

Indening

Light for Art and Culture

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AISHTI FOUNDATION, BEIRUT / LBN DAVID ADIAYE ARCHAEOLOGICAL INSTITUTE OF THE UNIVERSITY OF ZURICH / CH BERNHARD BRECHBÜHL ART MUSEUM LIECHTENSTEIN, VADUZ / L MORGER & DEGELO AND CHRISTIAN KEREZ AUSTRIAN CULTURAL FORUM, NEW YORK / USA ATELIER RAIMUND ABRAHAM BMW MUSEUM, MUNICH / D THROUGH ART WE EXPAND OUR HORIZONS DORNIER MUSEUM, FRIEDRICHSHAFEN / D AND ENTER NEW WORLDS. THAT IS WHY ALLMANN SATTLER WAPPNER ARCHITEKTEN BUILDINGS DESIGNED FOR ART AND FOLKWANG MUSEUM, ESSEN / D INTEREST. THE ARCHITECTURE AND FRIEDER BURDA MUSEUM, BADEN-BADEN / D TYPE OF LIGHTING USED IN THESE SPACES RICHARD MEIER & PARTNERS ARCHITECTS DAYLIGHT AND ARTIFICIAL LIGHT ARE OF GERMAN HISTORICAL MUSEUM, BERLIN / D ILLUMINATE ALL THE FACETS OF THE ARTWORK KUNSTHISTORISCHES MUSEUM, VIENNA / A LANGEN FOUNDATION, NEUSS / D TADAO ANDO LENTOS ART MUSEUM, LINZ / A WEBER & HOFER LEÓN MUSEUM OF CONTEMPORARY ART, LEÓN / E MANSILLA + TUÑÓN LIEBIEGHAUS, FRANKFURT / D KÜHN MALVEZZI LYON MUSEUM OF FINE ARTS, LYON / F JEAN-MICHEL WILMOTTE MAMbo - BOLOGNA MUSEUM OF MODERN ART, BOLOGNA / I STUDIO ALDO ROSSI MAXXI NATIONAL MUSEUM OF XXI CENTURY ARTS, ROME / I ZAHA HADID ARCHITECTS MUSEUM DER MODERNE, SALZBURG / A FRIEDRICH POERSCHKE ZWINK ARCHITEKTEN MUSEO DELLE CULTURE (MUDEC), MAILAND / I DAVID CHIPPERFIELD ARCHITECTS MUSEO JUMEX, MEXICO CITY / MX DAVID CHIPPERFIELD ARCHITECTS MUSEUM OF WORLD CULTURE, GOTHENBURG / S BRISAC GONZALEZ ARCHITECTS PETTER DASS MUSEUM, ALSTAHAUG / N SNØHETTA ROYAL MUSEUMS OF FINE ARTS OF BELGIUM, BRUSSELS / BE ROGER BASTIN AND PIERRE LAMBY STEIFF MUSEUM, GIENGEN AN DER BRENZ / D PATZNER ARCHITEKTEN TATE MODERN, LONDON / GB HFR70G & DF MFURON TOPKAPI, ISTANBUL / TR CAGLAYAN TUGAL TSING HUA UNIVERSITY ART MUSEUM, BEIJING / CN BEIJING TSINGSHANG ARCHITECTURAL DESIGN AND RESEARCH INSTITUTE TURNER CONTEMPORARY, MARGATE, KENT / GB DAVID CHIPPERFIELD ARCHITECTS ULLENS CENTER FOR CONTEMPORARY ART, PEKING / RC WILMOTTE ET ASSOCIÉS WEISHAUPT ART GALLERY, ULM / D WWA, WÖHR HEUGENHAUSER WUMEN SHOWROOM IN FORBIDDEN CITY, BEIJING/CN **BEIJING URBAN CONSTRUCTION DESIGN & DEVELOPMENT** ZEUGHAUS, MANNHEIM / D PFEIFFER · ELLERMANN · PRECKEL

LIGHT FOR ART AND CULTURE REFERENCE LIST

OUR LIVES ARE ENRICHED BY ART. ATELIER BRÜCKNER CULTURE ARE AT THE CENTRE OF PUBLIC DAVID CHIPPERFIELD ARCHITECTS HAVE A FAR-REACHING INFLUENCE ON GANA ART GALLERY, SEOUL / ROK THEIR IDENTITY. IN A MUSEUM SPACE, JEAN-MICHEL WILMOTTE FUNDAMENTAL IMPORTANCE BECAUSE CHRISTIAN AXT THEY GUIDE PEOPLE EMOTIONALLY. KUNSTHAUS BREGENZ / A THE LIGHTING MAKES IT POSSIBLE TO PETER ZUMTHOR AND TO STRUCTURE EXHIBITIONS. HG MERZ



MAX HOLLEIN

"Light as a curator and scenographer."

