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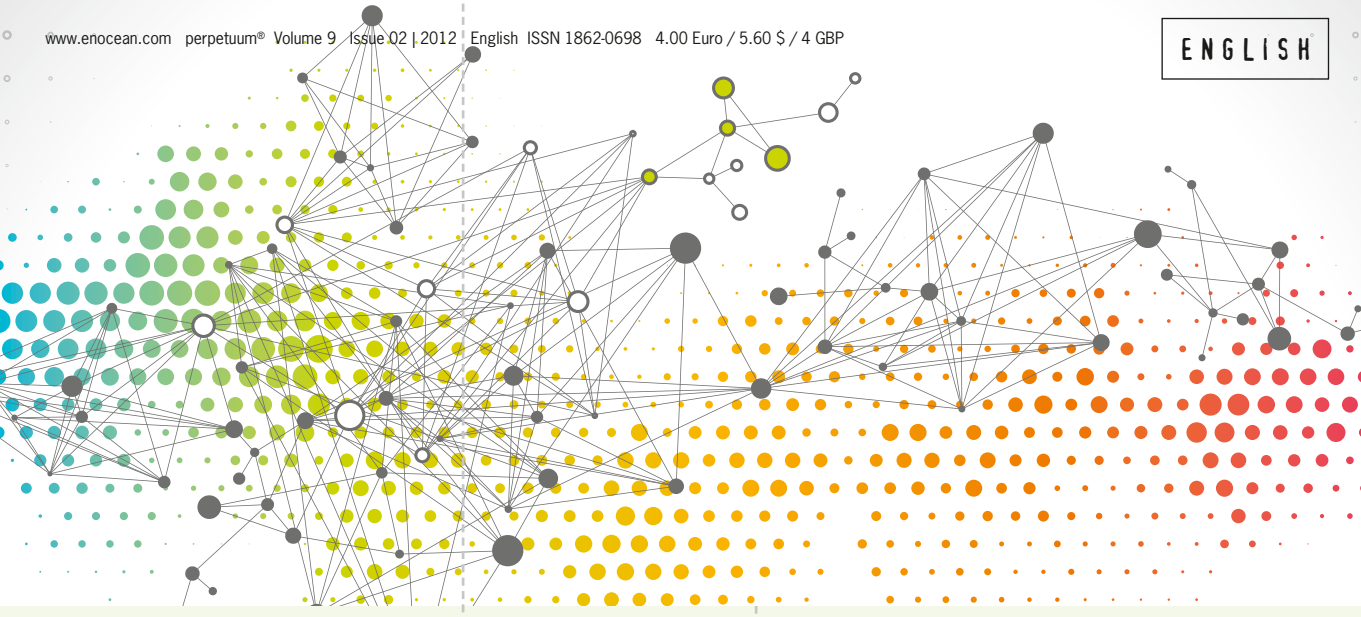

ENABLED BY ENOCEAN

perpetuum®

MAINTENANCE-FREE WIRELESS SWITCHES & SENSORS

2012 ISSUE 2

SMART BUILDINGS

ISO/IEC14543-3-10
EnOcean radio is international standard

WAGO
"Lying-down" skyscraper at Frankfurt airport

RUBY HOUSE
Environmental benefits for a smart home

MILKYWAY
The easy way to smart homes

25 YEARS Thermokon

Innovations non-stop Sustainability granted

When founding Thermokon in April 1987 as a specialist for the production of temperature sensors for the boiler industry, Harald Zygan showed a keen sense of innovation already. Shortly sensors for the detection of humidity, air quality and motion were following.

Meanwhile the portfolio of Thermokon is designed for intelligent and sustainable buildings which shall require LEED platinum classifications.

Thanks to most energy-efficient sensors Thermokon is contributing actively to a lasting reduction of the CO_2 emission.

"technic&design" made in Germany – noticeable all over the world.

LONMARK® BACnet® Modbus KNX®

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enocean alliance
No Wires. No Batteries. No Limits.

thermokon®
Keep in touch with the future

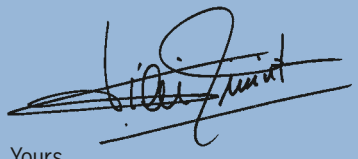
Dear readers,

Energy is a key factor influencing our lives today. Governmental initiatives related to energy efficiency are being rolled out as we speak. According to the EU energy efficiency directive 2012, member states must aim to reduce the energy consumption of the existing building stock by 80% of 2010 levels by 2050. In addition, Germany and Japan have decided to opt out of nuclear and turn to renewable energy instead. Increased energy efficiency is a necessity if these objectives are to be realized.

Intelligent technologies that reduce energy consumption will become a growth engine for economies around the world and we will see smart homes becoming progressively more common. The smart home is one of the major growth markets that we have chosen to focus on at EnOcean. Wireless, batteryless sensors and switches are vital elements of building automation systems, saving energy, increasing comfort and increasing safety. We are seeing increasing development of outstanding products based on the EnOcean technology which enable an almost plug&play installation in smart homes and provide the technical connection to smart grid. Utility networks, telecommunication networks, mobile devices and building automation systems are communicating more and more with each other as the world we live in gets smarter. The EnOcean standard ISO/IEC 14543-3-10 plays a fundamental role in making it easy for our customers to realize their solution in a simple, cost effective and sustainable way. To get a better idea of the differentiated EnOcean based product offering, please visit us at the EnOcean Alliance booth at this year's Smart Homes Amsterdam in October or at AHR Expo in Dallas, USA, at the end of January 2013.

Setting ambitious goals for increased energy efficiency is a worldwide trend. In Asia specifically there is a fast growing need for energy-efficient buildings as energy resources are limited. China, Japan and other Asian markets are important focus areas of our global strategy and we're very excited about the traction that our technology is getting in these markets. This is also mirrored in the development of the EnOcean Alliance; with more than 300 members and 1000 interoperable products, the EnOcean Alliance is one of the fastest growing technical alliances. Over the last six months we're happy to have welcomed 25 new members to the Alliance from Asia alone. Customers are impressed with the well-established EnOcean eco-system and the easy integration of the EnOcean technology, which offers reliable functionalities, a faster time to market and reduced design risks. Furthermore, with EnOcean wireless now being an international ISO/IEC standard, this opens even more doors to us and our customers.

So far 2012 has been a very eventful and exciting year for EnOcean and the EnOcean Alliance. You'll get a good impression of what we've been working on when you take a look in this issue of our perpetuum magazine.



Yours,
Laurent Giai-Miniet
CEO, EnOcean GmbH

ISO/IEC 14543-3-10

EnOcean radio is international standard

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"Lying-down" skyscraper at Frankfurt airport

WAGO

MASTHEAD

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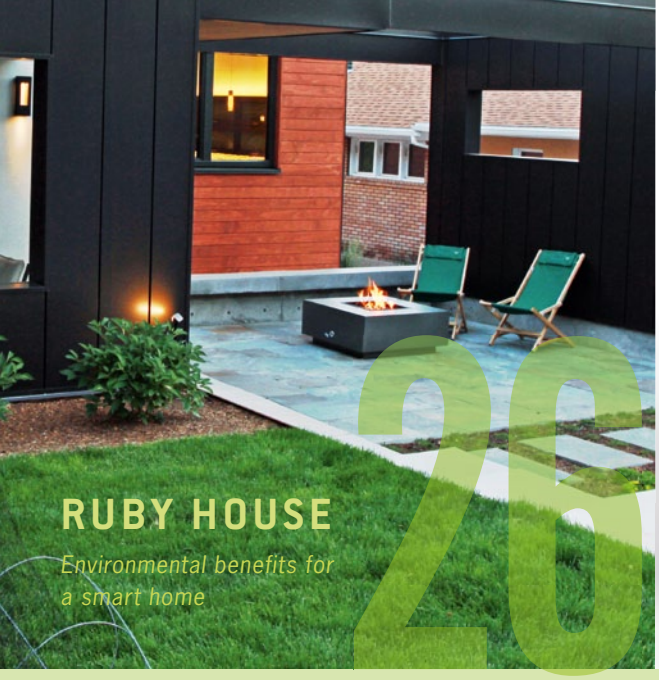

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The easy way to smart homes

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THE ABC OF ENOCEAN

EnOcean GmbH is the originator of energy harvesting wireless technology. The company offers its customers a complete plug&play system of energy converters, energy management, wireless transmitters, software and development tools. In March 2012, the EnOcean wireless protocol was ratified as international standard ISO/IEC 14543-3-10. With this platform OEM partners can quickly and easily implement customized wireless switching solutions based on energy harvesting wireless technology.

By Andreas Schneider, Chief Marketing Officer, EnOcean GmbH

ENERGY HARVESTING WIRELESS EnOcean modules use energy from the surrounding environment, from linear motion, light or differences in temperature, to detect and transmit data. Thus the devices operate without batteries and are completely maintenance-free. This is enabled by the three core elements of the EnOcean technology: miniaturized energy converters, ultra-low-power electronic circuitry and reliable wireless.

ENERGY CONVERTERS Wireless modules are powered by energy converters: an electrodynamic energy converter, which uses mechanical motion, a miniaturized solar module, which generates energy from light, as well as a DC/DC converter, which, combined with a thermoelectric converter and an energy harvesting wireless module, taps heat as an energy source.

FIELDS OF APPLICATION There are several areas of application for energy harvesting solutions ranging from applications for home and building automation, the smart home, smart metering and the smart grid to solutions for industry, logistics and transportation. All EnOcean enabled products by different manufacturers are interoperable, meaning that they can communicate with one another in one and the same system.

WIRELESS MODULES The Dolphin platform is the core of the EnOcean product portfolio. It consists of uni- and bi-directional wireless modules which can be combined with several energy converters. Starter and developer kits complete the offerings for developers and OEMs.

WIRELESS STANDARD EnOcean wireless standard ISO/IEC 14543-3-10 uses the 868 MHz or 315 MHz frequency band. Telegrams are just one millisecond 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. The range is 300 meters in the open and up to 30 meters inside buildings. As an open protocol, EnOcean wireless communicates with TCP/IP, WiFi, GSM, KNX, Dali, BACnet or LON.

SOFTWARE EnOcean wireless modules always come with firmware, a suitable API as well as software tools. So they can be implemented plug&play with plenty of scope for application-specific configuration.

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Green. Smart. Wireless.
enocean®

ENOCEAN ALLIANCE CONTINUES GROWTH TREND

By Graham Martin, Chairman, EnOcean Alliance

With 50 percent growth in membership within one year, the EnOcean Alliance is currently undergoing the strongest growth period since its inception. Today the Alliance has over 300 members as well as 250,000 buildings already equipped with energy harvesting wireless technology and more than 1000 interoperable products. Leading companies across the globe in the building sector formed the EnOcean Alliance in 2008 to establish innovative automation solutions for sustainable buildings – and so to make buildings more energy-efficient, more flexible and less expensive to operate. Members of the EnOcean Alliance develop products and solutions based on energy harvesting wireless technology.

Alliance members have the possibility of accessing new business areas with energy harvesting wireless technology based on the international standard ISO/IEC 14543-3-10. Furthermore they can proactively work together within the Alliance Technical Working Group to implement interoperable products based on approved Alliance specifications, and to benefit from the international networking and the Alliance marketing activities – such as joint trade shows, public relations support, advertising and lobbying.

