

## Lighting for the new Heumarkt U-Bahn station in Cologne creates lively views

**Each of the eight stations on the new North-South rapid transit (U-Bahn) line in Cologne was designed by a different architectural firm. Four of these stations use lighting technology from WE-EF. The largest of the stations, which is at Heumarkt, offers an impressive demonstration of how the luminaires contribute to function, safety and aesthetics all at the same time.**

### **An underground cathedral**

The image of train stations as a “modern cathedral” arose in the days when monumental train stations marked the start of the age of mobility. This association experienced an unexpected renaissance at the end of 2013. When the Heumarkt U-Bahn station in Cologne was commissioned, the cathedral analogy was a common thread in commemorative speeches and media reports. In fact, because of its surprisingly large, emerging arches and vaulted ceiling, the underground halls of the U-Bahn station are reminiscent of a church nave.

The reasons why the station comprises two expansive overlapping spaces are of a purely worldly nature, however. Heumarkt is an important transport hub in Cologne. It is the crossroads at which the North–South and planned East–West lines intersect. The new station allows travellers to access the North–South line at a depth of 23 metres and, potentially, the East–West line from another station hall at a higher level. However, the East–West line will only be used for train travel if its connection – which is currently above ground – is moved below. Until then, this area will serve as an intermediate level with a 300-m<sup>2</sup> shopping pavilion that stands on the covered East-West track bed.

With its elliptical layout and fully-glassed walls, the pavilion conveys a sense of airiness and transparency. The impression of almost floating is reinforced by the rounded shape of the corbelled roof. Its outer shell consists of perforated metal sheet while the inner space of the roof contains the building technology for the pavilion.

With its organic design, the large kiosk area integrates perfectly into the dynamic space of the station. This characteristic momentum is not just conveyed in building’s vaulted East–West level. The numerous cut-outs and visual axes open up a wide range of new perspectives that also add to this vibrancy. From some locations the entire height of the building can be seen – from the deep level of the North–South line and the intermediate level, to the glassed stairways leading above ground, where natural daylight enters the structure.

### **Good lighting from every level**

Given the great differences in room heights – for example, 13 metres in the vaulted hall and moderate ceiling heights in the intermediate levels – as well as the volumes of space across the various floor levels (especially in the escalator and stairway areas), the task for the lighting design team was to generate sufficient illuminance at the transport levels from a wide range of lighting point heights. A particularly versatile lighting instrument was required in order to manage the heterogeneous installation positions and the installation/mounting conditions, using a continuous luminaire design. The versatile WE-EF DOC200 recessed exterior downlight series was the ideal solution for evenly powerful and flexible lighting.

The luminaires are innately suited to the raw ambient conditions present in a transportation building. The corrosion-resistant, marine-grade die-cast aluminium housings, 5CE corrosion protection, polymer-coated stainless steel fasteners, lenses made from safety glass resistant to changing temperatures, vibration protection and IP65 protection ensure reliable operation of the luminaires. In this project specifically, the adaptability of the luminaires to suit the necessary installation situations was also an advantage.

In the Heumarkt station, DOC240 luminaires are mounted in a variety of combinations – incorporated with cross-members and integrated with the perforated metal sheet cladding of the station ceiling, and directly installed in both level and inclined concrete ceilings. In areas that are difficult to access, such as above the escalators and stairways, the downlights have been installed on luminaire lifts. These lifts make it possible to lower the luminaires for servicing or to replace lamps, which is a tool-free process. A wide range of wattages was required: for HIT lamps, 35 W, 70 W and 150 W; and for TC lamps, a 2 x 26 W configuration.

**An illuminating band for the cathedral apex**

The East–West hall features a spectacular highlight: DOC240 luminaires with 150 watt metal halide lamps and symmetric wide beam distribution. Arranged in pairs between the cross-members along the apex line of the arched ceiling, they form a 110-metre band of light running through the entire length of the “cathedral”. While the DOC240 luminaires direct impressive light downwards, FLC131 projectors with extremely narrow beam distribution are mounted above the downlights to illuminate the ceiling panels.