Director of the Schirn Kunsthalle Frankfurt, Director of the Städel Museum and the Liebieghaus Skulpturensammlung Whether in a museum, in a public hall or in private surroundings, a piece of art unites with light and space and should be experienced as a single entity. The way the overall impression is choreographed has a fundamental effect on how the work of art is perceived. Anyone who has seen the Baroque Masters in a church setting, for example, with its dramatic lighting constantly changing throughout the day, has seen at first hand the huge potential of staging. Old Masters that were originally viewed by candlelight or daylight have a different "light story" from, say, contemporary art that stems from industrial production and blazes forth under the glow of fluorescent tubes. The choices for accentuating and contextualising are illustrated by different types of staging available today, making light both a curator and a scenographer.

Not only does the style of lighting enhance the atmosphere, it can also draw attention and direct the gaze of the visitor. Unique lighting concepts are required for presenting paintings, photographs, sculptures and archaeological artefacts. The most successful concepts are those that make the exhibit shine out and give the impression that it is glowing from within itself without the visitor actually noticing the light setting. That is why, for generations of visitors, the illuminating role of museums as institutions of enlightenment does not apply to the exhibits alone.

In future, museum designers will also pay even more attention to the theme of "light" for other reasons, because this is an area that must face up to operational realities such as energy efficiency, environmentally responsible practices and climatic conditions. Besides the aesthetic aspects, it is also necessary to take both the economic and conservation requirements into account. The Internet of Things, with its innovative technical opportunities will play an increasingly intelligent role here, shaping the entire industry for a long time to come.





Dr Sabine Haag Museum of Art History Manager, Vienna

"IT IS IMPOSSIBLE TO IMAGINE A MUSEUM WITHOUT THE RIGHT LIGHTING"

"We spent ages discussing how we could make a historic collection in a historic building relevant to the world of today. In our search for the right lighting solution, we ultimately came up with the idea of using contemporary lighting for the museum's Art Chamber. As far as I am concerned, our collaboration here with Zumtobel was essentially shaped by their knowledge of how to create something ground-breaking. For the best collection in the world, we insisted on working only with the very best partners."

Museo Jumex, Mexico City / MX Architect: David Chipperfield Architects, London / UK Lighting design: Arup, London / UK <u>A</u>

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David Chipperfield David Chipperfield Architects | Product Designer ARCOS Spotlight

"WE WANTED TO **CREATE A PRODUCT** TOGETHER THAT WOULD NOT ONLY **BE INSTALLED BY MUSEUM DIRECTORS** FOR HIGH QUALITY **EXHIBITION SPACES**, BUT THAT WOULD BE **USED BY OURSELVES** AS WELL."

Kunsthaus Bregenz / A Architect: Peter Zumthor / CH Façade lighting art: Siegrun Appelt | 288 KW, 2005

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Peter Zumthor Architect

"FROM THE OUTSIDE, THE BUILDING LOOKS LIKE A LUMINAIRE. IT ABSORBS THE CHANGING LIGHT OF THE SKY AND GIVES AN INTIMATION OF ITS INNER LIFE."



Museum of Military History, Dresden / D Architect: Studio Daniel Libeskind AG Zurich / J



Daniel Libeskind Architect

"THE PERFECT LUMINAIRE SHOULD BEHAVE LIKE LIGHT ITSELF."





Wang Zhi Yong Senior Interior Architect

"THE KEY IS TO PRESERVE AND HIGHLIGHT AN EXHIBIT'S BEAUTY, WITHOUT AFFECTING THE VISITOR'S VIEWING PLEASURE BY THE PHYSICAL PRESENCE OF THE LUMINAIRE."



Wumen Showroom in Forbidden City, Beijing/CN Lighting design: Beijing Urban Construction Design& Development Group Co, Ltd., Beijing / CN



An Wei Hua Registered Electrical Engineer

"BY CONTROLLING VARIOUS FORMS OF LIGHT EXPRESSION, ANCIENT BUILDINGS AND CULTURAL EXHIBITS CAN FULLY UNFOLD THEIR BRILLIANT POTENTIAL."

Light for outdoor and indoor

Great architecture creates a link between internal and external spaces. This applies particularly to museum architecture, as this represents a public cultural space.



With responsibility for the architectural, curatorial, social and economic relevance of cultural buildings, the demands on the performance of lighting concepts and lighting systems also increases.

The interplay of perception and construction, staging and orientation, outside and inside, daylight and artificial lighting requires a precise and holistic range of lighting tools for different tasks. By working very closely with architects, planners, builders and exhibition managers, Zumtobel has developed lighting systems that offer crucial support when it comes to the implementation of sophisticated lighting concepts in museum architecture.