The Alliance offers three membership classes: Promoters, Participants and Associate Members. The following eight companies are promoters of the EnOcean Alliance: BSC Computer, EnOcean, Leviton, MK Electric (a Honeywell Business), Jäger Direkt, Texas Instruments, Thermokon and Verve Living Systems.

We invite you to join us as a 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

SAVE THE DATE

New developments and technical training will be presented at the EnOcean Alliance Members' Meeting in San Francisco, November 12th and 13th (back to back with Greenbuild 2012). Members can register for this event at **help@enocean-alliance.org**

enocean® alliance
No Wires. No Batteries. No Limits.

ISO/IEC 14543-3-10 – A NEW WIRELESS STANDARD

With ISO/IEC 14543-3-10 the International Electrotechnical Commission (IEC) has ratified the EnOcean wireless protocol as an international standard. It is the first and only wireless standard for applications with ultra-low power consumption that is also optimised for energy harvesting solutions and therefore for EnOcean's self-powered wireless technology. The standard can be downloaded from www.iso.org.

By Laurent Giai-Miniet, CEO, EnOcean GmbH

ESTABLISHED ENERGY HARVESTING

Energy harvesting has nestled its way into our everyday lives. Today, energy-autonomous wireless systems are found in all kinds of buildings, in industrial plants and many other sectors. Energy harvesting wireless modules gather the power they need to operate from the environment around them – from motion, light or changes in temperature – and, in doing so, make electronic control systems independent of an external power supply. The ambient energy obtained in this way, given a suitable low power wireless controller, is sufficient to send a wireless signal as a command and control message. The messages sent are extremely brief.

A key market for energy harvesting wireless technology is building or home automation, as most automated functions in a building only require short term wireless transmission of small amounts of information. Harvesting devices include light switches and devices transmitting the information from wireless sensors such as temperature, humidity and occupancy sensors or CO2 detectors. All these applications require a wireless protocol that operates on relatively low power.

DEMAND FOR INTEROPERABILITY

A major requirement of reliable and cost-efficient systems is interoperability between the products of different manufacturers – which is why building automation calls for standardized technologies. Based on the energy harvesting wireless technology, the EnOcean Alliance has formalized standardized application profiles. This ensures that sensors from manufacturer "A" are able to communicate with receiver gateways manufactured by vendors "B" through "D" in the eco-system.

STANDARD FOR LOW POWER

Now these principles have been enshrined in the new standard, ISO/IEC 14543-3-10, which provides a "Wireless Short-Packet (WSP) protocol optimised for energy harvesting – Architecture and lower layer protocols". The protocol is efficient enough to support energy harvesting products for sensors and switches that do not require wires and batteries. It is the only standard specifically designed to keep the energy consumption of such sensors and switches extremely low, an order of magnitude lower than alternative standards. It achieves this by transmitting multiple, very short transmissions; and by selecting radio frequency bands with excellent signal propagation and minimal interference. The result is reliable, wireless communication that is energy efficient but long range, allowing the use of small, cost-effective, maintenance free energy harvesters that can compete with similar battery-powered devices.

LESS CROWDED FREQUENCY

The standard utilizes the less crowded 868 MHz and 315 MHz frequency bands, making it suitable for use worldwide, providing a safeguard against other wireless transmitters, whilst offering fast system response and elimination of data collisions. This makes the sub 1 GHz band much more suitable for reliable building automation than for example the 2.4 GHz band. In addition, it has twice the range of 2.4 GHz signals, and double the penetration through materials like walls and furniture. As a consequence, a 2.4 GHz system requires about four times more receiver nodes area-wide. That increases its cost, for example. Telegrams transmitted by the standard are just 0.7 milliseconds in duration and are transmitted at a data rate of 125 kilobits per second. The range of standard-based wireless sensors is about 300 meters in an open field and up to 30 meters inside buildings.

In many respects the structure of ISO/IEC 14543-3-10 is identical to most wireless standards where upper layers of the protocol (creating interoperable products) are governed by technology alliances and sit on top of the radio – physical and data link layer defined by an open international standard. This is the case with Bluetooth and IEEE 802.15.1, Wireless HART/ZigBee/RF4CE and IEEE 802.15.4, or WiFi and IEEE 802.11.

Where other wireless standards integrate physical and data link layers and the network layer is integrated in the protocol stacks, in the case of ISO/IEC 14543-3-10, the standard offers physical and data link layers as well as the network layer. This facilitates the development of standard based products. With the EnOcean Equipment Profiles (EEPs) the EnOcean Alliance offers the application level on top of ISO/IEC 14543-3-10 and lays the foundation for fully interoperable, open wireless technology. As the members of the EnOcean Alliance have already developed over 1000 products according to the standard, the ISO/IEC 14543-3-10 offers a huge product range and installed base.

POTENTIALS OF THE NEW STANDARD

Sensors and switches are a vital part of systems which save energy and increase comfort as well as safety. The combination of miniaturized energy harvesting modules with ultra-low power radio technology is the basis for innovative maintenance-free wireless sensors which add unparalleled flexibility at the lowest investment and operational cost. The new wireless ISO/IEC standard will accelerate the development and implementation of energy-optimized wireless sensors and wireless sensor networks. It will open up new markets and areas of application for energy harvesting solutions and thereby innovative technical solutions for more energy efficiency. In addition to the already established markets for home and building technology, there will be further uses of wireless energy harvesting ranging from smart home, smart metering and the smart grid to solutions for industry, logistics and transport.

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The standard covers the layers 1 to 3. The EnOcean Alliance defines the application level (layers 4 to 7)

NEW ENOCEAN DEVELOPER KIT

EnOcean's EDK 350 developer kit offers developers all key components for energy harvesting wireless technology in one package – ready for integration and configuration. Manufacturers (OEMs) can therefore develop their own energy harvesting applications for building automation or other areas of application very quickly.

By Markus Kreitmair, Innovation Manager, EnOcean GmbH

EnOcean's EDK 350 developer kit replaces its EDK 300 kit. It is geared even more specifically to customer requirements and covers the entire product range, from energy harvesting and wireless modules to ready-made product solutions.

The central element is a new universal programmer board (EOP 350). This is used to configure and program most EnOcean modules with the help of DolphinStudio PC software. The package includes the following EnOcean products:

- TCM 320 (transceiver module)
- STM 300 (universal wireless sensor module)
- PTM 330 (transmitter module for ECO 200)
- ECO 200 (mechanical energy converter)
- PTM 210 (energy harvesting switch module)
- STM 330 (energy harvesting temperature sensor module)
- USB 300 (USB wireless gateway stick)
- DolphinStudio (configuration and programming software)
- DolphinAPI (application programming interface)

The package is completed by the DolphinView PC software for visualizing and mapping the wireless protocol. The application profiles (EnOcean Equipment Profiles, EEP) can also be interpreted and sent. With similar content, a version of the EDK for the North American market will follow.

EnOcean continues to offer the successful ESK 300 starter kit, which offers a speedy and simple approach to energy harvesting wireless technology and is ideal for initial tests. The starter kit includes the USB 300 stick, which enables EnOcean-based products to be integrated quickly into smart home systems.

If configuration, hardware or software development is required, the ESK 300 starter kit can be upgraded to the developer kit at any time via the EPK 350 programmer kit. The EPK 350 consists of the universal programmer board, a transceiver module and the universal sensor module.

The new developer kit can also be extended with the EDK 352 Thermo Developer Kit. This includes the STM 312 energy harvesting wireless sensor module and the ultra low voltage ECT 310 DC/DC converter in conjunction with a Peltier element.

Thanks to the kit's new modular structure, EnOcean can offer its partners and customers cost-effective and customized development platforms. This facilitates the integration of energy harvesting wireless technology, while taking into account a wide variety of requirements.

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SECURITY AT THE TOUCH OF A BUTTON

The new PTM 215 energy harvesting switch module integrates rolling code for highly secure data transmissions.

By Dr Wolfgang Heller, Product Line Manager, EnOcean GmbH

To ensure data is up to date, the new PTM 215 module creates a new 16-bit rolling code for every wireless telegram. The telegram header, telegram data and current rolling code in turn form the basis for generating a 24-bit message authentication code (MAC). The receiving system can use this code to check the authenticity of the data package, thus preventing replay attacks, for example.

HOW IT WORKS

The self-powered switch module harvests the energy it needs for wireless transmission with the help of the ECO 200 mechanical energy converter. This is particularly suited to flat wireless switches with one or two rockers and manual switches with up to four buttons. This allows OEMs to manufacture switches for dimmers or blind management, for example. The PTM 215 is fully compatible with the PTM 200 and PTM 210 mechanically, so no separate switch development is required. For the receiver side EnOcean offers a new version of the Dolphin API. This provides data decryption and encryption functions as well as rolling code for an easy integration into existing products.

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THE LINK TO ENOCEAN

The EnOcean Link software, a type of middleware, will transform EnOcean wireless telegrams into user data – thus facilitating the development of high-performance energy harvesting wireless networks such as for smart homes.

By Marian Hönsch, Application Engineer Software, EnOcean GmbH

EnOcean Link transforms the bits and bytes of EnOcean telegrams directly into data values such as temperature or humidity. This enables gateways, for example, to immediately interpret information from sensors and forward it to the central building control center (see diagram). This software can be integrated flexibly into terminal devices, servers or cloud services. It automatically takes into account the specifications of application profiles (EnOcean Equipment Profiles) and other requirements such as data encryption. OEMs thus benefit from faster and much easier product development. The tool is currently still in the prototype phase. EnOcean customers are closely involved in this process.

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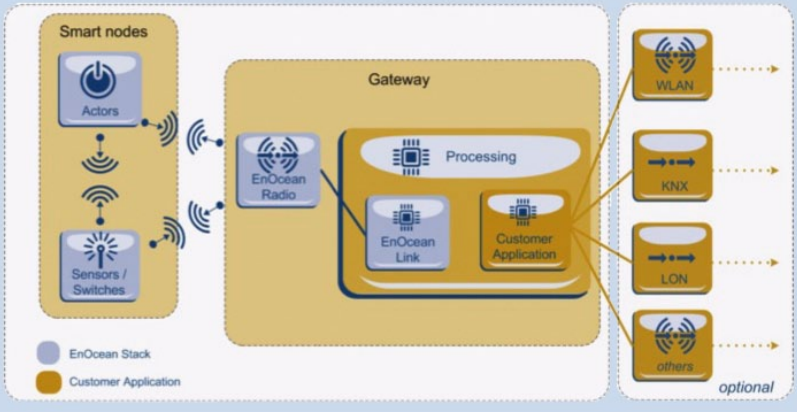


ENOCEAN MODULES AND ACCESSORIES

RoHS COMPLIANT 2002/95/EC

enocean Wireless Standard ISO/IEC 14543-3-10

MODULES ARE AVAILABLE FOR 868 MHZ AND 315 MHZ

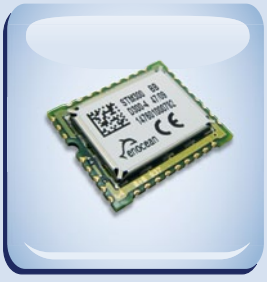
Modules with 868 MHz frequency are suitable for Europe and other countries adopting the R&TTE specification.
Modules with 315 MHz frequency are suitable for North America and other countries adopting the FCC specification.

