The LED is conquering the retail sector. From shop window to sweater shelf, new projects such as the Benetton stores in Vienna are now illuminated throughout with LED technology from ERCO, which has proven highly effective and economically efficient. But the new technology is now also presenting itself in a fresh look, underlined and enhanced by the unique light qualities of the LED lighting tools. Whether shop, museum or façade illumination – this Lichtbericht again shows 100% LED.
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- Keylights
- Bright prospects

**Report**

- LED conquers the fashion world: Benetton megastores, Vienna

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**Light & Technology**

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- ERCO Technical Centre: LED case study: RGBW wallwashing in the representative office
- Focus: Double-focus downlights in use
- Double focus: Technology of LED double-focus downlights

**Projects**

- Palazzo Bembo, Venice: Historical architecture, contemporary art, visionary lighting: ERCO LED technology proves its fine qualities in Palazzo Bembo exhibition halls
- Museum im Palais, Graz: The treasury of Styria: a further example of an institute of worldwide significance that has opted for ERCO's LED technology in its galleries
- ECE Center Thier-Galerie, Dortmund: An economic keystone and city landmark: the new shopping center "Thier Galerie" in Dortmund's city center. LED lighting tools by ERCO enhance its striking appearance

**Backlights**

- ERCO Lichtbericht 94

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**About this issue**

After outdoor applications and museum lighting, LED lighting solutions are now also conquering the retail sector. Italian fashion brand United Colors of Benetton has illuminated two of its megastores in Vienna throughout with ERCO LED lighting tools. Starting with façade lighting through to scenic window displays all the way to the presentation of their merchandise on the shop floor. In contrast to the old HIT lighting, the new LED concept appeals not only on an aesthetic level; the connected load could, as a result, be reduced from around 140kW to now 50kW. A lighting solution, then, that is as sustainable as it is effective.

From page 10, the LED plays an important role in a talk with experts. The aim of this talk conducted by Armin Scharf was to show how the LED is changing luminaires and, as a result, the luminaire industry. It also provides a look behind the scenes of the technology change at ERCO. New technologies necessitate a new approach to the product. Dealing with these technologies requires, as it were, a feat of translation from technology to culture. Our old established credo of "light, not luminaires" is very much coming into effect here. The technology of the luminaire is fundamentally redefined by the LED, whereas light as a cultural concept requires reliable qualities, but at the same time spreads because of an institute of worldwide significance such as ERCO, ERCO LED lighting tools.

LED light in the museum is described on page 24 featuring the Palazzo Bembo in Venice: historical architecture looking out over the Rialto bridge; inside, contemporary art effectively illuminated by Logotec LED spotlights. In Graz, the Museum im Palais is a further example of museum lighting with LEDs. The collection in the refurbished Palais Herberstein is part of the Joanneum Universal Museum. Here, the works of art are effectively staged using LED technology, while ERCO's lighting tools produce an equally impressive atmosphere in outdoor areas.

All things considered, there is no question that LED technology is well on its way and is now successfully used in many different types of project. At the Light + Building trade fair in Frankfurt, we will further showcase the technology change towards LEDs. We look forward to welcoming you there.

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**Translation:** Lanzillotta Translations, Düsseldorf

**Photographs (Page):** Andrea Adrover (32), Julia Zausser (1, 10), Ascott Green/Victor Spälfl (14), Andreas Jost (2, 5), Thomas W. Ei (12, 4–5, 24), Alexander Ring (10–13, 14–21, 12), Dirk Sperle (2), Joachim Wetter (20), Sabine Weckert (2), Michael Wolf (148, Edgar Zippel, U1, 2, 3).

**Imprint:** Lanzillotta Translations, Düsseldorf

**Translation:** Lanzillotta Translations, Düsseldorf
Keylights

Vienna
Swiss parquet flooring manufac-
turer Bauwerk presents its high-end
products in the design stores of the
Silverbirch chain – after Hamburg
Bauwerk now also in Vienna’s Silber-
Werk on Praterstrasse. Optec
spotlights and Quintessence down-
lights and wallwashers optimally
accentuate the high-quality wood.

Bauwerk parquet flooring store, Sil-
verbirch, Vienna
Architect: Stephen Williams Associ-
ates, Hamburg
www.bauwerk-parket.com

London
About to marry a prince and need
appropriate invitation cards? We
come to this printing and station-
ery shop with its rich tradition. It
prides itself in being a supplier to
the Royal family. But even ordinary
customers feel equally comfortable
in the freshly renovated premises.
Quintessence recessed luminaries
ensure excellent visual comfort
while Optec spotlights appropri-
ately accentuate the products.
Mount Street Printers, London
www.mountstreetprinters.com

Berlin
In the cheeky vernacular of Ber-
liners, the Victoria column topping
the Victory Column in Berlin since 1872
is nicknamed “Goldelse”, meaning
something like “Golden Gutsy”. The
column was restored in 2011 and
given a fresh and modern appear-
ance at night: the relief-adorned
base of the statue is uniformly illu-
minated by efficient and durable
Tesla LED wallwashers.

Victory Column, Berlin
Project manager: De monaments
Berlin (State Office for Historical Monu-
ments)

Ifrane
The small town in the Middle Atlas
mountains of Morocco is a popular
skiing resort and holiday destina-
tion. Established in 1973 as a luxury
establishment, the Michfilhen hotel
has now been extended and fully
redesigned – including a dramatic
lighting concept for indoor and
outdoor areas using ERCO’s light-
ting tools.

Michelin hotel, Ifrane
Architect: Ae International, Casa-
blanca
Lighting designer: Oscar Nystrom,
Braune/Sanllo Togay
www.michilhenhotel.com

Turin
Once a palace of the kings of
Savoy, the Venaria Reale has now
been extended and fully
redesigned – some galleries even with Cantax
LED spotlights from ERCO.

Architect: Salvatore Turin
Venaria Reale, permanent exhibition,
ordinary museum and a lively cul-
tural centre. Today, it is equipped
with metal halide lamps.

Stuttgart
For dramatic effect at night, the
column was restored in 2011 and
nicknamed “Goldelse”, meaning
Victory Column in Berlin since 1873
and is known as a state-owned
museum. For concerts. ERCO’s outdoor
projectors.

