ENABLED BY ENOCEAN

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MAINTENANCE-FREE WIRELESS SWITCHES & SENSORS

ISSUE

2011
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ENERGY EFFICIENCY

ENOCEAN MODULES
Sensory organs for smart systems

NEW PROMOTER
Texas Instruments upgrades its commitment to EnOcean Alliance

LEVITON
Insurer WCF achieves LEED gold using self-powered wireless products

INTESIS
Seamless air-conditioning integration

LICHTFAIR
2011

Philadelphia
May 15–19, 2011
EnOcean Alliance
and partners exhibit

Dear readers,

What must a technology do for you? Personally I think it should make life easier. Perceiving which technologies really do that is a very individual matter however. Social media websites such as Facebook, currently the subject of so much discussion, take a lot of time for instance, but nevertheless have potential for rediscovering – accompanied by globalization – an age-old means of conveying information, namely recommendation by people you trust.

Fewer and fewer people now doubt the benefit of building automation, on the other hand, as we see from the rapid spread of EnOcean solutions at different levels. For example the growing number of companies that include these solutions in their catalog of products. The development of an increasing number of new applications. Or internationalization – in the meantime the EnOcean Alliance has members in Europe, America, Asia and Africa.

This growth is primarily driven by two unique selling propositions – the freedom from maintenance of EnOcean enabled wireless solutions and their interoperability. The EnOcean Alliance and its members are working hard to ensure this interoperability worldwide. At the end of January it approved a new future-oriented EEP 2.1 profile. Now, for the first time, there are EnOcean equipment profiles for cross-manufacturer bidirectional communication. Attracted by the activities of the EnOcean Alliance and the resulting opportunities, semiconductor producer Texas Instruments has decided to become a promoter of the Alliance and help push ahead with global standardization of energy harvesting wireless technology.

You can read about that and lots more in the many interesting articles in this issue. Or call by the upcoming ISH in Frankfurt or Lightfair in Philadelphia. There you'll find EnOcean not only at the joint EnOcean Alliance booth but also at the booths of many other exhibitors – a clear indicator that EnOcean technology has become an industrial standard.

Markus Brehler,
CEO, EnOcean GmbH

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Sensory organs for smart systems

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NEW PROMOTER
Texas Instruments upgrades its commitment to EnOcean Alliance

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THE ABCs OF ENOCEAN

EnOcean GmbH is the originator of patented self-powered wireless techno-logy. Headquartered in Oberhaching near Munich, the company manufac-tures and markets maintenance-free wireless sensor solutions for use in buildings and industrial installations. EnOcean products are based on a combination of miniaturized energy converters, ultra-low-power electronic circuitry and reliable wireless. EnOcean wireless components are already in use in more than 100,000 buildings.

By Andreas Schneider, Chief Marketing Officer, EnOcean GmbH

GREEN

The innovative enabling technology from EnOcean works entirely without batteries, and is completely service-free. To detect information and then transmit it by short-range wireless, an EnOcean solution harvests the necessary power from its surroundings: from linear motion, light or differences in temperature for example. The energy obtained in this way suffices to send a wireless signal, and turn on a light for instance. Plus, the use of wireless switches and wireless sensors very much simplifies the cabling of a building. At the same time they make for a great deal of flexibility because no new cabling is nee-ded if alterations are due. With little effort and with no breaking into walls, EnOcean-enabled products can be placed exactly where they are of optimum use.

SMART

EnOcean is a system that optimally connects a number of components: wireless sensor networks, energy ma-nagement, software and sensor link. Each wireless node possesses its own local processor to capture measured data, for instance, and control energy management or wireless transmission. EnOcean wireless modules always come with firmware set up so that no modifications are necessary. Plus there is enough scope for application-specific configuration. Added to which, wireless sensor modules from EnOcean are very simply integrated in a whole number of different sensors.

WIRELESS

The EnOcean wireless signal uses the 868 MHz or 315 MHz frequency band, meaning the technology is suitable for solutions worldwide. Telegrams are just one millise-cond in duration, and are transmitted at a rate of 125 kilobits per second. To exclude transmission errors, a telegram is repeated a number of times in the space of 30 milliseconds. Transmitting data packets in random in-tervals makes the probability of collision extremely small. The range of EnOcean wireless sensors is 300 meters in the open and up to 30 meters inside buildings. Each EnOcean module comes with a unique 32-bit identifica-tion number to eliminate any possibility of overlap with other wireless sensors.

BROAD-BASED INTEGRATION

OEM partners from very different sectors can simply integrate EnOcean modules in their products. In this way EnOcean technology allows speedy development and deployment of new wireless solutions. With the new Dolphin platform EnOcean modules can for the first time not only transmit information but also receive it – creating the basis for innovative wireless applications in building services, in industry, medical engineering and for any number of other purposes. And all EnOcean-enabled pro-ducts are interoperable. That means devices from diffe-rent manufacturers can quite easily communicate and co-operate with one another in one and the same system.

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Green. Smart. Wireless.
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WELCOME TO THE ALLIANCE FOR SUSTAINABLE BUILDINGS

By Graham Martin, Chairman, EnOcean Alliance

enocean *alliance*
No Wires. No Batteries. No Limits.

Leading companies worldwide from the building sector formed in 2008 the EnOcean Alliance, with the aim of promoting and establishing innovative automation solutions for sustainable buildings – and so to make buildings more energy-efficient, more flexible and lower in cost. We aim to standardize and internationalize EnOcean wireless technology, and to ensure interoperability between the products of different manufacturers.

As a member of the EnOcean Alliance you have the possibility of accessing new business areas with innovative EnOcean technology. Furthermore you can proactively work together within the Alliance Technical Working Group to implement interoperable products based on approved Alliance specifications, and to propose features and profiles for adoption in the standard. You also can benefit from Alliance marketing activities – such as joint trade shows, public relations support, advertising and lobbying.

The Alliance offers three membership classes:

- **PROMOTERS:** key players who lead, define and drive the Alliance.

- **PARTICIPANTS:** companies and suppliers providing products and services using EnOcean technology.

- **ASSOCIATE MEMBERS:** building professionals, academics, smaller distribution partners and others interested in the technology, advancements, examples, training, etc.

We invite you to join us as a Participant member of the Alliance to enable you to benefit from this fast growing innovative eco-system and the ever increasing success of the technology:

www.enocean-alliance.org/joinus

SENSORY ORGANS FOR SMART SYSTEMS

Complex systems without sensors are difficult to imagine. Even the simplest steam engine a century and more ago needed a speed sensor, the flyweight governor, to make it suitable for industry. Just like we humans need sensory organs to produce intelligent action, technical systems and buildings can be made more intelligent and thus more efficient by combining them with different kinds of sensor information. But one of the challenges is that this information is not available in the same place as the central intelligence.

By Andreas Schneider, Chief Marketing Officer, EnOcean GmbH

The window is open, it is a bright spring morning out there and the air is wonderful. In the room – no matter whether it is a living room or a conference room – there were many people until shortly before, so there is too little oxygen and the lights are turned on. A familiar situation. In a building that is not automated a human will take control, and possesses a number of sensors for the purpose such as eyes (for light, windows open/closed and presence), nose (air quality), ears (fan operating) and skin (temperature). The signals are processed in the brain and, depending on the behavior you have learnt and your frame of mind, they trigger actions that result in more or less efficiency in how energy is used.

Building automation systems can assume control of energy consumers lighting and heating as well as all other actuators such as blinds, ventilation, multimedia installations or even security. To make sure a system works best, sensors should be installed where they can measure their information direct and uncorrupted: sensors like light and blinds switches next to a door, for example, and at extra points of operation on a desk or next to the bed for the most convenience. Temperature sensors on the other hand should not be placed next to a drafty entrance door but close to areas where you work and reside. There are optimum locations for air quality and humidity sensors too, and meters for consumption of electricity, water and gas are connected direct to the loads or their supply lines.

THE BETTER ALTERNATIVE TO WIRED

EnOcean's self-powered wireless technology is an attractive way of generating information decentrally and presenting it to a system for further processing. The connection from one or more sensors by reliable and service-free wireless, fed by environmental energy and without batteries, is in most cases the better alternative to a wired solution. Packaged in sophisticated designs and with miniaturized energy converters, the switches and sensors can be optimally positioned without the need for cable ducts. They combine the benefits of conventional wiring with those of energy harvesting wireless technology.

This new flexibility in positioning sensors and energy-autonomous wireless actuators enables simple retrofitting of existing buildings, automation of new buildings and the creation of innovative industrial applications.
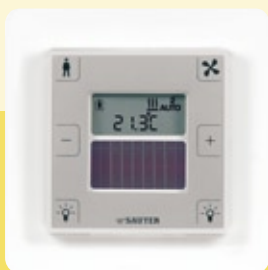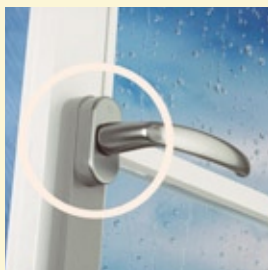
EnOcean enabled products require neither batteries nor cables and are absolutely maintenance-free.

The new Dolphin modules are the ideal platform for energy-optimized building automation. In addition to the potential savings of energy and optimization of processes by intelligent control, doing away with wiring is an appreciable contribution to sustainability because it reduces the use of copper and PVC sheathing. The sensor information, acquired by batteryless and wireless means, is processed by central intelligence or decentrally in smart actuators that assume direct control of the loads.

ENERGY EFFICIENCY BY INTELLIGENT HEATING AND VENTILATION CONTROL

All meaningful sensors can be integrated in an interoperable system for control, regardless of their originally intended purpose. A wireless window handle can deliver information for turning down the heating for example. A solar motion detector turns off the light when a room is no longer occupied, and the ventilation is turned up if the CO_2 concentration is too high. Heating and ventilation control can be trimmed for more energy efficiency by integrating presence, window and air quality information. All wireless sensor data can be transmitted through gateways to overriding control levels or made accessible to authorized systems over TCP/IP. Energy-autonomous EnOcean wireless sensor networks connected to the World Wide Web could play a central role in the future implementation of smart grids.

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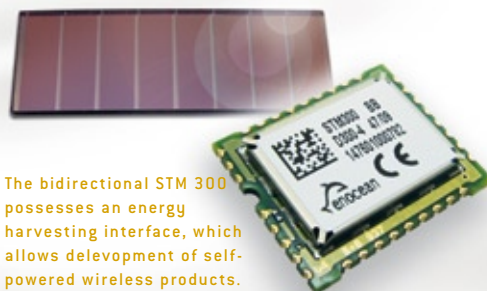
The bidirectional STM 300 possesses an energy harvesting interface, which allows delevopment of self-powered wireless products.

TEMPERATURE DIFFERENCE AS ENERGY SOURCE

Differences in temperature have high energy content, cooling a drop of water by one degree is enough energy for 20,000 EnOcean wireless telegrams. It is enough to operate not just a wireless sensor but even a number of actuators. EnOcean is launching a new DC/DC converter – the ECT 310 – enabling energy harvesting wireless modules to operate on heat.

By Armin Anders, VP Product Management, EnOcean GmbH

EnOcean marketed the first energy harvesting modules for series production in 2003. These were powered either by motive or solar energy. In addition to motion and light, EnOcean is now developing a third source of energy for its service-free wireless modules – temperature difference.
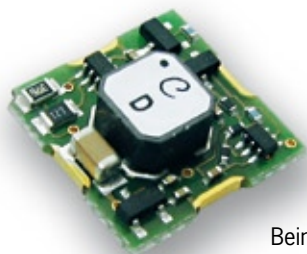
ECT 310 DC/DC converter works on as little as 20 mV, corresponding to a temperature difference of 2°K.

Being able to operate sensors from temperature differences is extremely interesting for numerous applications, such as in heating, air-conditioning and ventilation control, in process automation, in vehicles and even on the human body. Virtually all tanks and piping that carry fluids or gases, for example, show at least temporary temperature differences from their surroundings.

BASIC PRINCIPLE

Generating energy must be cost-attractive. You find standard, inexpensive thermoelectric elements (Peltier) in cooler bags for example, where the contents are cooled by current. For the ECT 310 EnOcean simply reversed the effect, and the cool contents feed a sensor with energy. That meant inventing a new kind of converter however, because the inexpensive Peltier elements have a decisive drawback: they only produce very small voltages of about 10 mV per degree Kelvin. Whereas connected electronic circuitry such as an EnOcean sensor module requires a typical supply voltage of 3 V.

The ECT 310 is a highly optimized, self-resonating oscillator that already starts to oscillate on 10 mV input voltage, and from 20 mV (i.e. about 2°K) generates a useful output voltage of more than 3 V. To enable the exceptionally high converter efficiency of 30 percent, the output voltage is only roughly regulated to less than 5 V in the entire input voltage range up to 500 mV. This is no problem for connected EnOcean modules because they are accustomed to working on a non-regulated supply voltage, such as that from a solar cell. A central component of the ECT 310 is its coil with a high transmission factor of 1:100. The dimensions of the ECT module are 16 x 16 x 5 mm.