ENERGY HARVESTING WIRELESS SENSOR MODULES

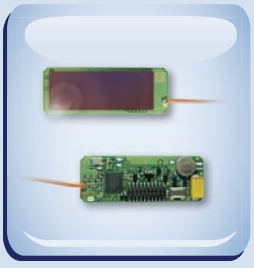
+ NEW +

PTM 210/PTM 215 (868 MHz) and PTM 200C (315 MHz)
Ideal for energy harvesting wireless switches.
The variant PTM 215 contains also rolling code functionality

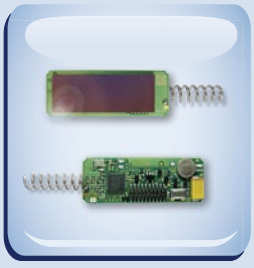
ECO 200 & PTM 330
The perfect combination for unique switch applications



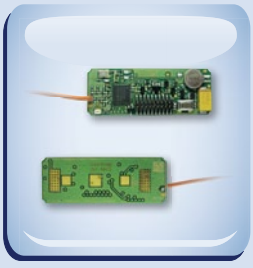
STM 300
Ideal for bidirectional energy harvesting wireless sensors and innovative actuators



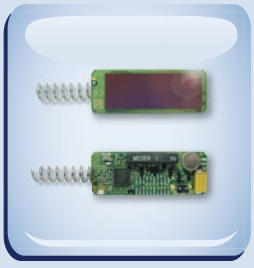
STM 310
Energy harvesting wireless sensor module – with solar cell and whip antenna



STM 311
Energy harvesting wireless sensor module – with solar cell and helical antenna



STM 312
Energy harvesting wireless sensor module – with solar cell but without whip antenna



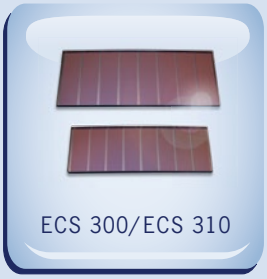
STM 320
Energy harvesting magnet contact transmitter module with helical antenna

STM 330
Energy harvesting wireless temperature sensor module with whip antenna

ENERGY CONVERTERS

ECO 200

Mechanical
Harvests linear motion for use in wireless switches



ECS 300/ECS 310

Solar
Harvests indoor light for energy harvesting wireless sensors and actuators

ECT 310

Thermo-electric
Harvests temperature differentials for energy harvesting

WIRELESS RECEIVER AND TRANSCEIVER MODULES

TCM 300/TCM 310

TCM 320

USB 300

TCM 300, TCM 310, TCM 320 and USB 300 – ideal for permanently powered system components

ENOCEAN SOFTWARE

DolphinStudio

DolphinAPI
Now also including security features such as rolling code and encyrption

DolphinView

In variations:
DolphinView Basic
DolphinView Advanced

ACCESSORIES

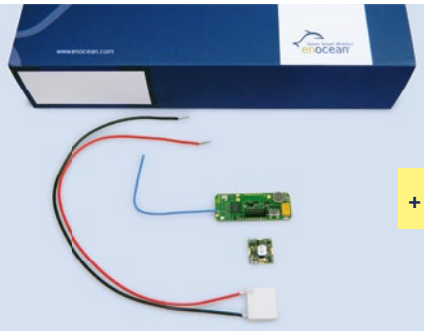
ESK 300 Starter Kit
The ideal entry to EnOcean technology

+ NEW +

EPK 350 Programmer Kit
For upgrading ESK 300 Starter Kit to a developer kit

+ NEW +

EDK 350 Developer Kit
Developer kit for energy harvesting wireless sensor solutions



+ NEW +

EDK 352 Thermo Developer Kit
Extension of Developer Kit EDK 350 with a thermo harvester for STM 312 sensor module

EPM 300 – Field-intensity meter

CONTACT

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www.enocean.com/distributor

SUPPORT

Further support materials can be found here:
www.enocean.com/support
www.enocean.com/product-finder

FOR A FASTER TIME-TO-MARKET

Strategically leveraging white label products in their portfolio can free OEMs to better focus on quickly developing their core products and value proposition.

By Scott Moulton,
Director of Product Management, EnOcean

Most companies' product portfolios have a few core products that really set them apart in the market and drive the bulk of customer demand. However, these core products typically can't deliver significant sales entirely on their own. Rather, most portfolios require various products playing more of a supporting role in completing the overall appeal and viability of the solution. This is even more pronounced when the offering is a system, where much of the value is tied to interactions between products.

MAKE VERSUS BUY

An ongoing challenge for every company is determining how to best focus resources to efficiently bring the winning product mix to market, including both the core and supporting products. Typically, there is no shortage of new product ideas. The challenge is in determining which product ideas will deliver the highest return on investment, balancing a company's unique expertise, limited resources, and position in the market. Often the highest value lies in focusing internal resources on core products that carry high levels of technical innovation or that create a unique value proposition within a given channel. The reality, however, is that there's rarely sufficient resources to develop all the needed supporting products as well. Consequently, it's always a good practice to consider a "make vs. buy" proposition for each product required in the offering. Rather than developing everything internally, there may be compelling options to private label existing products from OEM or white-label product suppliers, with significant advantages in minimizing the time to market, development costs, and avoiding the diversion of resources away from core products. The use of white label is common practice in many segments of tech and consumer electronics industries, where the complexity and cost of product development as well as the rate of innovation often forces companies to narrow their focus to where they can maintain their unique value proposition. For example, a computer hardware manufacturer often focuses on developing only the core CPU hardware, and simply private labels the other necessary supporting parts of the solution such as the display, mouse, keyboard, etc. Attempting to develop every piece of the system internally would likely cause them to miss the relatively short market window. There are many other common examples where leveraging white label or private label products provide clear advantages.

MULTIPLE BENEFITS

With this in mind, EnOcean recently began offering a base line of white label finished products including occupancy sensors, window contacts, switches, HVAC and electrical load control modules based on EnOcean's energy harvesting wireless technology. This supports its OEM customers in bringing compelling EnOcean-based product portfolios to the market quickly and cost effectively, enabling them to focus on developing their core products internally, and then simply private labeling the needed supporting products. With this white label offering, EnOcean's OEM customers can benefit from significantly shorter development timelines, reduced investment, and reduced distraction as they work to capitalize on quickly evolving market opportunities.

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STATE-OF-THE-ART PEST CONTROL THANKS TO M2M: MOUSE TRAPS SEND RESULTS VIA TEXT MESSAGES

Machine-to-machine communication (M2M) is playing an increasingly important role in the business models of companies and the everyday lives of consumers. M2M can simplify company-relevant workflows and processes in a wide variety of ways.

By Kai-Adam Brasche, Leader M2M Business Unit, E-Plus Mobilfunk GmbH & Co. KG

M2M communication can, for example, help make pest control in the food industry more efficient. No business in this industry can afford a mouse infestation. National and international hygiene standards do not permit poison traps. Permanent systems to monitor the inflow of rodents therefore need to be equipped with snap or live traps. These have to be checked every day according to German animal welfare law – depending of the size of the company, this can be extremely time-consuming.

COMBINED EXPERTISE

The eMitter traps from BioTec-Klute and BSC Computer GmbH offer a sophisticated and cost-efficient alternative. The technology behind this complete solution combines the expertise of four companies: The eMitter traps from BioTec-Klute are equipped with EnOcean energy harvesting wireless technology. When a mouse enters the trap, it activates a switch and thus triggers an EnOcean radio signal. The communication hardware (GSM controller) from BSC Computer GmbH receives this message and then, via M2M-PLUS connectivity, informs the responsible inspector via mobile communication – either by text message or e-mail. The animal can then be released from the trap immediately. This round-the-clock monitoring considerably shortens the process.

ENOCEAN AND MOBILE COMMUNICATION

The key to this solution is the integration of EnOcean wireless technology and mobile communications. EnOcean radio signals are able to cover the short distance to the next controller. M2M-PLUS transmission technology is then used for the next stage of communication – from the controller to the cell phone or PC of the responsible employee. This is the brand name used by the E-Plus Group for its bundled know-how in the field of machine-to-machine communication. The heart of the operation is the control center, where each and every card in the entire network can be monitored and adjusted in real time.

BASED ON PARTNERSHIP

The company actively promotes the development of new M2M applications. Based on the large number of successful projects the company has great experience and a broad partner network.

www.m2m-plus.de
www.biotec-klute.de
www.bscgmbh.de

INTERNET ON ENOCEAN

Nest EnOcean of openPicus offers a programmable WiFi gateway with web server to control EnOcean devices via the internet.

By Claudio Carnevali, CEO, openPicus

openPicus has developed a brand-new WiFi gateway, made to connect the EnOcean devices to the internet easily. The gateway embeds the openPicus Flyport WiFi and the EnOcean TCM 320 transceiver module. Intelligence is onboard as well: It even works without an active internet connection. Nest EnOcean is provided with a demo application source code that basically sends and receives EnOcean telegrams.

INTERACTIVE COMMUNICATION

Flyport is a programmable and open source module system that includes a microcontroller and a WiFi transceiver for different kinds of connectivity to the internet: WiFi and Ethernet. The solution runs customizable and interactive web server, TCP/UDP clients or server, FTP clients as well as email clients. Using the openPicus free IDE (Integrated Drive Electronics), it's easy to create different Smart Home solutions such as: browser based interfaces, cloud services or alerting systems by email and Twitter.

OPEN SMART HOME

The new Nest EnOcean will be a kind of a seed for a so called "democratic domotic". openPicus will encourage its community of 3,500 developers worldwide to use the gateway in order to open a range of possibilities that only the open source approach can realize. The company expects thousands of developers interested in creating smart home-connected app-controlled solutions for smart phones and tablets.

openPicus' approach is to enable internet freedom for things, the control and communication for electronic devices. The company offers stand-alone hardware, Flyport modules, and a free IDE for embedded applications to interact via web, email or messages with simple sensors or complex electronic equipment.

www.openpicus.com

ENERGY HARVESTING: ADOPTION AND MARKET TRENDS IN THE NEXT 5 YEARS

The energy harvesting market, estimated at US$ 700 Million in 2012 according to IDTechEx research published in the "Energy Harvesting and Storage for Electronic Devices 2012-2022" report, will more than double in the next 5 years, eventually reaching US$ 1.5 Billion by 2017.

By Corinne Jennings, Business Manager, IDTechEx

Building automation forms a core market of energy harvesting wireless technology. In addition, the integration of harvesters and wireless sensors in many different vertical sectors ranging from aerospace, automotive as well as consumer electronics and healthcare applications will increase.

AEROSPACE/AUTOMOTIVE APPLICATIONS

The use of energy harvesting wireless sensors in the automotive and aerospace industries is receiving a lot of attention. Examples of applications include embedded wireless sensors for structural health monitoring in aircrafts (whether it's on the vehicle's body, engine or turbine blade) and sensors for monitoring tire pressure. Challenges often relate to operation in harsh environments, very high, or in some cases very low temperatures, and integration of complete solutions that are tolerant of these conditions. Also, the requirements for safety when integrating these technologies into air or land vehicles lead to long development times that could reach up to 10–15 years.

SYSTEMS INTEGRATION IN INDUSTRIAL PROCESSES

Dr Kai Koenig, working within the corporate research centre of the ABB Group, has discussed how wireless sensors and energy harvesting fit in the process industry and specifically describes ABB's efforts in utilizing these technologies to reduce downtime and maximize reliability of a plant's assets, in conferences worldwide. To do this, operators need to know more about the health of a plant's assets, and this information is mostly supplied by sensors. Eliminating wiring for these sensors would reduce cost and complexity, and therefore energy harvesting is the best solution for powering these sensors.

