



© getty images / Tom Dulat

LIGHT FOR THE LOUVRE

Intelligent lighting automation for a stunning presentation

POSSIBILITIES START HERE



kontron
S&T Group

INTERNATIONAL COOPERATION	// 3
INDIVIDUAL LIGHTING MOODS ACCORDING TO TIME OF DAY	// 4
LIGHTING MANAGEMENT 24/7	// 4
SERVERS AND CONTROLLERS FOR AUTOMATIC LIGHTING	// 4
CONTROL OF UP TO 10,000 LIGHTS	// 5
RELIABLE INDUSTRIAL COMPUTER PLATFORM AS THE BASIS FOR OPTIMUM LIGHTING	// 5



"Kontron and Zumtobel have been cooperating for over ten years on the platform for automation controllers and servers.

This has resulted in a close, familiar partnership. On the one hand, we are convinced by the reliability and robustness of Kontron's industrial computers during operation. On the other hand, it is important for us that Kontron continually adapts its platform to technological innovation without changing the underlying design."

Jens Beecken, Zumtobel Produktmanager Controls & Lighting Management



// Louvre Abu Dhabi

© Department of Culture and Tourism - Abu Dhabi / Photo by Mohamed Somji

Light can enchant. Lighting design transforms sparse halls into bespoke locations, shops become boutiques. But what can lighting do where everything has already been perfected? Created by an exceptional agreement between the governments of Abu Dhabi and France, Louvre Abu Dhabi was designed by Jean Nouvel and opened on Saadiyat Island in November 2017. The natural sunlight entering through the ornamental ceiling structure alone allows visitors to stroll through the rooms like in a wonder world. Louvre Abu Dhabi employs high-tech. The Austrian company Zumtobel, a world leader in lighting settings, has provided the museum's impressive lighting. Depending on the time of day, an automation controller combined with a data server provides a unique flair - reliably and automatically. Both high-tech lighting computers are based on a Kontron industrial computer platform.

Louvre Abu Dhabi celebrates the universal creativity of mankind. Through its innovative curatorial approach, the museum focuses on building understanding across cultures. The museum's growing collection is unparalleled in the region and spans thousands of years of human history, including prehistoric tools, artefacts, religious texts, iconic paintings and contemporary artworks. The permanent collection is supplemented by rotating loans from thirteen French partner institutions, regional and international museums.

INDIVIDUAL LIGHTING MOODS ACCORDING TO TIME OF DAY

The architectural centerpiece is the circular giant dome with a diameter of 180 meters. It stands on a mere four columns, seemingly floating in the air. The ornamental ceiling structure filters the sunlight during the day, creating a multi-faceted play of light - as if sunrays were falling through the fanned leaves of a date palm.

In contrast to nature, this impression carries on even after sunset. This is ensured by Zumtobel's lighting system specially developed for the unique giant dome.

Many of the works of art on display are very sensitive to light. For this reason, a maximum annual light dose has been set for some of them, which must not be exceeded. The software that controls this light incidence is implemented on a Kontron industrial server. It therefore ensures that the artworks remain undamaged to posterity despite the lighting.



// © getty images / Tom Dulat

LIGHTING MANAGEMENT 24/7

Lighting management must function safely and reliably around the clock. Since the correct light dose is essential, the Zumtobel data server has an extremely important function for works of art. Kontron's built-in control computers do a great job here. They are designed for continuous operation and installed in a standard 2U Short form factor housing. They therefore fit into any standard rack used in building automation. Kontron equips the server ex works with an individual Zumtobel screen, thus creating a clear brand perception with an unmistakable product design.

It is clearly marked in the building technology control cabinet that the LUXMATE LITENET server or the Zumtobel Flexis N3 automation controller are responsible for the appropriate lighting: for the building's unique atmosphere

and the effective presentation of the individual works of art. Thanks to the long-term availability of the Kontron industrial server platform, Zumtobel no longer has to make frequent adjustments or certify the entire system: once it has been developed and tested, the solution guarantees Zumtobel customers the right lighting situation unaltered, powerful, and reliable for years to come.

The Louvre Abu Dhabi is just one of Zumtobel's outstanding flagship projects. Many other projects demonstrate the company's expertise in central lighting control. These include the Städel Museum and the St. Martins Tower in Frankfurt, the LVM Versicherung in Münster, the Münchner Tor in the north of the Bavarian state capital, the Gmunden hospital and the DHL mail centres.