Wiesbaden
Kloster Eberbach, Eltville
Architect: Rimpl + Flacht Architekten,
Wiesbaden
www.kloster-eberbach.de

Eltville
Embedded in the vine hills of the
Rhinegau, this ancient monastery
is known as a state-owned win-
eries and ERCO gallery lighting, the auc-
tion lots are now presented in line
with international standards.

Casablanca
As the first art auction house in the
country, the CMODA has
looked after Morocco’s growing
art market since 2002. To do so
ever more efficiently, the company has
moved into a new building. Featur-
ing state-of-the-art technology and ERCO gallery lighting, the auc-
tion lots are now presented in line
with international standards.

Stuttgart
New look for the Court of Honour
of Stuttgart’s Alte Staatsgalerie
(Old State Gallery): Tesis in-ground
wallwashers for metal halide lamps
now efficiently bathe the neo-
classical façade in uniform lighting.
The rider statue of King William I
of Württemberg is accentuated
against this background using Tesis
directional luminaires.

Court of Honour of the Alte Staatsgalerie,
Stuttgart
Architecture and lighting design:
Christoph Arndt, lsa architekt, Stuttgart
Landscape planning: Kloster Landschafts-
architektur, Stuttgart
www.altestaatsgalerie.de

Utrecht
The small town in the Middle Atlas
mountains of Morocco is a popular
skiing resort and holiday destina-
tion. Established in 1973 as a luxury
establishment, the Michfilhen hotel
has now been extended and fully
redesigned – including a dramatic
lighting concept for indoor and
outdoor areas using ERCO’s light-
ting tools.

Dutch sculptor Ruud Kajzer has
received multiple awards for his
“Waterwerken” project. The work of
art involves a number of abstract
concrete sculptures with multifar-
etered references to the subject of
water set up on a spit of land at the
Amsterdam-Rhine Canal in Utrecht.
For dramatic effect at night, the
works are illuminated using effi-
cient and durable Powercast LED
projectors.

Waterwerken, sculptures by Ruud Kajzer,
lustopenweg, Utrecht
www.waterwerk.nl

Rome
The baroque Palazzo Barberini
houses the eminent Museum Gal-
leria Nazionale d’Arte Antica. Fol-
owing renovations in July 2011, it
is once again fully accessible to the
general public. This room with a fresco by
Pietro da Cortona is a true architec-
tural gem.

Palazzo Barberini, Rome
Architect: Carlo Maderno (~1556–1629),
Francesco Borromini (1599–1667),
Gian Lorenzo Bernini (1608–1680)
Lighting designer: Adriano Caputo,
Studiodisegno, Rome
www.galleriaborghese.it

Stuttgart
The Lacoste shop in the Portuguese
sea side resort of Cascais represents
the latest state-of-the-art in shop
design of the famous sportswear
brand with the little crocodile.

The designers opted for a mix
of Quintessence LED downlights for
ambient lighting, Hi li directional
luminaires to accentuate the
products, and Cantax spotlights
with metal halide lamps in the
shop windows. White rea surfaces are
a dominant feature while RGB cove
lighting adds colourful accents –
in harmony with the clear, bright
colours of the collection.

Lacoste Boutique, Cascais
Project manager: Izna Muscag, Lacoste/
Dymalsky Portugal
Interior designer: Luis Duarte, Space
Atvienten, Lisbon
www.lacoste.com

The gold brocade of the
wall covering is illumi-
nated by warm grazing
light. This sunlight effect
is artificially produced
by Powercast projectors
with metal halide lamps
mounted outside in the
air well.

Cascais
The Lacoste shop in the Portuguese
sea side resort of Cascais represents
the latest state-of-the-art in shop
design of the famous sportswear
brand with the little crocodile.

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Tesla LED wallwashers.

Victory Column, Berlin
Project manager: De monaments
Berlin (State Office for Historical Monu-
ments)
Bright prospects

LED – awesome!

Frans Hals Museum, Haarlem
Director: Karel Schampers
www.franshalsmuseum.nl

Photo: Thomas Mayer, Neuss

Featured in the photo (from left to right):
Ferdinand van Dam (OTH Architecten B.V.),
Carlo von Meijenfeldt (ERCO), Marijke van der Wijst (Van Der Wijst Interieurarchitecten BNI),
Julian Wolse (OTH Architecten B.V.)
A store design with the air of liberation, transparency and authenticity, both simple and complex: Italian fashion brand Benetton now debuts its new megastore of the fashion world: Benetton megastores, Vienna. The new megastore of the Italian fashion brand United Colors of Benetton in Vienna is presenting itself in an aesthetically and technically innovative fashion – illuminated exclusively by ERCO LED lighting tools. The new megastore of the Italian fashion brand United Colors of Benetton in Vienna is presenting itself in an aesthetically and technically innovative fashion – illuminated exclusively by ERCO LED lighting tools.

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The shop windows of the megastores are left without back walls as separation from the shop floor – giving customers the experience of flowing transitions between the different zones. Here, the designers opted for Logotec LED spotlights with narrow spot to flood characteristics as lighting. Precise beams with virtually no spill light produce strong contrasts with marginal reflections on the pane for maximum effect of the window display even in broad daylight.

The men's department on the basement level highlights a further aspect of the lighting concept: the free arrangement of tracks and recessed luminaires oriented not on an orthogonal grid, but rather on the merchandise shelves. Again, the merchandise is accentuated by Logotec LED spotlights, while ambient lighting could be kept to a minimum thanks to the bright surface of floor, walls and ceiling.

In order to light the ampul structured historic facade, priority was given to glare control for users of the upper levels.
The LED: more than a new type of lamp

We are slowly beginning to realise just how profoundly the LED will change the luminaire industry. Armin Scharf talks to experts at ERCO.

Armin Scharf:
The whole light scene, it seems, is mesmerized by the LED. But how much of a breakthrough is this technology in actual fact?

David Kuntzsch:
The LED is indeed a much talked about subject, but it seems that we either exist in two parallel universes, where things are more or less the same, or our world is being revolutionized, however, things are a little more complex. It’s true that the LED is gaining ground, but conventional lamps continue to play a big role. From the ERCO viewpoint we can clearly see in terms of market penetration that the LED is now measuring up to traditional lamps and ranks well in terms of efficacy.

Andreas Blaut:
Working in development, I can only confirm this. The LED has broken away from earlier reservations and it’s the only technology we now use. The LED is also a dominant topic whenever we talk to other market players or suppliers.

Armin Scharf:
And what is the situation in design?