Bringing together technology developers, integrators and end users of energy harvesting and wireless sensor technologies in order to discuss the multitude of potential applications that are becoming possible, IDTechEx is organizing the 4th installment of Energy Harvesting and Wireless Sensor Networks USA, in Washington DC on the 7th and 8th of November.

www.IDTechEx.com/ehUSA

WAYS TO THE SMART HOME

An interview with…
… Armin Anders, Vice President Business Development, EnOcean GmbH

Everyone is talking about "smart homes" and everyone has a different concept of what they are. What is your idea of a smart home?

Armin Anders: A smart home offers its inhabitants comfort, security and the opportunity to conserve energy via an automated networked system. Wireless sensors act as the sensory organs of the home and supply the necessary information for intelligent control of actuators.

I like to compare it to car electronics. Countless sensors now collect comprehensive measurements or process information to cut fuel consumption, enhance the driving experience and improve safety through optimum engine management. Passenger information systems are also turning cars into entertainment centers that drivers can now also access via their smartphones. These technologies that are now commonplace in cars will be increasingly used in private residential properties.

What are the latest developments and trends?

A.A.: What makes a house a smart home – and the latest developments are part of this – is the networking of local energy generation, control of consumption, security systems and comfort functions as well as multimedia.

Building system, including lighting, heating, air-conditioning and domestic appliances, are networked via a control center. However, users can also integrate Internet-enabled devices such as smartphones, PCs, tablets and multimedia equipment into the system. A smart home is ultimately also part of the smart grid, which distributes energy where it is needed by exchanging information with energy suppliers on a reliable and secure basis.

What criteria does a successful and above all user-friendly smart home concept have to meet?

A.A.: In the living area, easy usage, preferably with Plug&Play capability, and an attractive design are important. And because circumstances, needs and technical possibilities change, it is also important that users can add to the system at any time. Interoperable devices play a key role in this regard. This alone ensures that users have freedom of choice when it comes to products and benefit from flexible networking.

Products based on energy harvesting wireless technology meet all these criteria. With no wires or batteries, they are especially flexible, can be retrofitted at any time and are also maintenance-free. Thanks to the international EnOcean wireless standard ISO/IEC 14543-3-10, all devices can communicate with each other without difficulty. This open protocol is the ideal connection to bridge the last few meters between sensors in the home and for example an existing WLAN or mobile communication network.

Looking to the future, what can we expect from smart homes?

A.A.: The "Internet of Things" will play a key role. It is conceivable that each and every end node – in other words, every sensor and household appliance – will have its own IP address in future, at least virtually. With the help of open software platforms and secure data connections, every device – and thus energy consumption – could be controlled via mobile devices or the cloud.

www.enocean.com/smart-home-and-home-automation

THE SMART HOME: AN ANALYST OVERVIEW

Traditionally, 'smart home' described high-end, luxury whole-home automation systems. Adoption was tied to the rate of house building, and to disposable income. However, new segments are emerging which are set to offer faster growth: 'managed systems', 'HAN' devices and 'smart meter-agnostic' energy management systems.

By Lisa Arrowsmith, Principal Analyst, IMS Research (recently acquired by IHS)

'Managed systems' include an external interface (e.g., Wi-Fi or Ethernet to connect to a residential gateway, or a cellular SIM), and an online interface managed by a third party. This enables home devices like HVAC systems to be controlled remotely, and allows consumers to monitor the status of devices like motion detectors. Previously, such systems were offered by dedicated platform providers; however, the involvement of a range of big name telecommunications, security, and consumer goods companies will trigger market growth.

SMART METERING

HAN ('home area network') devices are another emerging part of the 'smart home' market. Increasingly, 'smart meters' are being deployed with two-way communication between electricity meters and utility companies via an 'AMI' (Advanced Metering Infrastructure) network. The utility company can measure remotely how much electricity consumers are using and send signals back to the meter. Increasingly, smart meters will be able to 'talk' to in-home devices, such as smart thermostats or appliances. With 'dynamic pricing' tariffs, the highest unit prices are charged when demand is highest, to smooth out demand, and avoid using the most costly or least environmentally-friendly power plants which are kept in reserve to satisfy demand peaks. Longer-term, there could be widespread load-shedding or demand-response programs. Here, the utility company sends a signal to a smart meter (via the AMI network) to request that electricity consumption is reduced. This can be automated through the deployment of devices such as 'smart thermostats' to adjust HVAC settings and through 'smart load control switches', which may be used with air conditioner compressors and electric storage water heaters.

NETWORK REQUIREMENTS

These different 'smart home' market segments have different network architectures and connectivity requirements. Often, luxury high-end solutions have used wired solutions, either installed as a house is being built or in a costly retrofit. When wireless solutions are used, they are typically proprietary (often sub-GHz) RF. In the managed smart home, companies such as ISPs & cable operators are driving the demand for standardized low-power wireless-enabled devices. Typically the service provider supplies consumers with a smart home gateway and some peripheral devices to get them started. Longer-term, many providers wish to move away from supplying devices directly, driving demand for the use of semi-open or standardized technologies, such as Z-Wave, EnOcean, and the emerging DECT ULE.

HOME AREA NETWORK DEVICES

For 'HAN' devices, the architecture promoted in some countries (such as the US & Australia) is to enable direct communication between the smart meter and in-home

devices, such as electricity displays. Here, ZigBee appears to have gained favor. However, smart meters are being deployed at different rates globally; in many cases they are deployed without a HAN gateway. Even where they have integrated HAN gateways, several barriers stop the widespread uptake of home energy management systems which can communicate with them. They include no incentives, such as dynamic pricing tariffs; no utility company plan for demand-response programs; or even that some utility companies – particularly in the United States – have not enabled HAN gateways, even where they are installed.

'SMART METER-AGNOSTIC' ENERGY MANAGEMENT SYSTEMS

Though these issues are expected to be resolved long-term, meanwhile another smart home segment is developing: smart meter-agnostic energy management systems. These systems (provided a smart meter featuring a HAN gateway is present and can be paired with) can use AMI information to, say, display electricity consumption, dynamic pricing information, and demand-response requests. In the many households where such functions have not yet come to fruition, the same system can offer other benefits. This could include offering a meter clamp with the system to measure household electricity information; using smart plugs to measure consumption at an appliance-level, and also offering an external interface (to enable remote system access and cloud-based home management).

REGIONAL DIFFERENCES

Initially, the United States is set to be the biggest market for smart home systems. Already, smart meter deployment is driving the HAN market, and the involvement of major services providers (including Comcast, Verizon, Time Warner Cable and ADT) in the managed services market is growing. Initially, such companies deploy smart home systems for safety & security applications, such as home monitoring; however, most are also now moving into energy management applications. In Europe, smart meter deployments are at various stages, and the approach to HAN-based systems differs by country. Yet managed services aimed at energy management applications are starting to show greater adoption, with the involvement of companies like Swisscom, Deutsche Telecom, RWE, and others. As in Europe, smart meter deployments in Asia vary by country. Again, energy management is seen as a key driver of smart home systems, but notably suppliers of consumer goods, such as Toshiba, Panasonic, Sharp, Hitachi, LG and Samsung, are expected to drive the future 'smart home' market, alongside service providers.

MARKET SIZING

There is set to be rapid adoption of connectivity in 'standard' in-home devices. For example, in 2016, IMS Research projects that 9.2% of thermostats shipped globally for the residential market will include a connectivity technology, enabling them to be part of a 'smart home' system. Additionally, the evolution of the 'smart home' is driving the market for new device categories. Almost 50 million 'smart home' gateways will be shipped that are capable of energy management applications, with more to manage other functions such as lighting control or safety & security. Annual revenues for 'smart home energy management' nodes are projected to grow from US$0.4 billion in 2011 to over US$3 billion in 2016. And that's just the energy management devices! With lighting systems and safety & security applications included, the market will be far larger.

ENOCEAN TECHNOLOGY

There is undeniably the opportunity for EnOcean devices to play a key role in the evolution of the 'smart home' across multiple segments. EnOcean technology has already shown its value in a range of high-end, new-build residential markets. With the news that the underlying wireless technology is now an ISO/IEC standard, and because of their unique energy harvesting properties, EnOcean devices offer an attractive proposition for companies moving into the 'managed services' market. Service providers, such as telecommunications and security companies, are increasingly looking to home control as the next step in an "n-play" strategy, as a means of increasing subscriber revenues and reducing churn. Through partnerships, EnOcean device suppliers will be able to leverage such companies' existing subscriber base, nationwide reach, and experience of marketing services to deploy widely available 'smart home' devices in the future.

www.imsresearch.com

For more information on IMS Research's new market study, 'The Smart Home – 2012 Edition', please contact Lisa Arrowsmith on Lisa.Arrowsmith@imsresearch.com.

OVERVIEW OF ENOCEAN ALLIANCE MEMBERS

www.enocean-alliance.org/products

enocean®

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... AND MORE THAN 150 ASSOCIATE MEMBERS

MARRIOTT PROPERTY UNLOCKS HOTEL ENERGY SAVINGS POTENTIAL

What is small, wireless, found in hotel rooms, requires no batteries to function and helps save energy? The answer: an EnOcean-enabled keycard switch.

By Cory Vanderpool, Business Development Director, North America, EnOcean Alliance

While the answer might be surprising, guestroom energy management systems that use keycards to activate or deactivate lighting, HVAC and electrical power are very common in Europe and Asia. In the United States, however, acceptance of these types of systems has been slow, but with increasing concern about saving energy and money, this is beginning to change.

HOW IT WORKS

A wireless keycard switch converts the slide of a plastic hotel room key into a small amount of electricity. This electricity is used to transmit a wireless signal that communicates to a relay controlling the power to the lights and HVAC unit in the room. When the access card is placed into the keycard switch, the room is enabled, thus activating the room's HVAC unit, as well as the lights. When the occupant leaves the room and the access card is removed, the room is then deactivated and the HVAC unit, lights and other electrical devices will turn off or go into set back mode immediately, preventing the room's temperature from moving outside of an economical range.

A GROWING TREND IN HOTELS

When the Springhill Suites by Marriott opened its doors in January 2012 in Richardson, Texas, it was the first in a new generation of Marriott properties. It also features guest rooms with keycard switches, thermostats and electrical load controllers.

The keycard switch provides occupancy-based control of lights, outlets and the HVAC system in the room. This innovative system enables the hotel to save energy without sacrificing the comfort of their guests. "Our guests are primarily young business people who tend to be very comfortable with technology," said Gail Jackson, Regional Director of Operations for Lowen Hospitality Management. "They are also very concerned about the environment and appreciate the fact that we are making efforts to save energy and reduce our footprint." Ms. Jackson goes on to say, "From a management perspective, products like the keycard switch allow us to introduce innovation into our properties and ensure that we stay in sync with the green initiatives that are an important part of the Springhill Suites brand."

"LYING-DOWN" SKYSCRAPER AT FRANKFURT AIRPORT

Foto The Squaire, Roland Horn

In a large building such as The Square, the building technology used and its control and automation present a great challenge. Especially with respect to room automation, the operators wanted to guarantee great flexibility. Thus, for example, it should be easy to redesign office spaces without requiring work on the electrical installation or new programming within the automation solution.

OPEN SYSTEM ARCHITECTURE OFFERS FLEXIBILITY

In contrast to a "classic" skyscraper where there is a logical subdivision of automation technology by level, due to its special architecture, the Squaire is divided into six segments along its main axis, with an individual component server responsible for each. Therefore it is possible to separate complete building sections tenant-specifically and in terms of communication technology from one another without losing all of the operation and monitoring.

