for example the cooling air flowing through the towers of The Met in Bangkok, a residential skyscraper completed by the architects in 2009. The cross-ventilation of the interior spaces extensively replaces the air-conditioning system of the building. At night, the load-bearing elements of the façade are accentuated by a lighting installation, emphasising the vertical construction against the façade structure. This can be considered a contemporary interpretation of traditional Thai residential houses. Light contrasts have a special function in tropical countries: while the darker shaded areas convey a physically pleasant feeling of coolness, the light-flooded areas are associated with unhindered incidence of sunlight. The darker free spaces inside The Met are planted with greenery and laced with pools of water. The façades are shaded externally by means of outdoor spaces accommodating trees and vertical walls of greenery.

The most radical green designs on which the WOHA architects are currently working, include the high-rise building projects Parkroyal on Pickering and Oasia Downtown with hotel, club and small office units in Singapore. Over 15,000 m² inside the Parkroyal are reserved for sky gardens, swimming pools, waterfalls, terraces and vertical gardens. The Oasia Downtown building is designed as a garden folly and as much as 750 % of the plot is covered with plants. The shaggy green mane of the tower is a very tropical alternative to the smooth, western-influenced high-rise icons, getting nature back into urban everyday life.
Well-thought-out architectural designs are WOHA’s response to the chronic lack of space in most major Asian cities. The idea of “multiple ground levels” involves organisation of ground floor areas in spatial sequences such as squares, walkways, parks or gardens and activities such as jogging, walking the dog, children playing in the playground, barbecues with the neighbours. The “club sandwich” approach on the other hand, involves a layering of different functions on top of each other. In WOHA’s design of the School of the Arts in Singapore, the base of the building is reserved for public performances in concert halls, theatre stages and performing spaces. Located above this, are three six-storey blocks dedicated to academic study of the fine arts, the performing arts and music. Sports grounds and open areas are located on the roof of the school. In a landscape-like sequence, darker interior spaces alternate with shaded transition spaces and bright open spaces.

The designs of the architects aim to combine a highly dense style of construction with a humane, vital and active way of life. For WOHA, light is essential for an emotional sense of well-being. The architects therefore adjust light and lighting to suit each project and the associated requirements. Starting off on a natural light basis, illumination is added to emphasise spatial or architectural design elements, to create a specific atmosphere or spatial modulations – from a single room to an urban scale. In the exterior spaces, intentionally shaded elements also contribute to the spectrum of these qualities.

Apart from offering an organisation of space, the ultimate objectives of the architectural design of the vertical buildings also include a provision of space for action and opportunity. WOHA architecture facilitates social togetherness in places designed for meeting and interaction.
Green wave for cyclists

Copenhagen sets the course for a new quality of urban life

PHOTOGRAPHS Ty Stange  TEXT Sandra Hofmeister
To the moon and back again (or roughly 1.2 million km) – that’s about the total distance travelled by cyclists in Copenhagen every day. The priority of cyclists in the traffic policy of the urban administration of the Danish city has been undisputed for years. Cyclist safety has increased significantly and the accident risk reduced. Bicycle lanes have special service stations with air pumps. During rush hour traffic, the signals at major road junctions are set to green for cyclists, giving them a “green wave”. The Lord Mayor of Copenhagen, Frank Jensen, who often travels by bike himself, knows first hand that modern people don’t want to waste any time in traffic jams.

Cycling is part of the way of life in Copenhagen. In the late afternoon rush hour, young and old can be seen pushing the pedals on the main street Nørrebrogade. With colourful helmets, briefcase hanging from the shoulder, shopping bags dangling from the handle bar, they head towards home after work. About 35% of people living in Copenhagen go to their place of work or training by bike every day. At many junctions, car traffic isn’t much of an issue – waiting cyclists accumulate in front of the red traffic lights instead. Driven by their own physical strength, they make their way through the city silently.

Less noise, less pollution and better health: the advantages of cycling for the quality of urban life on the coast of the Øresund have long been recognised by politicians and used to their advantage. The vision of a green city characterised by excellent environmental figures and a high as well as sustainable standard of living, is closely associated with the idea of Copenhagen as a Cycling City. The number of commuters incorporated in this concept has been increasing for some years now. The first super highway for cyclists to be opened in April is one of the incentives to try to motivate commuters to switch from car to bike, even if they have a little further to go. A trial stretch of 18 km will connect the suburban community Albertslund to the city centre. The super highway has a special asphalt cover, is wider than a normal bicycle lane, has fewer less traffic lights and is illuminated at night. A total of 26 such highways covering a distance of 300 km are planned for the region around Copenhagen. The idea is to connect the surrounding residential areas of the capital with the city centre and to herald a new era of traffic planning. It is envisaged that by 2015, about 50% of all commuters will go to their place of work or training by bike. This would correspond to an impressive CO₂ emission reduction of 6,074 metric tons per year.
The approach is both realistic and pragmatic according to Peter Jantzen, a member of the Cycle Super Highway Unit of the city council. This is where the concepts for the superhighways are developed, cyclist commuter flow plans are worked out, potential new routes are examined in terms of demographic aspects and urban guidelines, and routing and budgets are coordinated with the municipalities involved. Ideas for extension of the highway concept are not lacking: the speed required for the "green wave" could for instance be displayed electronically, circular routes supplementing the highways converging in Copenhagen and extending the peripheral bikeway network, are also conceivable.

An evaluation of the first route will shed more light on the feasibility of these visions of the future. Until then, large orange signs, similar to overground and underground railway signs, indicating the highway for cyclists to Albertslund, will be part of the cityscape. WWW.CYKELSUPERSTIER.DK

Concrete plans for the future: to encourage commuters to switch to cycling, Copenhagen’s city hall is planning a whole network of super highways (right). These are intended to connect the peripheral communities to the city centre. Left: Bicycle lane service station: cyclists already enjoy many privileges in Copenhagen.
Images in motion

Galleria Dencercity in Cheonan, South Korea

PHOTOGRAPHS Kim Yong-Kwan TEXT Anneke Bokern
In his “Design School Guide to Shopping”, Rem Koolhaas once compared the star architect Frank Gehry’s buildings to a shopping centre, causing quite a stir in the international community of architects. To design a shopping centre wasn’t considered much of a challenge – most of these being nothing more than unattractive boxes with an interior entirely dedicated to commerce.

This has changed, thanks to Koolhaas. It is no longer unusual for a renowned architect to be called in to design a shopping centre and the attitude to this building type has changed correspondingly. Ben van Berkel, director of the Dutch architectural firm UNStudio, thinks that people – especially in Asia – not only go to shopping centres as consumers, but also for the sake of social interaction. He poses the logical question that if museums are designed like supermarkets nowadays, why can’t we treat shopping centres like museums? Two projects demonstrate what van Berkel means by this: the conversion of the shopping centre Galleria in Seoul completed in 2003, and the shopping centre Star Place in Taiwan opened in 2006. UNStudio has now built another shopping centre for the company operating the Galleria, this time in a city called Cheonan, located 80 km south of Seoul.

