An example for energy efficiency in Southern Europe

Winner KNX Award 2012 Category International – Europe

At the Metal Foundation in the Spanish city of Avilés (Asturias), KNX controls and regulates the lighting, sun protection and air conditioning

With its energy-efficient building technology, the headquarters of the foundation have the chance to become one of the first NZEB (Near Zero Energy Buildings) in Spain

The Metal Foundation in Asturias on the Costa Verde is one of the first educational establishments to offer KNX training in Spain. It is only logical that the new headquarters of the charitable foundation in Avilés should be fitted with the bus system. Since its opening in 2012, training rooms and laboratories are housed on the 3,000 square metres of floor space. The versatility of KNX for efficiency, comfort, security and control should be illustrated by the building automation system. The building technology emphasises the foundation's commitment to new technologies for sustainability and environmental protection. The project was supported by industry partners both in an advisory and physical capacity. The engineering office DOERCO in Gijon was presented with the KNX Award International Award for Europe for its successful system integration.

The 150 lighting circuits of the interior lighting are controlled via KNX. Constant lighting controllers which take into account the level of daylight are implemented in rooms with large windows and they are therefore extremely efficient. Presence detectors also provide economic lighting on demand. In spite of this, it is possible to switch the light on manually via a push button when it is economically reasonable. An astro time switch ensures that the exterior lighting is automatically switched on at dusk, is switched off during the night and then switched on again at dawn.

The blinds in front of the training rooms and offices are used for anti-glare protection and support the energy efficiency of the building. They keep the building cool in the summer and let the sun's warmth into the rooms during the winter. This intelligent control is based on a Heliometric software and receives the data from weather stations, such as brightness and wind force, room temperature, presence signals, sun position and points of the compass. Even the louvre angles are set automatically.

The KNX individual room controller also saves energy whether it is for heating or cooling. The setpoint values, whether comfort or standby, are set independently of the layout. The interlocking of the control circuits with window contacts prevents loss of heat or cold. KNX communicates with the HVAC system to adapt the generation of heat or cold to the requirements of the room. The KNX terminal of a Wago IP controller is used as an interface and integrates other systems such as BACnet, MODBUS, DALI and Enocean.

With the KNX intruder alarm system, signals from presence detectors and window contacts are used to trigger the alarm and activate the surveillance cameras. An energy management system, which is organised via an "eibPort" module, processes consumption data. The interface to the BMS increases the level of security in the event of an alarm and technical monitoring supports the system maintenance. Fault signals can be sent via email. Four touch screens are installed for the central control and operation of the KNX functions. There is also a central control point with a visualisation screen from which you can access the entire building technology.

Benefits provided by KNX in this project
- Energy-saving control of the lighting systems
- Efficient and convenient individual room control
- Sun protection supports the ambience in the room
- Energy management
- Central control
- Technical monitoring
- Visual perception of advanced KNX training
- Flexible for optimisation and changes in use

Technical refinements
- Constant lighting control for room lighting
- Preventative and corrective maintenance through current detection
- Temperature control communicates with the HVAC system
- Wago IP controller as interface between KNX and other systems
- Blind control dependent on meteorological data and solar position
- Fault signals via email

Companies involved

Building owner, Planning:
Fundación Metal Asturias, Avilés (www.fundacionmetal.org)

KNX System Integrator:
KNX system integration: Doerco Ingenieria, Gijon, (www.doerco.com)

Area of application:
Educational institution

Functions:
- Lighting
- HVAC
- Shading
- Alarm systems
- Technical monitoring
- Energy management
- Visualisation
- Interfaces

Scope
Number of KNX devices: 340, ABB, b.a.b.-technologie GmbH, Jung, Schneider, Siemens, Somfy, Mobotix, Wago etc.

Costs:
330.000 euros