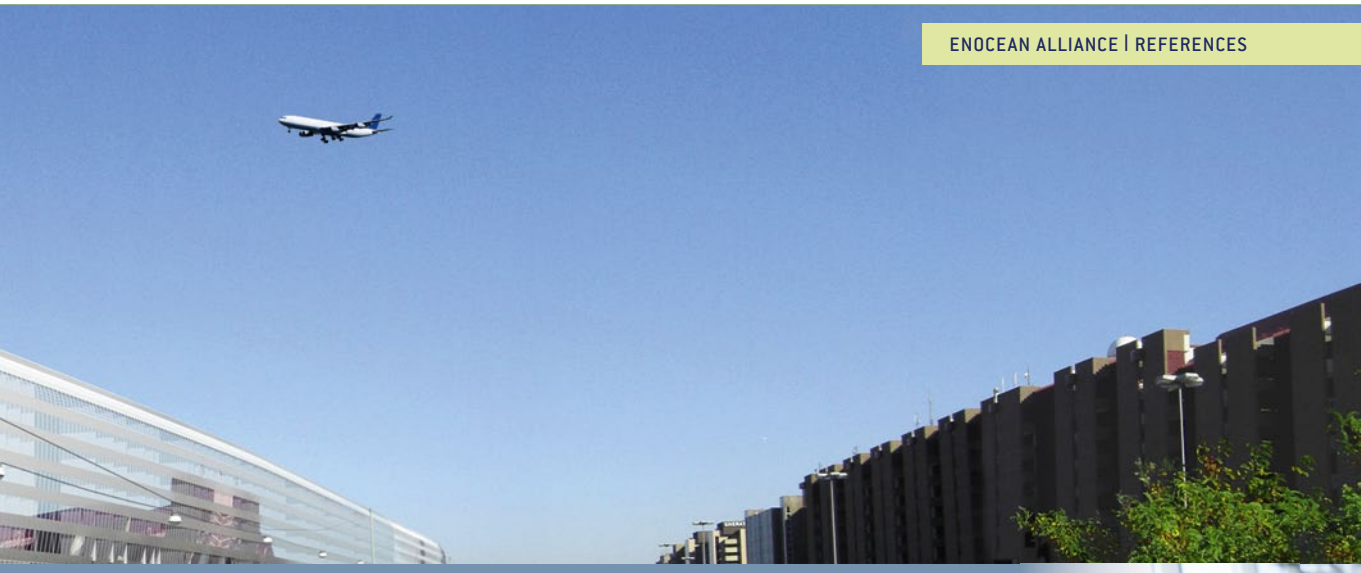
REDUNDANCY ENSURES SECURITY

The switches on the various levels are connected to each one of the six component servers via a light waveguide ring. For each level and component, there are two switches that are near the stairwells. The ring-shaped architecture ensures high reliability. If a connection is interrupted, the second path within the ring guarantees that the data arrives at its destination.

STANDARDIZED HARDWARE AND SYSTEM CABLING

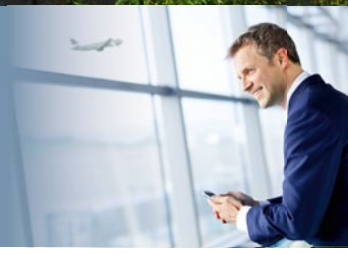
Several system distributors are connected to each of the switches on which a WAGO 750-841 controller is installed; these handle the activation of the individual components. The system distributors, which are all constructed the same way, comprise not only the controller but also the various modules that the controller uses to activate the individual components such as lights and blinds. In each system distributor with a WAGO controller, there is also an expansion module

The 750-841 controllers supervise all building and individual room automation components.



One of Europe's most spectacular buildings, "The Squaire," was recently built at the Frankfurt Airport. On just nine levels, this imposing building features 140,000 m² of useful space. The WAGO-I/O-SYSTEM was used for the electrical building automation.

By Martin Hardenfels, Head of Project Sales, WAGO Kontakttechnik GmbH & Co. KG



The standardized system distributors simplify the on-site start-up.

that expands the space on the internal module bus. Up to seven additional system distributors (so-called slaves) are connected at a distance of 15 m. With a single controller, the master, a building section with a length of more than 100 m can therefore be automated.

Via modules in the system distributors, the WAGO controller manages the heating and cooling, which works with heating and cooling ceilings; the lighting; the windows; and blinds. The building's central systems, pumps, valves, and frequency inverters must be activated for the blowers, exterior lighting, heating and cooling distribution, etc. Various subbus systems such as Modbus RTU, DALI, MP-Bus, and KNX are used here.

ROOM OPERATION VIA ENOCEAN

The lighting, heating, and room shading are implemented with radio switches which work with the EnOcean standard. The addresses of the EnOcean operating devices can be parameterized easily via configuration. EnOcean technology is particularly beneficial if changes to office spaces are made. Interior walls can be put up or removed without having to have an electrician work on the installation. The EnOcean devices can simply be reattached at any point in the redesigned spaces. Then, only the assignment of the devices and the division of the rooms must be configured in the software; this can be done with a few mouse clicks.

www.wago.com

ENVIRONMENTAL BENEFITS FOR A SMART HOME

Ruby House in Salt Lake City, Utah, is an innovative example of energy performance in residential design and construction in one of Salt Lake City's oldest and most prestigious neighborhoods, the "Avenues", where Victorian homes and landscaping have been faithfully restored and quaint bungalows line the streets.

By Jim O'Callaghan, President, EnOcean Inc.

The home embraces passive design, which takes advantage of the natural climate to maintain thermal comfort. It also features energy harvesting wireless technologies which enable the capture and storage of power from the environment to deliver self-powered wireless switches, sensors and controls.

MODERN HOME IN A RUSTIC STYLE

Salt Lake City doctors Brandon and Darcy Wolsey reached out to architect David Brach, founder of Brach Design, a firm focused on passive design and zero energy design for residential and small commercial clients and EnOcean. Working together, the team created Ruby House, a "Contemporary Prairie" style home that has a modern feel but utilizes natural building materials – wood, brick and stucco – for a rustic look that blends nicely with the neighborhood's classic style homes. It also features innovative energy harvesting wireless technologies that give the Wolseys complete remote control of their interior and exterior lighting systems.

INTEGRATION FROM THE GROUND UP

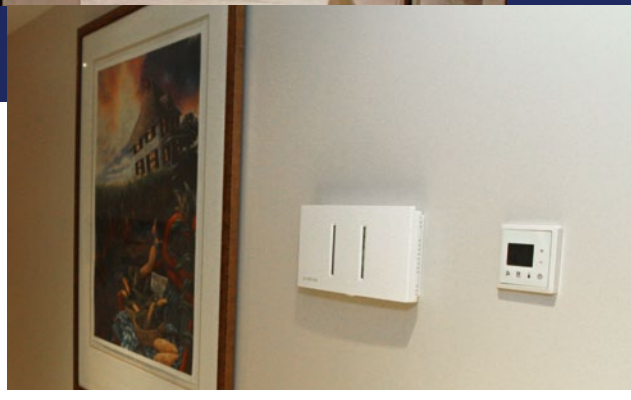
Ruby House is an example of complete interoperability between multiple wireless control manufacturers. The basis for this interoperability is the wireless standard ISO/IEC 14543-3-10 for wireless applications with ultra-low power consumption and energy harvesting technology.

The house is home to light switches from Verve Living Systems; handheld light switches from Illumra; software for remote control of lighting from BSC; and energy meters from Magnum energy. All the devices are connected into the EnOcean wireless system through an EnOcean-to-WiFi gateway. All sensor and consumption data is sent wirelessly to a central control unit or "Intelligent Station", which enables complete control of the system. The devices are self-powered through an electro-dynamic process in which power is drawn from changes in motion in their vicinity. For instance, the energy harvested from the motion of pressing a switch is converted into electrical energy, which is then used to power the light switches.

LIGHTING IN FULL CONTROL

The Wolseys have control of all lighting loads and window shades via self-powered switches through PC-based software and their iPhones. Plans are to expand the capability to a variety of mobile devices, such as iPads, as these devices become more ubiquitous in managing daily control functions.

Switches within the house are configured to either control individual loads or groups of lights for scene control or "pathway" lighting. For example, the Wolseys can use a remote control in their car to power switches on or off or dim them. They can light pathway landscaping and



turn on garage lights as they arrive home. The Illumra Handheld Self-Powered Wireless Light Switch is small enough to fit in the palm of your hand or leave in your car to turn on lights as you pull up to a house or building as the Wolseys have done.

There's also a "good-night" switch located in the master bedroom that allows the Wolseys access to control all the lighting in the house, including the control and monitoring of their outside security lights.

The house is wired to five small controllers located on different levels. Each controller has power coming from the breaker box. From the controller, power goes out to the actual fixtures. Between the light fixture and the switch, there is no wiring. "I can move the switch, for instance, from the right side of the door to the left side. I can put it high or low, on a window sill or coffee table – I can put it anywhere and it will operate like a hard-wired switch," notes Dr. Wolsey.

ENERGY SAVING AND COMFORT BENEFITS

When the Wolseys decided to integrate the EnOcean-based system, it wasn't only for environmental reasons. "Although we were aware of the energy-saving benefits of the passive design and the lighting system, we also were interested in being able to program the lighting to reflect how we live – and change it if we desired without having to rewire behind the walls. A big part of our decision to embrace EnOcean was our ability to maintain control. Additionally incorporating the principles of energy harvesting wireless technology as part of a passive design for the home not only significantly improves comfort, but reduces heating and cooling bills as well as the greenhouse gas emissions from heating, cooling, mechanical ventilation and lighting."

ENERGY SAVINGS AND COMFORT FOR NURSING HOME

On the Upper West Side of New York City, the Kurt & Leah Schneider Apartments is a nursing home with 54 apartments. To provide more comfort to occupants while reducing energy consumption, wired and wireless controllers from CAN2GO were used in tandem with a BACnet IP system.

By David Lamarche, Director of Marketing & Communications, SCL Elements

The building of Kurt & Leah Schneider Apartments was equipped with hot water perimeter heating with no zone control. Having this single water loop per floor, some apartments were too hot while others were too cold. This was an inconvenience for occupants and generated high energy bills.

INDIVIDUAL SETTINGS

The administrators wanted to provide zoning for the hot water perimeter heating to be able to individually and precisely set the temperature in each apartment. They also wanted to centralize control for remote management. These measures would improve comfort and security, as well as save energy.

CENTRAL CONTROL

The zoning of the water-based heating system required putting independently controllable valves and temperature sensors in all apartments. To centralize the system, a network of controllers communicating with both valves and sensors needed to be installed. The network is used to gather all the sensing and control point data back to a central interface, thereby enabling remote management of all apartments.

WIRELESS BENEFITS

CAN2GO controllers were chosen for the project because they support wired and wireless control with BACnet IP integration. In total, 37 CAN2GO controllers receive data from 54 EnOcean wireless temperature sensors and control 54 water-based heaters with zoning valves. All CAN2GO controllers network wirelessly and push all the points data back to the building's BACnet IP system for remote monitoring and management.

LESS ENERGY WITH MORE COMFORT AND SAFETY

The new control system enables administrators to precisely set and monitor the temperature in each apartment according to occupancy, schedules and weather. This generates significant savings while maximizing comfort. There were no compromises on comfort during installation, as wireless technology kept all apartments operational during system setup.