Beyond the impressive band of light in the vaulted ceilings, the DOC240 luminaires are mainly used to illuminate the steps and paths in many areas of the station. Their discreet design is ideal for harmonising the lighting with the modern architecture and sophisticated exposed concrete or backlit glass block surfaces.

**Expert solution for a special installation situation**

Temperatures posed a challenge at some of the luminaire installation points in this project. With DOC240 luminaires, the control gear is located as standard in a terminal box outside of the luminaire housing. This thermal separation of the heat-generating lamp and the control electronics is sufficient for most installation situations. However, the Heumarkt U-Bahn station had a specific situation of its own – the station lies directly underneath an asphalted road, which can generate so much heat in the summer that temperature stress is a real possibility for the luminaires under the hall ceiling. In view of this possibility, WE-EF developed solutions specifically engineered for the project.

Luminaire housings and terminal boxes in the installation pipe beneath the vaulted ceiling are kept a certain distance away, using special threaded rods. The additional distance between the lamps and the luminaire electronics provides optimal operating conditions for the entire luminaire system, and ensures a long service life for its components.

**Acoustic surprise, visual continuity**

Passengers waiting at the platform edge at Heumarkt station have a surprise in store every day between 8 p.m. and midnight. A bell installation by Austrian artist Werner Reiterer starts at a random time selected by software. The fact that the „ghost train“ that then travels through the station cannot be seen is not due to the lighting – it is actually a purely acoustic phenomenon.

The lighting solution continually meets all standard specifications, providing good visual conditions and highlighting the aesthetic appeal of the architecture. Furthermore, the emergency lighting integrated in the WE-EF luminaires ensures that, should the worst happen, all passengers will be able to see where they are and safely exit the station if necessary.

Project: Heumarkt U-Bahn station, Cologne

Client: KVB Kölner Verkehrs-Betriebe

Architect: Coersmeier Tebroke Architektur GmbH, Cologne

Lighting designers: Lichtdesign-Ingenieurgesellschaft mbH, Prof. Heinrich Kramer, Cologne

WE-EF luminaires: DOC240 recessed exterior downlights, FLC131 projectors

Photos: WE-EF – Frieder Blickle

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**Heumarkt U-Bahn station, Cologne / Photos: WE-EF – Frieder Blickle**

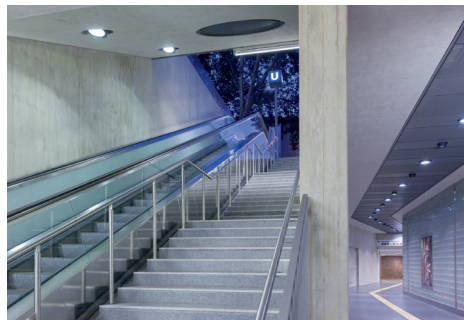
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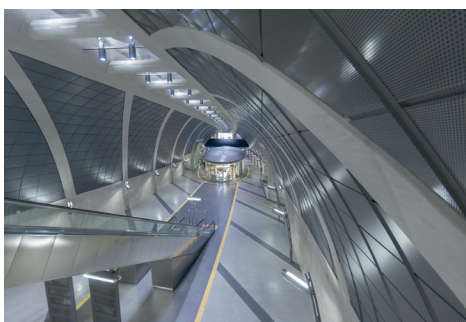
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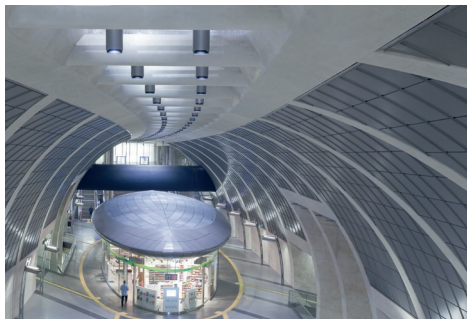


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**we-ef**

## Heumarkt U-Bahn station, Cologne / Photos: WE-EF – Frieder Blickle

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