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Retrofitting the Brussels office of Macq

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Introduction

In March 2019, the wireless lighting control technology from Silvair enabled a rapid lighting retrofit at the Brussels office of Macq Mobility Management Solutions. It resulted in deployment of a robust 360-node Bluetooth mesh lighting network. 8'33 took care of the implementation, delivering all necessary components and designing the project for Helexia, the energy manager of Macq.

The sensor-driven lighting control system installed at the Macq headquarters is the biggest office implementation of a SIG-qualified Bluetooth mesh lighting network to date. The Brussels project showcases the flexibility of Bluetooth mesh and Silvair lighting control solutions in meeting different lighting needs across an architecturally diverse office environment.



8'33

is a French company specializing in high-efficiency LED lighting technologies and innovative systems for intelligent buildings. Cooperating with major electrical engineering companies and specialized wholesalers, 8'33 provides customized solutions for real estate owners, shopping malls, luxury hotels and industrial facilities.



Helexia

is a Belgian energy service company (ESCO) offering innovative and integrated solutions for increasing energy efficiency of commercial and industrial buildings. Helexia provides its customers with longterm support through third-party investment or turn-key project delivery.



Macq Mobility Management Solutions

is a Belgian enterprise that provides innovative solutions for traffic flow management. Founded 95 years ago in Brussels, Macq operates in the fields of smart mobility, specialized road traffic management, smart buildings and industrial process management.

Macq office in Brussels

The Macq headquarters is a 2,000 m² office building located on Rue de l'Aéronef in Brussels, Belgium. It includes multiple open spaces, meeting rooms and ateliers, as well as storage rooms, parking spaces, restrooms and corridors.

The retrofit covered the entire building. As part of the project, the obsolete lighting was replaced with LED luminaires, while simple wired controls were replaced with a wireless control system based on Bluetooth mesh.

The building's floor plan as seen in the Silvair commissioning app. More than 50 lighting zones were created to meet diverse lighting needs across the complex office environment of the Macq headquarters.



Products

The following LED and sensing devices were installed as part of the project:

301 LED fixtures

301 fixture controllers from DG Light 59 occupancy & light sensors from Danlers

The luminaires deployed during the retrofit are standard devices without any wireless control capabilities. The component that provides them with Bluetooth mesh connectivity is the fixture controller DG558 from DG Light. It is a simple, easy-to-install device that contains a systemon-chip with the Silvair Firmware. Equipped with a driver output port, the controller converts Bluetooth mesh commands to a DALI output, enabling rapid retrofitting of existing LED systems into Bluetooth mesh lighting networks.

The new lighting control system installed at the Macq office does not include any wireless switches. The company decided to deploy a fully automatic solution driven by occupancy and light sensors to maximize efficiencies through advanced lighting control strategies.



With the Silvair Firmware inside, fixture controller
DG558 from DG Light enables rapid retrofitting of existing LED systems into Bluetooth mesh lighting networks.

Implementation and commissioning

To minimize office downtime, the project was implemented throughout a single weekend. The LED retrofit itself, carried out by an external company, started on Friday afternoon. With no need to install any wires or disrupt the existing building infrastructure, installation works ended on Saturday evening. This is when the commissioning process started.

The commissioning was carried out by 8'33 using the Silvair commissioning tools. The entire wireless lighting control system was planned in a dedicated web app that allows for performing initial commissioning activities remotely before visiting the site. Once the planning stage is completed, the commissioning process can be finalized on-site using the mobile app.

Due to the architectural diversity of the Macq office, more than 50 lighting zones had to be created during the planning stage. A number of different lighting control scenarios were deployed across individual rooms and types of spaces. Still, with a library of ready-to-use profiles and scenarios available in the Silvair app, the commissioning process was completed by the end of the weekend. On Monday morning, when the first employees arrived to the office, the lighting control system was fully operational.



 The entire retrofit was completed throughout a single weekend. This included the installation of LED luminaires, fixture controllers and sensors, as well as the commissioning of the wireless lighting control system.

Scenarios and services

For all zones established across the Macq office, two major lighting scenes were set up. The first one kicks in at 6 a.m., ensuring light levels adequate for everyday office work. The second one is triggered at 10 p.m. Its light levels are lower, reflecting less demanding lighting needs during occasional night-time office activities. Both these scenes rely on the occupancy sensing scenario that has been implemented across the entire office. In addition, daylight harvesting strategy was implemented in rooms and areas with access to daylight.

In order to put the luminaires on a schedule, as well as to support advanced monitoring capabilities, a gateway device was also deployed. It gathers and aggregates energy consumption data from individual zones, delivering it in the form of raw numbers or convenient visual heatmaps. This allows Macq to analyze historical power consumption over desired periods of time, and put that data to work to optimize lighting efficiency even further.



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