In the case of the two predecessor “temples of consumerism”, the innovative interior design is complemented by a skin composed of LED lights and an illuminated building envelope with a fascinating moiré pattern. In this project, Ben van Berkel’s impressive design ideas again did not stop at the curvaceous and dazzlingly white interior. His façade design of the Galleria in Cheonan is special and turns the rules of the genre upside down. The new shopping centre is located close to a new train station in a developing area. Quite the opposite of anonymity or facelessness, the building presents itself as a silvery shimmering box by day, and an all-round luminous object displaying colourful images rushing across its façades at night.

The façade structure is 55 m high and has an area of 12,600 m². It is composed of two layers of vertical aluminium profiles, one on top of the other, resulting in a moiré effect. While the back layer consists of simple aluminium panels, the fins of the front layer are made of specially manufactured triangular sections fitted with hardened glass, integrating hardly visible LED spotlights specially developed by Zumtobel. At night, coloured light is projected onto the inner façade layer by the spotlights. The LED light dots are turned into large-area indirect picture elements with high, medium and low resolution, from 400 x 400 mm pixels at the corners of the building, to 800 x 800 mm pixels on the straight surfaces of the façades. A total of 22,000 luminaires are distributed over the façade, with about 10,000 of these in white and 12,000 in RGB. The single spots are programmed individually via a DMX controller, which transmits animations to the building surface down to the last detail. In this way, lively messages and images are created on the world’s largest light façade of this kind.
The Galleria Centercity façade turns into a huge screen that constantly changes its appearance in the cityscape.

The façade design allows the Galleria to change its appearance constantly. By daylight, the moiré effect moves across the outer silver envelope in unison with the movement of the observer, turning the entire building cube into a dynamic object, reminiscent of Victor Vasarely's Op Art objects. At night, the shopping centre turns into a gigantic, luminescent screen displaying computer-generated animations by UNStudio that include images from the world of fashion, art and – naturally – shopping. Just as the inner life of the building is generated by the flow of the stream of visitors, the building envelope is also constantly in motion. Freed from its static two-dimensionality, it becomes alive, and gaining depth and fluidity, is hardly perceivable as a surface any more. Ben van Berkel finds that illusions are created in this building, resulting in a seeming alteration of scales and the creation of double images – no image is permanent. This is what makes the Galleria so attractive, and so very different from a classical suburban shopping centre. It turns a former non-place into a place to remember.

CLIENT Hanwa Galleria, Cheonan, KOR
ARCHITECTURE UNStudio, Amsterdam/NL, Project management: Ger Gijzen, Astrid Piber
EXECUTING ARCHITECTS, CONSTRUCTION MANAGEMENT, LANDSCAPE ARCHITECTURE GANsam Architects & Partners, Seoul/KOR
LIGHTING DESIGN ag Licht, Bonn/D, Lightlife, Köln/D
ELECTRICAL DESIGN Ilshin E & C
ELECTRICAL INSTALLATION Sahmwon MEC

LIGHTING SOLUTION Custom solution RGB LED spotlights with IP65 as well as white LED spots, DMX controller

“Illusions are created which result in the seeming alteration of scales and the creation of double images,” says Ben van Berkel.

The aluminium profiles of the façade give rise to the moiré pattern of the LED light projected in the urban space. A total of 22,000 LED luminaires are distributed over the façade.
Bright garden halls

Extension of the Städel Museum in Frankfurt am Main

PHOTOGRAPHS Andrea Flak  TEXT Hildegard Wänger
Michael Schumacher considers the Städel project to be a stroke of luck: an obvious solution was used to extend the museum, and yet the result has a poetic charm. It seems that this opinion was shared by the jury that chose the design by schneider+schumacher, an architectural firm based in Frankfurt, as the winning project of an invitation-only competition in 2008. The new construction with an exhibition area of about 3,000 m² is located underneath the garden of the existing building. Access is along an axis from the main entrance via two single flights of stairs. Two arched fields to the right and left of the main stairs were opened up for this purpose. An elegant and delicate-looking ceiling, as high as 8.20 m in places, spans an area of 55.5 m by 47.6 m. The subterranean construction is partly visible above ground. The slightly convex museum garden, which is open to visitors, is decorated with an impressive pattern of perfectly round skylight windows that serve to illuminate the new museum areas.
195 circular skylights admit daylight into the garden halls, while transforming the garden into a delightfully spotted carpet of light at night.

The Städel, established in 1815, is to Frankfurt what the Louvre is to Paris. Starting with the estate of Johann Friedrich Städel, its collection of art has been growing steadily. Conversions, renovations and additions mark the history of the Neo-Renaissance building on the Schaumainkai alongside the river Main. A huge increase in the size of the collections of the museum – especially in the field of contemporary art – in the past years, thanks to numerous purchases, transfers and bestowals, made an extension imperative. Till Schneider and Michael Schumacher, who are alumni of the Städelschule art academy, already proposed the subterranean solution as the best way to solve the problem in an earlier preliminary study. The way that Michael Schumacher describes the course of events is that the idea came quickly, but was soon discarded because the museum management and the curators felt that a subterranean construction could not be financed on account of its lack of conspicuousness. After consideration of all of the other options during the competition phase, it luckily emerged that this was indeed the best solution. All that remained then was to get everyone involved to stop shying away from going underground.

The architects created an open and bright space for the subterranean extension. The lighting concept, for which the lighting designers at LKL (Licht Kunst Licht) based in Berlin and Bonn were responsible, was an important planning component right from the start. The free-spanning and slightly upward bulging ceiling of the large underground room is perforated by 195 circular skylight windows with diameters of 1.5 to 2.7 m. These admit daylight into the exhibition area, and also serve as a source of artificial light: they are fitted with a ring of LED elements containing warm white (2,700 K) and cold white (4,500 K) LEDs – a custom solution, developed by the lighting designers in cooperation with the architects and realised by Zumtobel. An even illumination of daylight, a movable light reduction system is integrated in every skylight. Daylight can be reduced in four stages, including complete darkness conditions. For the sake of homogeneous lighting, the underside of the skylights is closed off with a diffuser foil system.

As already demonstrated by the lighting concept, solutions that suggested themselves were generally favoured by the architects. This includes using the Old Foyer as access to the new garden halls, as well as using already existing space in different ways. The transition between old and new is also reflected in the continuity of materials. The new construction underneath the Städel garden went hand in hand with a general complete renovation of the old building of the Städel Museum plus installation of the latest fire protection technology, also under the direction of Schneider+Schumacher. The roof of the garden wing was for instance restored and fitted with new skylight windows. On top of that, the right conditions for a modern presentation of an art collection were created according to plans by the architects Kuehn Malvezzi. A reinstatement of the historical spatial axes has brought out the special qualities of the interior of the old building. Light and colour, displays and furniture accompany the contemporary presentation of exhibits and enhance their effect. The colour design is complemented by a new Zumtobel lighting system with dimmable artificial light produced by Tecton continuous-row luminaires and LED strips, as well as additional lighting accents with Arcos LED spotlights using dynamic colour temperature control.

