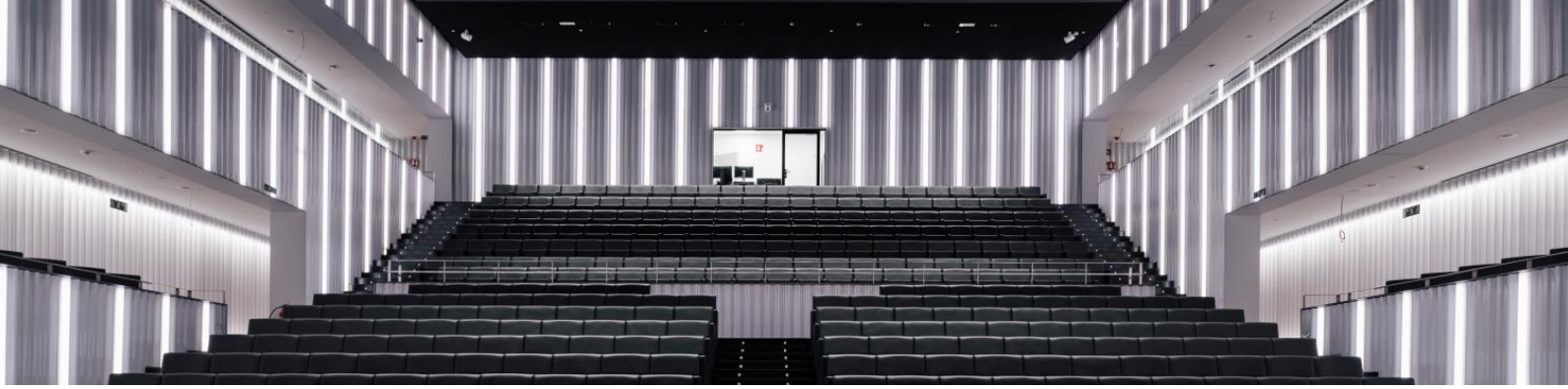




Feel comfortable in your building

Our solution for Torre Caleido





Torre Caleido – The fifth tower of the ‘Cuadro / Cinco Torres’ Madrid (ES)

At 181 metres tall, the Caleido Tower is the seventh-tallest building in Spain. It is the fifth tower in the up-and-coming business complex on the Paseo de la Castellana and, despite its impressive height, the smallest. This is because the architectural firms Fenwick Iribarren and Serrano-Suñer Arquitectura aim above all to impress through design and modernity, combined with a large green space. Two long main sections form the horizontal base of the tower. The building has achieved LEED GOLD certification, partly through the use of natural light aided by modern lighting control from B.E.G. The tower is considered a state-of-the-art anti-Covid building. This is because it incorporates facial recognition, intelligently controlled lifts, as well as air filtration and ventilation systems. It is estimated that more than 3 million visitors will visit the 70,000-square-metre Caleido complex each year.

The inverted T-shaped project is divided into four sections:

- an education section comprising 35 storeys, which will be occupied by the IE Business School (the business school of the Instituto de Empresa)
- a health section focusing on wellness and fitness (Quirón Salud Clinic).
- an underground car park with over 2,000 spaces
- a retail area with restaurants and shops beneath the green roof of the horizontal section of the building

Founded in 1973, IE Business School offers a learning environment for up to 6,000 students from 131 countries in 64 flexible classrooms and a 50,000-square-metre space equipped with state-of-the-art technology. Around 75 per cent of the students come from abroad.

The institution offers several MBA programmes and is one of the world’s leading and most innovative business schools.



In Forbes’ 2019 ‘Best Business Schools List’, the university ranked 6th globally. In addition to the classrooms, there are also special areas, including a start-up zone, a space for architecture and design projects, and a large lecture theatre for 600 students. Sports facilities, meditation corners, exhibition spaces and a 7,000-square-metre green space are also particular highlights. They serve to promote well-being or relaxation and take studying to a new level. “The first step towards your future” not only adorns the entrance but is also put into practice at IE through this location.

B.E.G. comes out on top

The Spanish team from B.E.G. managed to win over the decision-makers against its competitors and was given the opportunity to participate in this exceptional project. In addition to the IE Tower, the sports facilities, the swimming pool and the lifts were also fitted out.

For Caleido, the technology of choice was KNX, a globally proven bus system within building automation. KNX enables the uniform networking and visualisation of smart devices.

Systems used: KNX

Products used*:
 1246 x Pico-KNX-DX
 251 x PB4-KNX-ST
 409 x PBM-KNX-DX-4W
 248 x DA64-230/KNX REG
 4 x SA 230/16/H/KNX
 54 x PSN-KNX
 6 x LK-IP/KNXs REG

For the architect of the Caleido Tower, the compact detector proved to be a stroke of luck. As very large ceiling panels were used, it was necessary to ensure that the weight of a detector would not cause the respective panel to sag over time. Weighing just 14 grams, the B.E.G. PICO-KNX-DX was ideal and was integrated into all rooms where detectors were required. The flexibility of its functions was also a key factor in the project planning.



A small, lightweight device

The B.E.G. KNX presence detector PICO-KNX-DX impressed in the Caleido Tower with its sleek design, lightness and compact size. The PICO is one of the smallest KNX detectors in the world. Despite its diameter of just 33 mm, it has a range for motion and presence detection of 10 m across, 6 m in front and 4 m for seated activities. This means it detects even the slightest movements, such as moving from the mouse to the keyboard, within a 4-metre radius. In addition to a lighting output (dimmable or switchable) and a slave output for extending the detection range, the PICO-KNX-DX also features three HVAC outputs for controlling energy-intensive systems such as air conditioning units.

