

# COLOGNE CATHEDRAL RESPLENDENT IN NEW LIGHT

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Pictures: Ingenieurbüro Bamberger  
and Wolfgang Deuter / Corbis / Skoy

It's not only one of Germany's most well-known landmarks, but the third tallest church in the world. As a destination for up to 30,000 visitors a day, Cologne Cathedral is also Germany's most popular tourist attraction. As part of a competition for new ideas, engineer Walter Bamberger was awarded the tender from the High Cathedral of Cologne to redesign the lighting of the imposing nave in February 2006. DIGIDIM Routers by Helvar were used to put the new lighting ideas into practice under Mr. Bamberger's supervision. The result puts an end to the previous centralized control concept. Replaced with flexible light control that is simple to operate and extremely easy to maintain, as only DALI routers can provide.

Church lighting has very special requirements - not only because it is to highlight the aura of dignity of a place of worship, but also because the immense differences in height and large dimensions create further particular demands

on lighting systems. Walter Bamberger complied with the basic requirement that the church structure must be drilled. When he implemented his lighting concept in the Cologne Cathedral: almost 1,000 lighting elements are attached to the pillars by bolted frames using clamps or spreaders.

Out of respect for the historical object, Bamberger exercised restraint in the lighting arrangement, but achieved clarity in its formal statement. The artificial lighting concept pushes interior lighting to its limit, in that the cross vaults up to the choir polygons represent a single

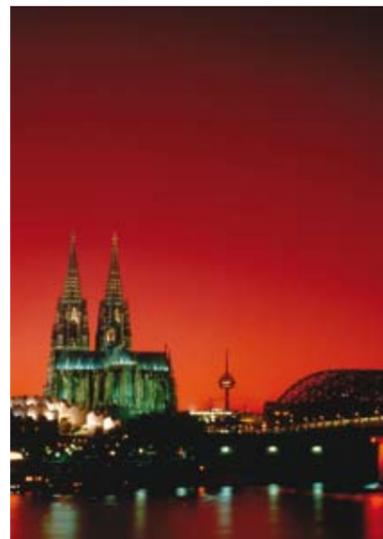
entity, allowing visitors a full experience of the Gothic chamber. Artificial light follows daylight throughout the course of the day and year and adjusts subtly to changes in natural room illumination. The lighting for the crossing was particularly challenging because light hits the altar platform vertically from a height of 45 meters. It was important to find the right balance using additional spotlights on the triforium to all but eliminate shadows.

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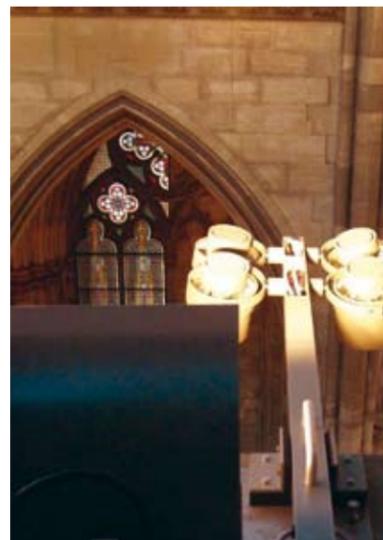
## Silent, challenging heights

At a height of 24 meters, special secondary lights with high-voltage halogen and metal halide lamps illuminate the arches from the peak at 45 meters up to the capitals of the pillars at 17 meters. While these lights are mounted out of the sight of the observer, boom lights with gimbal lighting fixtures provide appropriate lighting in the pews and equal light density on the pillars. After service, these boom lights can be removed in the choir by motor. The aisles get their light from the capitals of the middle pillars from the respective double aisles. The arches are illuminated by small light scoops with mini high-voltage halogen lamps, and the floor and stations of the crossing by single gimbal lighting fixtures. Spotlights on contact rails are positioned on the triforium for the crossing altar and high altar. All lighting fixtures are special designs by Bamberger, except for those on the contact rails for the crossing altar and high altar.