DIFFERENT COMBINATIONS

Featuring plug&play characteristics the ECT 310, combined with a thermoelectric converter and the STM 300 or STM 312 energy harvesting wireless modules, allows

The new STM 310 series is based on the EnOcean Dolphin chip and interfaces with different energy sources such as solar cells or a thermal converter.
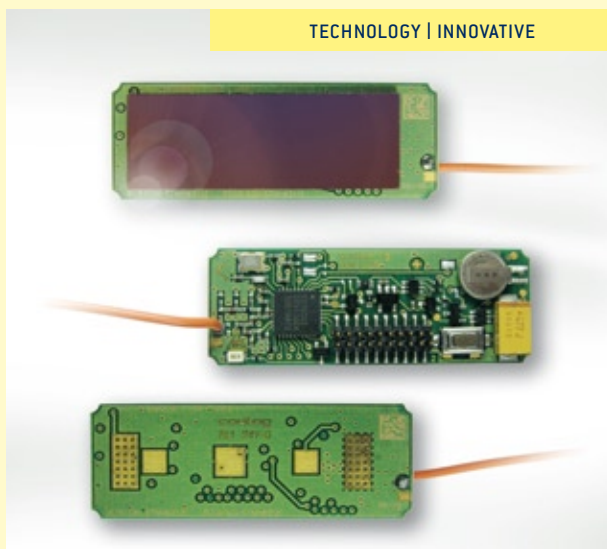
simple implementation of batteryless sensors or actuators powered solely by heat.

The bidirectional STM 300 is part of EnOcean's Dolphin platform and can both transmit and receive wireless signals. The module comes with an all-purpose energy harvesting interface and can be fitted with short-term energy storage or optionally also with long-term energy storage. This flexibility means that, combined with the new ECT 310 converter, a variety of heat-powered, batteryless wireless sensors and actuators can be implemented, which will also function reliably in surroundings where temperatures fluctuate. Given enough heat, a small energy storage mechanism is sufficient to power the module. If there are too few temperature differences from time to time, the larger storage mechanism will span the intervals. The storage mechanisms are controlled automatically on a digital output from the STM 300 module.
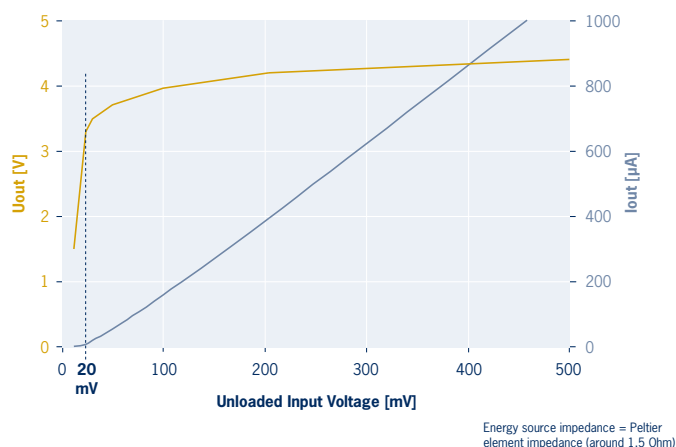
This combination is especially suitable for temperature-powered, bidirectional sensors and actuators – for example installation sensors that require data feedback or control parameters from a control center, or actuators that control heat distribution. Unlike the STM 300, the STM 312 wireless sensor module comes with two energy storage mechanisms already integrated, a ready installed antenna and a connector for joining a sensor element. OEMs can thus solder the ECT 310 and the thermoelement straight onto the STM 312, making for especially compact designs with a minimum of development effort. This combination is consequently very suitable for sensors attached in dark places, in suspended ceilings or cellar rooms for instance. The all-in-one module already integrates the energy storage and energy management for typically four days without power input. Three analog and three digital measuring inputs are configured on a connector. The module also features a processor for data including software stacks for the wireless protocol and firmware that the user can reprogram for a specific application. It is important to note that the energy supply is fully isolated from the sensor technology, meaning that the power is produced by temperature, but an entirely different process variable can be measured, such as pressure or humidity.

HEAT FOR FURTHER DEVELOPMENT

EnOcean is offering the ECT 310 as part of the EDK 312 Developer Kit, an expansion of the EDK 300. Together with the enclosed STM 312 wireless modules, a thermoelectric converter and complete documentation, OEMs are able to speedily develop their own heat-powered, batteryless solutions for building and industrial automation or other applications.

Energy source impedance = Peltier element impedance (around 1.5 Ohm)

ECT 310 output voltage vs input voltage.

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RoHS
COMPLIANT
2002/95/EC
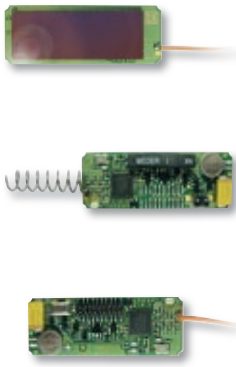
ENOCEAN MODULES

Modules with 868 MHz frequency are suitable for Europe and other countries adopting R&TTE specification.
Modules with 315 MHz frequency are suitable for North America and other countries adopting FCC specification.

ENERGY HARVESTING WIRELESS SENSOR MODULES		AVAILABLE FOR	
		868 MHZ	315 MHZ
PTM 200 – Ultrathin miniaturized switch module ■ Maintenance-free powering by finger pressure ■ Optionally 1 or 2 rockers or up to 4 pushbuttons ■ Dimensions 40 mm x 40 mm x 11.2 mm ■ Actuating travel 1.8 mm ■ Actuating force approx. 7 N ■ Newly certified for use in Japan		✔ PTM 200	✔ PTM 200C
PTM 330 – Wireless transmitter module ■ Dimensions: 26 mm x 21 mm x 3 mm ■ Operation with ECO 200 or external energy source ■ Four digital inputs ■ With 16 PDM pads and also with external 50-Ω antenna		✔ PTM 330	✔ PTM 330C
ECO 200 – Energy converter for linear movement ■ Dimensions 29 mm x 20 mm x 7 mm ■ Optimized for wireless transmitter module PTM 330 ■ Successor to ECO 100		✔ ECO 200	✔ ECO 200
STM 110 – Sensor module ■ Maintenance-free sensor module ■ Powered by mini-solar cell, 13 mm x 35 mm ■ Dimensions 21 mm x 40 mm x 9 mm ■ Operates for several days in total darkness ■ Periodic presence signals ■ 3 A/D converter inputs, 4 digital inputs		✔ STM 110	✔ STM 110C STM 112C
STM 300 – EnOcean scavenging transceiver module ■ Operation with external energy converter (e.g. ECS 300 solar cell) and energy storage ■ Basic firmware for cyclic sensing and transfer of measured values ■ Programmable by software API, also bidirectional radio ■ Dimensions 19 mm x 22 mm x 3 mm		✔ STM 300	✔ STM 300C
ECS 300 – Solar cell ■ For use with STM 300 for unidirectional sensors ■ 35 mm x 12.8 mm x 1.1 mm ■ 4 V, 6.5 µA at 200 lx	**ECS 310 – Solar cell** ■ For use with STM 300 for bidi-rectional sensors with Smart Ack ■ 50 mm x 20 mm x 1.1 mm ■ 4 V, 14 µA at 200 lx	✔ ECS 300 ECS 310	✔ ECS 300 ECS 310

NEW

	AVAILABLE FOR	
	868 MHZ	**315 MHZ**

STM 310 / 311 / 312 / 320 / 330 –
Energy harvesting wireless sensor module

- With integrated solar cell or external energy converter, e.g. thermo converter
- Wireless transmitter
- Onboard sensors or an external sensor port
- Integrated charging circuit with energy storage and onboard antenna
- Configurable and ready programmed functions
- Programmable by API software
- STM 310: Energy harvesting wireless sensor module - including solar cell and whip antenna
- STM 311: Energy harvesting wireless sensor module - including solar cell and helical antenna
- STM 312: Energy harvesting wireless sensor module - including whip antenna but no pre-installed solar cell
- STM 320: Energy harvesting magnet contact transmitter module with helical antenna
- STM 330: Energy harvesting wireless temperature sensor module with whip antenna

868 MHZ	315 MHZ
✔	✔
STM 310	**STM 310C**
STM 311	**STM 311C**
STM 312	**STM 312C**
STM 320	**STM 320C**
STM 330	**STM 330C**

NEW

ECT 310 PERPETUUM – Ultra-low-power DC/DC
converter for thermal energy harvester

- Optimized thermo energy harvester for wireless transmitter module STM 312
- Operation starts at typ. 20 mV relating to 2 K temperature difference on standard low-cost Peltier element
- Dimensions: 14 mm x 14 mm x 5 mm

868 MHZ	315 MHZ
✔	✔
ECT 310	**ECT 310**

RECEIVER AND TRANSCEIVER MODULES

TCM 300 / 320 – Transceiver module

- Unidirectional serial communication
- Bidirectional serial communication
- 1-channel/ 4-channel relay mode
- 1-channel dimming mode
- 1- and 2-level repeater functionality
- Programmable by API software
- Dimensions TCM 300: 19 mm x 22 mm x 3 mm
- Dimensions TCM 320: 36.5 mm x 18 mm

868 MHZ	315 MHZ
✔	✔
TCM 300	**TCM 300C**
TCM 320	**TCM 320C**

RCM 100 / 120 / 122 / 130 / 140 / 152 –
Receiver modules

- Wireless receiver module and actuator control module for receiving and decoding EnOcean wireless transmitter signals
- Dimensions 18 mm x 42 mm x 5.5 mm
- 5 V voltage supply
- 25 mA current consumption
- Basic functions: switch, blinds control, dimming and serial interface for bus systems
- Simple teaching of up to 30 wireless transmitters
- Memory function (for light and blinds scenes)

868 MHZ	315 MHZ
✔	
RCM 100/ 120/122/ 130/140/ 152	

TCM 110 / 120 – Transceiver module

- 5 V voltage supply
- 33 mA current consumption
- Dimensions 24 mm x 42 mm x 5 mm
- **TCM 110:** ■ Single- and two-level repeater for EnOcean wireless telegrams
- **TCM 120:** ■ Bidirectional wireless
  - Serial interface

868 MHZ	315 MHZ
✔	
TCM 110	
TCM 120	

	AVAILABLE FOR	
	868 MHZ	**315 MHZ**
TCM 200C/220C – Transceiver module ■ Bidirectional transceiver modules ■ 5 V (TCM 200C) / 3 V (TCM 220C) supply voltage ■ Basic functions: receiver with serial interface and integrated repeater ■ Programmable in C using software API ■ 6 digital or analog inputs, 5 digital outputs ■ Dimensions 18 mm x 36.6 mm x 5 mm		✔ **TCM 200C** **TCM 220C**

FINISHED PRODUCTS FOR OEM CUSTOMERS

	868 MHZ	315 MHZ

OEM Universal switch insert PTM 250
■ Compatible with following designs with 55 mm x 55 mm rocker:
  – BERKER S1, B1, B3, B7 glass
  – GIRA Standard55, E2, Event, Esprit
  – JUNG A500, Aplus
  – MERTEN M-Smart, M-Arc, M-Plan
■ Surface mounting without casing
■ Switch program frame flat on the wall
■ Single or serial rocker
■ Colors: white, aluminum, anthracite, high-gloss pure white
	✔
	PTM 250	

OEM window contact STM 250 ■ Maintenance-free powering by daylight ■ Operates for several days in total darkness ■ Immediate signal transmission as soon as window closes or opens, triggered by window magnet ■ Periodic life signal ■ Contact monitor (110 mm x 19 mm, height 15 mm) attachable to all frame profiles ■ Color variants: white and black	✔ **STM 250**	
OEM single-channel wireless receiver RCM 250 EnOcean easyfit switch actuator for wireless switching of very different 230 V loads, e.g. incandescent lamps, high-volt halogen lamps or low-power motors. Up to 30 EnOcean PTM wireless switches or up to 2 EnOcean STM 250 wireless window contacts can be teached. Simple connection of the line voltage and load by screw terminals.	✔ **RCM 250**	
EPM 300 – Field-intensity meter EPM 300 is a mobile device for radio link range testing. It helps electrical installers to find the right position to mount products supporting EnOcean protocol.	✔ **EPM 300**	✔ **EPM 300C**

ACCESSORIES

	868 MHZ	315 MHZ
EDK 300 – Developer kit for EnOcean Dolphin modules Developer kit for fast implementation of EnOcean TCM 300/320 and STM 300 bidirectional wireless modules and software API.	✔ **EDK 300**	✔ **EDK 300C**
EDK 310 – Solar developer kit for Dolphin modules STM 3xy The kit extends EDK 300 for the solar-powered wireless modules of the STM 3xy product family. EDK 310 focuses development on solar-powered STM 310. The kit supports configuration and programming of following STM modules: STM 311, STM 312, STM 320, STM 330. EDK 300 is needed as a basis.	✔ **EDK 310**	✔ **EDK 310C**
EDK 312 – Thermo developer kit for Dolphin module STM 312 The kit extends EDK 300 for the thermo powered wireless modules of the STM 3xy product family. EDK 312 focuses development on STM 312 powered by an ultra-low-power DC/DC converter for thermal energy harvester ECT 310. EDK 300 is needed as a basis.	✔ **EDK 312**	✔ **EDK 312C**

NEW

THE OVER-50 GENERATION: USING INNOVATIVE TECHNOLOGY TO STAY INDEPENDENT

Many people, getting older, want to remain independent as long as possible in their own homes. If help from outside should be necessary from time to time, as much independence as possible is still the best medicine. That applies perhaps even more to people living in assisted accommodation facilities such as nursing homes or care homes – in all these cases energy harvesting wireless sensors and wireless switches from EnOcean can mean much more comfort and convenience, security and dignity.