Like every new building, the extension also has to stand up to questions regarding sustainability. Michael Schumacher defines the term in the sense that if something is lasting and attractive it is sustainable. The extension is embedded in the earth and needs very little energy to keep it warm or cool. The architects are also quite sure that it is lasting and attractive. In addition, energy-op-
According to Andreas Schulz of Licht Kunst Licht AG, exhibited works of art deserve to be enhanced by an outstanding lighting atmosphere – a maxim which makes no differentiation between exhibition spaces located above or below ground.
Finding a way to divide the new garden halls into smaller, cabinet-style exhibition spaces with individual illumination posed a major challenge for the lighting designers.
timised technical components are used. An ideal indoor climate for a museum can be achieved with minimal energy consumption thanks to the fact that the building is completely embedded in the soil, the creation of hot and cold thermal energy using a geo-thermal accumulator and heat pump, as well as a large internal thermal mass.

With the extension of the Städel, schneider+schumacher managed to reconcile apparently contradictory aims: the exhibition area has been doubled without infliction of any changes in the historical facets of the existing building. Thanks to the ingenious design, the garden has been retained as a green oasis, having gained importance as an architectural feature, permitting interesting insights and drawing together Städel and Städelschule. The Städel extension is a revelation, below and above ground.

The museum shop, which was also completely redesigned by Spiess Interior Design in the course of the extension, is very popular among visitors. The decorative pendant luminaires contribute significantly to the friendly atmosphere of the premises.

“Something is sustainable if it is lasting and attractive.”
Interview with Michael Schumacher, owner of schneider+schumacher, Frankfurt am Main

What do you consider special in the design of a museum?
MIchael Schumacher A museum is the ultimate challenge for an architect. You have to deal with space, large spaces, with light, with valuable exhibits - all this makes it a very attractive task.

What was the significance of the urban development context with regard to the Städel extension?
The way we planned the building, all the advantages that the Städel ensemble had before are retained. In four out of eight of the competition designs, the garden would have had to give way to a new construction, representing an urban development loss. This garden is used intensively for various types of events; our design allows a continuation of this in future. The slightly convex shape of the lawn and the skylights mean that the new rooms are visible in the urban environment in a spectacular way. An intriguing combination has been created, that could paradoxically be described with the term “spectacular modesty”.

The extension meets the sustainability requirement of a building on several counts. What were the decisive criteria for you in this respect?
We have a very simple definition of sustainability: something is sustainable if it is lasting and attractive. The Städel extension has an inherently sustainable design. Embedded in the earth, the extension requires very little energy to keep it warm or cool. And we are quite sure that it is lasting and attractive. From a technical point of view, significant sustainability-contributing factors include the borehole heat exchangers for indoor climate conditioning, the lighting with LED technology and the large proportion of daylight used.

You developed a custom design luminaire with Zumtobel. Can you describe the objective and the solution?
Our aim was to develop a lighting solution that satisfied the requirements and regulations of the curators and conservators, as well as fulfilling our wish to have a daylight-similar illumination.

CLIENT Städelisches Kunstinstitut, Frankfurt am Main/D
ARCHITECTURE of extension and renovation of old building: schneider+schumacher, Frankfurt am Main/D
ARCHITECTURE OF PRESENTATION OF COLLECTION Kuehn Malvezzi, Berlin/D
LIGHTING DESIGN LKL Licht Kunst Licht AG, Berlin, Bonn/D
ELECTRICAL DESIGN Delta-Tech, Weiterstadt/D
ELECTRICAL INSTALLATION Imtech, Rüsselsheim/D

LIGHTING SOLUTION FOR THE NEW CONSTRUCTION LED custom solution for circular skylights, ARCOS custom solution LED spotlight, LUXMATE Professional lighting management system
LIGHTING SOLUTION FOR RENOVATION OF THE OLD BUILDING TECTON continuous-row lighting system, ARCOS LED spotlight, PANOS INFINITY LED downlight, SCONFINE pendant luminaire, RESCLITE emergency lighting, LUXMATE Professional lighting management system
Renovation of the Main Wing and Garden Wing took place simultaneously with the construction of the garden halls. The new luminous ceiling creates an atmosphere similar to natural daylight conditions, while LED spotlights place brilliant lighting accents on the works of art.
Mountain group with surplus energy

Salewa headquarters in Bolzano

PHOTOGRAPHS Oskar Da Ritz (p. 40/41), Jens Ellensohn
TEXT Andreas Gottlieb Hempel
The new headquarters of Salewa, a leader of the technical alpine clothing market in Europe, certainly live up to the company’s slogan “Everything for the mountains”. Even the location of the building, designed by the architectural studios Cino Zucchi Architetti and Park Associati based in Milan, is appropriate. The complex is situated in Bolzano, at the edge of the “Pale Mountains”, as the Dolomites are often referred to because of the typical rock colour.

Does it make any sense to build high-rise buildings in the Alps? This question has given rise to intensive discussions in Bolzano, and in this context, the architects created a building that can be considered as a shining example of urban development. The multi-folded complex next to Monte di Mezzo fits into the deep circular valley of Bolzano and the surrounding mountain silhouettes as if it were one of the gang. Its vertical office towers are supplemented by horizontally aligned exhibition and warehouse areas, as well as an indoor climbing centre. The smooth façade skin made of glass and perforated aluminium panels in three different shades of grey, can be perceived as a reference to the Dolomites, which have been included in the UNESCO World Heritage List. The architecture is a sensitive response to the genius loci of the South Tyrolean landscape, resulting in a dialogue between the two. The side wings of the assembly open up wide towards the city in the north, welcoming guests and visitors with a generous gesture. Heiner Oberrauch, president of the Oberalp-Salewa Group, calls it a “gate to Bolzano for all those coming from the motorway”. The glass façade of the office and exhibition areas on the other hand permits a free view of Bolzano and the mountains.

The unusual building shape accommodates various different functions under one roof: office and administration space for about 160 employees, warehouse areas for logistics, the largest indoor climbing centre in Italy equipped for up to 250 climbers, a fitness room for employees, a crèche and a public meeting room. The design is user-focused – particularly aiming to meet the requirements of the employees. The exemplary South Tyrolean company wants...
The stunning architecture of the new Salewa headquarters has become a component of the surrounding mountain silhouette.
The custom luminaire IBLA was developed by Studio Park Associati in collaboration with Zumtobel. Its shape bears reference to the cubage of the building.
to demonstrate its belief in living an active life, as is appropriate for a mountain sports specialist. But that’s not all: the building operates on the basis of a comprehensive energy and lighting design. This has received awards by the recognised South Tyrolean “Climate House” concept, with individual building areas even having been awarded the highest, gold level of certification. Importance was attached to using building materials requiring short transport routes to keep the environmental impact down, with 90% of the suppliers located in the vicinity. The solar panels of the building produce more energy than needed. In addition, a CO₂ emission reduction potential of 330 metric tons per year was achieved using technologies for heat recovery as well as for heating and cooling of the building mass, with additional surface temperature control. This amazing figure is also attributable to a double-shell glass façade: a rear-ventilated thermal insulation structure with solar protection glazing, which is placed in front of the load-bearing concrete components of ceilings and supports using a steel construction.