Henk Kosche:
The situation is the same. As far as I can see, the LED has established itself firmly over the last five years. All our current projects are centered on this technology and the LED is a common occurrence in our daily work.

Markus Görres:
Issues around LED technology have defined our day-to-day business for quite a few years now, and not only in terms of operative aspects. The LED, after all, requires new skills if these issues are to be resolved comprehensively and in the interest of our customers.

Armin Scharf:
This means ERCO has already made the shift to LEDs?

Andreas Blaut:
We are definitely past the initial stages, since we have built up quite a good level of new knowledge across all our departments and successfully implemented a number of major projects involving LED light. Having said that, we still have a long way to go. Looking at the forecasts, we expect huge market potential here, especially in such sectors as museums, retail or outdoor lighting. These are precisely the areas where we already hold a strong position.

David Kuntzsch:
In terms of conceptual design, development and design, we are talking about big changes here. LED deliveries are already on a par with traditional lamps. The HID lamp, of course, still has particular significance for retail applications, especially where very large lumen packages need to be made available at a comparatively reasonable price.

Armin Scharf:
What are the new skills that are required for LEDs, what specifically has changed at ERCO?

Andreas Blaut:
Where do we start? Initially, we found ourselves having to design LED PCBs, develop entirely new optical systems, and devise electronics to control these LEDs. Using LEDs also means we need to procure them first, and you need experts here who can communicate with the suppliers. Including QC processes, in turn, need to assess the quality of these LEDs. In this way, LEDs have brought a wave of change to every sector of our company.

David Kuntzsch:
ERCO provides a global infrastructure of lighting consultants who not only sell a product, but help the customer implement their conceptual design. In order to maintain the quality of our consulting services, our staff in this sector needs intensive familiarisation with the material in a very short space of time. This proved to be an enormous challenge.

Armin Scharf:
Has this, as it were, developed into some sort of LED culture at ERCO?

Henk Kosche:
Yes, absolutely. The LED has brought with it a continual process of change, we deal with the new challenges facing us very openly, critically analysing and scrutinising each as they arise. Exactly what you should do with new technologies.

David Kuntzsch:
LED culture, for us means that things change for ERCO, but not, if at all possible, for the customer and their processes. The applications and approaches of our component system acquired over many years remain identical. The light intensity distributions are exactly the same, only the lamp has changed. It means we demonstrate a high level of innovation while remaining reliable and predictable to the outside.

Armin Scharf:
Is this a contribution to planning certainty in times of change?

Markus Görres:
Exactly. Designers who need to ensure greater energy efficiency for a concept based on low-voltage halogen lamps can do so quite easily. We offer a solution with the same characteristics, but based on LED technology.

Armin Scharf:
LED technology is developing at a very fast pace; when is the right time from a customer point of view to join the movement?

David Kuntzsch:
The demand for LED solutions is already very significant, as you know. It means the current technical and economic advantages are perceived to be highly positive to the point that people want to capitalise on them right away. This is true even though people know that later investments will have even greater advantages. Even now, we are already talking about average energy cost savings of 60 to 80 per cent. With savings on such a scale, it makes perfect sense to switch to LED solutions right away, rather than waiting initially for maybe another 5 per cent or so in terms of efficiency.

Amin Scharf:
In which segments in particular is the LED much in use?

David Kuntzsch:
Based on the projects already supplied, we find the deployment in museums and galleries using LEDs is disproportionately large. At the same time, it’s the market segment with the highest standards in terms of lighting quality that is most active in adapting to this new technology. This is hardly surprising in light of the LED characteristics. The National Gallery in London employed their own team of experts to measure the quality of light in their laboratories for many months, before deciding on an LED solution in late 2010. Ever since we started offering luminaires with LEDs producing even higher luminous flux, other market segments also started to show interest. Last year, for instance, we were able to execute quite a number of challenging retail projects, some opting exclusively for the LED.

Armin Scharf:
The fact that especially museums are leading the way here is remarkable. Are they not the ones that complained the loudest about the disappearance of the light bulb?

Markus Görres:
The loss of conventional incandescent sources has been dramatised so much because alternative light sources such as the fluorescent lamp weren’t able to provide adequate colour rendering or brilliance. The LED now has another position, with even better characteristics.

Andreas Blaut:
Looking at the technical characteristics of the LED, i.e. energy savings, no IR or UV component in the light, the LED is indeed ideal for the illumination of art.

Henk Kosche:
Thanks to our own optoelectronic systems, our 20W LED spotlights today are as efficient as 100W low-voltage halogen spots. With accent lighting playing such a crucial role especially in museums, the gain in efficiency is significant.

David Kuntzsch:
And the colour temperature of the LED doesn’t change when dimmed. That’s important for a museum, where the items displayed in an exhibition are to be presented with the same level of illumination. Differences in distance between luminaires and exhibits means the light needs to be dimmed, which, when using halogen lamps, results in an unwanted shift in the colour temperature.

Armin Scharf:
With the LED, the luminaire sector is adopting the same short cycles as the semiconductor industry. Speed is a priority here for ERCO, i.e. being the first to launch LEDs in a product sector, or is reliability more important, meaning that products from the start are technically sophisticated and mature?

Henk Kosche:
We have been dealing with this technology quite intensively for over ten years. We have always looked closely to analyse the suitability of the source for various applications. We started with orientation luminaires back in 2000, before turning to LED outdoor luminaires. Today, we cover the whole spectrum of architectural lighting. We always want to provide our customers with the best possible quality; the technology must follow suit.

David Kuntzsch:
The trickiest bit about new technologies is facilitating the transition. In other words, we wanted to continue providing our customers with sophisticated solutions which actually meet their requirements and not merely illustrate technical feasibility.

Armin Scharf:
How does ERCO define the light quality of LEDs?

David Kuntzsch:
Light quality has different meanings for different people especially when talking about LEDs. There are the objective, measurable light qualities, such as colour temperature or colour rendering. For us, these are in contrasted terms – hygiene factors. As a technology-driven company, it goes without saying that we use chips guaranteeing the highest colour rendering and a defined colour temperature. For many market players that’s all there is to light quality; for us it’s actually just the beginning.

For us, light quality also means thinking from the target surface. Vertical illuminance, for example, is all about uniform wall illuminination using an asymmetrical light distribution. We need, therefore, to come up with a lighting technology that reproduces exactly what our customers have been accustomed to for many decades. Ultimately, we provide our customers with light, not luminaires. That’s actually ERCO’s credo.

