The glass façade takes the foreground during the day and melts into the background in the night, when the interior comes to the fore. The lighting is provided by regular up and down wall-washing accent lights.

The building becomes a luminous body in the night.

Glass architecture is light architecture

A symbiosis of architecture, structural engineering and - last but not least- lighting design!

From Paxton's Crystal Palace for the Great Exhibition in London a century ago to the present day, glass and steel are a favourite combination of materials in modern architecture. Transparency, openness and flexibility in modern buildings have taken a step further towards light and luminescence in defining the architectural philosophy of present times.

In the technology-conscious world we live in, it is the architects and civil engineers who push the limits of glazing technology to the unbelievable. Murphy / Jahn is one such unique architectural firm who have discovered how to create architecture that is experientially rich, complete, ever changing. According to Helmut Jahn: "Perfection is achieved not when nothing is to be added, but when nothing can be taken away." This shows that their architectural work today is more evolutionary than revolutionary. Progress is incremental, advancing from project to project, as new technical ideas are tested.

For Helmut Jahn, transparency and lightness are conceptual and intellectual ideas that can be realised with new materials. He strives for architecture of clarity and order, he wants his buildings to be comprehensible and rational. For these purposes, glass is the material of his choice. It allows spaces to be layered, to be read as overlapping realms that slide past each other.

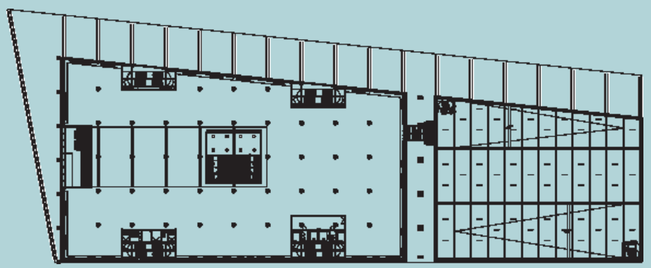
Galeria Kaufhof in Chemnitz/D is one such project where the architect has proved that creativity has to do more with the elimination of the inessential, than inventing something new. The lighting design concepts for the façade, staircases and underground tunnel were developed by Michael F. Rohde, L-Plan, Berlin/D in close collaboration with the architect, and the light artist, Yann Kersalé, AIK, Paris/F.

The city of Chemnitz suffered a lot in the second world war and later on under the communist regime. The town centre was rebuilt with large open spaces devoid of any urban activity. The main challenge offered by this project in the town centre of Chemnitz was to restore the Neumarkt and reinstore scale and urbanity to an area which was once an urban wasteland. This concept also shows how an urban space assumes an important role in Helmut Jahn's work. The architect recognizes that the function of new urban centres is different from those of the past decades. Today, urban design is linked more to entertainment and product consumption.

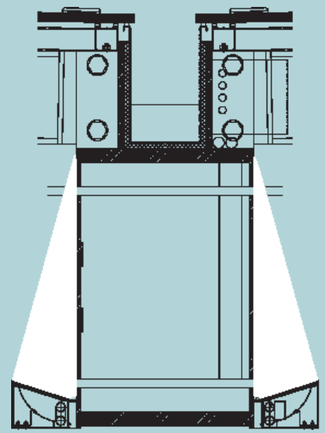
The Kaufhof (25,000 square metres of sales space) occupies a large parcel of land between a historic city square, the Neumarkt, and Bahnhofstrasse. The department store is oriented towards the Neumarkt and separated by a galleria from a multi-storey car park with shops at ground level. The entrance to the car park is via ramps in Bahnhofstrasse and covered by glazed, lit canopies. They lead to a tunnel enhanced with light art by Yann Kersalé, giving the user a sense of orientation. To the north is the central terminal for cars and buses, which is covered by a large cantilevered roof extending to Neumarkt to form an urban loggia, like a stage.

All over the world, commercial building and shopping malls are generally closed buildings. The façade is generally made of opaque material. The only exception is the ground floor, which has to cater for pedestrians and mark the entrance of the building.

One of the primary goals of this project was to make light the essence of the design by creating an urban scenography and transforming the shopping mall from an introverted to an extroverted piece of architecture. This was achieved by making a totally glazed store, where the



Ground plan



Detail of the lighting of the beams on the cantilevered roof.

Each steel beam of the cantilevered roof is accentuated by a continuous band of light comprising cold cathode lamps with an aluminium reflector.