By Emmanuel Francois, Sales Director West Europe, EnOcean GmbH

In coming years we will see a dramatic rise in the average age of the population. Current studies show that there is a great wish to stay living in the surroundings people have become accustomed to, as long as possible and largely without reliance on help from outside. Early improvement of home comfort through modern technologies consequently takes on central importance for many house owners and tenants too – without waiting until they are in their fifties or sixties.

To eliminate any doubts, launching into a new quality of living is not at all difficult. For example, if the belt of a window roller shutter is too heavy, or the handle for sun awnings has to be cumbersomely hooked in to use it on a balcony, a motor-powered drive can make things much easier. Using a conventional rocker switch for operation means you have to decide where to install it and it stays there, restricting the convenience. Whereas, a wireless receiver for the motor drive and a batteryless EnOcean wall-fitted switch – for example from Siemens – make the operation of blinds and shutters much more flexible. The chic, flat wireless switch is simply placed where it makes sense for everyday use – such as next to the living room door or on a shelf unit. The height at

which the switch is installed can also be altered to match personal needs or preferences, at any time, even years later.

Many will find it practical to have an extra handheld switches for their dining room or lounge table. For those that like to raise the shutters in the morning straight from their bed, all that is necessary is to "teach" a further switch into the wireless receiver by pressing a button, and then attach it to the wall or a bedside table. This kind of simplification is obviously extremely convenient for people who are bedridden or care-dependent. All it takes to turn the main light of a room on and off from bed, for example, is a wireless receiver for the lamp and a switch on the wall. Self-powered room thermostats with EnOcean technology can also be positioned at the bedside.

A STEP-BY-STEP SOLUTION

EnOcean technology can be matched to needs as they arise and gradually expanded. For example, if someone becomes seriously disabled they could have a window

The EnOcean enabled wireless wall switches and new EnOcean solar room units from Siemens are optimally combined to control numerous functions such as lights, sun protection and HVAC.

that can be operated wirelessly and electrically when they want fresh air. At the same time a batteryless window contact could automatically close the electric thermostat so that heating energy is not blown out of the open window.

If someone with early symptoms of dementia becomes unable to operate a light switch, a motion detector installed next to their bed could automatically turn on a light as soon as they get out of bed. Lights could automatically be switched on during the nighttime in other rooms by means of presence detectors, or the heating reduced in a dwelling when people leave it. Also, for safety's sake, a cooker or electric iron could be deactivated.

Combining EnOcean technology with an intelligent home automation system produces even more convenience. Wireless emergency buttons by the washbowl or shower in the bathroom or at the bedside could enable an automatic hands-free telephone link to the mobile phone of a close family member and, if required, this person could activate a room camera via iPhone to check the status of the emergency. Additionally, residents of a care home could be safeguarded against health risks by automatically signaling to a control center that a particular window had been open for a long time.

MATTRESS WITH INTEGRATED WIRELESS PRESENCE SENSOR

EnOcean-enabled presence detectors can also improve medical care in assisted living facilities. If no movement is registered in the bedroom of one of the residents in the morning, the nursing staff would be alerted to visit their room for a checkup. This is the underlying thought behind the recently introduced wireless bed with an integrated mattress sensor that automatically indicates to the personnel on duty in the office of a care home if someone gets up during the night or stays in bed too long in the morning. Combined with extra controls the wireless mattress can also offer excellent service in a modern household or a senior citizen's dwelling. After a person has been in bed for a period of time, certain electrical appliances in the household can be switched off, a night light switched on, and the temperature automatically reduced for healthy sleep.

VIRTUALLY LIMITLESS APPLICATION

The opportunities for energy harvesting wireless technology are boundless. In France, for example, staircase lifts operated by wireless switches have been installed in existing buildings because their batteryless capability means no chasing of walls or cumbersome wiring is required. The service-free nature of EnOcean technology also means there is no concern about stairlift power failure while in use.

Intelligent solutions are conceivable for the future that allow dementia sufferers to remain in their own familiar surroundings for much longer. At a UK company, for instance, work is in progress on a solution with room presence detectors, refrigerator door sensors and an appropriate motion profile to actively encourage dementia patients to feed themselves.

The diverse application possibilities presented by EnOcean's batteryless sensors will see them enter many households in the future to make a valuable contribution to personal independence and better quality of life. An increasing number of property owners are becoming more receptive to investing in this innovative wireless technology – whether for use in their own property or rented properties. For large housing enterprises, this represents an opportunity to help prolong the residence of existing rental customers, minimize gaps between tenancies and maximize rental income.

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OVERVIEW OF ENOCEAN ALLIANCE MEMBERS

www.enocean-alliance.org/products

PROMOTERS

ESI Embedded Intelligence	Green. Smart. Wireless. enocean®	LEVITON	MASCO
MK a Honeywell Business	Omnio	OPUS greenNet Eine Qualitätsmarke von Jäger Direkt®	TEXAS INSTRUMENTS	thermokon Sensortechnik GmbH

PARTICIPANTS

	AD HOC ELECTRONICS	CG	tec	BECKHOFF	bk-electronic	BootUp GmbH
CAN2GO	denro	DISTECH CONTROLS	DRSG	EMerge ALLIANCE	Techoflex	EHRT Canada
elsner elektronik	Eltako ELECTRONICS	Ex-Or Making light work	Funk Technik	GE Energy	GE Lighting	GIR
hansgrohe	HAUTAU	HESCH	HOPPE	Hotel Technology	IK elektronik	ILLUMRA
Infratec Datentechnik GmbH	INNCOM	Intesis	kieback&peter Technik für Gebäude-Automation	LonMark INTERNATIONAL	Lutuo	Abran Energy Solutions
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Reliable controls	SAUTER	schulte elektrotechnik	sensor	SERVODAN	S4	
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TEXAS INSTRUMENTS UPGRADES ITS COMMITMENT TO ENOCEAN ALLIANCE

By Graham Martin, Chairman, EnOcean Alliance

Texas Instruments Incorporated (TI) has become a promoter of the EnOcean Alliance, of which it has been a member since 2008. By upgrading to promoter status, TI is reinforcing its commitment to EnOcean's energy-harvesting wireless technology and will provide its expertise in energy-efficient integrated circuits (ICs). The EnOcean Alliance, founded in 2008, is driven to establish EnOcean as an international standard for sustainable buildings. The alliance counts more than 170 members worldwide, including leading companies from the building technology and electronics sectors.

With Texas Instruments as a new promoter the Alliance has become a global partner to spread the benefits of energy harvesting technology. This in-depth cooperation will contribute to defining the energy harvesting wireless technology and setting it up as a standard for energy-efficient buildings.

TI has successfully collaborated with EnOcean since 2005 and its ICs are used in a number of EnOcean modules. In June 2010 the two companies announced their intention to expand collaboration in the area of energy harvesting technology.

"EnOcean's batteryless and wireless technology opens new opportunities for energy-efficient buildings," said Volker Prueller, marketing manager for TI's Low-Power RF products. "In our promoter role, TI can work closely with other members of the alliance to increase development of energy harvesting technology."

www.ti.com
www.enocean-alliance.org

ENOCEAN TO BACNET, AND BACK AGAIN

CAN2GO installed complete bidirectional control and integration between two proven industry standards in a cardboard factory in Canada.

*By Louis-Nicolas Hamer, P.Eng, LEED AP, Vice-president product strategy,
SCL Elements Inc. /CAN2GO*

In Montreal, Canada, a 427,000 square ft. cardboard factory has 25 gas-fired unit heaters originally controlled by mechanical thermostats. The challenge was to integrate the heaters within the existing BACnet IP system of the factory. Because installing miles of conduits and wires throughout would be costly and cause downtime, the wireless option was the only one offering a short payback period.

Using EnOcean relays, controlled wirelessly by CAN2GO wired and wireless controllers, themselves equipped with embedded BACnet IP gateways, the mandated contractor was able to install the missing link between the heaters and the BACnet building management system –

without extensive wiring costs or significant downtime. 16 heaters are controlled by EnOcean relays communicating with CAN2GO controllers. Nine others are hard-wired directly to controllers. All controllers communicate wirelessly to each other using their ZigBee wireless mesh capabilities; limiting wiring to a minimum and allowing a robust mesh backhaul – even in a dynamic environment with large dense core paper reels. One controller is connected to the LAN, sending the wired and wireless end-devices as BACnet objects to the existing third-party BACnet IP system – no gateway or software is needed.

40 PERCENT LESS TIME ON THE JOB
Putting all these installation and integration advantages together, the contractor estimated spending 40 percent less time on the job than if it had been a completely wired retrofit. The total estimated savings reach $45,000 – for a 25 controllers project.

www.can2go.com

Factory floor plan diagram (427,000 sq.ft.)
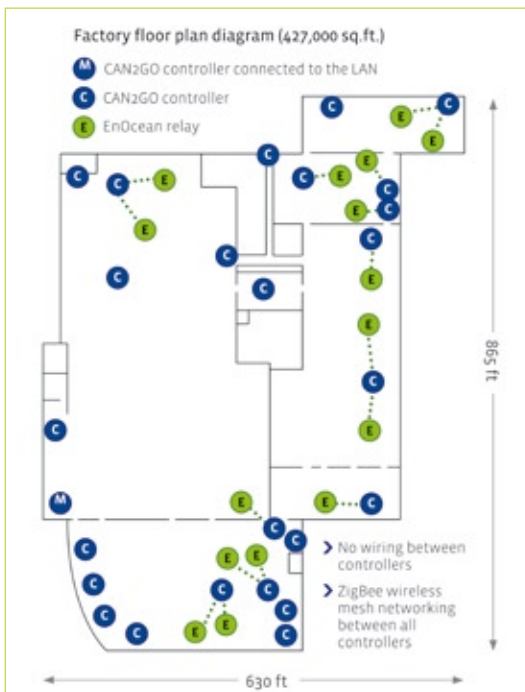
GOLDEN TIMES FOR WORKERS COMPENSATION FUND

Utah's traditional insurance company Workers Compensation Fund (WCF) achieves LEED Gold building certification using LevNet RF self-powered wireless occupancy sensors.

By Bob Freshman, Marketing Manager, Leviton

WCF has insured employers in Utah since 1917. WCF is a non-profit mutual insurance company who provides underwriting, safety, claims, and legal services to more than 20,000 Utah employers. They pay the same premium taxes as other insurance companies and contribute to Utah's economy by providing a stable and competitive source of workers compensation insurance.

During the design development and several months into the project, the owner determined it wanted the project to achieve LEED Silver certification. The interior design development was quickly altered to achieve the new goal. However, the core-and-shell package was already underway. The project team managed construction credits with materials and waste stream diversion for extra points that took the project from LEED Silver to LEED Gold.

DAYLIGHT HARVESTING
Providing a zoned area daylight harvesting system in all open areas of the facility that responds to daylight in both the space and occupancy sensors, functioning in harmony with other building systems in the facility - the challenge was that the mechanical HVAC system installation included disc diffusers that provide for large amounts of air to move across the ceiling at high volume. This interfered with the sensing capability of the ultrasonic occupancy sensors used for lighting control in the large open office spaces. This issue was not recognized until the building was occupied by the owner after construction was completed.

NO INTERRUPTION OF DAY-TO-DAY BUSINESS
Mark Wilson with Layton Sales Agency in Salt Lake City, Utah recommended that the ultrasonic devices be removed and replaced with Leviton's passive infrared occupancy sensors. These devices are not subjected to false triggering from the air movement. However this presented another issue, that being coverage in the large open offices. The ultrasonic devices covered a 2000 sq. ft. area and the PIRs only 1500 sq. ft. so several dead spots appeared in the spaces.

The problem was solved using Leviton's LevNet RF wireless products combining the wireless receiver with the necessary number of solar-powered wireless PIR devices in order to provide adequate coverage of each of the spaces. The receiver was mounted above the ceiling at an existing hardwired PIR location near the center of each lighting zone and used the same power and trigger wiring that existed at the device. The wireless motion sensors were paired with the areas receiver and then located as necessary to provide adequate motion coverage of the space. This allowed completion of the project in one weekend and did not interrupt day-to-day business, use of the space resulting in no down time to the owner. It also reduced the labor cost significantly because no wiring was needed for the order to complete the installation.

Each area required multiple devices to provide coverage with the modular furniture layout. This was not a problem for the receiver, which can accommodate up to 30 devices.

REDUCED INSTALLATION COST

The system functioned as required by the design team and the owner. Using the existing location for hardwired devices and then pairing that with the wireless devices resulted in minimal interruption to the owner. Substantially reduced installation cost resulted from the use of wireless devices. This allowed for energy savings from both daylight harvesting and on/off control of the facilities lighting. The facility was awarded LEED Gold status.

www.leviton.com

INNOVATIVE SOLUTIONS FOR OPTIMUM TRAINING CONDITIONS

An events center for optimum training conditions created with sophisticated furnishings and innovative technology.

By Marcel Lenk, Managing Director, Bibliothekseinrichtung Lenk GmbH, and Werner Petritz, Product Manager, PEHA

In the creation of a library, detailed planning of single products through to complete libraries is a special challenge. To present its customers with a vivid impression of their furnishings and fittings early on in the planning phase, the company Bibliothekseinrichtung Lenk GmbH (BiblioLenk) has developed a special planning program that gives them a 3D view of their new or reconstructed library. In this way colors, design and functionality can all be composed before placing an order and the commencement of production, accompanied by a virtual walk-around in the library to be.