Copyright: ERCO Lichtbericht 94
Hendrik Koseke:
We noticed early on that the advantages of LED technology can only be realised when you have a coherent overall system. The LED’s efficiency and longevity is only achievable with superb thermal management. The same can be said for the role of electronic management in the overall system. We simply had no choice other than to deal with each of these elements individually and optimise them as a system.

Armin Scharf:
How is this reflected in the overall efficiency?

David Kuntzsch:
Generally, the designer looks at the quantity of light generated and the energy required for it, i.e. the ratio of lumens to watts. In our opinion, this falls a bit short though. Lumen output, LED, only quantify the luminous flux generated by the lamp. We are interested, however, in how much light arrives on the target surface. Yet generated light can be lost in the housing or stray somewhere on the wall as spill light. Comparing our products with those of our competitors, we often register 50% to 100% more illuminance on the target surface using the same amount of energy.

Armin Scharf:
The LED luminaire market seems rather confusing. Will this change?

Andreas Blaut:
I reckon it will likely become even more confusing in the medium term. The established luminaire manufacturers are making efforts to reduce the level of complexity in order to make life as easy as possible for their customers. At the same time, there are companies that bring with them electronics and LED competence from other sectors, which is not really conducive to clarity. It is entirely possible that a time may come when customer requirements again become a priority and the market consolidates.

David Kuntzsch:
It is quite possible that the market and its make-up will change because of new suppliers. These include companies with strong brands, e.g. from the consumer electronics sector. Convergently, established companies could lose their previous relevance as they fail to find adequate answers to new questions brought in by designers.

Armin Scharf:
What is the significance of varychrome technology which adds a white LED to the RGB system?

Andreas Blaut:
Behind what is known as RGBW technology lies the vision that an ideal luminaire that can produce saturated colours as well as pastel-type whites and various colour temperatures.

Markus Görres:
RGB alone isn’t able to achieve a continuous colour spectrum or good colour rendering; RGB systems are actually suited only for pure colour applications. If illumination in white is required along with it, you will need an additional white LED. The RGBW system provides entirely new possibilities, especially in terms of colour rendition quality.

Markus Görres:
On top of that, we only need to communicate one principle, the customer only needs to understand one principle. With it, they get a number of advantages on the side: less spill light, better beam quality. They can consistently combine luminaires irrespective of their application.

Armin Scharf:
There are competitors who follow a different modularity principle in that they combine purchased standard elements. Is this not an option for ERCO?

Andreas Blaut:
No, because firstly, it limits the flexibility, as purchased modules are hard, if at all, to change. We, on the other hand, are able to react to the frequent changes to LED chips and provide our customers more or less promptly with the best possible light quality.

David Kuntzsch:
The advantage of our strategy is just as obvious in the design. Purchased modules would have left us with the old principles: lamp plus reflector – and so, with a structure that is no different at all from conventional solutions. The deep reduction and the formal freedom which we’ve now achieved are based on a consistent use of our own components, our own optical elements.
LED spotlights with RGBW varychrome technology

The new all-rounders among the lighting tools: ERCO’s new LED spotlights with RGBW varychrome technology feature variable light colour and brightness, subtle white nuances with excellent colour rendition and interchangeable Spherolit lenses for various light intensity distributions.

Varychrome technology with RGB colour mixing was a key factor in the breakthrough of LEDs in architectural lighting. For the first time, LED luminaires provided a combination of features that could not be implemented using conventional technology: flexibility and variability joined comfort, long life and efficiency. Their capacity for superb dimming and highly saturated light colours make LEDs the ideal light source for colour mixing luminaires. ERCO now presents a new generation of LED varychrome spotlights that mark a clear advance, especially in terms of versatility and light quality, arguably the most flexible tools for accent lighting and wallwashing ever provided. These new developments are based on the principle of adding white LEDs to the primary colours red, green and blue (RGB). Addressing these four components individually and using a DALI-compatible 4-channel control gear means highly saturated light can be produced together with pastel hues, but more especially so, it provides high-grade white light with variable colour temperature – infinitely variable along the Planckian locus. The additional warm white component (3000K) also ensures excellent colour rendition.

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Thanks to their LED lens systems with Spherolit lens technology, the new LED varychrome spotlights provide the usual wide range of light intensity distributions from spot to wallwash with homogeneous beams without colour shadows. The wallwashers, in particular, are ideal for dynamic, coloured light to add ever new dramatic lighting effects to architecture.

Beams without colour shadows

The individual colour light sources of conventional RGB spotlights, recognisable as red, green and blue light points on the cover glass, often result in the phenomenon of corresponding multi-coloured perimeters around the shadow edges. In the development of its new LED varychrome spotlights ERCO focused specifically on eliminating these colour shadows. To this end, the colour components are homogeneously mixed right in the LED optical system with the result that the cover glass already appears in the mixed light colour and the beam illuminates objects and surfaces without any colour shadows.

Saturated colour

In order to produce coloured light, the four colour components red, green, blue and white are individually addressed along the principles of additive colour mixing. Mixing 100% blue and 100% red, for instance, produces highly saturated light in magenta. In ERCO’s LED varychrome spotlights, the colours are mixed in the LED optical system resulting in a colour that appears homogeneous even on the cover glass.

Neutral white (approx. 5000K)

In addition to the three primary colours, the new LED varychrome spotlights now also have warm white LEDs. This, as a result, allows any light colour to be infinitely changed to pastel hues, but even more so, for whites to be produced along the Planckian locus – by adding further blue or red components to the white light.

Warm white (approx. 2700K)

The new LED varychrome spotlights allow infinite adjustment of the colour temperature in a range from 2700K to 5500K. The already good colour rendering of the warm white LED (Ra>90) is further optimised by adding extra spectral components.

**RGBW LED module**

The red, green, blue and white LEDs are combined to light points on the modules of ERCO’s LED varychrome spotlights. The modules are developed and produced by ERCO to strict specifications.

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LED spotlights with RGBW varychrome technology

Products with RGBW technology
The new LED varychrome technology for spotlights consists of the RGBW module, a special LED optical system with integrated colour mixing layer, a six-fold collimator, interchangeable Spherolit lenses, and customised DALI control gear. It is available in the new Light Board and Opton spotlight ranges and in the latest generation of Cantax spotlights. For ceiling integration, ERCO provides Light Board as recessed RGBW luminaires. RGBW technology now also features in LED downlights and LED wallwashers in the Quintessence range.