The lighting concept developed for the building is literally a shining example of ingenuity. One requirement that this had to fulfil was that the office and exhibition areas should not be shaded against sunshine – the employees in the building were to enjoy a free view of the mountains. Another demand was that the interior lighting conditions were to be constant with varying daylight situations. Park Associati and Zumtobel worked together to meet these requirements and developed IBLA, a dimmable luminaire. This not only throws indirect light onto the ceiling, but also provides direct illumination of computer workplaces, thereby ensuring ideal lighting conditions without annoying glare effects. The special folded design of the luminaire made of a mineral-based material echoes the building architecture in miniature form. Unobtrusive recessed luminaires in the conference rooms allow flexible lighting for various uses such as meetings or video presentations. The well-balanced distribution of light gives the rooms a bright and friendly atmosphere. The solution selected for the exhibition and reception rooms provides a homogeneous general illumination with batten luminaires, and a focussing object illumination with spotlights. These allow exhibited Salewa products to be highlighted individually.

The appearance of the building at night was another important aspect for the client. Light emerging from the glazed façade areas and the illumination of aluminium and concrete surfaces of the closed parts of the building, make the complex stand out discreetly, yet unambiguously, as a laboratory of ideas, research and development.

**Project Details**

**CLIENT** Oberalp Salewa/I

**ARCHITECTURE** Cino Zucchi Architetti and Park Associati [Filippo Pagliani, Michele Rossi], Milan/I

**ELECTRICAL DESIGN** Energytech, P.I. Gabriele Frasnelli, Bolzano/I

**LIGHTING SOLUTION** IBLA custom design office luminaire, MELLOW LIGHT IV recessed luminaire, SLOTLIGHT II light line, TECTON SLIMLINE continuous-row system, LINARIA batten luminaire, PERLUCES recessed luminaire, LIVANO spotlight, ONDARIA circular luminaire, ONLITE CPS emergency lighting system, PURESIGN escape sign luminaire, RESICLITE LED emergency lighting
Sustainable architecture
Austrian Embassy in Jakarta/ID

As Indonesia’s first green building, the Austrian Embassy in Jakarta has set a new standard of room quality, indoor climate comfort and sustainability in the country. The office building designed as a passive house collects energy via solar collectors, has a rainwater treatment system and pipes bearing cooling water laid in the ceiling to cool the structure. Environmentally-friendly and innovative building measures make a conventional air-conditioning system unnecessary. Certification by the Green Building Council Indonesia has already been awarded. The lighting design also contributed to this: modern energy-saving lighting systems with high luminous efficacies are used for workplace illumination, while energy-saving lamp technology ensures efficient operation of the luminaires, as well as creating a pleasant direct/indirect lighting atmosphere in the office spaces.

CLIENT Republic of Austria, Federal Ministry for European and International Affairs, represented by the Austrian Embassy Jakarta
ARCHITECTURE pos Architekten, Vienna/A
LIGHTING DESIGN Pokorny Lichtarchitektur, Vienna/A
ELECTRICAL INSTALLATION PT. Tetra Setia, Jakarta/Indonesia; Distributor: PT. Lelco, Jakarta/Indonesia
LIGHTING SOLUTION SLOTLIGHT II light line, PERLUCE surface-mounted luminaire, CLARIS II pendant luminaire

The greenest office in the Netherlands
Villa Flora in Venlo/NL

The Villa Flora is a landmark of the region of Limburg and the city of Venlo – a symbol of responsible handling of natural resources. The name of this impressive office building is already an indication of the fact that the approximately 30-metre high building is green; very green even: it is the most energy efficient building in the Netherlands. The modern appearance of the light and airy glass complex is impressive. Thanks to numerous environmentally friendly measures, it is also a milestone of sustainability in the epicentre of cradle-to-cradle principles. The building is positioned for optimal utilisation of solar energy. An intelligent lighting control system ensures cost-effective operation, while providing optimal lighting quality. Modern pendant luminaires – equipped with special microprismatic optics and dimmable electronic ballast – offer maximum luminous efficacies and modern workplace conditions. The biggest energy-saving potential is realised by consistent daylight-dependent control of the luminaires. The daylight sensor installed on the roof of the structure determines the daylight entering the building depending on the position of the sun. Whenever necessary, the lighting management system of the building supplements daylight with artificial light to provide an illuminance of 500 lux in total.

CLIENT Provincie Limburg/NL
ARCHITECTURE Jon Kristinsson, Deventer/NL
ELECTRICAL DESIGN Volantis bv, Venlo/NL
ELECTRICAL INSTALLATION Terberg Systeemintegratie bv, Ijsselstein/NL
LIGHTING SOLUTION LIGHT FIELDS pendant luminaire, PANOS downlight range, COPA high-bay luminaire, MIROS floodlight reflector system, SLOTLIGHT light line, LUXMATE Litenet light management system

CLIENT Provincie Limburg/NL
ARCHITECTURE Jon Kristinsson, Deventer/NL
ELECTRICAL DESIGN Volantis bv, Venlo/NL
ELECTRICAL INSTALLATION Terberg Systeemintegratie bv, Ijsselstein/NL
LIGHTING SOLUTION LIGHT FIELDS pendant luminaire, PANOS downlight range, COPA high-bay luminaire, MIROS floodlight reflector system, SLOTLIGHT light line, LUXMATE Litenet light management system
Creative freedom of space and light
Google Headquarters, London/UK

An entirely new type of modern working space was created at Google’s new office premises on Buckingham Palace Road, London Victoria. No more long corridors, boring open-plan offices or austere conference rooms; instead, what you find there is lively colours, stylish yet functional furniture and a splendid lighting ambience. For the offices of the search engine giant, the London-based architecture and interior design studio Penson developed a completely new concept incorporating a combination of shrewd functions and some really clever and fresh thinking workplace strategies. The floors provide a mixture of different spaces and functions, ranging from a coffee lab, lounges, and a music studio, to plenty of very clever collaboration and working spaces. Most walls across the space are magnetic white board laminates, which allow scribbles across the entire floor. In addition to spacious areas for work and recreation, small nooks and crannies for people to use alone or in groups have also been provided. The target this architectural masterpiece aims at is always the same: the space has to work around Google staff and not the other way round. The lighting concept had to follow the same principles: luminaires perfectly in line with the architecture and with the users’ requirements. Correspondingly, the lighting solution developed by Zumtobel creates workplace conditions in which people feel at ease as well as concentrated and motivated in their work – whether due to the soft lines of Ondaria circular luminaires in the conference rooms or the excellent quality of light provided by the LED downlights and light lines in the group and break rooms.