FLEXIBILITY IN PLANNING AND EXECUTION

BiblioLenk not only produces furniture, it also incorporates technical details, such as power outlets, light switches, lifts or PC hardware. High flexibility in light planning in particular is possible with the Easyclick system from PEHA, dispensing with a huge amount of cabling.

Operation uses batteryless and entirely service-free Easyclick transmitters in EnOcean technology. That does away with any bothersome battery replacement and avoids high maintenance costs. Plus, the Easyclick transmitters can be positioned where, in ergonomic terms, it is most convenient to have them. The result is flexibility and fast adaptation if the configuration of rooms or a building is altered at a later date.

CENTRAL CONTROL IN TRAINING AND CONFERENCE CENTER

In the training and conference center for libraries newly opened in Schönheide in 2010 the library outfitter also uses the energy-saving and flexible concept in its own rooms. The entire integrated media can be controlled cablelessly at the media center. Three wide screens covering 700 sqm with their beamers can be rolled out by pressing the touch monitor. To present events, preset scenarios in the myHomeControl software help to control more than 100 meters of RGB LED illumination and more than 200 LED spots by finger tip. Window louvres are also adjusted without any connecting cables as the angle of the sun changes, while roller blinds are just as easily rolled in and out. The possibility of connecting a smartphone and adding remote control mean there are virtually no limits to flexibility.

www.peha.de
www.BiblioLenk.de
www.bootup.ch

RHÔNE-ALPES LOCAL GOVERNMENT AUTHORITY USE INNOVATIVE WIRELESS TECHNOLOGIES

An example of intelligent EnOcean enabled solutions controls sunblinds in the new headquarters of the Rhône-Alpes local government authority

By Amandine Chevalier, Marketing & Communications Coordinator, Distech Controls SAS

The new headquarters building is located at the heart of Lyon's Confluence district astride the Rhône and Saône rivers. From this strategic location the local government services are able to work more closely with the citizens of the region. Some 1350 civil servants previously distributed in seven separate sites across the city are now housed under one roof over a total area of 38,000 sqm.

AN URBAN PROJECT BASED ON THE CONCEPT OF SUSTAINABLE DEVELOPMENT

The most important requirements for the Rhône-Alpes local government authority were architectural quality, sustainable development, functionality and conformity with planning as well as compliance with projected cost and time frameworks. The proposal put forward by the Portzamparc architectural consultancy was chosen thanks to the adaptability and evolutive potential of the interior spaces as well as the advanced, environmentally friendly solutions adopted throughout.

WIRELESS CONTROL OF EXTERNAL SUNBLINDS

Devices and systems from Distech Controls and EnOcean allow for the integrated control of all external sunblinds throughout the building. EnOcean enabled switches are located next to the windows and operate the external sunblinds. These switches relay input information wirelessly to Distech Controls receivers located within the false ceilings and operating with EnOcean

technology. The receivers are connected to a sunblind control unit via an RJ9/RJ9 (plug&play) cable transmitting the appropriate control signals. Up to four double EnOcean switches can be connected to an EnOcean-based Distech Controls receiver.

Installed in the project are 248 Distech Controls 230 VAC controller units, 840 EnOcean enabled double switches and 248 Distech Controls receivers featuring EnOcean technology.

MAXIMAL FLEXIBILITY FOR THE FUTURE

Solutions based on the innovative energy harvesting wireless technology offer maximal flexibility in the subdivision of office spaces. Lack of wiring allows for easy repositioning of office partitions on the basis of changing requirements of the Rhône-Alpes local government authority in the future. And there were fewer cables needed: no wired connection between the switches and the receivers.

www.distech-controls.eu

INTELLIGENT ROOM AUTOMATION FOR THYSSENKRUPP

The e.control room automation system from spega governs lighting, sunblinds and air-conditioning in the new ThyssenKrupp corporate headquarters in Essen.

By Patrick Schilling, Head of Sales North, spega-Spelsberg Gebäudeautomation GmbH

Photos: Arnoldius

It was probably one of the biggest relocation jobs in Europe – since mid-June last year the more than 500 people of ThyssenKrupp's head office are no longer based in Düsseldorf but at a new site in Essen, part of an impressive ensemble of buildings in the so-called Krupp Belt, a project covering 230 hectares. With the guiding idea of creating future-oriented headquarters, integrated room automation from spega was selected for energy efficiency, sustainability and flexibility. The e.control system governs lighting, sunblinds and air-conditioning with the support of EnOcean technology.

Openness and transparency characterize the modern appearance of the ThyssenKrupp headquarters. The highlight is no doubt the cubical center piece called Q1. With the three other parts of the building the head office is scaled for more than 2000 people. Right from the start it was very important that the offices should be as flexible as possible in their use. An obvious answer was to implement innovations and sustainable solutions in all areas of building engineering and services. Changes in corporate organization or the relocation of personnel call for straightforward adaptation of a building and variable configuration from a single office through to open-space areas. Implementation of the e.control room automation system from spega is cableless, flexible-axis, decentralized and modular, and optimally suited to possible rearrangement of more than 1000 offices. The software enables speedy and cost-attractive reassignment of room temperature control, anti-glare and lighting.

CABLELESS AND COMPLIANT

Room temperature is measured by 1400 spega dialog RC-T wireless sensors. Wireless switches of the type dialog RC-Lx and dialog RC-Jx allow manual control of lighting and sunblinds. More than 800 spega dialog RC-E wireless receivers and lumina MS/RC-EB multisensors with an integrated wireless receiver convert EnOcean telegrams for the LON network of room automation and support the functions temperature measurement, window monitoring, light setting, sunblind setting, setpoint. All the functionality of e.control can thus be used to produce perfect room conditions. As a result the Thyssen-Krupp headquarters meet VDI directive 3813, which outlines the principles of flexible-axis buildings by segmentation plus more than 45 detailed functions from the facilities lighting, anti-glare, heating, air-conditioning and ventilation – including the necessary exchange of information between them.

EXCELLENT EFFICIENCY

Through the use of e.control the ThyssenKrupp head office achieves efficiency class A in room automation to DIN EN 15232 standard. Rated by the minimum requirements of Germany's energy economy directive EnEV there is potential for a 30 percent saving in heating and cooling energy and 60 percent in lighting energy at the Essen location. The ThyssenKrupp headquarters were consequently awarded a gold certificate from Germany's Sustainable Building Council (DGNB).

www.spega.com

NEW YORK CITY LANDMARK HOTEL UPGRADES ENERGY EFFICIENCY AND INCREASES GUEST SATISFACTION

Venergy Control System autonomously controls energy consumption in The Penn Club of New York, a landmark hotel with more than a century of history and tradition in its walls. The hi-tech retrofit effectively reduced energy consumption, while increasing guest satisfaction and preserving the integrity of the building's historic architecture.

By Mike Giorgi, CEO, Magnum Energy Solutions

The Penn Club of New York is located in downtown Manhattan. It was ranked among the nation's top 10 private city clubs and has been awarded The Platinum Club of America distinction for its third consecutive term. This award identifies The Penn Club as a 5-star private club and places it among the top three percent of 6,000 private clubs in America. Based on a careful consideration of the history, the architecture, and other features, the building; the Landmarks Preservation Commission stated that the Penn Club of New York building has special character and historical and aesthetic value as part of the development, heritage, and cultural characteristics of New York City.

PARAMOUNT OBJECTIVES

The primary goal of installing the lighting and HVAC controls was to reduce the hotel's energy consumption. However, it was paramount that the upgrades not interfere with day-to-day operations nor diminish the 5-star experience that guests have come to expect. The installation had to meet reduction of energy consumption; maintain or increase guest satisfaction, keep guest rooms open-for-business and preserve the integrity of the building's architecture. The building manager's expectations and demands were met using a combination of energy harvesting and wireless controls: Venergy Control System.

The landmark hotel has more than a century of history and tradition in its walls.

A batteryless keycard switch acts as door key and master key and helps to save energy

ROOM-LEVEL ENERGY MANAGEMENT

The Venergy Control System was installed in 39 rooms. In each room, a wireless thermostat, keycard access switch and actuators were used to manage energy usage based on each room's occupancy status. System integrators identified several opportunistic places to save energy. HVAC equipment, TV, bathroom lights and overhead light above bed were controlled using energy harvesting and wireless automation. The system determines if a hotel room is vacant or occupied according to the status of the keycard access switch. When a guest enters a hotel room and inserts a keycard into its dock a wireless signal is sent indicating to the system that the room is occupied. In occupied mode, the guests experience all the comforts the hotel room has to offer. After a guest leaves the room the keycard is removed and the lights are shut off, television is shut off and the HVAC system goes to energy-conservation mode: in-room temperatures are set up or down according to the season. By managing the conditioned air entering hotel guest rooms and turning lights off when the rooms are unoccupied the hotel immediately reduced energy consumption and subsequently won back revenues lost to wasted energy. Transformational energy harvesting wireless sensors and switches provided simple means of retrofitting the hotel with automated demand-side energy management.

INSTALLATIONS IN 30-45 MINUTES

Hotel room installations typically took about 30-45 minutes and could be done between guest stays. The installation time period was four days with a half day dedicated to training staff members. The Penn Club's HVAC solution is a a four-pipe system with one speed fan on high. In implementing the Venergy Control System thermostat, integrators were able to use a second fan speed (low) by adding one relay to the motor. The solution also eliminated 78 AA batteries by using the Venergy Thermostat.

SAVING ENERGY AND REVENUES FROM NOW FORWARD

After comparing utility bills before and after the retrofit, the hotel accomplished its goal of reducing energy wastes caused by heating, cooling and lighting unoccupied rooms. Additionally, the Venergy Control System helped the hotel comply with energy standards such as CA Title 24 and ASHRAE/IESNA standard 90.1. The energy management system has halted energy waste in unoccupied rooms while contributing to the fight against CO_2 emissions.

Heading into the installation, hotel management's biggest fear was guest satisfaction. But after one month of observation, the system was running smoothly. Guests and employees had embraced the new system. "Installation went smoothly and the system has been functioning flawlessly. I was very satisfied with the outcome. I just recommended the system to the yacht club across the street", stated Jose Acosta, Director of Engineering.

www.magnumenergysolutions.com

WIRELESS LIGHTING CONTROL

The Hamburg-based ECE company, which is the European market leader for shopping centers, uses innovative wireless technology from WAGO for lighting control in its new European headquarters in Hamburg-Poppenbüttel. The reasons: wireless technology makes room design more flexible, saves costs and is rewarded with bonus points by the certification for sustainable building.

By Thomas Fischer, Technical Sales Consultant, WAGO Kontakttechnik GmbH & Co. KG

In the offices of the new ECE European headquarters, light switches are entirely wireless, enabling them to be mounted on the glass walls of the light-flooded atrium, for example. When pressed, the batteryless wireless switch connects to the wireless receiver in the suspended ceiling, turning the ceiling lights on. "Wireless technology perfectly meets our design requirements for highly flexible room design in the entire building", explains Dirk Schenkel, Project Manager for Electrical and Handling Technology at the new ECE European headquarters.

FLEXIBLE ROOM DESIGN AS GUIDING TARGET

When planning the new ECE administration building, with an area of about 20,000 sqm and providing space for some 650 employees on seven floors, every effort was made for a flexible room design. For good reason, since the company is growing very dynamically, which also often affects space requirements. Offices may be exchanged, enlarged, reduced, partitioned or expanded. Wireless technology makes such relocations easier. No cables need to be removed or relocated when retrofitting the lights. The electrical house technician sticks the light switch to its new location, while re-synchronizing the wireless switch with the wireless receiver by two pushes of a button. Done! Before opting for wireless technology, ECE performed a critical cost comparison with conventional wiring. The result: Wireless technology is cost-neutral right from the first installation. It even shows economical advantages after first redesign has been performed.

INDIVIDUALLY CONFIGURED MODULES

The technology used by WAGO consists of batteryless wireless transmitters (light switches), a wireless receiver with four lighting connections to four individually switched relays, 230 V/16 A (WINSTA® distribution box), along with the WINSTA plug-in connection system MIDI for 0.5 – 4 mm² / 25 A / 400 V. The WINSTA® distribution box was equipped without optional sunblind control for ECE. The modules are mounted in a bus-compatible way, so that central functions can be realized by an additional control line. Furthermore, the WINSTA® connection system provided pre-assembled and quality-checked components, allowing for easy plug-in of cable assemblies.

MAINTENANCE-FREE ENOCEAN WIRELESS TECHNOLOGY

The EnOcean system requires no battery or accumulator. A single press of a switch equipped with an EnOcean sensor and maintenance-free energy generator produces enough energy to send a wireless pulse. By the push of a button, wireless data with a unique personal identification number are sent as a 32-bit address within the license-free 868 MHz frequency band. This allows more than four thousand million transmitters to be distinguished from each other. The wireless receiver identifies these data, assigning them to the appropriate ceiling lamp. To make sure that no transmitters interfere with each other (data collisions) in a large building like the ECE European headquarters, the transmission time of a wireless telegram is

The light switches in the new European headquarters of ECE are entirely cableless, enabling their attachment on the glass walls of the light-flooded atrium for example. [photo: Martin Ortgies]

WINSTA distribution box: Batteryless light switches are pressed and send an on/off signal to the wireless receiver in the ceiling that conveys the switching pulse to the ceiling lamps. If rooms are reconfigured, no cables need to be removed or newly routed. That adds to flexibility and saves cost. [photo: Martin Ortgies]

a mere thousandth of a second. Transmission is also repeated several times within a few milliseconds in a time-delayed and random manner. Furthermore, the range of the transmitters within the building is limited to about 30 meters. Even when using 100 closely spaced transmitters sending once per minute, more than 99.99 percent will be receiving. Within the selected frequency band, no interference will occur with DECT, WLAN or private radio applications (e.g., PMR).