"It was very important for us to add comfort for our residents while maximizing energy savings. The CAN2GO solution and its wireless capabilities allowed us to do both without disturbing occupants. Our clientele deserved the extra care and tranquility; something other solutions couldn't provide", summarizes Nicole Rappaport from Kurt & Leah Schneider Apartments.

www.can2go.com

SUSTAINABILITY FOR NATIONAL PARKS

Lava Beds National Monument utilizes LevNet RF self-powered wireless controls to lower energy use and costs

By Cheryl De Los Santos, Manager, Marketing Communications, Leviton Lighting & Energy Solutions

While implementing energy use improvements in several California state parks, Lava Beds National Monument was identified as a site that would benefit from such upgrades. Leviton's LevNet RF products were selected to help control lighting in common areas, offices and restrooms. The results were annual savings of approximately 65,000 kWh and $6,400 in energy costs.

FACILITIES BECOME UP-TO-DATE

The Lava Beds National Monument is located in northern California's Siskyou Mountains. The 47,000 acres of park lands include lava tube caves, rugged desert terrain and historical sites. The park attracts nearly 100,000 visitors each year. The project involved bringing the administration facilities of the park up-to-date. The building was still using older T12 fluorescent ballasts, which were replaced with T8s. A more efficient occupancy sensing technology was sought, as the simple motion detecting technology previously installed was becoming outdated.

To increase the energy efficiency of the park administration facilities, Leviton LevNet RF products were selected. LevNet RF wireless technologies are based on the EnOcean standard and therefore require no batteries and no wiring, making them a maintenance-free and environmentally friendly choice. Wireless occupancy sensors were installed into common areas, offices and the restroom, which keep lights off when the spaces are unoccupied. The project goal was to reduce energy use by 30%, but was exceeded by reaching savings of 40%.

THE PROJECT AT A GLANCE

Location: Lava Beds National Monument Tulelake, CA

Application: Retrofit

Industry: Parks and recreation

System Components: LevNet RF Wireless Occupancy Sensors, Transmitters and Receivers

Benefits: 40% in energy savings equaling 65,000 kWh of electricity and an annual energy cost reduction of $6,400

Owner: U.S. National Park Service
Electrical Contractor: Quality Electric
Start: October 2009
Finish: September 2010

www.leviton.com

WIRELESS CONTROL OF HEATING FIGHTS NORWEGIAN CHILL

In the schools "Vikran Skole" and "Tromvik Skole" located in the city Tromsø the existing heating plants were retrofitted using wireless EasySens sensors from Thermokon to ensure an efficient heating. The wireless product line EasySens enables self-sufficient and wireless room automation. The data detected are transmitted wirelessly via EnOcean radio telegrams to a receiver.

By Frank Neudecker, Export Manager, Thermokon

Tromso is the biggest city in the north of Norway and the capital of the small province Troms. In this beautiful landscape, north of the Arctic Circle, the sun does not set completely in the summer nights. From mid-November to mid-January no sun rise is experienced either.

FLEXIBILITY WINS

Actually, the primary school in Tromvik (a small village at the Schären west of Tromso) should have been closed in 2010 because not enough pupils were visiting the school any more. After public resistance it was decided however to renovate the school and to exploit the latest developments in technology. The heating plant of Virkan Skole had to be retrofitted as well. However, the planners were tied to given facts. Due to the fact, that wireless sensors and receivers based on the EnOcean technology could be flexibly mounted in the existing class rooms and time- and cost-consuming wiring and laying of cables including cutting channels in masonry could be avoided, the headmasters decided on using the EasySens system by Thermokon in combination with a Wago controller. Because the installation was made during the month of December and the Artic winter when the school is closed anyway and the sun does not shine, the wireless sensors were additionally equipped with a battery to guarantee function of the system around the clock.

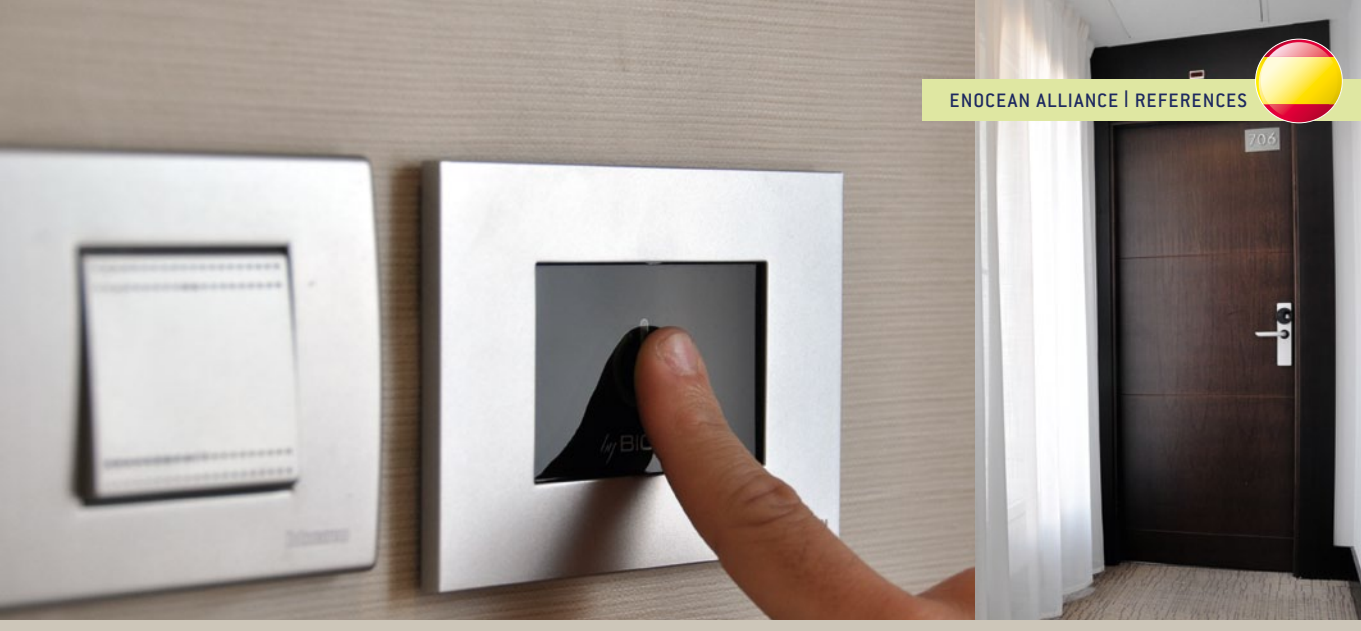
STC65 Gateway

COMMUNICATION OF THE DEVICES

In the Vikran Skole school 15 room sensors type SR04 were installed which are communicating with the WAGO controller via four Thermokon SRC65/RS485 EVC receivers. The WAGO station controls the valves via in-/output modules and keeps the heating at a constant level. The school Tromvik Skole was retrofitted using eight room sensors SR04. The WAGO controller receives the data from the bidirectional Thermokon receiver STC65/RS485 EVC and thus controls 14 electric heating circuits wirelessly via 14 actuators SRC-DO type 4.

The partner of this project is the WAGO system integrator GraTech.

www.thermokon.com
www.gratech.no



111 ROOMS TALKING ENOCEAN

The Hotel Lagasca in Madrid regulates energy consumption with wireless biometric access and control solutions of Biodit integrating energy harvesting wireless technology.

By Nicholas Adam, Member of the Board, Biodit

Biodit is a provider of biomotic solutions. The company has managed to harness biometric technology in addition to a host of domotic products with a proprietary software and communication protocol. The result is a pioneering suite of extremely secure hardware and software management solutions that significantly enhance the user experience for anybody looking to manage and control a restricted area.

REDUCED ENERGY CONSUMPTION

All of Biodit's products can communicate with each other in a wireless or wired manner. The hardware design is cutting edge and can easily be adapted to match any requirement. The main focus of Biodit's market effort, so far, has been towards the branded hotel industry, with notable success at the Hotel Lagasca in Madrid that is owned and operated by NH Hoteles. There, Biodit has installed wireless biometric access and control solutions for each of the 111 rooms in addition to its enrollment technology and software management tool. The energy consumption in each of the rooms is regulated and modulated with the Biodit energy device in addition to the Biodit Lightmaster. Each of the Biodit in-room devices contains EnOcean wireless technology.

Biodit integrates biometric functionalities in building automation

POWERFUL SOLUTION

The feedback from the hotel staff has been very complimentary with an emphasis on the reliability and ease of use as a powerful management tool. The feedback from the hotel guests has been spectacular, far beyond Biodit's expectations, and confirms the enhanced guest experience. Mr. Andres Botin, the General Manager of NH Lagasca says: "Thanks to this innovative system, there is improved security and convenience for the hotel guest by diminishing the risk of theft or loss of card keys. The hotel guest no longer needs to depend on a key, which is a considerable advantage."

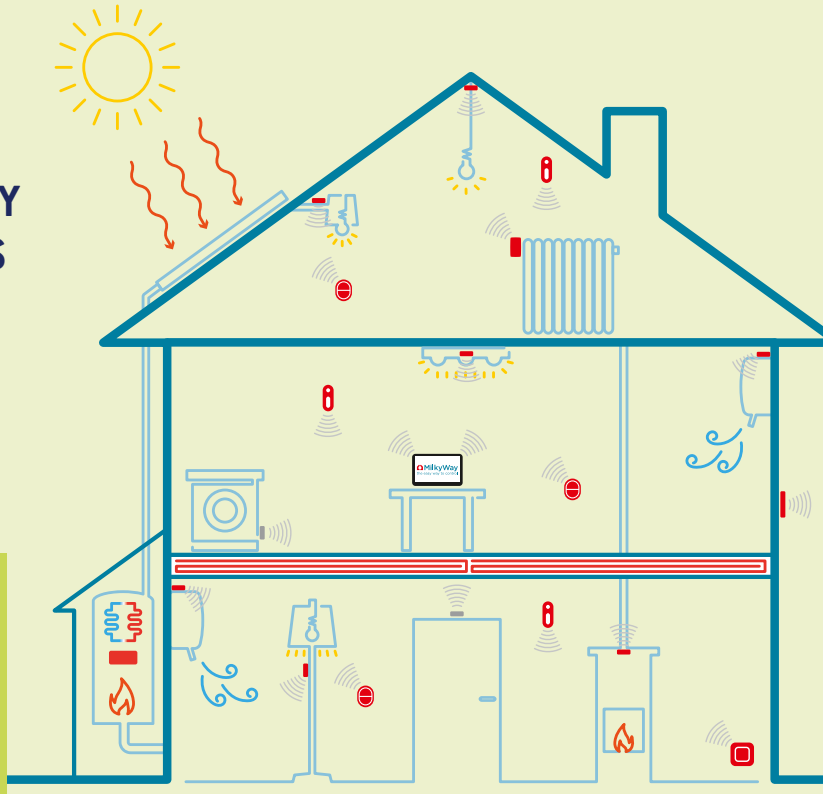
PROMISING FUTURE

Apart from the branded hotel sector with many international hotel chains many more applications exist such as for cruise liners, residential buildings, gym lockers and battery recharging terminals for electric cars, to name but a few. Ongoing discussions are being held with many different companies in different sectors. The response from the market has been phenomenal and Biodit continues to believe in EnOcean as a technology partner and a promising future together.

www.biodit.com

MILKYWAY – THE EASY WAY TO SMART HOMES

Portable Touch Interface



GruppoGiordano Idea SpA, a leading electronics company based in Verona, Italy for lighting, HVAC and comfort, has recently developed a set of solutions for home energy management and control based on wireless technologies, such as EnOcean and WiFi, united under the brand MilkyWay.