Control of RGBW spotlights
The lighting control system Light System DALI provides two control panels for corresponding spotlights in its integrated Light Studio software – the colour circle, which allows selection of any colour, and the slider control to regulate the whites of a defined colour temperature. In accordance with the current DALI standards, ERCO’s varychrome spotlights with RGBW technology only require one DALI address despite having four colour channels. The proven colour compensation technology used in the factory ensures a high level of colour constancy and precision.

The optical components of ERCO’s LED varychrome spotlight with RGBW technology: RGBW LED module with primary lens (1), light mixing layer (2) with diffuser film (3), six-fold collimator as secondary lens (4), interchangeable Spherolit lens as tertiary lens (5).

Spherolit lens for RGBW
The new LED varychrome spotlights feature a special form of the patented Spherolit lens technology developed by ERCO. The LED modules with their primary lenses directly on the LEDs, the collimators as secondary lenses to create a parallel beam, and the Spherolit lenses as tertiary lenses to control the light distribution are complemented by a further layer: this colour mixing layer is positioned between LED module and the six-fold collimator for totally mixed homogeneous colour components in the optical system to produce a beam without any colour shadows.

Spectrum and colour rendition
Due to the properties of the human eye, light that appears white to us may have a very different spectral composition. This results in varying renderings of body colours which define the colour rendition quality in relation to a full-spectrum reference light. Because of their narrow-band spectrums, pure RGB luminaires produce white light with poor colour rendition characteristics. The more uniform spectrum of the RGBW luminaires, in contrast, enables a highly natural, superior colour rendition.

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Colour space
Within the coloured area of the CIE diagram, the Planckian locus traces the whites of different colour temperatures – from bluish cool white to reddish warm white. RGBW technology produces both highly saturated colours and variable shades of white.

Colour temperature
Light Clients with the varychrome RGBW technology, such as those from the new LED varychrome spotlight range, allow the colour temperature to be adjusted continuously over a wide range in the Light Studio software. Alternatively, the familiar colour wheel can be used to select any light colour.

RGB LEDs
The RGB LEDs are ideal for mixing highly saturated coloured light. However, the white light from RGB LEDs does not give satisfactory colour rendition quality, making it less suitable for lighting tasks where colour is critical.

RGBW LEDs
Mixing RGB LEDs with warm white LEDs combines the advantages of both systems: RGBW luminaires produce variable shades of white along the Planckian curve with excellent colour rendering, but also coloured light to paint fans all the way to the highly saturated range. The more uniform spectrum results in a good colour rendition quality.
ERCO Technical Centre
LED case study: New light for conference rooms

ERCO has taken to upgrading its own premises in a continuous commitment to deploying modern and efficient LED lighting. The experience gained in the process provides the best arguments for offering optimal LED lighting solutions to designers and clients.

The basement level of ERCO’s Technical Centre in Lüdenscheid accommodates a number of conference rooms that, although designed along the same concept, differ primarily in terms of size to cater for different usage requirements. All rooms have a glass front to the exterior, which can be shaded where necessary using motorised interior blinds. A suspended acoustic ceiling element incorporates recessed luminaires and hides installations such as media technology, air conditioning and ventilation systems. At the head of the room, the ceiling element stops short of the wall. The resulting haunches are used to keep air outlets, electric screen and tracked spotlights out of sight. The lighting concept differentiates between ambient lighting components in a downlight matrix and lighting at the front face in the form of spotlights and wallwashers on track.

The dimmable LED technology used in the Quintessence downlights and Logotec spotlights scores primarily in terms of efficiency and light quality, but delivers a further convincing argument in that it was easily integrated into the lighting control system Light System DALI. Intelligent lighting control is crucial for efficient visual comfort particularly in multifunctional rooms. Thanks to DALI plug and play, the LED luminaires are quick and easy to incorporate into pre-programmed user requirements, which can be readily recalled with a touch screen on the Light Changer, not only for individual dimming of the various light components, but also for automatic activation of the projection screen, for instance, for multimedia presentations.

The energy savings potential is again considerable here: Compared to the previous installation – at the time equipped to conform with the prevailing standard using general-purpose, halogen and fluorescent lamps – the energy consumption has dropped by around 75% – in the muted light of a presentation, even a data projector of the latest “ECO – low energy” generation has a significantly higher energy requirement than the new LED lighting.

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![Image](image1.png)

In the small conference rooms, ceiling-integrated lighting is provided by Quintessence LED downlights, whereas the larger rooms differentiate between downlights and wallwashers. Interior blinds and projection screens can be integrated in the light management ensured by Light System DALI using DALI blind and screen actuators. A simple touch of the Light Changer recalling the “Presentation” scene, for instance, dims the lighting while the screen is simultaneously lowered.

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<table>
<thead>
<tr>
<th>Lighting concept</th>
<th>Old</th>
<th>New (LED)</th>
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</thead>
<tbody>
<tr>
<td>Connected load per m² (W/m²)</td>
<td>41.34</td>
<td>11.06</td>
</tr>
<tr>
<td>Comparison of connected load (%)</td>
<td>100%</td>
<td>27%</td>
</tr>
<tr>
<td>Comparison of operating costs (%)</td>
<td>100%</td>
<td>18%</td>
</tr>
<tr>
<td>CO₂ savings per year</td>
<td>4.9t</td>
<td></td>
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<tr>
<td>Corresponds to a reduction to 27%</td>
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Logotec LED
The spotlights and wallwashers with Spherolit lenses are mounted on 3-circuit track and via DALI dimmers are connected in groups with the lighting control system. The uniform wallwashing of the back wall creates a larger room impression. One spotlight is used to create a glare-free zone of higher luminance at the room entrance to produce the effect of a “welcome mat”.

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Light that can be infinitely controlled, not only in terms of brightness, but also colour, opens up new dimensions for scenic lighting effects in rooms. Where variable room lighting of high quality is as important as individual accent lights in rich colour, LED varychrome luminaires with RGBW technology are the perfect solution – they combine red, green and blue LEDs with efficient warm white LEDs. Individually addressed using DALI-compatible control gear units, these luminaires can produce intensive light of any colour through additive colour mixing, but also shades of white along the Planckian locus – from the extremely warm tone of a dimmed light bulb all the way to the bright and cool white of zenith daylight. Through balanced spectral composition of the light, colours are rendered beautifully and appear natural. For the representative office in ERCO’s Technical Centre, designers opted for Quintessence RGBW wallwashers with LEDs to ensure uniform wallwashing of the room surfaces using light of variable hues.