The lighting output can be used both as a presence detector and as a twilight sensor (motion-independent control/switching). The B.E.G. PICO-KNX-DX also features functions such as a temperature sensor, presence simulation, a corridor function, an orientation light function, short-duration presence detection and self-adjustment of the delay time. The short presence function, for example, allows for additional energy savings. The delay time is reduced to an adjustable percentage when a room is only entered briefly, for example to fetch something.

The B.E.G. KNX Generation 7 (2022) range will in future also support KNX-Secure, RGB and Human Centric Lighting.

The building was digitally modelled in advance using BIM. BIM, or Building Information Modelling, is a planning method that is increasingly becoming the global standard for planning large-scale projects. It involves representing all the alphanumeric properties of the planned structure. This data is automatically kept up to date. This gives all parties involved access to the current status of the planning and to background information, on the basis of which further decisions can be made. B.E.G. provides BIM data alongside product information for many B.E.G. presence and motion detectors.

Implementation using B.E.G. KNX devices

Combining bus systems can help to reduce costs. In the Caleido Tower, over 15,000 DALI luminaires were installed alongside the KNX system. A gateway is used to control these via KNX. It connects the KNX bus to the DALI bus, which is designed for lighting control. Each B.E.G. Gateway DA64-230/KNX REG can switch and dim up to 64 electronic ballasts in 16 groups. Scene control of individual electronic ballasts is also possible. In addition to RGB and Tunable White, the B.E.G. Gateway DA64-230/KNX REG also supports B.E.G. DALI-LINK multi-sensors.

Implementation

In the corridors of the IE Tower, the lighting is controlled by the PICO-KNX-DX based on natural light levels and occupancy. If no further movement is detected, the system switches to what is known as orientation lighting. In this mode, the lighting is dimmed to x% as soon as the room is no longer occupied. This state remains active until the next movement is detected, or the light switches off after a preset time if no further movement is detected. A calendar function can also be used to implement a night mode.

Particularly in large projects such as Caleido, orientation lighting is often used to illuminate the building visually. The lighting for the IE logo on the façade is automatically switched on in the evening by the B.E.G. KNX switching actuator SA 230/16/H/KNX REG with a calendar function. Individual lights are also switched on and off using switching actuators. This occurs, for example, when illuminating screens during presentations or in technical rooms and basements. Thanks to the calendar function, the lights are automatically switched off in the evenings – once lessons have finished and no movement is detected in the surrounding areas – in areas without motion detection at a preset time. This applies, for example, to the canteen, where the B.E.G. PICO-KNX-FC functions solely as a twilight sensor, thereby regulating the light to the desired brightness depending on natural daylight.

In 64 flexible classrooms, a decision was made to use classic push-button control without sensors. Our 4-way push-button PB4-KNX-ST was used for this. This allows the entire classroom or the respective 'students' and 'teachers' areas to be switched on or off, or dimmed.



One of 64 multi-purpose classrooms fitted with B.E.G. KNX push-buttons (PB4-KNX-ST)

In the toilets and changing rooms, the lights are switched on only when someone is present. There is no natural light in these rooms. This means that, without a presence detector, the lights in such areas would remain on permanently. A presence detector saves a great deal of energy.

The offices and meeting rooms have been fitted with B.E.G. KNX PICO-KNX-DX presence detectors and B.E.G. KNX PBM-KNX-DX-4W push-button interfaces. The advantage of a push-button interface over KNX push-buttons lies in the freedom to choose the switch range. This allows for the desired design and an interface with 4 channels for multiple rooms.

The sensor can be operated in fully automatic or semi-automatic mode. In fully automatic mode, the light switches on when movement is detected and the ambient brightness falls below the set threshold. The user can switch the light on or off, or dim it, manually using a push-button. In semi-automatic mode, the light is always controlled via the push-button. As in fully automatic mode, the follow-up time is restarted with every movement and the lighting is switched off once the follow-up time (last movement + set time) has elapsed. At IE, the decision was made to use semi-automatic mode and control operation. This means that the lighting is regulated to the desired brightness level, e.g. 500 lux, depending on the daylight. As daylight increases, the proportion of artificial lighting decreases accordingly, and vice versa. If there is sufficient daylight, the artificial lighting is switched off despite movement and may be switched on again later if the level falls below the setpoint.

In addition, the air conditioning systems are motion-activated to further save energy in sun-drenched Madrid. In October 2021, the IE Business School was officially opened in the Caleido Tower in the presence of Felipe VI, King of Spain, and António Guterres, Secretary-General of the United Nations. The Secretary-General described the IE Tower as “a symbol of the importance of education, a place of learning, knowledge generation and answers to the challenges facing humanity”.

The following B.E.G. products have been installed in Torre Caleido:

1246x



93529 PICO-KNX-DX

251x



93174 PB4-KNX-ST

409x



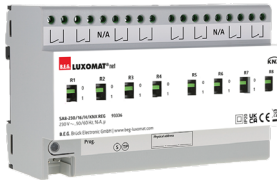
93365 PBM-KNX-DX-4W*

248x



93302 DA64-230/KNX REG*

4x



93336 SA 230/16/H/KNX*

54x



90214 PSN-230 / 640 / 30 / KNX REG

6x



90403 LK-IP/KNXs REG



Personal advice

Our team is always on hand to offer advice and assistance. If you have any questions about your order or our products, please give us a call or send us an email.

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