CLIENT Google Headquarters, London /UK
ARCHITECTS Penson, London/UK
INTERIOR DESIGN Penson, Anna Pizzey, London/UK
ELECTRICAL CONTRACTOR Elite Electrical, London/UK
LIGHTING SOLUTION PANOS INFINITY LED downlights, SLOTLIGHT light lines, ONDARIA circular luminaire, SCONFINE pendant luminaires, TECTON lighting system, CARDAN SPIRIT lighting system, LUXMATE CIRIA control unit, RESCULTE emergency downlights, COMSIGN emergency exit sign luminaires

Soft illumination
Rookery Building in Chicago

Back in 1890, the 11 storeys of The Rookery made it the tallest building in the world. Today, the building is still considered to be a forerunner of modern skyscrapers. The unique and fascinating architecture of the interior design by Frank Lloyd Wright and the stucco-decorated façade are certainly worth a visit. Thanks to the façade lighting, designed by OVI, a lighting design office based in New York, and realised by Zumtobel, the building is now also a special feature in the cityscape at night. Custom luminaires manufactured specially for the project accentuate the fine stucco work of the façade. This involved an adaptation of the optics: the typical rotationally symmetric light cone of LED point light sources is flattened and elliptical in the custom solution. The Rookery by night has become a breathtaking symbol of timeless-ness and a new highlight of Chicago’s financial district.

CLIENT Buck Management Group, LLC, Chicago/US
ARCHITECT Burnham & Root, Chicago/US
LIGHTING DESIGN Office for Visual Interaction, Inc. (OVI), New York/US
ELECTRICAL INSTALLATION Rex Electric & Technologies, LLC, Chicago/US
LIGHTING SOLUTION ELVO LED surface-mounted spotlights (custom solution)
Design all the way to the roof
Porsche Design Group in Singapore

The Shoppes at Marina Bay Sands is a shopping mall in Singapore with an area of about 160 m² dedicated to the presentation of the classy product range of the luxury brand Porsche Design. The store emphasises the Iconic Style philosophy of the Porsche Design Group. In line with the product range presented, the lighting selected by the premium manufacturer excels in terms of quality and outstanding design. The modern lighting technology of Discus spotlights accentuates the exquisite objects, while also bringing the interior landscape to life. The minimalistic design of the LED luminaire so typical of EOOS, harmonises perfectly with Porsche Design’s very quiet, purist shop furnishings.

CLIENT: Porsche Design Group, Bietigheim-Bissingen/D
ARCHITECTURE AND LIGHTING DESIGN: Porsche Design Studio and Blocher Blocher Partners, Stuttgart/D
LIGHTING SOLUTION: DISCUS LED spotlights

Great Hall even greater
University of Technology in Sydney/AU

Sydney’s University of Technology has established itself as a progressive and cosmopolitan institution of higher education in the course of over 20 years of existence. This is not only based on providing ideal conditions for learning and study, but also attributable to the importance attached by the university to its cultural image. This was one of the reasons why the university management decided to redevelop the Great Hall – a multi-functional venue with an area of 1,100 m² for staging events on the campus grounds. The key element of the new hall design is a mantle of perforated aluminium panels inside the building, resting on an existing concrete base. Acoustic and lighting systems can be integrated in the panels without affecting their appearance. Flexible use of the generously sized hall and foyer depending on the particular event, is facilitated by modern LED spotlights. Thanks to an intelligent lighting system, the spotlights provide a balanced lighting atmosphere by day, while lending the rooms an attractive brilliance at night.

CLIENT: University of Technology, Sydney/AU
ARCHITECTURE DRAW: Sydney/AU
LIGHTING DESIGN: Steensen Varming, Sydney/AU
ELECTRICAL INSTALLATION: Steensen Varming, Sydney/AU
LIGHTING SOLUTION: IYON LED spotlight range, ARCOS spotlight range, L3+DALI track
More passenger convenience
Skylink airport terminal in Vienna/A

Operation of the new Skylink terminal at Vienna Airport is scheduled to commence in June 2012. Modern architecture with light-flooded areas, short transfer distances, more choice for shoppers and plenty of facilities for eating and drinking all aim to make the terminal a pleasant experience for travellers. The illumination was considered an integral part of the ultra-modern architecture right from the start, according to the responsible lighting designer Hannelore Kress-Adams, of the homonymous planning office Kress & Adams. With lighting specialist Zumtobel as a partner, the designers were able to realise the specific technical requirements professionally and utilise specially fabricated custom luminaires or modified products. The two companies collaborated in the development of a square 700 mm x 700 mm, transparent pendant luminaire with a central opening, which serves to ensure unhindered installation of fire detectors and sprinkler systems. A total of 2,500 luminaires – matching the clear design vocabulary – were used to achieve a calm ceiling image and a pleasantly homogeneous basic illumination. A clever solution was devised for the numerous public thoroughfares to and from the gates: the lighting designers created special “light cushions” with a fabric covering, which can swing away to one side. In this way, service technicians can access the technical systems level located above at any time.

CLIENT Flughafen Vienna AG, Vienna/A
ARCHITECTURE Baumschlager Eberle, Vienna/D
LIGHTING DESIGN Kress & Adams, Colgone/D
ELECTRICAL INSTALLATION Kremsmüller, Schwechat/A
LIGHTING INSTALLATION Fa. Csernohorszky, Vienna/A
LIGHTING SOLUTION Custom lighting – fabric "light cushions", custom lighting – fabric luminaire elements, custom design square pendant luminaires, SLOTLIGHT II light line, custom design recessed luminaires in glass, LUXMATE Professional lighting management system

On one wavelength
Cité de l’Océan et du Surf in Biarritz/F

Translucent glass, cobblestones, white concrete and a design vocabulary focused on flow: the architecture of the new multi-functional construction by Steven Holl Architects seems to merge with the waves of the Atlantic breaking in front of its doors. The motion of the waves is imitated by the curvy ramps of this amazing building that serves as a museum, cultural centre, event hall and hotel. Inside the building complex, the concave design element from the exterior is propagated by the concrete ceiling. Exhibition areas presenting scientific phenomena of the sea are located in the basement, which is accessible via ramps. The spotlight system used to illuminate the exhibition combines the necessary functionality with a high sensitivity to the architecture. Some of the spotlights used to provide the special illumination in this area were fitted with wall brackets to retain the harmonious image of the ceiling.