WIRELESS TECHNOLOGY COMMISSIONING

"Installing and commissioning WAGO wireless technology was surprisingly simple and straightforward," reports Wolfgang Westphal from the Gerhard Köpke Elektromontagen installation company. For initial commissioning, a button is pressed on the WAGO distribution box, causing the box to automatically change to teach-in mode. Once the wireless transmitter has been activated by the light switch, the transmitter sends a unique 32-bit ID to the box for registration. Commissioning is then complete.

LOWER ELECTROMAGNETIC POLLUTION FROM WIRELESS SWITCHES THAN FROM STANDARD SWITCHES

Due to the avoidance of cables to and from the switches, EnOcean wireless technology does not contribute at all to low-frequency electromagnetic emissions. Furthermore, no electrosmog is generated, since the wireless signals are only transmitted upon actuation. According to

Dirk Schenkel, EnOcean wireless technology has a positive effect on certification by the German Sustainable Building Council (DGNB). The DGNB certificate is awarded to environmentally friendly, economically efficient buildings that conserve resources and have been optimized in terms of user comfort. "Both a low level of electrosmog and waste prevention when redesigning rooms bring us additional points for the certification, while increasing the value of our buildings."

www.wago.com

THINK OUTSIDE THE BOX

Forward-thinking 20th-century employers imagined the workplace of the future as a paperless paradise where computers replaced typewriters and work was streamlined. Today, typewriters have gone the way of the dodo, but not everything in the modern office has been updated.

By Elizabeth Hall, Associate Editor, LD+A – Official magazine of IES (Illuminating Engineering Society of North America).

According to the National Lighting Bureau, 2.2 million U.S. commercial spaces have lighting that is more than 30 years old. Since lighting accounts for 18 percent of energy use in office buildings, these buildings waste energy by using outdated systems (Building Energy Data Book). For visionary employers of the 21st century, lighting may be the next office-space frontier.

One such innovator is Glumac, an engineering firm that specializes in sustainable design. Glumac not only encourages clients to think outside the box for lighting and building systems upgrades, it recently took the same approach itself when transforming an 8672 sq ft gutted space on the first floor of an 11-story office building in Irvine, CA, into its new office. The project was recognized as the first "Office of the Future" by the North American Office of the Future Consortium, a group of eight leading utilities and non-profit, The New Building Institute.

Glumac had one goal for the new office lighting: beat California's Title 24 by up to 40 percent. Glumac lighting designer Carlos Inclán and electrical engineer Jennifer Berg realized, however, that energy-efficient illumination is only as good as the environment it creates. "You must be splendid before you're Spartan", says Inclán. "If a design is just Spartan, users will find a way to defeat the system." Putting their co-workers' comfort first, Inclán and Berg used glare-free sources in private and open office areas, maximized daylight, and added a comprehensive control system that manages both electric and natural light sources. The results far exceed expectations. The space uses a mere 0.24 to 0.3 watts per sq ft with controls, besting Title 24 standards by more than 75 percent. What is more, it has earned the respect of employees and visitors alike, who are surprised with the quality of the lighting. The new office is currently awaiting LEED Platinum certification.

WINNING COMBINATION

Innovators see opportunity where others do not. Inclán knew he had found the right solution for the open office area with the Tambient line of luminaires from The Lighting Quotient, combination task and ambient luminaires fitted with T5 lamps. The luminaire's specially designed furniture mounting – it sits above seated and below standing eye height – produces visually comfortable light on work surfaces and ceilings without shining light directly into the viewer's eye. By combining task and ambient functions, fewer luminaires are needed to produce necessary light levels.

The luminaires are also linked to occupancy sensors (WattStopper) and photosensors (Echoflex) that use EnOcean wireless technology to dim the lights according to incoming daylight. The sensors are set to maintain 30 footcandles on workspaces. Ballasts, sensors and photocells are housed in one portable wireless package so that they can be moved along with modular office furniture. "An added bonus is that any item plugged into these receptacles, such as monitors and printers, will also automatically turn on/off with the occupancy sensor", notes Berg. For the shared workstations, Berg worked with The Lighting Quotient to add emergency lighting to the Tambient, so that one fixture serves three functions.

DOING MORE WITH LESS

Sources that minimize glare were also used in the hallways, lobby and private offices with the same idea that inspired the lighting for the open office: "If you do away with glare, fewer footcandles go farther", explains Inclán. The lights are controlled by a WattStopper Digital Light Management system that includes a ceiling-mounted occupancy sensor and a remote control dimming switch. Though every office has two luminaires, Berg

programmed the lights so that only one turns on automatically when the occupant enters the office. "You can manually turn on the second fixture, but we've discovered that most people won't because it isn't over their desks, so they don't need it. Basically every light in the office, down to the storage closet lights, is controlled by occupancy sensors", notes Berg. "Controls are one way to save energy without sacrificing what people think are light levels." Maximizing daylight is another. Despite the fact that the windows have near pitch-black glazing and building-mandated shades, copious amounts of daylight enter the space. Since all private offices are located around the perimeter, they reap the benefits of the daylight through photosensors that automatically adjust the pendants so that 25 fc is maintained on work surfaces.

HOW IT MEASURES UP

Lighting is not the only building system at Glumac that benefited from controls. "On the HVAC side, we built in our own direct digital controls", says mechanical engineer, Brian Berg. "We wanted to make a showcase of it, so we have various language protocols talking to one another to show that it was possible. We're wrapping the lighting controls into our controls." Using the EnOcean wireless technology, the HVAC team can gather real-time lighting energy use data and display it graphically on a control dashboard. "When the daylighting levels go up, you can see the space lighting levels go down", notes Berg. Eventually, the energy data will be displayed on a flat-screen in the lobby. Glumac will use the display as an educational tool to show visitors the benefits of saving energy.

www.glumac.com
www.echoflexsolutions.com

THE EXHIBITS BENEFIT FROM DAYLIGHT AND WIRELESS TECHNOLOGY

The Folkwang Museum in Essen, Germany, bets on the flexibility of EnOcean enabled technology to guarantee constant room conditions for its valuable exhibits.

By Heike Loh, Marketing, Thermokon Sensortechnik GmbH

The change of Essen's landscaped museum received a glamorous emphasis with the opening of the new Folkwang Museum in 2010 when Essen was awarded cultural capital 2010. Financed by Alfred Krupp von Bohlen and the Halbach foundation, constructed by David Chipperfield Architects and realized by Wolff Gruppe, the new building retrains the autonomy of the historically protected old building. The new showrooms, capturing plenty of natural light, give special emphasis to the architecture. The Folkwang Museum owes its excellent reputation worldwide to the outstanding collection of German and French paintings of the 19th century, the classic modern art as well as the art after 1945. The photographical and graphical museum as well as the integrated German placard museum is of paramount importance.

HIGH DEMANDS ON STEADY TEMPERATURE AND HUMIDITY CONDITIONS

The exhibits presented are very valuable and thus require constant conditions in the showrooms and warehouses on 365 days a year and 24 hours a day. Due to the fact that the displays are continuously changing and the sensors had to be installed in the highly frequented areas of the museum, it was unanimously decided by the executing architects PLAN FORWARD and all executing companies to use EnOcean enabled wireless technology by Thermokon.

FLEXIBILITY WITH CHANGING EXHIBITS

Fully self-powered wireless EasySens sensors series SR04rH enable the detection of temperature and humidity. The energy necessary to send a wireless telegram is harvested from the direct ambience of the sensor. Solar energy is used by the integrated solar cell. Wiring and complicated battery changes are eliminated. Further advantages are created by

Self-powered wireless EasySens sensor SRO4rH detects temperature and humidity in the museum

high flexibility of the sensors with changing room layouts and easy integration in historically protected buildings. The wireless receivers SRC65 Modbus were installed in the ceilings. Due to the long distances because of large halls, repeaters were used. The interface with the GFR DDC system was made via Modbus gateways.

The complex TGA units were installed by the company GYRO Bautechnik GmbH. Beckers Regeltechnik from Neunkirchen Vluyn was in charge of building automation and installed the BM technology. In the field of DDC and HVAC, products of GFR were used. Monitoring of room conditions was realized with wireless Thermokon sensors.

www.thermokon.de
www.museum-folkwang.de

Advertisement

LIVING 2.0

House builder Viebrockhaus AG chooses OPUS greenNet building control from JÄGER DIREKT.

By Ina Trautmann, Marketing Management, JÄGER DIREKT

Building your own home is usually a decision for life. Which makes it all the more important to plan every detail and choose future-oriented, reliable technologies. Viebrockhaus AG, one of Germany's biggest house builders, chooses the OPUS greenNet system from JÄGER DIREKT when it comes to home automation.

Convenient and simple – all functions of the smart home control are accessible through the touch-screen display of an iPod.

SURE SOLUTION FOR THE FUTURE

User-friendly, versatile, simple and flexible to expand – these are some of the plus points of OPUS greenNet that convinced the premium-market German house builder, a firm advocate of climate protection and energy saving. "Everything right for the future" is what chairman Andreas Viebrock wants in his houses, and the smart building control not only satisfies today's demands but is also conceived for future requirements in terms of comfort and convenience, safety and energy efficiency.

MAXIME TOUCH

Together with JÄGER DIREKT, Viebrockhaus has developed a new show house model called Maxime touch that meets the modern standards of the Living 2.0 concept as well as satisfying the wishes of the house builder for affordable, environment-friendly and easy-to-use technology. The energy-plus 40 house with its passive shell is notable for modern energy efficiency plus generous living comfort with 150 sqm to move in.

All functions of the smart building control in Maxime touch are presented on the touchscreen display of an iPod. A variety of OPUS greenNet solutions produce comfort and convenience, safety and more than average energy efficiency.

A major element of the JÄGER DIREKT concept is the use of EnOcean technology, dispensing entirely with cables and batteries. The spectrum of practical, invisible helpers in the household ranges from monitoring of window handles by iPod (with software customized for the end-user) through smart lights control to flexible optical and acoustic room supervision.

GREAT DEMAND

The partnership between Viebrockhaus and JÄGER DIREKT was not signed and sealed until the Light+Building show in 2010, but more than 100 house builders have already opted for the Living 2.0 package. The demand is proof that the future-oriented concept is right for our environmentally conscious times.

A basic solution for all Viebrock houses is consequently planned as well as further innovative ideas. But not only new house builders are benefiting from the innovative technology. Customers who purchased a Viebrock house in recent years are able to retrofit their houses with OPUS greenNet technology – for less energy consumption, more comfort and convenience, and a personal contribution to protection of the climate.

www.jaeger-direkt.com

WIRELESS CONTROL IN YOUR SLEEP

Funkstuhltechnik and Schlaraffia are marketing MatControl as the first batteryless sensor mattress.

By Klaus Kleine, Managing Director, Funkstuhltechnik

For a number of years already, Funkstuhltechnik has been successfully marketing its smart office seat, enabling control of lights and heating in offices by a seat. Now the company based in German North Rhine-Westphalia has come along with another singular solution – a wireless mattress (MatControl). The sensor, developed for mattresses, is the result of cooperation with the Schlaraffia company, which is offering customers a range of mattresses with all the expected high level of comfort plus this unique technical innovation. No matter whether high-grade box spring or foam, hard or soft, the user has the same options as with conventional mattresses.

The batteryless, maintenance-free sensor opens up entirely new possibilities for architects, planners and operators of hotels, nursing homes and hospitals. With its innovative visualization, MatControl turns over a new leaf in terms of security, comfort and convenience. The product went through intensive and elaborate tests, specially developed for this purpose by Schlaraffia and Funkstuhltechnik. They show that it is 100 percent reliable wherever a mattress is in use.

SMART AID FOR NURSING HOMES

The wireless mattress makes it easier for the personnel of a nursing home to care for residents – with more safety and speedier. MatContol will automatically turn off all electrical devices after someone has been in bed for a defined length of time. Heating and electricity costs in buildings can be cut substantially, by automatically turning off the main lights and turning on nighttime lighting for instance. Economies in heating energy are possible by automatically reducing room temperature to a healthy level for sleep during the night hours. Bed occupancy can be shown on a central computer by specially developed and easily operated visualization software. Care personnel receive feedback whether a resident is in bed at night and gets up normally in the morning. That saves a lot of running as well as enhancing the security of the elderly.