The four dimensions of light

Only through light can art truly become an experience. The perfect presentation of paintings, photographs, sculptures and archaeological artefacts requires a deep understanding of the respective space, the medium and the curatorial theme. Effective lighting concepts follow the planning principles of museum lighting. A successful lighting design will encompass the four dimensions of light – direction, intensity, colour and time – to create a fascinating single entity.



Direction

Intensity

Colour

Time

The direction of the light is determined by the position of a light source in relation to the illuminated object. More than all other parameters, it determines the effect of the light on both the exhibit and the viewer. The direction of the light affects the depth of the room, the plasticity and how the object is perceived. Special attention is paid to glare. As well as physical glare, which can impair visibility, psychological glare due to strong points of light in the field of vision can have a direct impact on wellbeing and the quality of the visitor experience. The precise positioning and anti-glare characteristics of light fixtures, such as flexible glare protection modules, are key elements in designing high-quality museum lighting.

A certain quantity of light is required on the surface to display works of art in the best possible way. The usual illuminance from conventional lighting systems in museums is between 50 and 200 lux for conservation reasons, depending on the exhibit. Thanks to the latest LED technology, without damaging UV, IR and heat radiation, even sensitive objects such as works on paper can benefit from optimal illumination.

The colours that are visible to the viewer and the way that these colours are experienced are determined by the colour of the light, as well as the spectrum of reflection or transmission of the particular exhibit. The precise specification of the light colour with regard to the lighting conditions in the room and the material of the artwork guarantees the best results. New technologies such as tunableWhite from Zumtobel enable dynamic control of the light colour.

Intelligent lighting control systems allow the intensity and colour temperature of artificial light to be calibrated and controlled throughout the course of the day. This means a constant, high-quality lighting experience can be ensured, regardless of the time of day or the external light conditions.

Planning principles

A variety of lighting solutions

Specific exhibition concepts, exhibits and spaces require lighting systems with different characteristics.



Superspot: For precise accentuation of small exhibits; draws the eye Spot: For illumination of all types of objects; strengthens individual areas of the image or object

Flood:

For large-format exhibits and wall surfaces; creates distance and depth in the room Wideflood: For illumination of larger surface areas; can also be used for background lighting With beam angles from Superspot to Wideflood, anti-glare tubes for optimal glare control and framing attachments for precise borders, Zumtobel offers great freedom when designing the ideal museum lighting arrangement. Modular systems made from high-quality exchangeable lenses, optics and attachments allow optimum and quick adaptation reflect the specific lighting task. Our lighting tools enable maximum curatorial freedom with beam angles ranging from 8° to 65°. This offers architects, lighting designers and curators the greatest possible flexibility and precision when implementing sophisticated lighting concepts.



Oval flood: Oval dispersion; ideal for elongated exhibits Oval: Elliptical distribution; perfect for very narrow objects Projection: A sharp-edged point of light that can be focused Wallwasher: Homogeneous illumination of wall surfaces or larger images

ARCOS

Sensitivity and high precision - the spotlight system for sophisticated lighting scenarios.





A complete range for the perfect lighting of exhibits



Distribution characteristics

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Distribution characteristics

Superspot Spot/medium spot Flood Wideflood Wallwasher Installation 1-phase track 3-phase track L3 + DALI track Luminaire diameter

Ø 80 mm Ø 100 mm Ø 120 mm LED

Accessories UV/IR/colour filter Wallwasher attachment Cross louvre attachment Projection attachment: lens, iris, outline Interchangeable reflector Lenses (oval outline lens,

rectangular lens, soft outline lens), films

Honeycomb mesh

Ring louvre Vane louvre

Barn doors

1/15 W (3000 K, 4000 K) 1/22 W (3000 K, 4000 K) 1/30 W (2700-6500 K) 1/30 W Projection 1/30 W (3000 K, 4000 K) 1/35 W (3000 K, 4000 K)

Wallwasher

SUPERSYSTEM II

High-quality, miniaturised lighting system for expert solutions to tricky lighting problems.