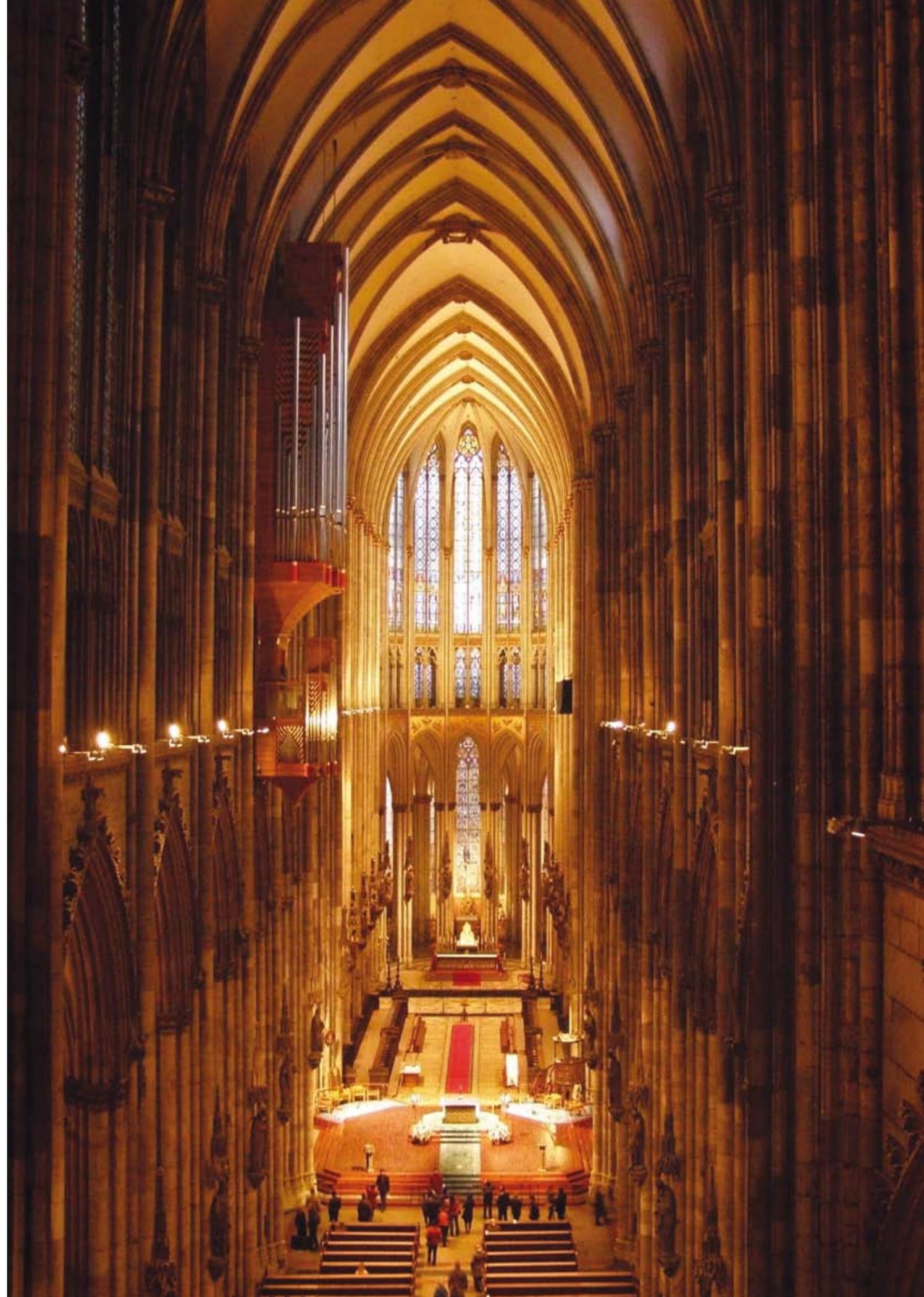
Cologne Cathedral in its entirety is a technical challenge for lighting design. More than 1,000 individual lights in over 600 controllable groups were



