ERCO

Report

Bringing majestic dimensions to life: The relighting of Milan Cathedral

Client: Cathedral works organisation "La Veneranda Fabbrica del Duomo di Milano", Milan / Italy, www.duomomilano.it
Lighting designer: Ferrara Palladino e Associati, Milan / Italy, www.ferrara-palladino.com
Photographers: Dirk Vogel, Dortmund, Germany and Arnaldo Dal Bosco, Valdagno / Italy
Products: Parscan spotlights and floodlights
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Place: Milan, Italy
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"Longh cume la fabrica del Domm," the Milanese say in Lombard dialect when there is no end to something. As the construction of the Cathedral in the heart of Italy's northern city – which has been in progress since 1368. ERCO is responsible for its upgraded lighting with efficient LED lighting tools.

The façade of the cathedral was eventually finished in 1805 on the initiative of Napoleon, who was crowned King of Italy here. And the "Veneranda Fabbrica del Duomo di Milano", the venerable organisation concerned with all operational aspects of the Cathedral, continues to this day, as it did centuries ago, to seek out skilled builders and craftsmen who see to the completion and upkeep of the Cathedral – and so are responsible for the preservation and restoration of its original structure, but also for providing modern features such as access control system, air conditioning or lighting.

Using light to define spatial dimensions

These then were the experts that needed to be impressed when the interior of the Cathedral was to be fitted with new lighting for this year's EXPO 2015 world fair in Milan. Fortunately, the lighting designers of Ferrara Palladino e Associati, Milan, were as familiar with the building as with the Veneranda Fabbrica, having previously worked on the façade lighting for the Cathedral back in 2000. Nonetheless – a gigantic task in light of the fact that the Cathedral is among the world's largest sacred buildings. It is 157m long, the transept is 92m wide and the nave is 45m high. The primary concern of the lighting designers was to bring these majestic dimensions to life for the visitors. "Effectively – the first aspect to consider is the monumentality of the architecture as a whole. The impressive size, its enormous scale which accompanies us from the moment we enter through the main portal," Pietro Palladino says explaining his design approach. "These are dimensions that confront us right away."

In its concept, the light therefore needed to emphasise the lofty character of Gothic architecture as much as the vastness of its interior. In the words of Palladino, it was to "be a tool used to bring out the grandeur of this building and pay homage to the Cathedral as the most significant place of worship in the city.

"Worshippers and tourists will see the Cathedral in an entirely new light"

In the light of the old system, the Cathedral's interior had appeared mundane, indeed almost neglegted. Floodlights with 400W high-pressure lamps had been mounted along the base of the vault, from where they illuminated the interior for the most part indiscriminately with a cool daylight character. A rather disappointing solution today, dictated by the lack of light sources back then that offered higher efficiency and a longer life. Maintenance and operating costs are invariably a critical aspect for the "Veneranda Fabbrica" in view of its formidable responsibilities and its difficult task of working with the typically limited budget of a cultural institution. One-off investments, in contrast, can generally be financed by raising extra funds, grants or donations.

A new standard of light quality

The clients therefore welcomed the concept of the lighting designers to use LED technology for a new aesthetic standard of quality, all the more, as the one-off investment in high-quality lighting tools promised to pay for itself in the long run through savings in energy and maintenance costs. Keeping the mounting location at over 30m along the base of the vault also meant that the existing electrical installation could stay in place. The luminaires remain out of sight for

the visitors, but can be aligned optimally to illuminate objects and surfaces in the interior. The crucial step towards a differentiated lighting concept was the decision to use a significantly larger number of luminaires with different outputs and beam geometries to offer an optimal solution for the specific lighting tasks in the room. The higher number of luminaires located in a place that is difficult to access would have caused significant maintenance problems with conventional technology – the low-maintenance LED luminaires, in contrast, afford the creative scope required for the lighting design.

The concept by Ferrara Palladino integrates several components. First, the uniform illumination of the Gothic vaults, which are staged for the first time using this approach. The ceiling washlighting reinforces the sense of height and lightness in the interior. Indirect light blends with additional zenithal illumination of the ground "to produce a kind of light carpet that connects the different spaces and creates a milder overall impression," as Pietro Palladino describes it. Within this ambient lighting, accent lighting adds contrasts that direct the attention – onto the rhythm of the slender columns, but also onto individual prominent objects such as sculptures of saints, altars and paintings. These lighting tasks, where distinct brightness contrasts need to be created across a distance of 40m or 50m, require spotlights with a very narrow beam, yet high lumen packages, as ERCO is able to offer thanks to its innovative Spherolit LED lenses. The designers did not specify an electronic lighting control system, but structured the lighting in switchable groups to allow the selection of light scenes appropriate for different occasions and usage situations.

Bottom line: A sustainable solution

The lighting concept with ERCO LED luminaires was tested in a virtual environment using the lighting design software DIALux. Calculations at this stage revealed that the energy consumption would reduce by almost two thirds despite the higher number of luminaires compared to the old system – the investment in light quality therefore can also be calculated in financial terms through savings in energy and maintenance costs. But even mock-ups in practice proved that the LED luminaires of the Parscan range impress with a brilliance and precision that bridges even significant lighting distances. As a standard, the Parscan spotlights also met the other requirements of the lighting designers, such as a functional life of more than 50,000 hours, integrated dimmers for brightness adjustment during installation and lockable alignment. Their compact design was equally well received: "The individual luminaires with their compact dimensions blend unobtrusively into their surroundings," Palladino concludes with satisfaction.

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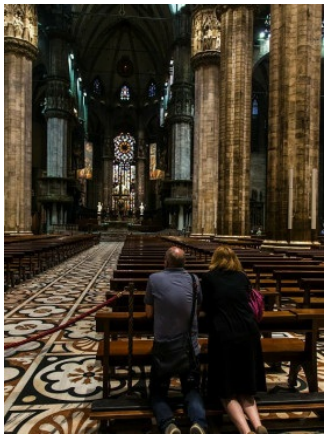
And what about the energy balance? Despite the higher number of now 784 luminaires, the connected load effectively reduced from 70kW to 23.7kW. A success that has earned the project an A+ rating for energy efficiency and ERCO as the supplier an Environment-Friendly Innovation Award 2015 by Italian environmental organisation Legambiente. As a result, the relighting of Milan Cathedral points the way both aesthetically and in functional terms for energy-saving measures through innovative lighting in sacred buildings and other historic monuments.

About the author:

Martin Krautter works as a freelance author and journalist in Offenbach am Main. After studies in industrial design at the HfG Offenbach, he was with ERCO in Lüdenscheid as head of media relations and the editorial team from 1998 to 2013.
www.m-krautter.de

Matthew Penn's studio: Margate, UK Photos: Frieder Blickle, Hamburg



ERCO GmbH
Brockhauser Weg 80-82
58507 Lüdenscheid
Germany
Tel.: +49 2351 551 0
Fax: +49 2351 551 300
info@erco.com
www.erco.com