KNX Award 2008
Category: Publicity
Winner: Ingeniería Domótica (Spain)

A new bioclimatic office building in Huesca – superbly illustrating the endless possibilities offered by KNX

The new branch office of the general contractor Marino Lopez XXI in Huesca, Spain, is a truly exceptional building. It is also a prime example of the flexibility offered by intelligent, KNX-based building services engineering – even after its initial installation. It was for this reason that the building won the KNX Publicity Award 2008.

Two main criteria were applied during the project planning for this building: firstly, that operation of all facilities should be intuitive and self-explanatory, and secondly, that the building should be as energy-efficient as possible. This KNX installation is clear evidence that comfort and energy efficiency are not mutually exclusive. Through the consistent use of a central bus system, the building saves approximately 40% energy, while offering an increased level of comfort. The individual floors of the four-storey building are divided into up to 12 different temperature zones, while the entire heating and cooling systems are divided into 32 zones. The temperature in these zones is always ideal, thanks to the incorporation of parameters from other trades. All imaginable facilities in the building are linked together via a KNX bus system: these include, for example, the lighting, shading, HVAC, alarm, technical surveillance, energy management and audio/video (e.g. plasma screens and DVD players) systems, remote monitoring and control, and KNX visualisations. Appliances whose status as secret power guzzlers is often ignored, such as microwaves and coffee machines, are also integrated. The system also includes extensive technical surveillance systems, for example burglar, water and fire alarms in combination with 24 IP cameras, and advanced monitoring possibilities via a terminal, laptop, or any other Internet-capable device.

The magic fingerprint

Linking together all of a building's trades via a single KNX system is one thing. Doing this in such a way that their operation is intuitive and self-explanatory is another thing altogether. At Marino Lopez XXI's new office, entire scenes are saved for individual users. The KNX system summons these via fingerprint readers. With just a single touch the user can control a number of facilities, such as shading, lighting and temperature. And different predefined scenes can be assigned to each user. As well as operator comfort, this fingerprint system also offers a high degree of security. When employees leave the building, absence scenarios can automatically be activated. The system also knows exactly when an employee has entered his or her office. In this case the temperature will be switched from standby to comfort mode, the lights will be switched on, and the shading will be adjusted appropriately. When employees leave their room, the system automatically switches back to standby mode to ensure that as little energy as possible is consumed. However, if a colleague enters an employee's office in his or her absence, the system will recognize this, because it can naturally also

determine when someone is not present. The system will not expect the room to be used now, thus will not begin heating or cooling it when in fact the respective colleague has long since left the office. The light will furthermore automatically be switched off again after 30 seconds. If the colleague who has entered the room wishes to remain there for an extended period, however, then he or she simply needs to press the appropriate button on the operator panel, upon which the control will switch back into comfort mode. The entire system is operated via touch-sensitive screens, touch sensors, Internet browsers and mobile terminals. Although there are preset parameters in place, users can modify scenes and adjust facilities according to their individual needs. They can also easily change preset schedules at any time, for example for the coffee machine.

The Lego principle

It might appear that the entire KNX system was planned all at once, from scratch right down to the finer details, but this is not the case. At first, only the shading, ventilation and a number of lights were controlled via KNX. It is thanks to the flexibility of KNX that the system was able to grow and grow, until eventually it controlled all of the lighting, the entire air conditioning system, and all access systems, alarms, remote maintenance systems and much more. Indeed, this is one of the reasons why KNX was chosen in the first place. The system is open to all trades, can be extended at any time, and is manufacturer-independent. Nor does the owner's decision to use a future-oriented, innovative KNX system of this kind come entirely as a surprise. This is not the first office that the company has had equipped with KNX. And in its role as a developer of construction projects, over the past few years it has also developed more than 5,000 residential units in Aragon, Madrid and Catalonia: and it installed innovative building systems in all 5,000 of these units.

This project was the obvious choice to win the KNX Publicity Award. It clearly shows how all trades can be fully integrated using KNX, and it demonstrates the openness of KNX: the majority of the trades integrated were added to the system gradually. This means that it is no problem to extend the building, or to modify it to take account of changing user behaviour in the future. And were it not for the simplicity of KNX bus installation, the retrofit installations would never have been possible in the first place.