CLIENT SNC Biarritz Ocean, Biarritz/F
ARCHITECTURE Steven Holl Architects, New York/US with Solange Fabião, New York/US and Rüssli Architekten, Luzern/CH
LIGHTING DESIGN L’Observatoire, New York/US
ELECTRICAL INSTALLATION Santerne Aquitaine, Bruges/F
LIGHTING SOLUTION ARCOS spotlight size 3, ARCOS spotlight size 4, custom design
State-of-the-art LED technology allows intelligent adaptation of the colour temperature of white light in museums, shops or offices to suit the different requirements:

1. cold white
2. neutral white
3. warm white
A lot has changed since the first LEDs appeared on the market as decorative coloured dots. LED luminaires went through a very fast development process, characterised by increasing luminous efficacies, higher efficiencies and a long service life. Today – another step further – the first “Tunable White” LED luminaires allowing white light to be produced at different colour temperatures, are available. Over 80 men and women work in Zumtobel’s development department, dedicated to meeting the challenges of a rapidly progressing field and devising new ways of using light for spatial design. The interview with Thomas Schmölz, Director Product Development Zumtobel, demonstrates how important it is to consider application and product as one, in order to use the necessary knowledge about customer requirements and the effect of light to create the successful product solutions of tomorrow.

Interview with Thomas Schmölz about sensitivity towards customer requirements and new challenges posed by the development of LED technology:

“We want to do more than fulfil lighting requirements; we want to take into account how the user feels and influence this positively.”

The lighting industry is currently undergoing a significant change process – driven by LED developments. What do you, as a developer, consider the potential of light to be in the future?

THOMAS SCHMÖLZ On the one hand, this potential lies in saving energy as well as in the conservation of resources. On the other hand, I think that light can offer us completely new ways of designing our living environments. The latter is in the foreground of our work: making artificial light more changeable and emulating the course of daylight, which offers people an optimal environment to work and live in.

To what extent do product development and quality already meet these processes?

THOMAS SCHMÖLZ Over the last years, the complexity of the demands made on light and therefore also on luminaires and lamps has increased. Light has to become more changeable and adapt to the requirements of the customer as flexibly as possible. This means that products are capable of more, but also need to be tested more extensively beforehand. Innovation and knowledge of customer requirements therefore represent our core competence in the development of products.
Which are the current chief development issues?

THOMAS SCHMÖLZ Current drivers include new lamps, i.e. light sources like LED and OLED, but also the Tunable White functionality – the dynamic adaptation of colour temperature. The question is: Which of the as yet unmet customer requirements can we satisfy with the new lamps in future? It always has to be borne in mind that although new light sources offer advantages, they are also associated with risks. Their performance in applications therefore has to be examined very thoroughly.

LED technology has revolutionised many areas. To what extent has this affected the development process of luminaires at Zumtobel?

THOMAS SCHMÖLZ Contrary to earlier developments, primarily based on design and mechanical issues, current developments essentially take place in the electronics field. We are expanding our competencies and adapting our processes accordingly. In this context, we also interact with interesting new partners, some of whom are based in Asia or the United States. LED has therefore not only revolutionised the technical development processes, but also the global networks of the lighting industry.

Social responsibility is a much-cited phrase nowadays that also affects architecture and technological developments. What does this mean for luminaires and lighting solutions?

THOMAS SCHMÖLZ Everybody is taking about saving energy, but we need to consider the subject in a broader context. The total resource consumption should be considered, i.e. also including characteristics such as light quality and user acceptance. I don’t think that excessive euphoria about new technologies is appropriate. The risks should always be taken into account as well. The quality of new light sources therefore has to be studied explicitly, to be able to achieve satisfactory results. We have carried out extensive studies for museum lighting and are now in the process of investigating applications in the health and care sector, as well as in the office sector.

Does this mean that you study the user requirements of a particular application area and derive new product developments from that?

THOMAS SCHMÖLZ Yes, exactly. This happens in preceding projects. Basically it’s all about recognising the requirements, but specifically, it’s about making the best possible use of the opportunities to positively meet these requirements with the new light sources. We want to do more than fulfill lighting requirements; we want to take into account how the user feels and influence this positively.

How can the previously mentioned Tunable White functionality be used by architects and planners for designing spaces?

THOMAS SCHMÖLZ Tunable White opens up lots of opportunities. But we need to ask ourselves which of these are worthwhile and demanded by the customer. The fact that daylight changes means that people are used to light being dynamic; until recently artificial light was fairly static. It would however be a mis-

Iyon is an LED spotlight that unites highly intelligent technology with elegant design. In combination with a suitable management system, users can obtain the best possible light quality for the specific application.
take to try to imitate this daily rhythm without some previous thought, because any imitation is usually not as good as the original. It’s up to us to match the colour temperature rendering to the applications with regard to the specific choice and balance. Museum or shop and supermarket lighting are leading in this context, in an effort to present objects and products authentically and attractively. In offices, the focus is more on trying to break the monotony and to structure the day. The required lighting management systems are essential components for successful achievement of this. They are the key to adjusting the luminaires to suit the specific application and user.

Could it be said that Tunable White brings changeable light to a changing world? To what extent can this technology be considered a metaphor for the change in the light industry and global change as a whole?

**THOMAS SCHMÖLZ** I think that Tunable White is representative of more design freedom and a development towards even more flexible, less manually controlled lighting solutions. Irrespective of that, the change in the light industry is caused by an extreme acceleration in the semi-conductor industry as well as new market participants bringing globalisation to the light industry.

Do these two thoughts also play a role in the approach to new developments?

**THOMAS SCHMÖLZ** Yes, definitely. The point of research and development is to make sure that the company continues to be competitive in future by coming up with new products and processes. An eye has to be kept on the constantly changing conditions and an exact analysis of the current and future requirements of individual living environments has to be made. Application and product have to be considered as one unit. This is why we, as a development department, are also very much integrated in application-oriented research projects. The application requirements determined there define future products. In this way, every concept is examined with respect to usability and feasibility for the specific applications.

**THOMAS SCHMÖLZ** studied mechanical engineering at the Vienna University of Technology. He joined Zumtobel’s luminaire development section in 1988. After management of development projects for the continuous-row lighting system ZX and the moisture-proof luminaire range FZ, he was appointed Director of Product Development in Dornbirn in 1993. He controls all Zumtobel development activities in Europe and the USA.
Walter Benjamin once wrote something interesting about Berlin, which was essentially that it’s nothing special to find your way around a city, while getting lost in it, like in a forest, requires training. This training starts early, initially in childhood, when new worlds are discovered with big eyes, safely holding the hand of an adult. An independent training phase follows during adolescence, driven by the courage to leave and break out, to discover unknown territories.

Once the city has become familiar, and having turned into one of its inhabitants, a specific target usually exists. Urban creatures walking around armed with habit are necessarily absent-minded: they go to work, to the bakery, to the shop. Quickly leaving wife, child and house, hurrying along streets, traversing squares, crossing the paths of others, waiting impatiently at the lights, turning off, walking on, stopping off to get something done and stepping back onto the street. The different smells and colours of everyday life, the buzz of voices and the tide of faces in the crowd, the endless richness and beauty of life in the city are more or less lost to this kind of urban creature.