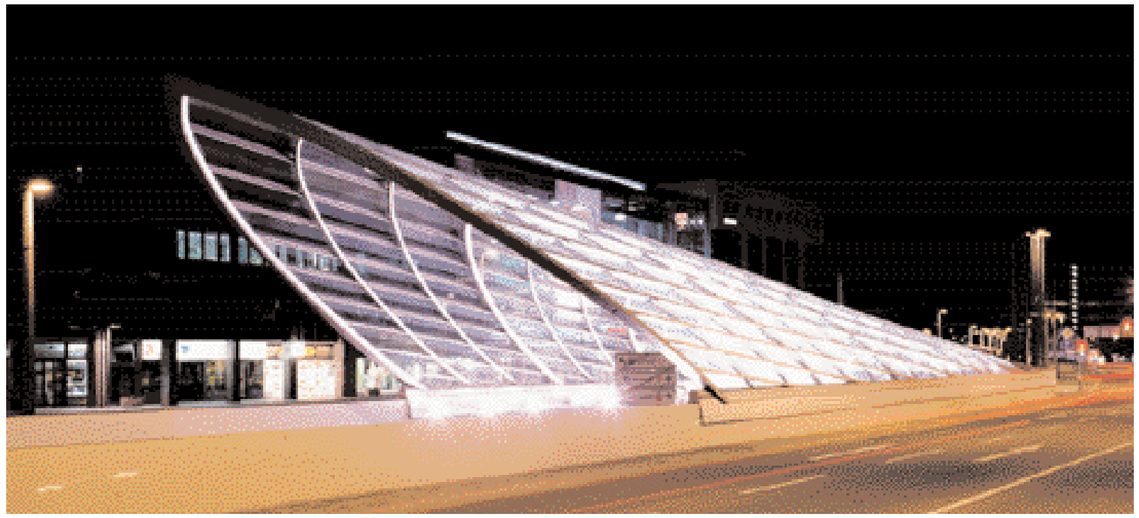
display of products is integrated with signage. The building thus becomes a transparent "Stadt Pavilion", glowing from the inside outwards, which is especially striking at night. This design concept is extended to the roofs of the adjacent Central Station and the canopies to and from the parking garage.

Innovative engineering and performance, and an interest in material and construction are the generators of form and aesthetics in Helmut Jahn's architecture. In this project, he has designed the façade so that the glass is read as a thin, form-covering screen, which acts as a fabric to moderate both the natural and artificial light. The insulated glass panels run like a taut membrane applied to the edges of the vertical structural panels. The glass is point-held through the panel joints, with cables and horizontal glass-fins added where slabs do not exist. Stretched metal screens enclose the car park and define the edge of the cantilevered structure at the roof, changing between transparency and an opaque surface. The brief from the client and the architect was to illuminate the glass façade and the steel structure. Lighting clear-glass is difficult, since it is transparent and poses no chance for reflection.

Michael Rohde and his design team solved this problem by providing accent lighting to the advertising panels directly behind the façade. The ground floor, being the most important for pedestrian interaction, has received special attention. The mannequins are placed on light podiums and are additionally lit by adjustable, wide-beam downlights for interest and effect. For the upper floors, one narrow-beam downlight (HIT-CRI 70 watt) and one wide-beam uplighter (HIT-DE 70 watt) are used per window to illuminate the poster screens. Metal halide lamps have been used to enhance the quality of the colourful posters that add to the lively quality of the facade. During the day, the high-tech glass façade takes the primary focus. After dark, the façade slips into the background and the interior comes to the fore, primarily the light reflected by the vertical surfaces determining the structure. The building is virtually turned inside out.

The fire-escape staircase becomes a decorative element during the night. The underside is lit using T5 luminaires.

The lighting concept is further extended by lighting elements outside the building, such as the glass and steel canopy for the parking.



Different lighting has been designed for the different functions performed by the building – staircases, entrances and ground floor – which is visible through the façade. The main entrance is accentuated by bands of T5 luminaires that are flush-mounted with the floor slabs and provided with a glass diffuser. This is a clear example of how light can be used in the urban context to guide people through spaces.

The Kaufhof Chemnitz has a well defined protruding head in the form of a cantilevered roof supported by steel beams. Cold cathode lamps with asymmetric reflectors are installed along the contours of these sections to accentuate them, and form a continuous line of light along the beam canal. Aluminium reflectors are used behind these lamps for consistent illumination. LMT Leuchten + Metall Technik GmbH produced the cold cathode lamp installation (reflector design: L-Plan).

