

Get away for weekend and find out what life is like in a cutting-edge smart home

Passive house lets holidaymakers experience energy-efficient KNX automation for themselves

Winner
KNX Award 2014
Category
Publicity



The weather in the beautiful Ardennes region of Belgium ranges from wild blizzards in winter to sweltering sun in the summer. But that need not bother visitors to “Passive Live”, a detached house located almost 700 metres above sea level. Built according to the “passive house” standard and automated with KNX technology, it is always wonderfully comfortable: cosy and warm in winter, and shady and cool in summer. Despite its atmospheric lighting and convenient building services, its energy costs are negligible. The house produces more energy than it consumes.

At weekends this prototype house is available to let for anyone looking for inspiration for their own building projects. On weekdays it is used for demonstration and testing purposes by participating companies working in the fields of design consultancy, architecture, planning, installation and system integration. Impressed by the concept and functionality of the project, the jury selected it as the winner of the 2014 KNX Publicity Award.

Informative

Despite KNX's strong track record, house builders still often have reservations about using the technology. A visit to “Passive Live” will soon reassure them of its benefits. Guests at the house are constantly surprised by just how user-friendly KNX is. The building is controlled completely automatically without the occupants necessarily being aware of it. However, if they wish they can be kept permanently updated on their energy use, the amount of solar power the house is producing, the air quality,



Guests at this holiday house in the Belgian Ardennes will find plenty of inspiration here for their own ‘smart’ building projects.

water consumption, etc., in order to assess their own user behaviour.

Functional

The house is fitted with state-of-the-art thermal insulation materials, plus sustainable technologies such as a heat pump, heat recovery, and rainwater treatment system. KNX manages a large number of applications for enhancing comfort, convenience, safety, security and energy efficiency. For example, the LED lights in the house can be switched on and off and dimmed individually or all together from a central point. Various scenes are selectable, for example “Arriving” (depending on the dawn sensor the “arriving in the evening scene” or “arriving at daytime scene” will be activated), “Check out (activates also the presence simulation)”, “Exit”, etc. The solar shading element on the main window is also automatically controlled in response to data from a GPS weather station. In passageways, toilets and side rooms, the lights are switched on and off by motion sensors and door contacts, thus saving energy. The heating system is also automated. A high air quality is automatically maintained by the house's ventilation con-

trol system, which is linked to presence, CO₂, VOC and humidity sensors. And if the rainwater in the tank ever runs out, a KNX control unit completely automatically switches over to mains water.

Intuitive

The touch screens in the entrance hall and living room are astonishingly easy to use, even without any special training. Functions can be easily called up just by touching a button on the screen, and interpreting the symbols is simple. The touch screens also display operating statuses and weather and other data. This house is a perfect example of what's possible with “Internet Of Things”. Via a KNX/IP gateway and a VPN tunnel this house is permanently connected with “Cloudcake” for remote programming and for showing all KNX data in the form of diagrams and dashboards. As well private as public dashboards are available. This allows the owner and system integration company to make correct analysis and small changes (via ETS) on the installation without having to go on site. They can even operate the building's features from their smartphone over the same VPN tunnel via AyControl. Where neces-

Benefits of KNX for this project

- Decentralised system incorporating a wide range of applications
- KNX integrates all building services
- Automated system for maximum energy efficiency
- Noticeably improved comfort for occupants
- Increased safety and security
- Operating concepts are easy to grasp
- Technical monitoring
- Information on energy use
- Mobile operation via smartphone

Technical highlights

- Decentralised design with no server: just actuators and sensors transmitting logic commands and data
- *System can be operated and data accessed remotely from a mobile device via a secure VPN Tunnel
- Real-time monitoring of energy use via state-of-the-art “Cloudcake” platform
- Use of “Internet Of Things”

Companies involved

Client: TT bvba

Architect: A33.be

Planner: passive-live.be

Electrical installer and KNX system integrator: Vecoluxand Red Technics
www.redtechnics.be

Project type:

Passive / Holiday / Detached house

Building services/system components:

- Lighting
- Solar control
- Heating
- Ventilation
- Photovoltaic system
- Rainwater treatment
- Technical monitoring
- Energy management
- Interfaces to other systems

Size of installation:

Number of KNX devices: 38

sary, interfaces are used for connecting certain building services, for example M-Bus for the heat meters, SO pulse measurement for the solar power and water meters, and a 0–10V interface for the ventilation system.