Quite differently the flâneur: this saunterer is a creature of art and leisure, a master of phantasmagoria. His step is full of anticipation, while his look is full of hesitation. He knows no destination, only the present. He doesn’t do errands, he gathers impressions. With ears open and eyes alert. For him, the city is like a gigantic image-generating machine to browse through without knowing what to he should look for or what he will find. He is learning to see and he loves the little observations out of which he dreams up a world of his own. Drifting along the crowd like flotsam on water, he accepts every gift presented to his imagination by the city with grateful awe.

For the flâneur, the city is full of marvels, and he is quite convinced that the return on his idleness, the basis of his strolling, is more valuable than the revenue of work.

Does he still exist, the flâneur? Or has he disappeared with the 19th century that first produced him? By trying to emulate him, are we chasing a chimaera? One thing is for sure: the transportation revolution in the 19th century and the transmission and media revolution in the 20th century resulted in a complete change in the conditions under which we move around in the urban labyrinth and how we perceive the often overwhelming abundance of impressions. Airplane, railway, subway and car have, each in their own way, turned the kaleidoscope of impressions into a fleeting image that we need to catch hold of. The continuum of perception has been totally burst open by the new media, defying spatial distances. We often only know a city as an image, viewed on a screen that fits in every pocket. This doesn’t however mean that we are anywhere near finished with the urban remix that is still referred to as city. The city of the future is still waiting to be discovered.

The city – for centuries associated with hope and promise, but also with hostility and downfall. Urban environments are brimming with chances waiting to be seized, inhabited by millions hoping to find their luck there, a place where bets on the future are made. Listening to the hymns sung by euphorics, only inhabitants of high-density, sustainably designed urban feel-good bubbles will have a safe base of existence in the future. The picture painted by apocalypticists on the other hand will have us believe that the open city of the past has long morphed into an uncontrollable monster full of dangers. Both agree on one point however: the fate of mankind will be decided in a 21st century megacity, rather than in the expanse of the steppes or vastness of the oceans, or even in the fields of the industrialised landscape. Expressed more succinctly: a competent interpretation of the present, requires an awareness and understanding of the energies and mechanisms supplying and holding together these hothouses of comfort.

All this may be true, but a fact that is often overlooked is that the way a person perceives the city in which he or she is, varies tremendously from one individual to another. Today more than ever.
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Museum lighting is regularly faced with the tricky task of presenting sensitive exhibits to optimum effect while protecting them against damage. Here, Zumtobel's LED luminaires with dynamic colour temperatures offer a perfect solution. For the first time ever, adjustable white light quality makes it possible to highlight different materials and colours by means of the perfect colour temperature in each case without having to replace luminaires or lamps, at the same time, contrasts between cool and warm white attract the attention of visitors, improving the quality of perception. Another asset of Tunable White: the spectrum of the LED is almost completely free from any UV or IR radiation, allowing for gentle lighting of valuable exhibits without having to use additional filters. Using state-of-the-art control systems for minor exhibitions or entire museums, the colour temperature is always set perfectly to meet individual requirements.
TUNABLE WHITE FOR PRESENTATION AND RETAIL

In shops and retail areas, light has to entice customers to buy as much as possible. It is used to address people's emotions and to create brand identities. Colour temperatures range from 2,700 K to 6,500 K providing plenty of design scope. LED luminaires with Tunable White function provide centre stage settings with customised lighting scenes, allow the light to adjust to the respective application, or highlight the look and colours of individual products. The 3-channel technology used in the process provides unique colour rendering of Ra 90 over the full spectrum. In combination with state-of-the-art control modules such as the CIRCLE control point or the LUXMATE LITENET Tunable White control system, Tunable White spotlights and downlights by Zumtobel create complex solutions for flexible retail space design.
LUXMATE LITENET
Lighting management system

LUXMATE EMOTION
Lighting management system

PANOS INFINITY
36 W – 44 W LED
1,100 lm – 1,600 lm

VIVO L
36 W – 44 W LED
1,100 lm – 1,600 lm

IYON M
35 W, 1,650 lm
ONLITE COMSIGN 150
Escape sign luminaire

In the new generation of COMSIGN 150, an already popular feature has been further improved: the weight of the luminaire’s transparent acrylic glass has been reduced even further and installation on walls and ceilings and cord suspension has been facilitated even more. The surface-mounted component is made of high-grade aluminium. The pendant version of the elegant escape sign luminaire seems to float. Its slightly curved shape fulfills both aesthetical and functional tasks. When it comes to luminance levels beyond 500 cd/m², the luminance levels achieved by COMSIGN 150 are significantly higher than those required, high uniformity levels are reached as well. These features are combined with the properties of an innovative LED luminaire: an extra-long service life at constant light output levels and low energy consumption.

DESIGN EOOS
zumtobel.com/comsign
1:1 Luminaire dimensions 15.5 mm x 187.5 mm x 300 mm
ONLITE CROSGIGN 110/160
Escape sign and emergency luminaire

As a versatile all-rounder, CROSGIGN takes a step forward into a highly efficient future: By using the latest LED technology, the luminaire needs a power input of only 3W despite providing a light output ratio of more than 100 lm/W, which reduces energy consumption sustainably whilst at the same time, reducing the use of material and improving the lighting result. CROSGIGN is available with IP 42/54 protection, which makes the luminaire resistant against dirt, dust and moisture. Its application-oriented versatility is achieved by a wide range of exchangeable components, unrivalled ease of installation and two recognition ranges. Two rotating lenses at the bottom turn the escape sign luminaire into an emergency luminaire as well. Thanks to these ERI spots (patent pending), the lighting cones of the LED spots can be individually adjusted to the building situation, so that even corners or escape-route crossings can be illuminated.

DESIGN Eeos
zumtobel.com/crossign
ONLITE PURESIGN 150
Escape sign and emergency luminaire

Zumtobel's latest generation of escape sign luminaires meets the highest requirements in terms of economic efficiency. PURESIGN's sustainable life cycle begins with purist material use and resource-saving powder coating and reaches its peak with the luminaire's energy consumption reduced even further and improved IP 42 protection. As a result, the service life of the surface-mounted, pendant and recessed luminaire is extended and its application versatility improved. The slim-line PURESIGN not only boasts a light-weight and elegant appearance, but also incorporates innovative lighting technology: the escape sign luminaire features two rotating ERI spots for variable illumination of escape routes. Thus, every single PURESIGN luminaire is now able to fulfil the tasks of both escape route and emergency luminaires.

