KNX Association
Bessenveldstraat 5
B - 1831 Brüssel-Diegem
www.konnex.org

Terminal 5 Heathrow in London

The most innovative airport in the world

Figure 1. *The new Heathrow Terminal 5 at night*

Terminal 5 is the biggest building construction project in England which spreads over several kilometers. The new expansion was launched from the British Airports Authority BAA and will make Heathrow one of the largest and probably most innovative airports in the world. The project includes two main halls, an energy center, parking areas, service tunnels, a train network, VIP areas, an airport control tower and several other areas.

Terminal 5 is designed to receive more than 30 Million passengers in a year. Its infrastructure needs to be well lit and safely maintained. After careful evaluation the BBA decided to use KNX for the bus system which offers safety, stability and interoperability. The decentral location of KNX device massively reduces the amount of necessary wiring. 64,000 DALI- light fixtures are integrated through KNX-DALI gateways. The KNX systems are connected through KNX-IP-Gateways over the Campus IP network to the central management system.

Benefits of KNX for this projects

- Thanks to standards and certifications the total interoperability among all KNX products from different manufactures is guaranteed.
- Single addressing of light fixtures allows full flexibility and expandability
- Simple, time-saving installation of components
- With the DALI interface KNX offers the most economic and energy efficient solution

Project Nr.: Z1 / 06 / D

Country: England

Type of Building

- **RESIDENTIAL**
- Single Family Home
- Apartment Building
- Apartment
- Other

- **COMMERCIAL**
- Office / Public Administration Building
- Business
- Sales
- Hotel and Restaurant
- Entertainment (Cinema, Theater, Museum, etc.)
- Health Care
- Educational (School, University, etc.)
- Recreational (Sport, Wellness, etc.)
- Other
- **PUBLICITY**

Trade / Systems

- Lighting
- Shading / Daylighting Control
- Heating, Ventilation, Air-Conditioning
- Home appliances
- Alarm System
- Monitoring
- Energy Managment System
- Audio / Video
- Visualization
- Interface to other Systems
- Remote Control and Administration
- Other Application

Size

- Number of Areas / Lines: 236 (IP worlds)/910
- Number of KNX-Devices: approx. 7000

Figure 2. *View into one of the large entrance halls of Terminal 5*

Sophisticated Features:

- Cross-linking of 64,000 lights over DALI-KNX-Gateways
- Cross-linking of more than 910 KNX lines over 236 KNX-IP-Gateways and the local LAN
- Integration of emergency lights into the same DALI-KNX-network
- Feedback of error messages and defects from lights to the building management systems
- Integration of additional systems in KNX, e.g. error messages of elevators

Figure 3. *Parts of the control tower on its way to the project site*

Overcoming long KNX network distances with IP

Early on the owner and building operator BAA decided to use IP as backbone for the KNX system and to use the local area network for the communication over long distances. This combination allows a reliable KNX network over long distances.

A category 6 IP network which offers double redundancy and additional backup strategies for a reliable and secure network was installed for Terminal 5. In addition the entire system was split up in so-called „IP worlds“ – every world connects a certain number of KNX lines. This project includes a total of 236 KNX gateways which are connected to more than 910 lines. This prevents an overload on the bus and offers 20% extra capacity for future expansion. All the KNX components were delivered on pre-wired control panels for rational installation.

One of the BAA demands was the monitoring and operating of all sub systems from a single building management system. The KNX systems are integrated via OPC-Server (OPC = OLE for Process Control, software interface for windows-based automation systems).

DALI-KNX for Energy Efficient Lighting Control

The most economic solution for the lighting control system was the implementation of DALI (Digital Addressable Lighting Interface, standard for the digital lighting fixture network) technology. 50 DALI ballasts are connected to a single KNX-DALI-Gateway. They get dimmed and switched through light sensors, occupancy sensors and the management system. The lighting fixtures report defects to the management system for rational maintenance. All emergency lights were also integrated into the KNX-DALI network which allowed a significant cost reduction. The project gets constantly expanded and the BAA discovers an increasing number of additional systems that get connected to the KNX system.

Involved Parties

Owner:
BAA Heathrow, London

Electrical Engineer:
AMEC,
Crown House & Balfour Betty

KNX integrator:
Andromeda Telematics Limited,
Surrey

Awards

KNX Special Award

KNX Association
Bessenveldstraat 5
B - 1831 Brüssel-Diegem
Phone: +32 - (0) 2 - 775 85 90
Fax: +32 - (0) 2 - 675 50 28
E-Mail: info@konnex.org
Web: www. konnex.org

Anfragen an die Redaktion:
Inquiries to the editorship:

Redaktion KNXJournal
Lüdersstraße 10
12555 Berlin
Germany

Telefon / Phone
+49 - (0) 30 - 64 32 62 79
+49 - (0) 30 - 64 32 62 78
E-Mail: knx-journal@konnex.org
redaktion@knx-journal.com
Web:
www.konnex.org/news/journal