ERCO Technical Centre
LED case study: RGBW wallwashing in the representative office

Variable colour temperature
Light components with variable colour temperature such as wallwashing with RGBW varychrome wallwashers open up countless possibilities of scenicographic lighting in the room. One such option in a specific application would be wallwashing adjusted to the natural light coming in through the large windows throughout the course of the day: cooler room light in the afternoon (left), warm light towards dusk (right).

Light Clients are automatically recognised by Light System DALI to offer true “plug and play” connectivity.

DALI plug and play
ERCO’s RGBW lighting tools can be integrated as DALI Light Clients in such lighting control systems as Light System DALI. In compliance with the current DALI standard, the control gear units only require one DALI address in spite of having four control channels. On commissioning, the factory-encoded ERCO Light Clients are automatically recognised by Light System DALI to offer true “plug and play” connectivity.

Coloured light
Along with the option of infinitely variable colour temperature of white light, RGBW varychrome luminaires also cover the whole spectrum of coloured light: from pastel hues all the way to a highly saturated range. As a result, they are suitable both for high-quality white light with good colour rendition in day-to-day operation, but also for coloured scenic lighting in rooms used for special occasions, such as a reception or a private screening. ERCO’s Light Changer offers appropriate graphic tools on its touch screen for colour selection.

Variable hue-controlled light
Provides the intuitive interface to operate the lighting so that a single touch of the screen calls up the right light scene for different times of the day, occasions or moods. Appropriate graphic control panels also allow for interactive manual intervention, for instance, in order to correct the colour temperature of a group of wallwashers as requested.

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Double-focus downlights in use

Ceiling-integrated lighting with lamps largely concealed from view pretty much typifies the maxim of “light, not luminaires.” The development of the double-focus downlight has now taken this approach to positive extremes. Whereas the higher luminous flux of conventional downlights necessitates larger luminaire apertures, the double-focus downlights stand out due to their rather small aperture. Their advantage in terms of lighting lies in optimised screening of the lamp to avoid glare. This aspect is relevant particularly in rooms with high ceilings such as foyers or concert halls. Conventional downlights easily cause glare here through direct view upon the lamp. The regressed position of the lamp in the double-focus downlight, in contrast, ensures pleasant visual comfort. Double-focus downlights typically produce a relatively narrow beam to achieve appropriate lighting effects even in rooms with higher ceilings.

The small light aperture of the double-focus downlights also has design advantages. Compared to conventional downlights and their considerably much larger luminaire apertures these luminaires take on a very discreet effect on the ceiling. The latter, as a result, appears more homogeneous and inconspicuous. Grids with large, bright luminaire apertures are perceived as disturbing particularly on dark ceilings. Double-focus downlights therefore can contribute to a discreet appearance of the ceiling even in rooms of normal height.

In contrast to downlights (left), double-focus downlights (right) have a smaller, inconspicuous luminaire aperture but the same luminous flux to produce a more discreet impression. The Darklight reflector in recessed luminaires for conventional lamps ensures good visual comfort.

Concert hall application: Due to its height, the hall requires high luminous flux for an attractive lighting design. Double-focus downlights can produce the necessary horizontal illuminances while maintaining a high level of visual comfort.

Technology of LED double-focus downlights

Double-focus downlights with LED technology are designed differently from double-focus downlights for conventional lamps, but their applications are the same. Traditional double-focus downlights such as for high-pressure discharge lamps comprise an upper elliptical reflector and a lower Darklight reflector. The lamp located at the upper, first focal point of the ellipse is reflected to the second focal point. Here sits the upper edge of the compact Darklight reflector, which reduces glare and achieves excellent visual comfort in the room. Detrimental points here are their large size along with relatively poor efficiency.

Since PCBs with several LEDs produce diverse focal points, the existing lighting technology cannot directly be transferred to LED technology. Consequently, the light of the Quintessence LED double-focus downlights is guided via a compact lens system with collimator and Spherolit lens. The small light is emitted as a precise beam with little spill light immediately from the Spherolit lens making a Darklight reflector unnecessary. Instead, a matt black anti-glare cone ensures glare protection and an inconspicuous ceiling design, especially for dark ceilings. This technical approach results in a higher light output ratio than for conventional lamps, a much better unified glare rating (UGR), and a smaller size. The LED double-focus downlights are fitted either with flood or wide flood Spherolit lenses for adjustment to the room height.

Thomas Schielke

Lamp

GT22 90W Luminous flux 1800lm Luminous efficacy 20lm/W

LED 20W, warm white Luminous flux 1305lm Luminous efficacy 65lm/W

Illuminance 178lx 199lx

P* 8.79W/1000lm 2.10W/1000lm

Corresponds to a reduction to 24lx

The LED double-focus downlights are provided with a matt black anti-glare core for optimum glare protection and an inconspicuous ceiling especially in dark rooms with high ceilings.
In the midst of tourist stampedes, Venice, the sinking beauty, is well established as a hub for contemporary art. Its driving force is the Venice Biennale, whose attraction ensures that a number of renowned galleries and collections also receive a share of the international audience. A particular appeal is often created by the venues themselves: historical sites like the old Arsenal shipyards, where tangible history is contrasted with artefacts formed by contemporary minds – some unwieldy, strange, inaccessible, and awaiting history’s judgment.