DESIGN EOOS
zumtobel.com/puresign
6
LUXMATE LITENET with TUNABLE WHITE
Lighting management system

The LUXMATE LITENET Lighting Management System controls small building units as reliably as large-scale building complexes. Maximum energy efficiency can be achieved by intelligent integration of daylight sensors, presence detectors and time sensors. Added value in terms of quality is based on flexibility and convenience. With the latest generation of the lighting management system, control of Tunable White luminaires has been smoothly integrated into the system. What’s special about it is that the luminaires’ intensity and colour temperature can be set entirely independently and intuitively, on the basis of graphically displayed timelines. The lighting control system is supplied with the basic features of a beneficial lighting concept, including predefined sequences over the course of the day for offices, production facilities, healthcare facilities and retirement homes, based on the latest scientific findings. As these scenarios can be individually adjusted, and existing LITENET installations can be updated, energy-efficient lighting solutions with dynamic colour temperatures and luminous intensity levels can be implemented easily.

zumtobel.com/litenet

7
MELLOW LIGHT V
Recessed LED luminaire

MELLOW LIGHT V is the result of consistent ongoing refinement of a luminaire that creates a lighting effect similar to daylight. The latest LED generation has increased the recessed luminaire’s efficiency even further. With a power input of 40W, a luminous flux of 3,000 lumens is produced; for 4,000 lumens, only 55W are needed. MELLOW LIGHT V therefore easily provides illuminance levels of 300 and 500 lux. The upgraded luminaire package is rounded off by two colour temperatures – 3,000 K and 4,000 K. The luminaires, which are dimmable as standard, are available with three optics: Brightness, HighDefinition and MicroVane. As an emergency luminaire with optionally built-in LED lens, MELLOW LIGHT V is a safe alternative also in emergencies.

DESIGN James Irvine
zumtobel.com/ml

8
SLOTLIGHT II LED
LED light line

The narrow light line uses all the benefits of LED technology: SLOTLIGHT II LED cannot fail to impress as a maintenance-free product featuring a completely uniform light emitting panel. It allows to better trace outlines, re-define more room zones and bring corner areas into sharper focus. As a recessed luminaire, SLOTLIGHT II has no visible luminaire unit at all. As a surface-mounted and pendant luminaire, however, the luminaire unit emphasises the luminaire’s unobtrusive elegance. It can be used in any application area and, thanks to the IP 54 model, is even suitable for outdoor applications.

zumtobel.com/slotlight

9
PANOS INFINITY +
LED downlight

With its outstanding luminaire efficiency of more than 100 lm/W, the new PANOS INFINITY + luminaire takes the lead among all downlights at present available on the market. The most efficient LED downlight range available on the market is at the ready with 8 models for installation in the ceiling, all with a diameter of 200 mm. When it comes to luminous flux, versions with more than 2,400 lumens are available, either with 3,000 K or with 4,000 K. Functional versatility is ensured thanks to two reflectors: smooth and faceted optics are available for recessed depths of 100 mm and 140 mm.

DESIGN Christopher Redfern, Sottsass Associati
zumtobel.com/panosinfinity
10
CREDOS
LED downlight

The compact CREDOS LED downlight is the economically efficient solution for uniform ambient lighting in a wide variety of applications. With luminaire efficiency of up to 76 lumens per watt, CREDOS is significantly more efficient than conventional downlights fitted with fluorescent lamps or tungsten-halogen lamps. The downlight is available with a lumen package of 650 lumens, 1,000 lumens and –brand-new – 2,000 lumens. In all models, brightness is dimmable using standard phase dimmers; moreover, they boast excellent lighting quality and very good colour rendering (Ra 90).

zumtobel.com/credos

11
IYON Tunable White
LED spotlight range

The new IYON LED spotlight boasts luminaire efficiency levels of 40 to 77 lumens/W as well as excellent lighting and colour rendering qualities, setting new standards in terms of lighting for shops and exhibition areas. Tunable White models have been added to the spotlight range: at a high colour rendering index of Ra 90, the colour temperature can be continuously adjusted in the range between 2,700 K and 6,500 K. In case of frequently changing product ranges, flexible adjustment in the white light range ensures that the lighting solution is perfectly matched to the products on display: colours and materials are emphasised authentically and to natural effect; quality of perception is demonstrably enhanced.

DESIGN Delugan Meissl Associated Architects
zumtobel.com/iyon

12
ARCOS LED
Projection spotlight

The ARCOS LED projection spotlight uses the tapered ARCOS housing to accommodate high-output LED technology, staging an impressive performance: the result is light of utmost precision, with clean edges and high contrasts and, in the Soft Edge version, soft transitions. In the process, special lenses are used to provide high-precision, maximum light emission. High flexibility is ensured by exchange-able optics. These provide a wide range of beam patterns, from 6 degree superspots to 14 degree spots and even 25 degree flood optics with replaceable lenses. The output of the ARCOS LED projection spotlight can be dimmed directly on the housing. Frame, iris and gobo attachments can be fastened easily and safely in the built-in mounting unit.

zumtobel.com/arcos

13
ELEVO
LED façade luminaire

Mounted on windowsills and invisible to passers-by, ELEVO impressively illuminates facade features, protrusions and surfaces. ELEVO uses warm or cool white colour temperatures to bring both historical and contemporary façades to life. The luminaire is switch-able or PWM-dimmable, and can be easily integrated into a variety of system environments. As a compact, high-output LED luminaire, ELEVO is suitable for both direct and indirect lighting. The luminaire with IP 66 protection boasts an intelligent temperature guard for maximum resistance. Thanks to precise light distribution, the energy-efficient façade luminaire causes minimum lighting pollution.

zumtobel.com/elevo
2012 highlights

15 EPD
Environmental product declarations

European Core EPD

Institute Construction and Environment e.V.

Zumtobel – jointly with the Zumtobel Group’s Thorn and Tridonic brands – is the first company in the lighting industry to have introduced environmental product declarations according to EN ISO 14025 and EN ISO 15804. These environmental datasheets issued for each product item in accordance with international standards, will be prepared for all new products of the Zumtobel brand with immediate effect. The declaration will gradually be extended to cover existing product items as well. EPDs document the environmental impact of any product throughout its life cycle, for instance in terms of CO₂ emission, recycling percentage or material composition. With these EPDs, Zumtobel again takes a stand as a pioneer in environmentally compatible thinking and acting, offering its customers a new basis for taking their purchasing decisions based on environmentally relevant criteria. As soon as an EPD has been added to a product item, the environmental product declaration can be accessed online in the Zumtobel product catalogue.

zumtobel.com/epd

LEDOS III L
Ceiling- and floor-recessed LED luminaire

Compact, efficient, plus an IP 67 protection rating: even in its largest design size L (round: Ø 89 mm, square: side length 85 mm), the recessed LED luminaire is perpetuating its successful course. Using only 2.7W, it provides selective highlights. The square and round designs can be combined with various beam angles, glass panels as well as the option to fine-tune the light illuminating the item on display. With colour temperatures of 3,200 K and 6,000 K, LEDOS III L opens up additional design options. Thus, the ceiling- and floor-recessed LED luminaire is an ideal lighting tool for indoor and outdoor applications, helping people to find their way, or highlighting surfaces, façades, columns and sculptures.

zumtobel.com/ledos
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www.zumtobel.com
The IYON LED spotlight combines sensual design with maximum functionality and excellent efficiency. Black or white matt surfaces and a soft stylistic idiom ensure that this spotlight blends harmoniously into any architectural setting.

Zumtobel. The Light.

zumtobel.com/IYON