But the smart wireless mattress is not only suitable for applications in nursing. It can also be used in hotels or private households – to support lighting, heating and air-conditioning control. That results in more efficient use of energy, besides increasing comfort and convenience. Visualization is an extra plus point for hotel operators.

www.funkstuhl.de
www.schlaraffia.de
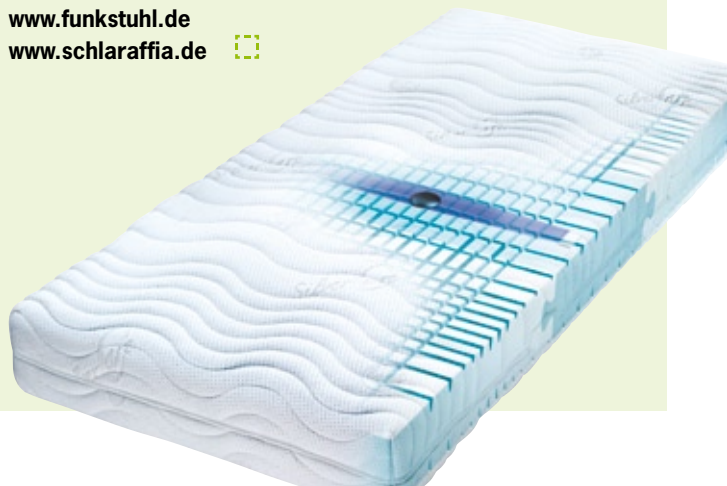
IDEAL CLIMATE FOR HOME AND WORK

Batteryless wireless sensors in room controls of the Frija design series exhibit excellent transmitter characteristics plus maximum range. That adds up to comfort, convenience and quality of life in digital living and working.

By Tino Schulze, Managing Director, S+S Regeltechnik GmbH

Innovative products from S+S Regeltechnik are responsible for producing an ideal climate at thousands of locations throughout Europe. Enabled by EnOcean technology with bidirectional Dolphin modules, S+S has gone to market with wireless transmitters, sensors and receivers branded KYMASGARD. The new devices come in different versions - for example as a simple temperature sensor or combined with humidity capability, with and without a presence button. The range also includes presence detectors, various wireless switch designs or card switches for use in hotels for example. Actuators are available as receivers for a whole variety of applications, or gateways for linking to building management.

The energy-autonomous products work by the energy harvesting principle: the slightest changes in their surroundings cause them to transmit and receive wireless signals. Needing neither batteries nor cables, the sensors can be installed or retrofitted with maximum flexibility and minimal effort and expenditure.

FEEDBACK COUNTS

S+S Regeltechnik is committed to sustainability. Its devices form the basis of energy management for the future. With solid expertise and quality of finish, its specialists develop concepts and produce solutions all from a single source. Customer feedback naturally flows into this. In every case S+S can produce an innovative solution for an ideal living and working environment.

www.spluss.de

ROOM CONTROL IN THE PREMIUM SEGMENT

Thermokon presents its new premium room control unit THANOS, taking a new approach to intuitive room control in excellent design.

By Nico Gotthardt, Product Manager, Thermokon Sensortechnik GmbH

Intuitive and attractive room control

The THANOS represents another high-quality product in the portfolio of Thermokon room control units. THANOS is an ideal addition to the range with its excellent design. A glass front covers a high-resolution 3.5-inch TFT display to show the functions executed for every input.

SENSITIVE TOUCH CONTROL

Typical applications for room automation can be customized. Control of HVAC elements such as temperature setpoint adjustment or the regulation of blinds, blinds and light control or fan stages only requires a simple touch. Combined with a common operating structure, the touch technology already enables an intuitive operation of the device with the first use. THANOS has an integrated temperature/humidity sensor enabling direct measurement of the physical room condition.

A functional brushed stainless steel clip is designed as a sensitive touch presence button so that customized basic functions can be implemented such as turning lights on/off. THANOS replaces the task of a typical light switch function without losing the convenience of a simple pushbutton.

VARIOUS TYPES

THANOS is available in the basic colors black and white. There is a large variant with up to 12 buttons. The lower operating area is designed as a typical rocker function such as up/down of shutters and blinds. The S type is a smaller design unit. The rocker function is realized in a second menu level in the display area. For individual specifications several button fields have a customized legend. A software application enables simple configuration of a device for operating functions, button symbols and display options.

BIDIRECTIONAL COMMUNICATION

Optionally, THANOS can be equipped with an EnOcean Dolphin module enabling bidirectional wireless communication with EnOcean enabled receivers. It is the first highly design-oriented product with an EnOcean interface. In addition to its stand-alone version the new multifunctional room control unit can team with network technologies like KNX, BACnet, LON or Modbus. Here THANOS is designed as a gateway enabling the proven combination of EnOcean technology with leading building bus systems.

www.thermokon.de

LEVNET RF SELF-POWERED WIRELESS SOLUTIONS

By Bob Freshman, Marketing Manager, Leviton

The retrofit market for energy management presents untapped opportunities. With 67 billion square feet of commercial space, retrofit opportunities are limitless in the health care, hospital, office, and education sectors. Due to the age of these buildings, the majority of them have no form of lighting controls. Wireless controls offer the best and most cost-effective energy solution to meet today's government mandates to reduce lighting energy use. Over $3.2 billion in grants are available to local governments to fund energy efficiency projects including retrofitting existing structures.

The LevNet RF line of self-powered wireless solutions expands Leviton's offering to provide customers with additional easy-to-install energy saving solutions. Using wireless and self-powered technologies developed by and licensed from EnOcean, LevNet RF solutions are maintenance-free, saving ongoing labor and material costs plus energy. Wireless and self-powered technology means no new wiring, external power, or batteries are required. With no additional wiring required, so installation is speedy and easy and takes only minutes to configure. LevNet RF RF offers simple lighting control and configurability for occupancy sensing, on/off switching, 3-way switching, bi-level switching, hotel HVAC control, and much more for design flexibility. No wires, no batteries, and no limits for a flexible and cost-effective energy savings solution in any application – this makes LevNet RF the preferred solution for retrofit and new construction applications.

www.leviton.com

Comfort with Efficiency and Flexibility

MD15-FTL small actuator

- The world's first battery-powered small actuator with EnOcean wireless technology
- Sensor, controller and motor-driven actuator in one unit
- Solution for flexible room automation with high energy efficiency and comfort

Efficient with **enocean**®

kieback&peter

Technology for Building Automation

Kieback&Peter GmbH & Co. KG, 12347 Berlin, Germany, Telephone +49 30 60095-0, www.kieback-peter.com

SEAMLESS INTEGRATION OF AIR-CONDITIONING WITH ENOCEAN WIRELESS TECHNOLOGY

HVAC applications account for approximately 50 percent of the energy consumed by a building. Until recently, no control or monitoring of air-conditioning systems from open wireless protocols was possible. Now Intesis Software has introduced EnOcean enabled interfaces for true split-level integration of air-conditioning units for energy saving.

By Isaac Gual, EnOcean Product Manager, Intesis Software SL

Intesis gateways with their small dimensions and the fact that they require no external power supply are the perfect candidates for home and hotel integrations. All devices are available for 868 and 315 MHz frequencies.

IntesisBox Enocean AC gateways open EnOcean systems to fully control air-conditioning units, being able to both actuate the AC indoor unit and overview its status. The existing models can currently supervise and control the working parameters – such as on/off or operation mode – of Mitsubishi Electric and Daikin AC indoor units as well as their errors.

Besides that, the interfaces implement advanced functionalities when linked with devices such as keycards, window contacts or presence detectors, allowing configurable intelligent behavior even without a central unit leading to an increase of the energy saving.

NEW BIDIRECTIONAL USB ENOCEAN GATEWAYS

These gateways can communicate with most EnOcean enabled products – for example thermostats, relays, switches, window contacts and presence detectors – and are easy to integrate in larger building management systems. The new bidirectional USB EnOcean gateways were developed to perform such integration:

USB-ENO is a transparent USB EnOcean gateway. It can be used with all kind of EnOcean devices such as sensors, actuators or gateways, allowing full control and supervision of these devices from software applications. It was designed to work with the configurable EnOcean serial protocol 2 and 3.

USB-ENO-ASCII gateway is specially designed to enable supervision and control of up to ten IntesisBox EnOcean AC gateways from USB enabled controllers or PC software with an easy commissioning. The AC variables can be easily read/written with simple ASCII text messages.

www.intesis.com
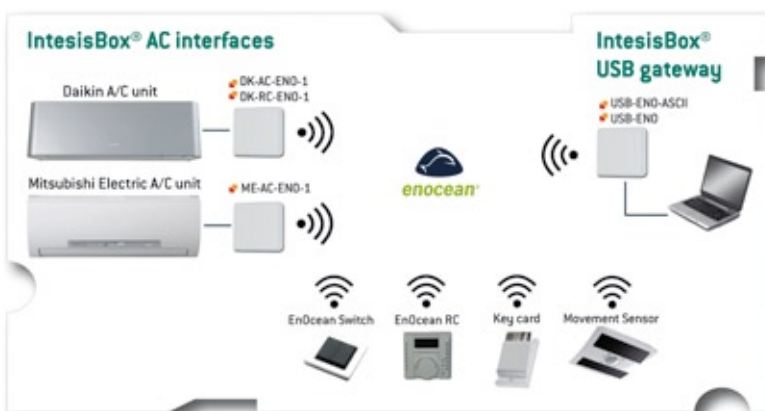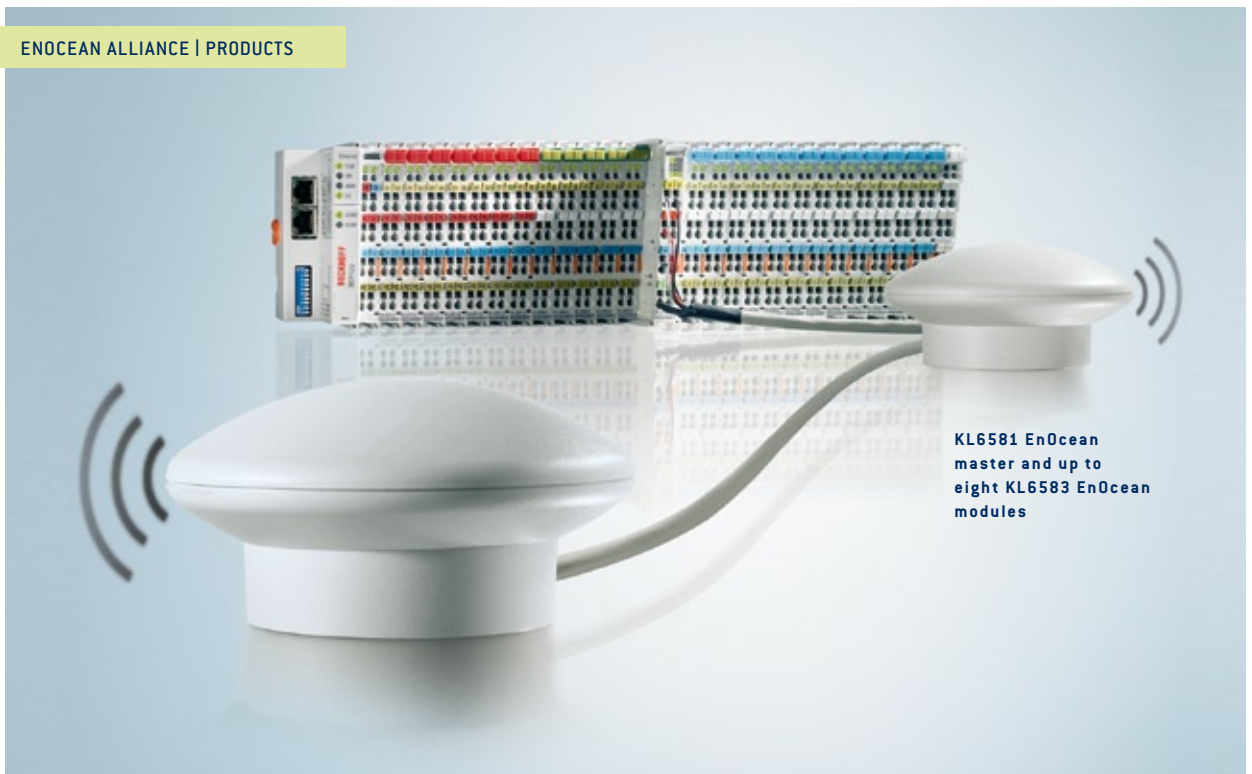
KL6581 EnOcean master and up to eight KL6583 EnOcean modules

NEW BIDIRECTIONAL ENOCEAN MODULES ENHANCE BECKHOFF BUILDING AUTOMATION SOLUTIONS

Beckhoff has introduced the ability to integrate the entire EnOcean portfolio into its PC-based automation system with the new bidirectional EnOcean modules. These make it possible to distribute a number of modules in buildings more simply and economically via a bus system.

By Michel Matuschke, Product Management Wireless and Fieldbus Systems, Beckhoff Automation GmbH

Bidirectionally communicating EnOcean devices, such as switching actuators, heating control valves, recently appeared on the market. These can now be integrated simply and economically into the Bus Terminal I/O system using EnOcean solutions from Beckhoff. The KL6581 and KL6583 Bus Terminals are the basis for this. The new KL6583 is a bidirectional EnOcean module that can flexibly communicate with both unidirectional and bidirectional EnOcean devices. Downward compatibility is thus ensured. Up to eight bidirectionally functioning EnOcean modules can be integrated into the Beckhoff Bus Terminal system via a bus system with a length of up to 500 meters (1640 feet) and via the KL6581 gateway terminal. This is a big advantage during installation in comparison with the previous version, which had to be installed for each EnOcean receiver.