The splendid Palazzo Bembo, built in the 15th century by the prominent Bembo family and located on the Canal Grande, now houses another space for such inspiring encounters. The house where, in 1470, the scholar and later cardinal Pietro Bembo was born, is once again a place of art and culture. What was, for many years, a vacant space across several of the Palazzo’s floors was brought to life again by Global Art Affairs, a foundation which has organised exhibitions featuring international artists for several years, initiated by Dutch artist Rene Rietmayer. Together with his curators Sarah Gold and Karlyn De Jongh, Rietmayer had been searching for a venue for the 54th Biennale exhibition “Personal Structures” featuring 28 artists from five continents. Having secured a long-term commitment to the exhibition space, the trio invested many resources and countless hours into the rooms’ restoration, which had to meet both the requirements of the historic register and, in the light of the exhibits’ importance, the standards of a museum. The foundation eventually opted for an ERCO track system with Logotec LED spotlights and wallwashers. Curator Sarah Gold relates her experience with the system as follows: “It works perfectly, allows the art optimal expression, and is easy and convenient to move around when we rearrange exhibitions.” Thanks to its efficient LED technology, the connected load is only about 20% that of a comparable system using low-voltage halogen technology. This not only saves power and natural resources; it also spares the curator’s nerves, seeing how fickle the wiring in old Palazzi can be, as Sarah Gold knows: “Here in Venice, we have seen vernissages where, at the precise moment the light was supposed to come on, the master fuse blew instead. That’s not going to happen here!”

A glance through the window puts each exhibit into the context of six centuries of European cultural history: the loggia hall of Palazzo Bembo looks out over the Canal Grande and the Rialto bridge. The Logotec LED projectors, equipped with warm white LEDs and proprietary SpheroLite technology lenses, ensure a perfect lighting design. The minimalist, neutral design of these compact projectors adds a subtle, yet characteristic ingredient to the blend of historical architecture and contemporary art.

For several years, the Global Art Affairs Foundation has organised exhibitions featuring international artists. In Palazzo Bembo, it has found a permanent venue in Venice, one of the most important hubs for contemporary art. The photo to the right shows the following works of art: Arnulf Rainer (Austria): Head, untitled, 2010; Cross, untitled, undated. Carl Andre (USA): Crux 14, 2010. The photo to the left shows the following works of art: Wallpaper by Peter Halley (USA): Judgment Day, 2011; in the background, by Yuko Sakurai (Japan): Tsuyama.
The treasury of Styria: Museum im Palais, Graz

The Cultural History Collection in the refurbished Palais Herberstein is part of the Joanneum Universal Museum: a further example of an institute of worldwide significance that has opted for ERCO’s LED technology in its galleries. Light is also used outdoors for highly effective architectural lighting.

Graz, the capital city of Styria, links rich history with a creative future as if the one entailed the other. How many modern cities have a historic centre that the UNESCO has listed as a world heritage site, and more so, were chosen by the same international cultural organisation as one of the ten “UNESCO Cities of Design” worldwide? The Joanneum Universal Museum is part of this vivid cultural tradition in Graz. Founded in 1811 by Archduke Johann as the first ever museum in Austria, it encompasses nine sites in historic and modern buildings today. Its collection includes well over 4.5 million items from different areas making it one of the largest of its kind in Europe. One such site is the baroque Palais Herberstein at Sackstraße 16. Since 1941, this important historic building in the old part of Graz has housed initially the New Gallery of the Joanneum, before extensive refurbishment and restoration work was carried out to reopen in May 2011 as the “Museum im Palais”, the new home of the Cultural History Collection.

A reopening that meets all the standards of a “City of Design”. With effect, the new museum blends the authentic presentation of magnificently restored baroque-style rooms in the Palais with exhibition galleries of a modern design that meet all the curatorial requirements. Today’s museum extras such as gift shop and restaurant are housed in atmospheric indoor and outdoor areas on the ground floor. Evidence of the variety of roles ERCO’s lighting tools are able to play in a context such as this. The Joanneum is yet another institute with global reputation that has opted for LED technology from ERCO to light its galleries. Its ornate baroque stairwell, the courtyard and the pillared arcades all feature stunning architectural lighting using ERCO products to further enhance the attractive appearance of this building.

The oldest part of the Palais hails from the 17th century. Today’s façade design with its two portals was added in the 18th century by baroque master builder Joseph Huerber (1715–1787), who also built an ornate central stairwell to weld the three wings into a single building: The grand baroque stairwell to weld the three wings into a single building: The grand baroque stairwell to form a grand entrance into the Museum im Palais. The lighting technology of the Tesis in-ground luminaires lends the building a discreet presence at nightfall. They are provided with efficient 20W metal halide lamps and mounted in groups of two with a beam emitting light both up and down.

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The circuit starts off in the grand baroque stairwell: It opens upwards to a ceiling fresco by Philipp Carl Laubmann (1703–1792) depicting a view into Olympus. It is illuminated by Trion ceiling washlights for 20W metal halide lamps used here to create an even softer light with a wider beam reaching far into the ceiling centre.

The ceiling of the stairwell is illuminated by Trion ceiling washlights for 20W metal halide lamps used here to achieve an even softer light with a wider beam reaching far into the ceiling centre.

Tesis in-ground luminaire HIT

Kubus façade luminaire HIT

www.museum-joanneum.at/museum_im_palais

Photos: Rudi Meisel, Berlin
Exhibition design: Dr. Eva Marko, Graz
Lighting design: Gerald P. Marko, Graz
the effect of a fresco that seems to shine from within. Following this overwhelming overture, the museum circuit continues on a dramatic level. It initially takes the visitor through a suite of four rooms, an antechamber, and a cabinet room with opulent Rococo decor, in order then to present the permanent exhibition of the Cultural History Collection in plain modern exhibition rooms. Based on the overriding theme of ‘status symbols’, the artefacts on show here represent political power, an aristocratic lifestyle and court education, and generally have a close link with Styria or Graz. Among the highlights of the Museum im Palais are, for example, the Styrian Ducal Hat (c. 1400), Frederick III’s Gothic state coach (~1450) and the only incontestably genuine transverse flute in the world made by the eminent French instrument-maker and flautist Jean Hotteterre, in around 1680.

As the lighting designer of the exhibition, G.P. Marko cleverly staged these cultural treasures in such a way that capitalises on all the advantages offered by the system design of ERCO’s LED lighting tools. Depending on the size and format of the exhibits, the designer brought all available light intensity distributions of the Logotec LED spotlights into play, from narrow spot to wide flood, oval flood and wallwash.

