



ENABLED BY ENOCEAN

## BATTERYLESS RADIO TECHNOLOGY FOR FENG SHUI-CERTIFIED OFFICE COMPLEX

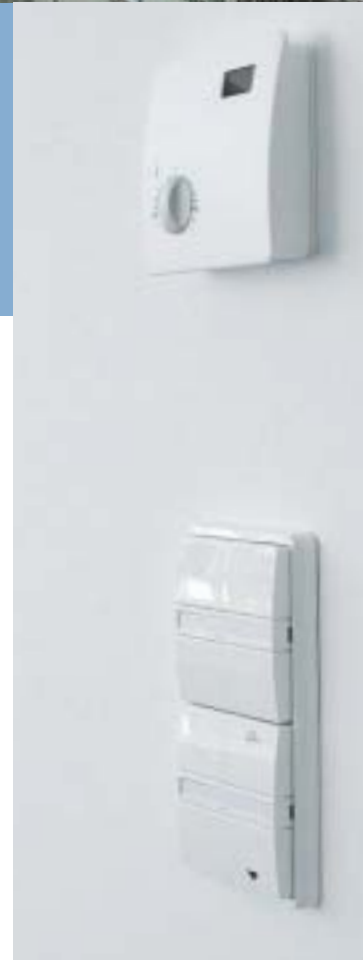
*In September 2003, Bosch und Siemens Hausgeräte GmbH, one of the three world's leading domestic appliance manufacturers, moved into its new premises in Munich, Germany. EnOcean batteryless radio switches and room sensors have been installed in around 150 managerial offices and meeting rooms in the aviva MUNICH office complex, which was built with the principles of Feng Shui in mind. By Peter Pernsteiner, journalist*

### ENOCEAN TECHNOLOGY AT AVIVA MUNICH

A first glance at the new aviva MUNICH office complex is enough to tell you that the architects wanted to create a building with style which would give the people working in it a true feeling of well-being. As well as a large fountain, two fully-glazed courtyards with trees, green spaces and water features enhance the appearance of the building, which offers a full 54.000 m<sup>2</sup> of office space and has been certified for its Feng Shui credentials. The needs of its tenants were taken into account during building.

Bosch und Siemens Hausgeräte GmbH (BSH) occupies around two-thirds of the office complex, which was completed in the summer of 2003. The company was able to exert considerable influence over the detailed planning of the building during the construction phase. For example, Thomas Leipold, who is in charge of facility management technology at BSH's head office, was very keen to ensure that the building's 150 offices and meeting rooms, which are accessed through connecting doors, should retain flexibility in terms of their installation technology. BSH also wanted maximum

freedom in the way that the premises are subdivided. "Our product portfolio is constantly developing, which means that we are often changing focus and forming new staff groups. We have up to 400 internal transfers every year, a large number of which require alterations to be made to room sizes and divisions", says Mr. Leipold. When planning the building's electrics, the Knab engineering practice was therefore asked not to install electrical equipment in any wall apart from the walls of the central corridor. Fischer&Fey engineers were asked to apply the same strategy to the climate control technology. The two companies therefore got together and segmented the ceilings and intermediate floors so that every window-width room section (approx. 135 cm wide) has two independent lighting circuits (one next to the window and one next to the corridor) and a cooling system installed in the floor which can be independently and flexibly adjusted using TCP/IP-networked room control units. These room controllers, which can be configured centrally, normally operate completely independently and typically supply the electrical and climate control equipment in five to eight neighbouring offices.



### CABLE-FREE PARTITION WALLS

"Although the light and blind switches in the secretaries' offices and the open-plan offices could be wired directly to the room controllers, we had to find a different solution for the areas where partition walls are in use, and we wanted the installation outlay to be as small as possible", explains Thomas Leipold. Radio switches seemed the most obvious solution. Nevertheless, there had always been a serious problem with power supply with this technology in the past. Batteries usually had to be replaced once a year – a time-consuming and expensive task in the long term. Moreover, regular data collisions caused by too many data telegrams being sent over the radio channel at once were a fact of life in large office complexes using the radio switches commonly available. Fortunately, BSH had for some

In the separate managerial offices, batteryless piezoelectric radio switches have been installed to control the blinds and the lighting (below). Solar-powered radio room thermostats have also been fitted.

time been monitoring the development of EnOcean's revolutionary radio switches using piezoelectric elements for energy generation. This technology uses extremely short radio telegrams with random multiple transmission, giving the EnOcean switches outstanding transmission reliability and making them the ideal solution for large office complexes with hundreds of radio switches. When systems integrator Imtech and building automation systems supplier Beckhoff were working out the detailed planning for the building, they had to ensure that the correct receivers for the radio range were integrated into the Bus coupler system. "Once the field Bus room controllers are networked, it's not necessary for every room controller to have its own receiver. We mainly got away with only one or two radio receivers for each fire protection zone on a floor of the building", explains Thomas Leipold.

### EASILY ADJUSTABLE

Thanks to the TCP/IP networking of decentralized room controllers, all switching tasks can be flexibly adapted by a central control computer to suit people's individual requirements. For example, if somebody doesn't want all the lights next to the window or the corridor in their office to be switched on or off at once, this can be accommodated by simply installing an additional EnOcean switch and making the correct software adjustment to the room controller. The same applies if a manager prefers convenient control of the lighting and blinds in his office from his desk as well as via a wall switch.

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The fully-glazed courtyards also ensure that the staff working in aviva MUNICH enjoy a pleasant environment.

Since the field Bus room controllers don't just control the electrics – they also operate in conjunction with room temperature sensors to adjust the cooling systems installed in the floors, it also seemed logical for Fischer&Fey to install radio connections for the room temperature sensors in the areas where partition walls are in use. Here again, EnOcean radio technology was chosen. Thermokon room thermostats fitted with an EnOcean radio module with mini solar cells were used.

**CONCLUSION:**

EnOcean's versatile technology proved its worth during the planning phase of the aviva MUNICH office complex. However, it was only able to demonstrate its full potential after the building's new occupants had moved in. People's individual requirements can now be quickly satisfied, thanks to the maintenance-free radio switches and room sensors.



**EasySens Wireless Sensor System**



Wireless Room Sensors



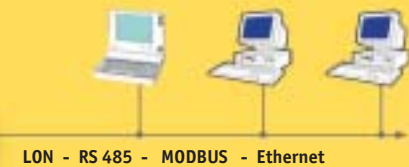
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**battery-less  
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