The KL6581, as a link to the Beckhoff bus system, comes in the standard terminal housing. The KL6583 EnOcean module is accommodated in an appealing new housing style that is available in different colors.

THE IDEAL PLATFORM FOR BUILDING AUTOMATION SYSTEMS

With TwinCAT automation software, the TwinCAT building automation framework and further software tools, Beckhoff offers an ideal platform for an advanced building control system. Over 400 different Bus Terminals allow the integration of all relevant building and bus systems, from DALI for lighting control, as well as dimmer terminals and 24 V output terminals, to EIB and LON, as well as BACnet and Ethernet.

www.beckhoff.com/building

BIDIRECTIONAL VAV CONTROLLER WITH BACNET GATEWAY

The new VAV controller from CAN2GO allows total wireless control of energy harvesting end-devices within an end-to-end BACnet system.

By David Lamarche, Director of Communications, CAN2GO

CAN2GO launched a new variable air volume (VAV) building automation controller capable of bidirectional communication with EnOcean and wired end-devices. The controller features an embedded EnOcean transceiver and an EnOcean-to-BACnet gateway, allowing total wireless control of energy harvesting end-devices within an end-to-end BACnet system.

Extending the reach of centralized building automation systems, the VAV controller is a fully-programmable device with an onboard pressure sensor capable of meeting VAV application requirements. The CAN2GO controller can act either as a stand-alone product or be integrated into a larger BACnet system.

THE BEST OF BOTH WORLDS

CAN2GO controllers are the first capable of two-way communication and control with wired and wireless end-devices. Employed as gateways, they convert EnOcean and wired end-devices to BACnet objects, enabling seamless integration into BACnet systems. They can also act as servers, hosting a complete IP web interface capable of managing all controllers and their end-devices.

The use of wireless technology within a building management system reduces the amount of wiring required, effectively enabling fast and cost-efficient solutions. By supporting both wired and wireless connectivity, an integrator can take advantage of the cost and deployment advantages of wireless where needed, and still rely on wired connectivity where appropriate.

In addition, for further flexibility, the controllers can communicate with each other wirelessly, or through a wired Ethernet/IP network, or via chain-linked CANbus serial bus.

www.can2go.com

UNIVERSAL LIGHT DIMMER

This new light dimmer from Unotech is controlled either using the black button at the front or remotely via EnOcean protocol based switches or sensors. It can by simple programming be made to interact with most of our wireless transmitters.

By Henrik Norén, Managing Director, Unotech A/S

LIGHT SCENES EASILY CREATED

The Rxd300/LCR is for universal load and can be used with incandescent lamps, 230 V halogen lamps as well as low-voltage halogen lamps through wire-wound or electronic low-voltage transformers. Up to 50 transmitters can be allocated for a combination of manual dimming and light scenes. It is very easy to define light scenes, producing convenience plus energy saving (all lights off when leaving). It is also possible to turn off the light with PIR sensors.

RXR/PI, RELAY MODULE 1500 VA

A version with relay output instead of dimming is also available. Typical applications are light sources that are not able to dim, or to switch off standby loss for TVs, DVD players and the like.

www.unotech.dk

NO WIRES, NO BATTERIES NEEDED: NEW PUSHBUTTONS FROM SERVODAN

By Per Eggen, Marketing Manager, Servodan A/S

Servodan has launched four new wireless and battery-less pushbuttons, using EnOcean communication and thus highly suitable for all Servodan wireless solutions. The new pushbuttons are absolutely maintenance-free and energy-neutral because they need no power supply or battery. They use the 868 MHz frequency band and are qualified for ambient temperature between -25° C and +65° C in dry rooms.

The kinetic energy generated by a single push is enough to send a signal to the receiver. Thus, the pushbuttons have unlimited service life - and can be placed anywhere since there is no need for cabling.

www.servodan.com
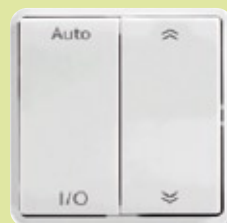
INTEROPERABILITY – KEY TO FURTHER GROWTH AND NEW MARKETS

*Publication of a new version of the EnOcean equipment profiles (EEPs) is further demonstration of interoperability between EnOcean enabled products from different OEMs. There are already some 100 equipment profiles for the development of a whole variety of solutions in building automation – switches, remote controls, sensors, multisensors and data of every kind.*

By Norbert Metzner, Senior Product Manager, EnOcean GmbH
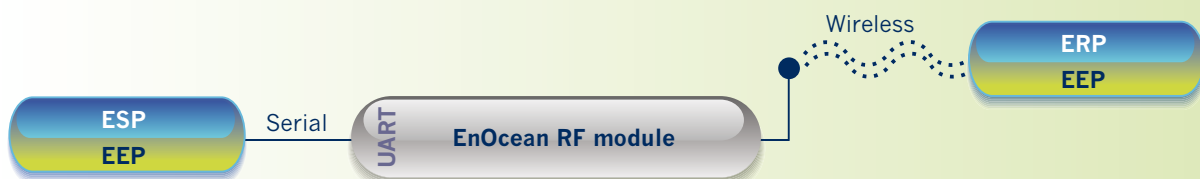
Interoperability is essential for items of equipment from different manufacturers to communicate and cooperate in one building automation system. It calls for clearly defined rules and standards; all components of a system must use the same data formats and protocols. These are set down in profiles for different applications. Consistent implementation of profile definitions makes it possible to combine a receiver from manufacturer A with a sensor from manufacturer B and a sensor of the same functionality from manufacturer C – a very major requisite in creating non-proprietary and cross-facility building automation, in solutions that are smart and energy-efficient.

MAJOR INNOVATIONS IN EEP 2.1

EEPs define the functionality of EnOcean enabled devices, independently of their manufacturer. The new EEP 2.1 version of the specification was devised by the technical working group of the EnOcean Alliance, which focuses on standardization of EnOcean technology and producing interoperability of different items of equipment worldwide.

This version of the EEP specification very much simplifies the use of profile data. It was generated in XML so that it can be read with HTML browsers, and manufacturers can put the data straight into their development processes. Error sources were eliminated while at the same time making the development process more flexi-

ble. Data structure and terminology were harmonized for easier use with other system-relevant specifications. The EEP specification consequently appears as part of the EnOcean radio protocol (ERP) in the specification of the serial interface (EnOcean serial protocol ESP).

A number of new profiles were developed to support increasing use of EnOcean technology in different areas of application. Innovations include profiles defined with variable data content to optimize the use of scarce energy sources, and profiles enabling remote management.

BIDIRECTIONAL SOLUTIONS FOR SMART BUILDING MANAGEMENT

Aimed at energy-saving potential in smart building management, the EnOcean Alliance has for the first time specified profiles that enable bidirectional communication between individual devices. Manufacturers can thus develop products that not only transmit but also receive information – creating new possibilities of automation in both buildings and processes.

www.enocean-alliance.org

OPERATING ENOCEAN FROM AFAR

REMOTE MANAGEMENT FOR COMMISSIONING AND SERVICE

By Thomas Rieder, Managing Director, PROBARE

Configuration and teaching in of individual devices is really always part of commissioning or service activities on EnOcean enabled installations. It often calls for direct accessing of actuators, sensors and gateways to operate their user interface consisting of switches and display elements. In building installations in particular this can prove to be complicated and time-consuming.

EnOcean's new Dolphin platform now enables wireless remote control, avoiding the necessity of direct access to devices in suspended ceilings, raised floors, cabinets and the like. Major features of this remote management are the remotely controlled teaching in and deletion of EnOcean devices (remote learn) and the transmission of configuration data (remote data transfer). Access to every single device is guarded by a secret code.

MODERN TEST TOOL
INSTEAD OF LADDER

So in future, when changing a configuration, the first thing the service technician does is to switch on an EnOcean test tool instead of finding a ladder. Then they no longer study the installation plan but receive wirelessly a list of EnOcean devices supporting remote management. These devices also tell them what remote management functionality they support, and identify themselves as actuators, sensors or gateways/controllers. A light

actuator can signal the loads assigned to it directly to the service technician by alternately switching them for instance. So a unique assignment between actuator and switched load is possible if the matching installation plan is not obtainable.

Once the required EnOcean device is selected, the service technician decides on the activity to be performed by remote management, for instance teaching in a new light switch by remote learn. They choose the light channel of the actuator through their test tool and activate its readiness to learn. If the rocker switch to be taught in is operated three times within two seconds, the learning process is completed. Then they can select and teach in another channel of the actuator.

The remote learn functionality naturally supports all other EnOcean enabled devices – keycard switches, motion detectors or brightness sensors – in addition to light switches in smart actuators. Finally the service technician can alter the configuration of the intelligent actuator by remote data transfer, simply by wireless and with their EnOcean test tool.
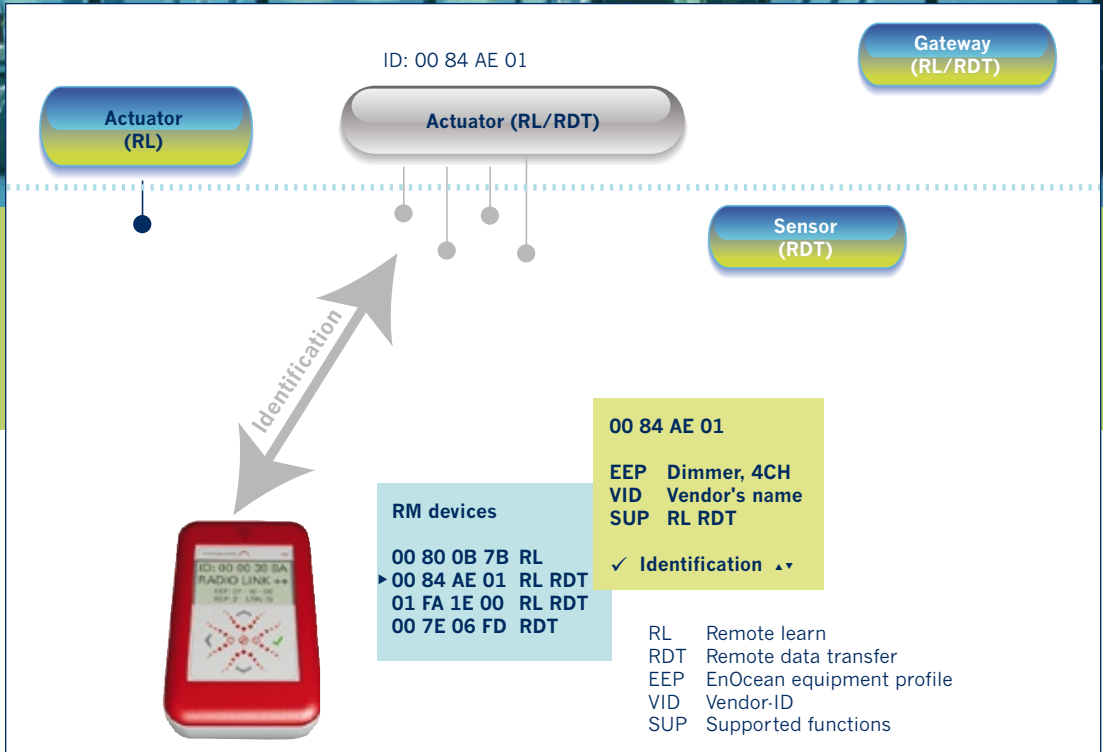
If remote access to an EnOcean device is no longer needed, the EnOcean test tool automatically locks out the remote management functionality by the secret code. This can of course be set for every single EnOcean device. So authorization levels can be created by device groups, a very important security aspect in large EnOcean installations.

CONVENIENT AND TIME-SAVING

Remote management means ample convenience and time-savings in commissioning and service. The EnOcean test tool can optimize these benefits by documenting all remote management activities for instance, and saving them unchangeable on a USB stick for later analysis and warranty inquiries.

The P30 from PROBARE already supports remote management plus remote learn functionality. Remote data transfer capability will be added as of ISH 2011. P30 users will receive the necessary device software update free by e-mail and can install it themselves by a USB stick. In the same way it will be possible to add the results of further development of remote management in the EnOcean Alliance to P30 device functions. For the user that means a secure investment plus availability of the latest EnOcean functions for daily use.

www.probare.biz

EN ROUTE IN UTAH

Arches
National Park

Traveling to an exhibition can be a bothersome business. But not my journey to the LIGHTFAIR 2010 in Las Vegas. After a two-week stay at the EnOcean office in Salt Lake City, I headed for the show with colleagues Armin Anders and Jim O'Callaghan – with a small detour by way of the spectacular canyons in the state of Utah. The trip, perfectly organized by Jim (including cooler box with refreshments), took us through a number of national parks: Arches, Canyonlands, Little Wild Horse, Goblin Valley and finally Zion Park.

By Slavica Simunovic, PR Manager, EnOcean GmbH

The first stop on Friday afternoon was Dead Horse Point, offering a view from 1731 meters down on the Colorado River, which at this point makes a 180-degree turn.

After a little refreshment and a glorious sunset we traveled on to our quarters in Moab. A delicious buffalo burger was followed by an evening in Frankie D's with live music. Perhaps the gin and cranberry was better than the music. And there really were people here wearing cowboy boots, wrangler jeans and stetsons.