The Spherolit lenses, easily interchangeable for future requirement, give designers and engineers great flexibility in fine-tuning the system, while the low proportion of spill light produces dramatic contrasts. To ensure the right dosage of illumiance, the LED spotlights can be individu-
Dortmund is a textbook example of structural transformation. Less than 50 years ago, the region’s notorious economic triad of coal, steel and beer dominated this Westphalian metropolis, the largest breweries of the time quenching the thirst of miners and steelworkers. In the meantime, the blast furnaces have gone cold, some dismantled, sold and shipped to China, while brownfields such as the former Phoenix steelworks provide ample space for new business districts, lakes, and exclusive residential real estate. The breweries also had to surrender to the decline in German consumers’ appetite for beer. As more and more businesses moved to the outskirts, enormous spaces became available in the city centre. New buildings as well as converted pre-war edifices are now utilised by the emerging service sector, both for cultural and retail purposes. One example of this is the former Westenhellweg brewery site, a prime location between the Thier brewery site, a prime location between the emerging service sector, both for cultural and retail purposes. One example of this is the former Westenhellweg brewery site, a prime location between the snowy hills of the Gummersbach mountains and the industrial waterfront. There is an agreement on the façade and, if necessary light pollution.

Dortmund’s city centre. LED lighting tools enhance its striking appearance. The wide light distribution characteristic from spot to wallwash.

That real estate was discovered and developed by Hamburg-based ECE Projektmanagement, a leading European specialist in this field. It created the Thier-Galerie, a new, attractive shopping centre with over 33,000 square metres of retail space. The Berlet house’s meticulously reconstructed historical façade facing Westenhellweg as well as the interior design concept of a “house within a house” contribute to the centre’s architectural appeal. Especially when it comes to projects of this scale, sustainability is an important factor to consider. With many years of experience, ECE brings a vast amount of know-how to the task of energy and resource efficiency. This is borne out by the fact that heating only accounts for 20 to 30% of the centre’s energy consumption while the rest is used for ventilation, air conditioning and lighting. This puts the focus on the lighting concept: According to ECE, it has cut the energy consumption in its new centres by an average of 20%, simply by installing state-of-the-art lighting tools, an approach that fits in perfectly with the ERCO concept of efficient visual comfort. Within these parameters, Dortmund-based LDE KOBER’s lighting designers sought to create an agreeable atmosphere on the inside with a mix of daylight and accentuated artificial lighting and to make the building as a whole stand out at night by highlighting the façade’s features. The top floors of the newly built space serve as parking garages and are designed as a roof garden. A casing of warm-coloured perforated metal gives elegance and lightness to the top section. Shimmering in a golden hue, it is accentuated at night by the grazing light from the Focalflood LED façade luminaires. The building has advanced to a landmark with minimal energy consumption and need for servicing thanks to ERCO LED technology.

Focalflood LED façade luminaire
The grazing light of the Focalflood façade luminaires brings out the vertical features of a “house within a house” and accentuates the entrance section. Again, the lighting tools are metal halide lamps, and with conventional lighting tools, such as metal halide lamps are used as lighting tools.

Ordinarily, ECE’s responsibility as an operator does not extend to furnishing tenants’ shops. However, ECE provides them with a lighting manual they created to help optimise energy efficiency. In this way, shops such as the fashion jewellery boutique “39°C” were inspired to use ERCO products to deliver a lighting concept that is consistent with the idea of efficient visual comfort.

Lightcast
The universal range of Optec luminaires is available for use both with conventional lighting tools, such as metal halide lamps, and with LEDs – in both cases with a wide selection of light distribution characteristics from spot to wallwash.

ECE Center Thier-Galerie, Dortmund

An economic keystone and city landmark: the new shopping centre “Thier-Galerie” in Dortmund’s city centre. LED lighting tools by ERCO enhance its striking appearance.

Architect: Kaspar Kraemer Architekten, Cologne (Facade); ECE Planning Team, Hamburg
Lighting designer: LDE KOBER, Dortmund
Photos: Dirk Vogel, Dortmund

www.thiergalerie.de
PLDC 2011, Madrid

In October 2011, the architectural lighting scene gathered in Madrid for the Professional Lighting Design Convention (PLDC). Contributing to the supporting programme, ERCO Spain had organised an “Afterwork Event” for the evening of 21 October 2011 to be held at Studioloft 11.13, one of the trendiest venues in Madrid. Many of the international lighting experts used this opportunity after a full day at the convention for an exchange with colleagues in a more informal setting effectively illuminated by ERCO, to enjoy the refreshments provided or simply to relax to the music. Thank you to all our guests and the team who have helped make this evening a great success!

www.plid-c.com
www.rockandloft.com/11.13/

Exponente 2011, Cologne

International museums, well-known vendors, and high-calibre visitors in an ever more eminent cultural market met at the Exponente trade show in Cologne from 16 – 18 November 2011. Also present were experts of ERCO Leuchten GmbH demonstrating LED lighting technology as a topic of particular interest to museums. At the Afterwork Event organised by ERCO Spain for the PLDC in Madrid last October.

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Dr. Dirk Stahlschmidt takes his leave

On 27 January 2012, our managing director Dr. Dirk Stahlschmidt bid a sad farewell to the company to go into retirement. In a small ceremony marking 26 successful years at ERCO, he was sent out in style. His executive colleagues and hundreds of employees had gathered to wish the outgoing managing director all the very best for this next stage of life. Dr. Stahlschmidt began his career at ERCO as a management assistant before he was put in charge of domestic sales in 1987 followed by his appointment as managing director in 1989. He also looks back on many years of service in an honorary capacity – such as on the advisory board and as chairman of the Fachverband Leuchten (Luminaria Association), as jointly responsible founder of the international Light+Building trade fair, and on the board of managing directors of the ZVEI, the German Electrical and Electronic Manufacturers’ Association.

Thanks to a colleague, who was expected and appreciated among the workforce as a straightforward person of integrity, managing director Tim Winkler Maack paid tribute to the work of Dr. Stahlschmidt (SFr). Below: Successor Marcus Scheuren used the opportunity to introduce himself as the new managing director.

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The world’s largest museum opened in April 2011 with the exhibition “The Art of the Enlightenment”. A massive new annex now extends the total area of the Chinese National Museum to 191,900m². The architectural design by gmp and the exhibition presented by Germany's three largest museums, the Staatliche Museen in Berlin, the Staatliche Kunstsammlungen in Dresden and the Bayerische Staatsgemäldesammlungen in Munich, are not the only contributions from Germany – ERCO supplied thousands of metres of track along with thousands of spotlights for exhibition lighting – some featuring cutting-edge LED technology.

Chinese National Museum, Beijing

Architect: von Gerkan, Marg und Partner (gmp), Hamburg
Photos: Michael Wolf, Hong Kong

www.kunstderaufklaerung.de
www.chnmuseum.cn