Parties involved:

Owner: Marino López XXI S.L., E-22004 Huesca, Spain
Architect: Conchita Ruiz Monserrat / Francisco Lacruz Abad, E-22001 Huesca, Spain
Electrical design: Alfonso Rodríguez, E-50002 Zaragoza, Spain
KNX system integrator: Ingénieria Domotica, E-31192 Mutilva Baja, Spain

Info:

Ingénieria Domotica,
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Box 1:

Integration of all facilities is an intelligent energy-saving solution
Thanks to the KNX system developed by Ingéneria Domotica, the building saves approx. 40% energy. This is possible due to the clever way in which all systems are linked together. Even appliances such as coffee machines, which are often forgotten as energy guzzlers, are integrated into the overall system. The intelligent control system keeps room temperatures in standby mode, only switching them to comfort mode if people are present in the room.

Box 2:

Use of KNX in this project
- Maximum comfort with minimal energy consumption, thanks to differentiated detection of current needs: in this way, energy consumption can be reduced by at least 40%.
- Simple, intuitive operation of all building engineering systems – with no need to read a manual – from various locations via user-friendly interfaces, e.g. fixed or portable touch panels, or from any PC via an Internet browser.

Box 3:

Technical highlights of this project
- The integrated access control (fingerprint) system lets the KNX system know whether or not there is anyone in the building. Additional interfaces for the burglar, fire and gas alarm systems and heating/cooling systems allow for greater security and safety, better energy management, and enhanced comfort.
- Automatic activation and deactivation of the alarm system via fingerprint reading; activation of absence scenarios such as e.g. presence simulation.

Box 4:

KNX building automation for a construction professional
The construction project developer Marino López XXI was founded in 1950 as a family business and today has branches in Zaragoza, Huesca and Cambrils. To date, the company has constructed around 5,000 residential buildings in the regions of Aragon, Madrid and Catalonia. Marino López XXI is well-known for its innovative ideas, knows the benefits of good automation, and applies state-of-the-art building engineering in every one of its projects. This approach is based on experience gathered by the company from its own buildings.

After KNX was successfully installed in its Zaragoza office, the company also used the technology in its new four-storey building in Huesca, which has 1,600 m2 of useful space. Initially, only the shading, and to a certain extent the lighting and ventilation systems, were networked via KNX. But the high degree of flexibility

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offered by KNX meant that, within a very short time, all light fixtures and the heating and cooling, access control, alarm and other systems were also networked with KNX. The modern bus system allowed this all to be achieved with a considerable reduction in cabling work.

Box 5:

Ingénieria Domotica – at the cutting edge all over Spain
In recent years, the system integrator Ingénieria Domotica has acquired a top reputation nationwide as an innovator in the integration of communications technology and building automation systems. The company, which has offices in Madrid and Pamplona, is now planning to establish new branches in Catalonia, Andalusia and Levante.

Since it was founded in 1999, Ingénieria Domotica has implemented a very large number of projects across the whole of Spain. The company, which has some 50 employees in total, is at the very cutting edge in the application of KNX in Spain. The average age of its "united, jovial and dynamic" engineers – as Director Carlos Fernandez Valdivieso calls them – is just 30. Ingénieria Domotica has some very impressive reference projects and case studies: museums, sports centres, hospitals, factories and fire stations, to name but a few.

The company also offers precisely-tailored courses for private companies, public institutions and other organisations on the topics of building systems engineering, automation and communications in building construction.

Photos:

Figure 1. The new Marino López XXI building in Huesca. Source: ZVG

Figure 2 Via the KNX system access control interface (fingerprint), all facilities can be monitored and controlled as required. Source: ZVG

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Figure 3. Visualisation start page: easy monitoring and control of all facilities. Source: ZVG

KNX Association is the creator and owner of the **KNX** technology – the worldwide STANDARD for all applications in home and building control, ranging from lighting and shutter control to various security systems, heating, ventilation, air conditioning, monitoring, alarming, water control, energy management, metering as well as household appliances, audio and lots more. **KNX** is the worldwide STANDARD for home and building control with a single, manufacturer independent design and commissioning tool (ETS), with a complete set of supported communication media (TP, PL, RF and IP) as well as a complete set of supported configuration modes (system and easy modes). **KNX** is approved as a European (CENELEC EN 50090 and CEN EN 13321-1) and an International standard (ISO/IEC 14543-3). This standard is based upon more than 18 years of experience in the market including its predecessors, EIB, EHS and BatiBUS. Over 140 member companies worldwide from different application domains have almost 7000 **KNX** certified product groups in their catalogues. The **KNX** Association has partnership agreements with more than 30,000 installer companies in 80 countries.

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