By Nicola Francesco Renoffio, Chief Technology Officer and Innovation & Intellectual Property Manager, GruppoGiordano Idea SpA

The solutions are easy to use and characterized by an attractive design and high functionality. The automation systems utilize EnOcean energy harvesting wireless technology that allows the production of components with no wires and no batteries that can be placed anywhere, maintenance-free. The use of open standards allows products to use MilkyWay even with third-party products to create countless applications.

CLIMATE CONTROL

MilkyWay ensures control of heating and air conditioning, in addition to reducing consumption, through the easy management of wireless systems consisting of sensors and actuators installed in several places – even in every room. Unlike older systems, it allows timely and effective measurement and adjustment, based on the real parameters of comfort and environmental criteria, and on actual use of the house. The sensors, with no wires and no batteries, use the energy collected from the environment – energy harvesting – by means of small solar panels or electrodynamic induction, thus allowing measurement of temperature and humidity inside and outside the house, and detecting the opening the windows – to stop heating and cooling during the change of air.

ENERGY CONTROL

Through control of all sources of energy in the house – gas, electricity, solar thermal, biomass – and all energy loads, the system can automatically implement the best strategy for using these sources, allocating them dynamically to the loads as needed, ensuring the highest availability of energy at the lowest cost.

LIGHT CONTROL

With MilkyWay, OEM manufacturers can realize innovative smart LED appliances, leveraging high electronic integration of LED drivers with dimming and wireless controls. Off-the-shelf solutions can also be provided, applicable to lighting fixtures with false ceilings and shelf

Wireless Indoor Sensor

Wireless Switch

Multizone Wireless Controller

Wireless Handheld Transmitter

Home Energy Controller

Wireless Dimmer Actuator

mounting. Both can leverage wireless and batteryless sensors and controls and can be integrated with automation solutions.

The products and solutions of MilkyWay are also available in the kits eNRGmate and CLIMEbuddy:

eNRGmate

is the complete wireless solution multi-standard, open, flexible, scalable and non-intrusive, designed for maximum comfort, energy savings and minimum cost through the automatic optimization of energy consumption in homes, small offices and shops. eNRGmate systems are the easiest and most economical solution – up to 70% less – for retrofitting existing houses and a powerful tool in hands of architects and designers for renovation projects and new homes.

CLIMEbuddy

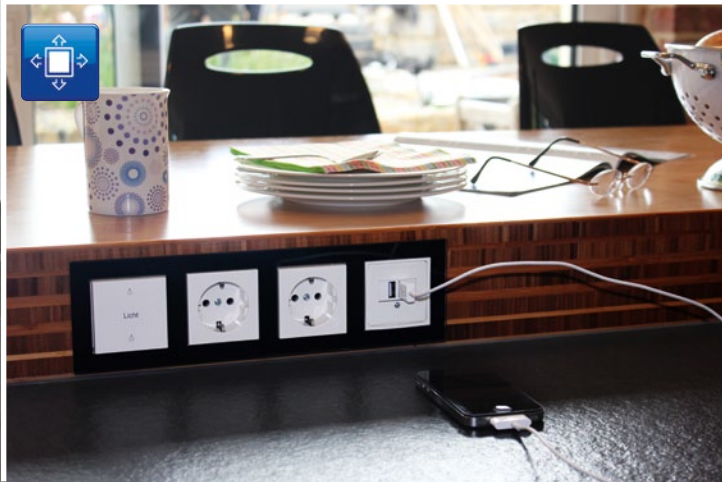
is the entry-level solution in kits for the control of multizone comfort, by means of wireless sensors and batteryless actuators. Easy to use, this kit provides a single point of control and weekly schedule for up to eight wireless zones. CLIMEbuddy is suitable for both heating and cooling systems with central heating radiators and fan-coil systems to be employed with any emission system. It's perfect for retrofitting in apartments and houses with radiators in column.

www.gruppogiordano.com
www.milkywaytech.com

SOLUTIONS THAT INSPIRE

The highlights of more than 200 references show how a whole house or building can be equipped with fantastic individual or complete solutions from OPUS®greenNet.

By Ina Trautmann, Head of Marketing, JÄGER DIREKT



THE ENTRANCE AREA

A fully glazed entrance area creates a light and welcoming impression, but when it's privacy you're after, simply press a button on your iPad® to turn the glass from transparent to frosted thanks to a freely positionable switch from EnOcean.

THE LIVING AREA

The various light settings such as "TV", "Party" or "Clean" ensure the optimum lighting for every situation. Creating the right atmosphere has never been easier – for everyone – thanks to an inline rocker switch with a variety of pre-programmed functions.

Another highlight are the touch room controls. These control not only individual lights, but also the shutters or heating. Just one action on a simple yet high-quality wireless room control unit is all that is needed.
The lighting lift is a real revelation. Chandeliers can be raised or lowered at the flick of a switch for greater comfort and flexibility. This is particularly useful – for example, for cleaning or decorative and seasonal changes such as Christmas or Easter.

OUTDOORS

Overall outdoor and garden lighting can be controlled either by switch or from a smartphone or tablet. "Barbecue" is just one of the light settings on offer. The same software can also be used to monitor and control the photovoltaic system, security cameras and weather station via smartphone/tablet or touchscreen. The outdoor functions are rounded off by the mudroom. This room came about due to the very nature of gardening and aims to prevent mud and dirt from outdoor activities being brought into the house. It allows you to clean up immediately after gardening without having to cross the entire house. Water sensors based on EnOcean technology provide the necessary safety features or issue warnings in the event of escaping water – e.g. from a washing machine or shower.

THE BATHROOM

A switch attached to the edge of the bathtub allows you to open the blinds to see out the window once you are in the bath. VDE provisions would not allow a wired switch to be attached directly to the bathtub – not to mention the installation outlay this would involve. The freely positionable switch directly on the side of the bathtub allows the user to get undressed in peace, get into the tub and then open the blinds to enjoy the view.

THE KITCHEN

With the switch attached to the kitchen counter, users can turn lights on or off, use the dimmer function or take advantage of the different light settings – without getting up again. The wrong lighting will never disturb you again as you browse through the morning papers.

UPSTAIRS

A freely positionable switch (attached to the attic hatch) turns on the light before you even enter the attic.

All of these solutions can be implemented as described or in various other forms. They epitomize a new era of building technology that captures the perfect interaction of technology, design and maximum functionality, while also contributing to energy conservation and climate protection.

www.OPUSgreen.Net

Beginning top left: switchable glass in entrance area
Top middle: touch room control for controlling light, shutters or temperature
Bottom left: water sensor provide mobile issue warnings
Middle: security camera with lighting, e.g. when the panic button is pressed
Bottom middle: retrofitted switch at to the kitchen counter
Top right: flexible switch at the edge of the bathtub

SUNSHIELD CONTROLLED BY MOBILE CARD

Sunshield technology in buildings can now be controlled using EnOcean thanks to a wireless interface from Somfy.

By Dirk Mommaerts, Marketing Manager Large Objects, Somfy GmbH

Whether in functional buildings or private residential buildings – various actuators are operated using different wireless systems in many buildings. The disadvantage for users and operators is that these systems are often not compatible with each other. As a result, the desired solutions are sometimes difficult to realize from a technical perspective and thus cost-intensive or they cannot be realized at all. It is therefore important for wireless systems to have an open design that enables networking.

PLUG-IN ENOCEAN WIRELESS CARD

Manufacturer Somfy has risen to this challenge to ensure EnOcean compatibility. The motor control units in the animeo series, which are used for the automatic operation of sunscreen blinds, can now be equipped with an EnOcean wireless card. Shading systems in buildings can thus be connected to EnOcean energy harvesting wireless technology. And because the card can simply be plugged into existing Somfy motor control units (manufactured from 07/2012 onwards), the technology can also be retrofitted. Equally easy, the integration of EnOcean wireless technology and Somfy sun shield into KNX bus systems can be realized via animeo KNX motor control using plug-in technology.

This type of retrofitting is particularly economical, as it involves relatively little time and effort. The wireless card can be combined with the EnOcean PTM 200 energy harvesting wireless switch module. The system will be available from November 2012.

www.somfy.com

CONTROL IN LUXURY STYLE BY VIMAR

VIMAR's made-in-Italy product suites combine aesthetical quality, technological innovation and simple installation.

VIMAR is one of the newest members of the EnOcean Alliance. The internationally oriented company is one of the world's manufacturing leaders for wiring devices and automation systems, with own production sites based in Italy. VIMAR offers a wide range of wiring devices covering over 200 functions to manage lighting, climate, sound and safety giving architects, designers and customers the choice in terms of different styles, materials and colors and prices.

VIMAR: ENOCEAN GREEN TECHNOLOGY SINCE 2010. AESTHETIC AND TECHNOLOGICAL EVOLUTION

The radio-frequency devices for automation and light controls – available for the EIKON and PLANA series – can easily be installed on wood, glass or masonry and offer the convenience of battery-free controls. The bidirectional radio interface between EnOcean technology and By-me home automation system allows a convenient integration between the rich functionalities of an automation system with the flexibility or freedom of the installation, especially for the renovations. The interface is also available for flush mounting in round box. Incorporating the reliable green EnOcean BUS technology, Vimar devices are powered by the energy produced from finger pressure.

PLANA: THE PERFECTION OF ITALIAN DESIGN

An element of pure essentiality: rigorous in its geometries and refined in its two minimalist looks, White and Silver. But also modern in its materials and bright in its colours, icy, shiny, classic, for any style. Plana is equipped with intelligent technology, which with more than two hundred functions manages the home in the simplest way.

EIKON: THE PERFECTION OF ITALIAN LUXURY

Refined design enhanced in the detail: understated design in the classic shape, or softer lines in round. Three elegant total looks: anthracite grey, white and Next. Fine materials like crystal, stainless steel, metal, solid wood and natural stone. A vast array of colours and functions. Eikon: the exclusive luxury of Italian quality and technology.

www.vimar.com

ENOCEAN GOES WIFI

The EnOcean WiFi 802.11 bgn Gateway from UNITRONIC connects the well-established and standardized radio technologies of EnOcean and Wireless LAN 802.11 bgn.

By Michael Haenel, Development Engineer, UNITRONIC

The compact network gateway can easily be integrated in an existing WiFi infrastructure with just minimal configuration. The software included enables extremely easy configuration of the WiFi parameter requirements via the standard mini USB connector.