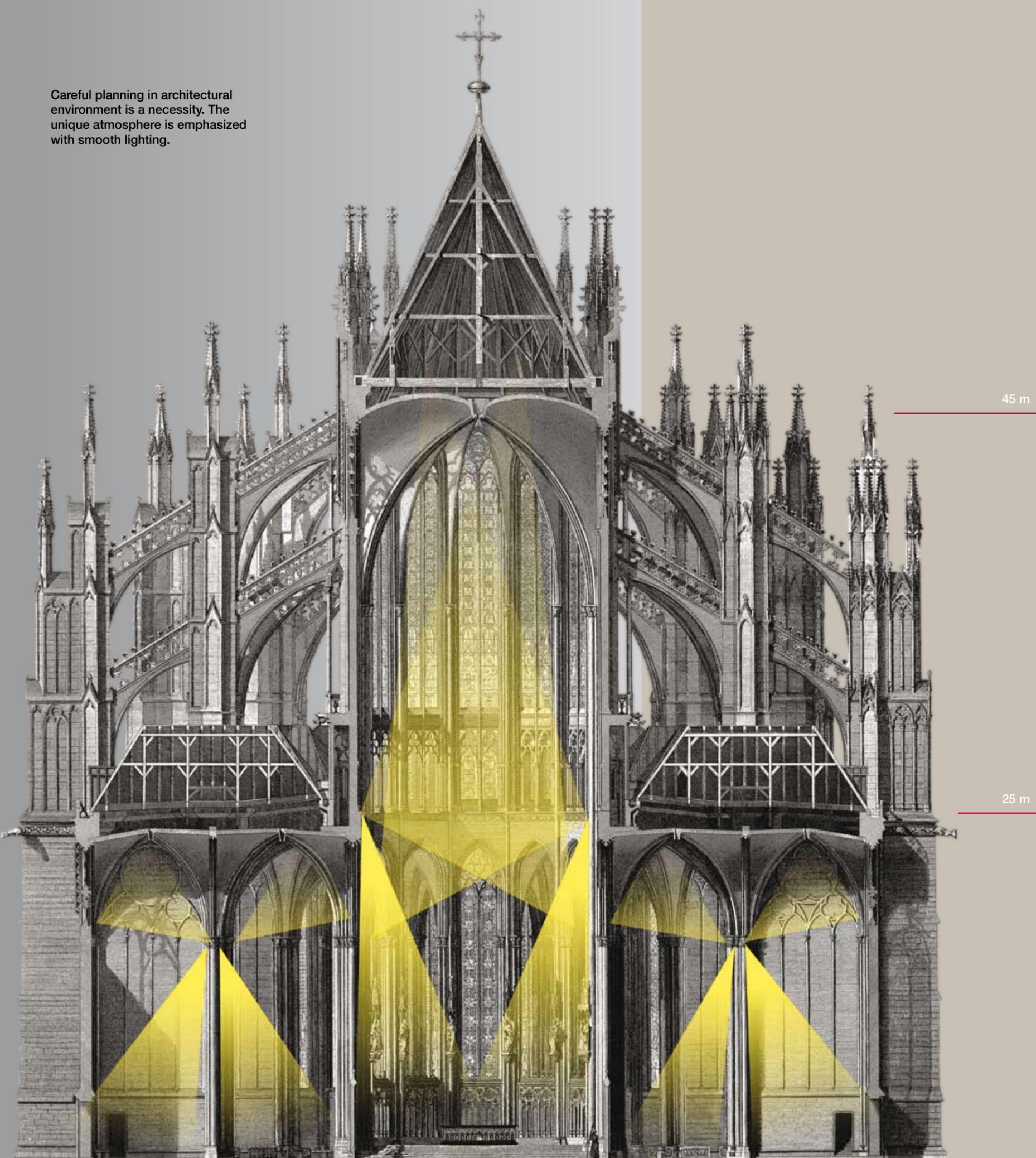
The beautiful Cathedral rules the skyline of Cologne.



The lighting equipment is easy to maintain, though it is not visible to the visitors.



Careful planning in architectural environment is a necessity. The unique atmosphere is emphasized with smooth lighting.



mounted using more than 20 km of cable, even though existing cabling was also used to minimize rewiring.

What makes the lighting concept in the Cologne Cathedral revolutionary is the decentralized system of its control hierarchy. The DALI system bus, with which Helvar DIGIDIM Routers work, enables decentralized positioning of components such as DALI transformers, ballasts, dimmers and relay units directly in the light fixture. A simple commercially available five-core cable is required for the wiring. This intelligent lighting design made assembly easy to maintain with plug connectors, which ensure smooth and fast component replacement.

### Well planned, well maintained

A big advantage of using DALI systems is the precise localization of error and outage sources. Every subsystem has a unique address and reports its status to the control system. A lamp failure can be located immediately, and is of course extremely important considering it can take up to 20 minutes to walk through the Cologne Cathedral.

The highlight, however, is the intelligent component management in the Helvar DIGIDIM Router, which automatically configures the replacement components during maintenance. If a dimmer above the altar island goes out, for example, the DIGIDIM Router generates an error message that is relayed to the technician. The advantage of using Helvar components is that re-initialization is dispensed with by making a simple replacement. The system automatically recognizes new components. Eight sub-distributors with a total of 18 DIGIDIM DALI routers by Helvar are deployed in one fibre optic Ethernet backbone in the Cologne Cathedral.

The entire system is controlled in the vestry using a wide 17-inch touch panel that can access 76 different programmed scenes. The various lighting scenes can be called up at the push of a button using unique names such as "organ concert", "Pontifical High Mass" or "guest morning". The user-interface is so intuitive and self-explanatory that it can be operated immediately by anyone even without special training. The floor plan of the Cologne Cathedral is depicted on the touch panel and all operating elements are directly linked with the respective light groups. ■

### Cologne Cathedral Hohe Domkirche St. Peter und Maria

- Overall outside length 144,58 m, width 86,25 m
- Height of the southern tower 157,31 m, northern tower 157,38 m
- Build over area ca. 7 914 m<sup>2</sup>
- 4000 places of which 1200 seats
- 509 steps to the tower
- Construction began in 1248 and took over 600 years to complete
  
- Address:  
Metropolitankapitel der Hohen Domkirche  
Dombauverwaltung  
Roncalliplatz 2  
50667 Köln