

Employees work in comfort at headquarters of Turkish corporation

KNX reduces energy and water use

Winner
KNX Award 2014
Category
Energy Efficiency



GAMA is a Turkish corporation that implements industrial and public-sector construction and engineering projects, including power stations, oil refineries, pipelines, bridges, hospitals, hotels and residential complexes, in a range of countries. Like the structures it builds for its clients, GAMA's own new headquarters in Ankara is also a very striking building. The new building complex, which includes a skyscraper and 20,000 m² of office space, was constructed according to "green building" principles. Completed in 2012, it was the first building in its category in Turkey to earn LEED EB GOLD environmental certification. It is fitted with KNX technology, which substantially reduces its consumption of energy and non-potable water. Its KNX installation, the work of system integrator Emes Elektromechanical Ind & Trd. Co Ltd, was the winner of the 2014 KNX Energy Efficiency Award.

Air conditioning and heating

Air conditioning systems can be very necessary in the Turkish capital in the summertime. The heating and air conditioning system in the new GAMA headquarters creates a pleasant working environment for employees, without placing an excessive burden on the refrigeration units. KNX fan coil controllers adapt the room temperature according to the current requirements, and can be set to one of two modes: Comfort and Night. In winter the heating is controlled in a similar way to the air conditioning system in summer, to ensure that heating energy is used as efficiently as possible. In meeting and conference rooms, KNX CO₂



Night-time lighting at the GAMA headquarters. KNX controls the lights according to user requirements and on the basis of a timer.

and humidity sensors are used to maintain a high air quality. The lighting system in the new headquarters comprises some 3,000 DALI-controlled lights that are automatically switched on and off and dimmed as necessary, via a KNX interface. The maximum lighting level is configured at 85 % for saving energy. Brightness and scene controllers additionally ensure that the lighting level is consistent and always appropriate to the situation. Presence and motion sensors in toilets, common areas and car parks keep the amount of energy expended on lighting to a minimum. At twilight and during the night, an astronomical timer activates a variety of lighting scenes for aesthetic and security reasons.

Optimising consumption

In the new headquarters, KNX is also used for monitoring purposes. Alarm signals from fire and intrusion detection systems can be used to trigger suitable lighting scenes, for example panic lighting. Technical faults are dealt with via a KNX visualisation, or can be forwarded to mobile receivers if required. When the emergency power supply



kicks in, KNX automatically dims those lights necessary for safety and security purposes, and switches off any non-critical systems. To keep technical staff up to date on energy flows, KNX gathers data from energy, water and gas meters for analysis purposes. The KNX system is visualised via the NetX BMS Server 2.0, while the connection to the KNX network is provided by KNX IP routers. CCTV, access control and gate control systems are integrated into the installation via interfaces, so can all be controlled from a central point. The key benefit of the KNX installation at GAMA headquarters is its superb energy efficiency. In the year following the optimisation of the energy applications in the new complex, electricity use fell by 20 %, gas use by 27 %, and water consumption by 31.5 %. According to a survey, employees appreciate the more appropriate lighting, pleasant working environment, and consistently high air quality in the new offices. The technical staff benefit too, thanks to the convenient visualisation system for the new KNX installation.

Benefits of KNX for this project

- Automated system reduces consumption of electricity, gas and water
- Lighting enhances security, comfort and convenience
- Heating and air conditioning systems are automatically controlled for individual rooms
- High air quality thanks to KNX CO₂ and humidity sensors
- Visualisation
- Rapid detection of technical faults
- Systems can be controlled and operated from a central point
- Operation via touch screen and smartphone
- Smart metering for optimised energy flows
- Lights and blackout equipment are linked for audiovisual presentations

Technical highlights

- Several systems working together to optimise energy efficiency
- Demand side management measures are initiated when emergency power supply is activated
- All functions reliably available thanks to rapid fault detection

Companies involved

Client: GAMA Holding
www.gama.com.tr

Planning and system integration:
Emes Elektromechanical Ind & Trd. Co Ltd, Mr Orhan İçli, Mr Türker Öztürk, Ankara
www.emesltd.com

Project type:
Office building

Building services/ system components:

- Lighting
- Heating, ventilation and air conditioning
- Technical monitoring
- Energy management
- Audiovisual equipment
- Visualisation
- Interfaces to other systems

Size of installation:

Number of KNX devices: 1,405

Selected KNX components:

- Siemens: KNX/DALI gateways
- Schneider: Bus push buttons
- Woertz: Fan coil controllers
- Theben: Presence detectors, CO₂ and humidity sensors
- Zennio: Klic DD gateways