Next day we started off early for the Arches National Park. Spaced over 120 sq mi, this has the world's biggest concentration of some 2000 natural sandstone arches.

From Arches we continued to Canyonlands, where a ranger explained to us in every detail – perhaps too much detail – how the national park came about.

Our next stop was Little Wild Horse Canyon – one of my personal highlights. We rambled through the canyon, whose appearance varies considerably as you go down. The path can get blocked by large boulders, which we had to climb over.

The visit to Zion Park on the day before the show was intended to be unhurried and relaxed. But we did not reckon with Armin. He wanted at all costs to go to Angels Landing, a 1763-meter-high rock formation that you reach over an 8 km route with 450 meters difference in altitude. The path is extremely narrow in places, and not to be recommended if you are scared of heights (as I am). But I finally braced myself and went along. The final stretch is very narrow, with iron chains to help you. Parts of it are only a few feet wide, so you have to watch very carefully where you tread. The view from up there

Then there are very narrow passages that you have to squeeze through sideways. It all added to the excitement.

After a short halt in Goblin Valley we carried on to Zion Park. It is hard to believe that the terrain in Goblin Valley could have been created by nature. The individual stones are as though they were cast from a single mold, and look quite unnatural. Perhaps aliens are out there after all?

over Zion Canyon is breath-taking – in the truest sense of the word.

Four days are not enough to explore the sweeping Utah landscape, but enough to say that it most be one of the most fantastic I have ever seen – thoroughly recommendable.

NEW PEOPLE

**NORBERT METZNER,
SENIOR PRODUCT MANAGER,
ENOCEAN GMBH**

Norbert Metzner joined EnOcean's product management team in September 2010. A graduate telecom engineer, he was in senior project management and product management in recent years, working for different producers and users of mobile radio technology. His prime mission at EnOcean is development and implementation of a software product strategy. This is to enable EnOcean to expand its formative role in energy-autonomous wireless technology, and explore further fields of application for energy harvesting. He is also responsible for customer projects in major markets. The experience Norbert has acquired in the international arena will help EnOcean, together with its partners of the EnOcean Alliance, to implement its technology fast in competitive products in different regions.

GREEN TWEETS
– ENOCEAN ALLIANCE IN SOCIAL NETWORKS

More and more enterprises and organizations are opening up to social media – the EnOcean Alliance too. Because LinkedIn, Xing, Facebook, Twitter and the like enable companies to communicate with the public in an entirely new way. Unlike classic media the focus with the social media is on dialog.

The EnOcean Alliance is open-minded about social networks, using these extra channels to communicate experience to customers and the public and hear from them about relevant topics:

TWITTER is a social network founded in 2006 where registered users can enter and post text messages with a maximum of 140 characters. Twitter is an easily handled realtime medium for presenting private or business content. The medium serves for exchanging information, thoughts and experience as well as for communication. EnOcean twitters under **www.twitter.com/ EnOceanAlliance**

LINKEDIN is a web-based social network for maintaining existing business contacts and making new connections (comparable to the German-language Xing platform). The system additionally offers numerous community functions such as professional groups or forums. In a LinkedIn group it is possible for members to talk to others with similar interests. Find the EnOcean Alliance group at LinkedIn under **www.linkedin.com**

FACEBOOK is the world's biggest social network, connecting people to their friends, colleagues, fellow students and just other humans in general. The EnOcean Alliance fanpage will in future present dates, news as well as products from Alliance members. See it under **www. facebook.com**

Videos from the EnOcean Alliance and its members have been on **YOUTUBE** since 2009 at **www.youtube. com/EnOcean**

The Eltako Wireless System

Unlimited flexibility and convenience in building services

Switch To Total Freedom

Since the 1st of December 2010 you can find the new wireless catalogue 2011 on our homepage www.eltako.com.

There are major innovations and changes for the passive wireless sensors: the wireless pushbuttons can be ordered now completely with engravings.

The **wireless sensor pushbuttons** are added to the wireless and noiseless pushbutton line. The lightest touch is sufficient to send the wireless telegram.

There are also a lot of new developments for the active sensors in chapter 2: FTK-, FAH60, FAFT60, FUT55D.

Our newly developed **wireless power net connector FPV12** in chapter 3 opens up new opportunities: wireless telegrams will be sent via power supply network to parts of buildings farther away. For example meter data can be sent from the basement to the top floor for visualisation.

The wireless network with the revolutionary batteryless **enocean**® wireless sensors in Eltako wireless pushbuttons and with innovative Eltako wireless switchgear.

Products and prices 2011

THREE TIMES GOLD FOR ENOCEAN ENABLED DEVICES IN NORTH AMERICA

CAN2GO WINS AHR EXPO 2011 INNOVATION AWARD

For the second consecutive year CAN2GO has won an Innovation Award at the AHR Expo. In 2010 when the CAN2GO controllers were launched at the AHR Expo they received Honorable Mention for the hardware platform that combined the best of the wired and wireless capabilities into one controller featuring Zigbee, EnOcean and CANbus being integrated into BACnet.

In 2011 CAN2GO has refined and improved the embedded firmware to become a stand-alone system. Their belief in the product led to one of the most exciting innovations in building automation. The embedded Firmware is the core of the CAN2GO system allowing our network to be decentralized and driving the "All in One Box" belief that we stand behind.

ILLUMRA LED DIMMER WINS BEST DIMMING CONTROL AT LED SHOW

ILLUMRA has won "Best Dimming or Control" at the LED Show 2010 in Las Vegas. The constant-voltage dimmer is available in a wireless or wired configuration that responds to hardwired or wireless batteryless controls to adjust the brightness of LED fixtures. The wired version is also available with an industry standard 0-10 V input. The new device uses 65,000 dimming steps to provide ultra-smooth LED dimming at all light levels, eliminating the flicker that is commonly associated with LED dimmers. The units can dim 12 V or 24 V LED strips and are rated for loads of up to 5 A.

"ILLUMRA is providing the LED community with game changing technology," said James Highgate, Lighting Consultant and Director of the LED Show. "We are impressed with the dimming capabilities in such a small package. We see the potential for many manufactures to incorporate the ILLUMRA LED dimmer into their product line."

ECHOFLEX WINS BEST APPLICATION OF ENERGY HARVESTING AT IDTECHEX CONFERENCE IN BOSTON

Echoflex Solutions has received the award for the best application of energy harvesting at the 2010 IdTechEx Energy Harvesting Conference in Boston. The award is given to an actual commercial success with an end-product using energy harvesting in the last 24 months. Nominated for its occupancy sensor, Echoflex uses a combination of efficient energy harvesting with ultra-low-power circuitry. The

Brian Aikens,
Chief Technical Engineer,
Echoflex Solutions, Inc. receiving the award

motion occupancy sensor (MOS-17C) is capable of low light level operation (20 lux achieved), exceeds 48 hours of single charge life (90+ hours achieved), a signal transmission distance exceeding the EnOcean average (150+ achieved) combined with easy installation (the sensor is omnidirectional). The motion detection range is approximately 40' diameter around the sensor for large motion and 20' for small hand movement when mounted on an 8' ceiling. The sensor features a walk test mode to ensure proper placement in the control environment. The sensor specification required that solar energy had to provide 100% of the power budget for the sensor The sensor. It is designed to meet EnOcean standardized telegrams and is available in both 315 and 868 MHz.

ISH 2011 – INNOVATIVE WIRELESS SOLUTIONS MAKE HEADWAY IN HEATING

EnOcean is showing at this year's ISH together with a number of members of the EnOcean Alliance on a joint booth (D10 in hall 10.2). BSC Computer, GFR, denro,

Elsner Elektronik, Hoppe, IK Elektronik, Jäger Direkt, Omnio, PEHA, Probare, Sauter, Siemens, Sommer, Thermokon will all be there to demonstrate possibilities of using batteryless wireless technology in the heating sector. EnOcean modules enable OEMs to develop their own sensors, actuators and room controls. The energy needs of modern heating installations can be improved significantly, for instance, by room controls with EnOcean technology and integrating sensors to detect temperature and other variables. Standardized equipment profiles create interoperability between products.

ISH 2011 is being staged from **March 15 through 19 in Frankfurt/Main, Germany.**

MARCH 2011

March 1-3, 2011
Ecobuild, London, UK
EnOcean and Distech Controls are exhibiting.
www.ecobuild.co.uk

March 1-4, 2011
Climatizacion Madrid 2011, Madrid, Spain
EnOcean Alliance and members are exhibiting.
www.ifema.es/web/ferias/climatizacion/default.html

March 15-17, 2011
electronica & Productronica China, Schanghai, China
EnOcean exhibits.
www.e-p-china.com

March 15-19, 2011
ISH 2011, Frankfurt, Germany
EnOcean Alliance and partners are exhibiting.
www.ish.messefrankfurt.com

March 30-31, 2011
Powering Wireless Sensor Networks, Munich, Germany
With presentation by Armin Anders from EnOcean and Graham Martin from EnOcean Alliance.
www.powering-wsn.com

MAY 2011

May 15-19, 2011
Lightfair 2011, Philadelphia, USA
EnOcean Alliance and partners are exhibiting.
www.lightfair.com

JUNE 2011

June 21-22, 2011
Energy Harvesting & Storage Europe 2010, Munich, Germany
EnOcean exhibits.
www.idtechex.com

SEPTEMBER 2011

September 20-21, 2011
Intelligent Building Systems, Paris, France
Members from EnOcean Alliance are exhibiting.
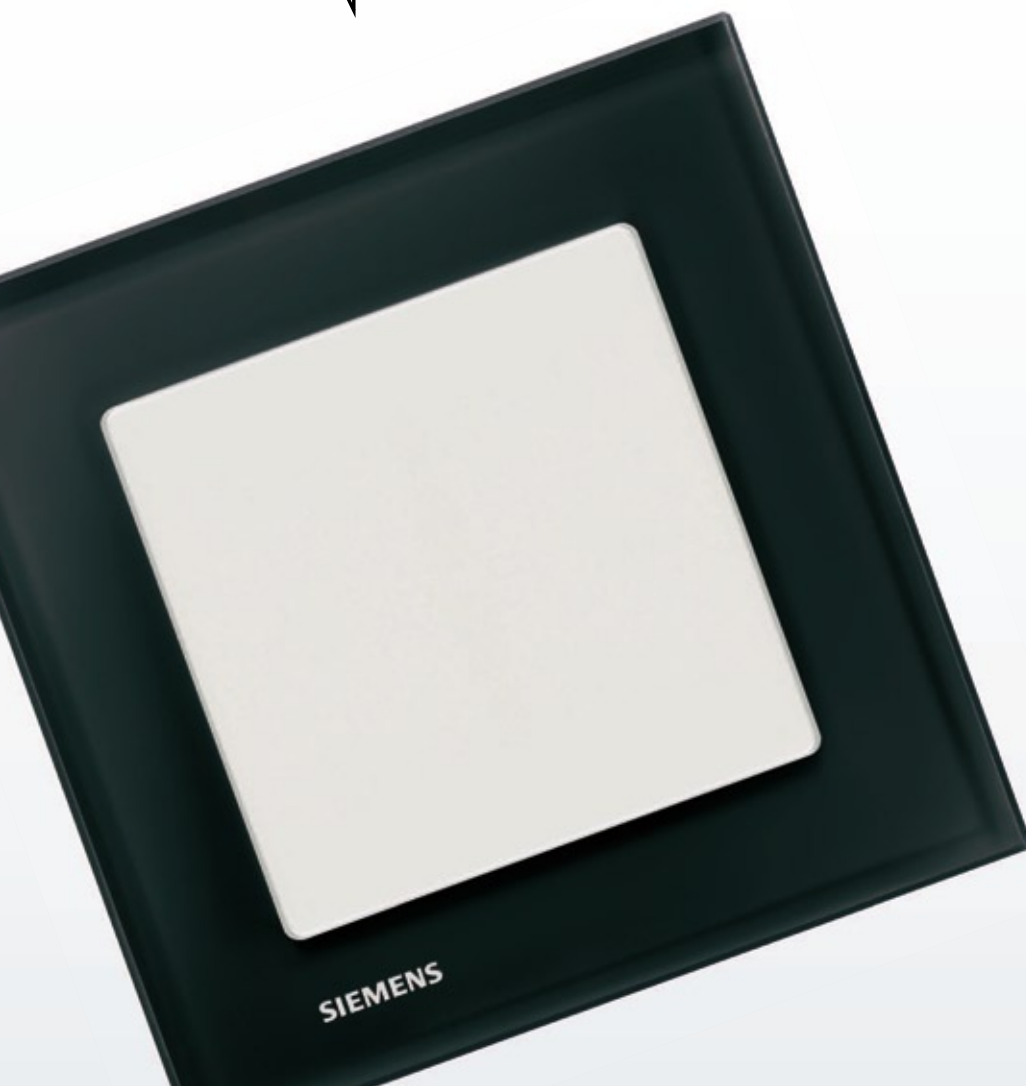www.ibs-event.com

OCTOBER 2011

October 11-12, 2011
M&E – The Building Services Event, London, UK
Members from EnOcean Alliance are exhibiting.
www.buildingservicesevent.com

Green. Smart. Wireless.
enocean®

End-products with EnOcean technology can be obtained direct from manufacturers (see page 17 – member overview) or wholesalers. See further information on www.enocean-alliance.org/products

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What is the best way to modernize buildings flexibly and save time, too?