U-profile: H 30 mm x W 26 mm H-profile: H 60 mm x W 26 mm Lengths 1000 mm, 2000 mm, 4000 mm





A complete range for the perfect lighting of exhibits



Distribution characteristics
Extremely narrow beam
Narrow beam
🚺 Wide beam
Very wide beam
Oval beam
Contours (round/rectangular
Wallwasher
Direct
M Indirect/direct

Luminaire diameter

Ø	26	mm
Ø	45	mm
Ø	65	mm

LED

1 x 2 W, 1 x 4 W (Ø 26 mm)
3 x 2 W, 3 x 4 W (Ø 26 mm)
1 x 6,5 W, 2 x 7 W (Ø 45 mm)
1 x 7 W, 1 x 15 W (Ø 65 mm)
1 x 6,5 W (framing spotlight)
1 x 8,5 W (framing spotlight)
1 x 8 W (wallwasher mini)
1 x 10 W (wallwasher midi)
1 x 8 W (LEDray S)
1 x 9 W (LEDline S)
1 x 9 W (LEDline H)

Colour temperature

4000 K (Ra 80, Ra 90) 3000 K (Ra 80, Ra 90) 2700 K (Ra 80, Ra 90)

Accessoires

Light direction foils
Ring louvre
Anti-glare tube

Track modules

LV track
Recessed profile set
Angle connector 90° (mechanical)
Angle connector 90° (electrical)
Connector (mechanical)
Connector (electrical)
Mounting rail cover plates
Set of end plates
Cord suspension
Electrical power feed DC/DC, AC/DC
Recessed device
Ceiling rose

Conservational aspects

LED light is virtually free from infrared light and ultraviolet light, therefore opening up the possibility of completely new forms of lighting for museums and art galleries. Professional calculation of radiation time on the basis of potential damage from the lighting solution ensures optimum protection. Zumtobel can also carry out measurements on site and provide follow-up analysis on request. A study conducted in collaboration with Darmstadt University has produced a useful knowledge base. Warm LED light with a colour temperature of 2700 to 3500 K significantly lowers the risk of potential damage when compared to lighting using conventional halogen technology or cool white LED lighting. Luminaires with tunableWhite technology make it possible to select the optimum light colour for individual objects.

Zumtobel can also carry out measurements on site and provide follow-up analysis on request. (Services, page 32)



Städel Museum, Frankfurt / D Architectural extension and renovation of the old building: schneider+schumacher, Frankfurt am Main / D Architecture for presentation of the collection: Kuehn Malvezzi, Berlin / D Lighting design: LKL Licht Kunst Licht AG, Berlin, Bonn / D

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Energy efficiency and service life

Lighting installations with tungsten halogen or fluorescent lamps consume a lot of electricity and entail the expense of replacement lamps. The Zumtobel LED portfolio for ambient lighting and accent lighting is twice as efficient. These products result in low electricity bills and short payback periods of 3 to 5 years. The fact that dimmable versions are available across the entire Zumtobel LED range offers additional potential savings. A lighting control system or luminaires that can be dimmed directly on the product itself are the best way of maximising these opportunities.

The long service life of Zumtobel's LED products, combined with their 5-year guarantee, keep maintenance costs down, even in galleries with typical ceiling heights of 4 to 8 metres.



Weishaupt Art Gallery, Ulm / D Architect: wwa – Wöhr Heugenhauser Architekten, Munich / D Lighting design: a.g Licht, Bonn / D

Services for Art and Culture

Zumtobel has a wealth of experience from working together with leading museums and cultural institutions. Our knowledge of the latest technologies and the effect of light in a room, on both the artwork and the viewer, allows us to create entirely new ways of presenting works, adding real value for museums and exhibitions.

As a member of the Zumtobel Group, we offer you a range of unique services in the area of Art and Culture:

Light damage analysis

Photochemical decomposition caused by artificial light with high ultraviolet and infrared radiation is a major cause of damage to valuable exhibits. Our experts use the latest spectrometer technology and analysis methods for light damage and threshold analysis.

Light as a Service

Does your project exceed your annual budget? No problem. At Zumtobel we can also provide you with lighting solutions as a service. The advantages are:

- professional project management
- turnkey installation
- inclusion of commissioning, training and maintenance
- clearly defined monthly rates

Lighting consultancy

Take advantage of the specialist knowledge gained from our directional research projects to help plan and optimise your lighting solutions for exhibitions, shops and restaurants. Using applications such as Limbic[®] Lighting and our unique worldwide planning and consultancy network, we help big brands achieve great results – including at the point of sale.

Customer care

Our customers deserve the best service, whenever and wherever. The Zumtobel customer care team is there for you around the clock and around the world.

Art Chamber in the Kunsthistorische Museum Wien (Museum of Art History), Vienna / A Architect: HG Merz, Stuttgart, Berlin / D Lighting design: Die Lichtplaner, Limburg / D Light conception: Symetrys, Lustenau / A CETTA

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Tracks and spots



Modular lighting systems



Recessed luminaires

Surface-mounted and pendant luminaires

Free-standing and wall-mounted luminaires

Continuous-row systems and

individual batten luminaires

Downlights









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extra protection

High-bay luminaires

Façade, media and outdoor luminaires

Lighting management systems



LITECOM





Lighting Services

Medical supply systems

ZUMTOBEL

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