Every customer has his own special challenges when it comes to lighting: The availability of the right light can be decisive or even vital for the functioning of an entire organization. In a hospital, for example, or in places where there is no daylight, or where people have to work at night, such as in logistics or production halls.

SERVERS AND CONTROLLERS FOR AUTOMATIC LIGHTING

In selecting its computer platform for its central LITENET server and the Flexis N3 automation controller, Zumtobel therefore placed the highest value on reliability, robustness and standards compliance. Hundreds or thousands of lights are individually controlled and programmed depending on the position of the sun, clouds and weather. This is ensured by algorithms processing the data from a so-called daylight sensor. It measures the incoming light and the position of the sun in real time. To ensure that the perfect lighting conditions always prevail in the respective building, the lighting required is determined for each room. Each light is individually controlled and programmed.

The LITENET Flexis N3 automation controller controls the lighting, glare protection and windows of a building with up to 2,000 openings. It serves as a stand-alone automation center and performs basic functions such as controlling and monitoring ongoing operation in accordance with the planning values. Time management with an integrated calendar is used to control working hours, holidays and other general conditions. The functions are configured at room level via the LITENET Flexis N3 controller. Optionally, the controller can be used for daylight-dependent artificial light tracking, blind management, and window control for ventilation. It also monitors and triggers functional and operating life tests for emergency lighting.



// KISS 2U server / Customized KISS server (Zumtobel Litenet_Server)

CONTROL OF UP TO 10,000 LIGHTS

The LITENET server takes on a variety of tasks as part of building automation with 10,000 openings. This includes the central administration of alarm and system message data from several LITENET system controllers. In the event of an error, a notification system forwards the necessary information to previously determined staff via email or SMS. In addition, the server offers central logging of consumption data, archiving of log files, and emergency lighting test logs, enabling the subsequent accurate analysis of incidents. The server also backs up the data of all LITENET controllers networked in a system and can also restore it to them if required.

The server is also prepared for remote access, enabling lighting technicians or facility managers to access the system via a secure Internet connection if required. The LITENET server can, of course, be seamlessly integrated into a higher-level building management system via the standard BACnet or OPC interfaces in order to transmit operating states and alarm messages.

RELIABLE INDUSTRIAL COMPUTER PLATFORM AS THE BASIS FOR OPTIMUM LIGHTING

As part of hardware upgrades, Kontron replaced the RAID system with two rotating hard disks with SSD storage for Zumtobel, thereby increasing reliability and performance. Replacing individual components does not alter the overall server design, so that Zumtobel's control software

can be used unchanged. Since the entire industrial server is based on standards, even the mainboard can be updated if necessary. To ensure that no data is lost in the event of a power failure and that the server itself restarts smoothly as soon as power is restored, it is equipped with what is known as power loss control.

Zumtobel's knowledge of the effects of light is of course also incorporated into the algorithms used to control lighting: different lighting situations can be created for conference rooms as required. Here, Zumtobel follows its Active Light concept, which stabilizes the elementary link between people and light by changing intensity, light color and direction at the right time. A meeting will require a different light than a presentation; during breaks, a bright and friendly atmosphere contributes to relaxation, and towards evening the blue component of the artificial light is reduced to signal to the body that the day is drawing to a close.

There are only a few companies in the world like Zumtobel that offer the control of lighting and the inclusion of daylight with automated precision, reliability, and individuality. Zumtobel's headquarters are located in Dornbirn in Austria's Vorarlberg region, which is internationally renowned for its outstanding architectural culture, and the company is represented by its own branches and partners in more than 90 countries. A total of over 6,200 employees work for Zumtobel Group AG, which is listed on the Vienna Stock Exchange, including thirteen production facilities on four continents.

About Kontron – Member of the S&T Group

Kontron is a global leader in IoT/Embedded Computing Technology (ECT). As a part of technology group S&T, Kontron, together with its sister company S&T Technologies, offers a combined portfolio of secure hardware, middleware and services for Internet of Things (IoT) and Industry 4.0 applications. With its standard products and tailor-made solutions based on highly reliable state-of-the-art embedded technologies, Kontron provides secure and innovative applications for a variety of industries. As a result, customers benefit from accelerated time-to-market, reduced total cost of ownership, product longevity and the best fully integrated applications overall.

For more information, please visit: www.kontron.com



GLOBAL HEADQUARTERS

KONTRON S&T AG

Lise-Meitner-Str. 3-5
86156 Augsburg, Germany
Tel.: +49 821 4086-0
Fax: +49 821 4086-111
info@kontron.com

www.kontron.com