Custom-made, angular, asymmetrical luminaires for communication lighting are used in the main entrance area and the access bridges. The highly efficient projectors equipped with metal halide lamps (HQI-TS 400 watt/D/36000) were chosen for glare-free, wide area flood-lighting. Groups (two/four) of these luminaires are mounted symmetrically to the steel beams in a repetitive pattern along the central axis of the access bridges. The five floors of the shopping centre are connected by the centrally located atrium and escalator shaft. The lighting designers decided to highlight this major communication hub. This was done by lighting the edges of every floor slab using three rows of T5 (21 watt/39 watt) lamps flush-mounted in battens behind the glass handrails, thereby enhancing the concept of transparency from a macro to a micro-level. General lighting was also provided using eight industrial high-bay wide-beam luminaires arranged in a regular grid.

The exit access routes connecting the car park and the shopping centre are lit on the underside by water-resistant (IP 65) T8 luminaires arranged in parallel to the building. The steel fire-escape staircase is lit by light strips of T5 lamps on the underside of the construction, an idea conceived by Yann Kersalé:.

Underground car parks and tunnels are generally regarded as uninteresting and unfriendly areas. But Yann Kersalé and Helmut Jahn have given the car park on this project a new dimension with their light art installation. Light tubes of extruded satin acrylic PMMA (Ø250 mm, IP65) equipped with metal halide lamps are applied along the length of the tunnel to light the space and to give a sense of orientation. The lamps have narrow beam reflectors and colour filters to generate coloured light in the tubes. Each of the four cardinal directions is represented by a different light colour to help the user find his way in and out of the building. The coloured light also adds drama to the rather monotonous driving experience in these tunnels. The exits are marked by canopies made of steel and glass. The structural members of these canopies are up-lit using linear projectors equipped with metal halide lamps (HIT-CRI 35W). Apart from highlighting the steel structure perfectly, these luminaires are absolutely glare-free for the traffic using the garage.

Use of glass as a building material gives efficient, ecological and aesthetic opportunities for Transparency, Reflection, Opacity and Refraction. Transparency allows for minimal form and aesthetics of construction. The building develops a luminescent quality, glowing from within. In the urban environment light brings out the poetic essence of the design after dark.

Text: Karolina M. Zielinska, Amardeep M. Dugar
Photos: Roland Halbe

The underside of the exits are illuminated by moisture-proof T8 luminaires.

Project Team

Client: Metro plus Grundstücksvermietungsgesellschaft mbH& Co. Objekt Chemnitz, KG/D
Architect: Murphy/Jahn, Helmut Jahn, Chicago/USA
Light art: AIK, Yann Kersalé:, Paris/F
Lighting design: L-Plan, Michael F. Rohde, Berlin/D
Civil and structural engineering: WSI, Werner Sobek, Stuttgart/D

Products applied:

Underground car park and tunnel lighting: Light tubes of extruded satin acrylic PMMA (Ø250mm., IP65) equipped with metal halide lamps (400 watt/250 watt/150 watt) Se'lux SSL	Info ➔ 6
Canopy: Linear projectors equipped with metal halide lamps (030100336 HIT-CRI 35 watt G12, IP65), Sill	Info ➔ 7
Entrance light bands: T5 LS 58 watt, planned with Spectral	Info ➔ 8
Access bridges: Plane Projectors (455-504043) equipped with metal halide lamps (HQI-TS 400 watt/D/36000), Sill	Info ➔ 9
Cantilevered roof-structure: Klinger Neon SFM 50/6 TR-SFMX-00015, LMT Leuchten + Metall Technik GmbH	Info ➔ 10
Fire-escape staircases: SPLBK-16, T5 LS, 54 watt 01900474), planned with Spectral	Info ➔ 11
Atrium: 6602 IP20 HQI-TS 1000 watt Industrial HI-BAY luminaire, wide-beam, Sill	Info ➔ 12
SPLL-16, T5 LS, 58 watt (G5 01900474), planned with Spectral	Info ➔ 13
Podiums: SPLL-16, T5 LS, 58 watt (G5 01900474), planned with Spectral	Info ➔ 14
Façade: Dancer 33 QT –DE 12300 300 watt, PRIO 30 100 watt and Shop-system Kardano for the ground floor, Zumtobel Staff substituted with Kotzolt Virgo Spot HIT-CRI 70 watt, G8 and Virgo Flood HIT-DE 70 watt, GX7s were used	Info ➔ 15

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