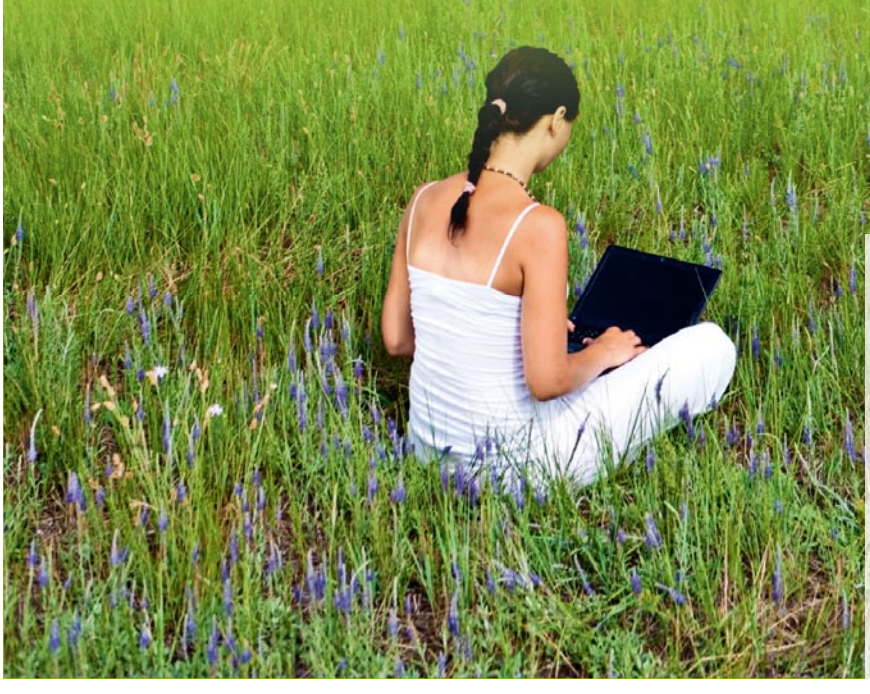
PERMANENTLY CONNECTED

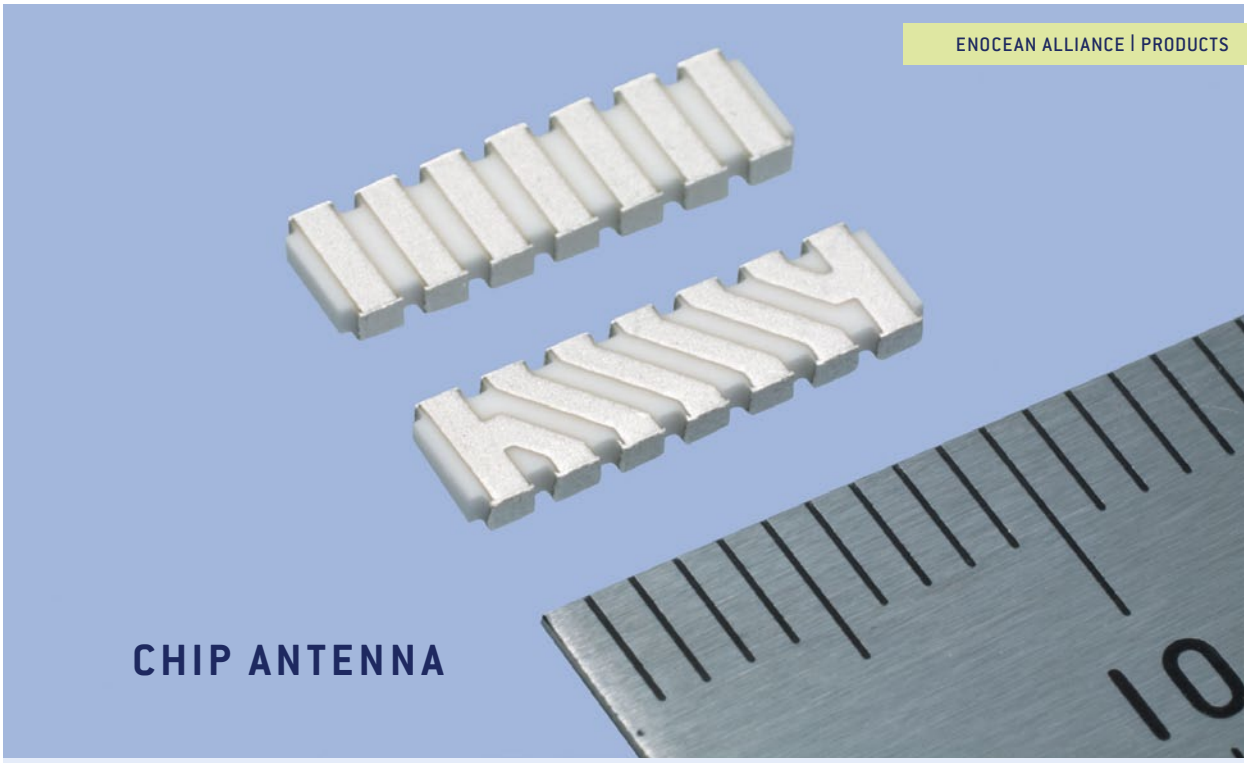
The EnOcean component comes preconfigured and needs no additional customer attention. Once configured, the gateway establishes a transparent connection between the networks. An IP address can be provided by the WiFi access point or configured as a static IP. To connect to the gateway to transmit and receive EnOcean messages, it is sufficient to open the previously configured TCP or UDP port of the device.

FLEXIBLE IN ACTION

The help of corresponding software solutions enables control of an EnOcean actuator or collection of data from an EnOcean sensor via PC, smart phone or notebook. Nearly any device which is connected to the same WiFi network as the gateway will be able to talk and listen to the EnOcean world. Due to the small dimensions and the power supply via the common USB interface, the gateway can be used in virtually any scenario, even portable.

www.unitronic.de





CHIP ANTENNA

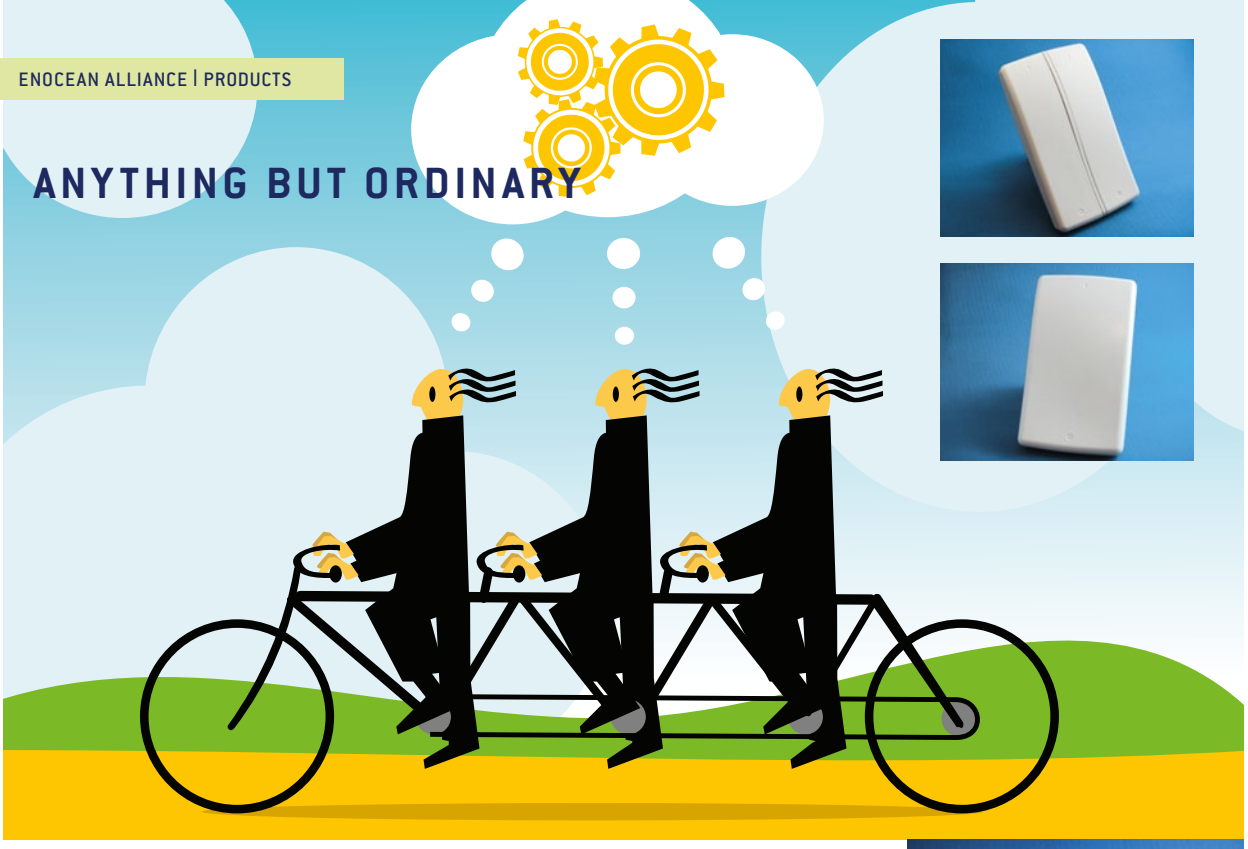
Mitsubishi Materials released its AM11DG Series which can be tuned for multiple frequencies in the sub-GHz zone.

By Jason Van Slyke, Western Sales Manager, Mitsubishi Materials USA Corporation

It has an extremely small footprint for applications where there is little available space for a large antenna. And frequency matching only requires the use of different supporting inductors. Mitsubishi Materials can also perform electromagnetic simulations which take into consideration the effect of surrounding components on antenna performance. As a member of the EnOcean Alliance, Mitsubishi Materials supplies and supports many of the products that use the EnOcean standard, e.g. Thermokon.

www.mmea.com

ANYTHING BUT ORDINARY



Echoflex has introduced three new products to the market, providing style, intelligence, and ease of use.

By Brian Aikens, Chief Technology Officer, Echoflex Solutions, Inc.

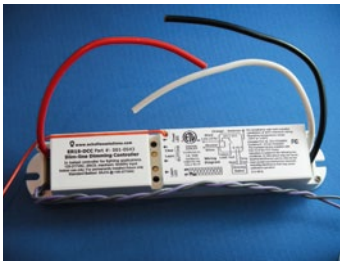
RESONATE WAVE SWITCHES

Echoflex's new Resonate Wave Switches combine European styling and simplicity with Echoflex's innovative eye-catching, energy-harvesting wireless switches. Subtle yet striking, the wave switches, available in white, black, and cream, define new lighting solutions as anything but ordinary.

The sleek-textured wave of the body integrates the switch face for exceptionally smooth operation. A smooth rear mounting surface allows the switches to be easily mounted on transparent surfaces without having to remove labels, providing a clean look. The new resonate switches operate with all Echoflex lighting controllers, delivering on/off and dimming functionality as well as the ability to learn up to 20 unique switch transmissions.

INBALLAST CONTROLLERS

Echoflex's new inballast controllers for single-channel dimming and 2-channel switching are designed to to be mounted directly into the ballast cavity on a lighting fixture. Once installed, all the commissioning features unique to Echoflex, including smart click commissioning using the switch on the wall and simple tap commissioning using a sensor teach button, ensure easily deployed, easily commissioned installation. These devices are designed for voltages of 100 through 277 and are available in 868 MHz and 315 MHz.



GARIBALDI

The latest version of Echoflex Garibaldi software simplifies project engineering tasks, which accelerates the process so that commissioning of the wireless devices can be competed quickly. Garibaldi provides an interface that allows installers to commission Echoflex controllers, create links between remote transmitters and controllers, and monitor telegram traffic. Running on any Windows-based PC or laptop with an EnOcean USB interface, Garibaldi presents a hands-free method for engineering any wireless project.

www.echoflexsolutions.com

BUILDING AUTOMATION COMBINED WITH MOBILE COMMUNICATIONS

With in-building radio communication, the second generation of its facility management platform, BSC Computer GmbH is enabling simple and secure data communication in smart homes.

By Jörg Hofmann, Managing Director, BSC Computer GmbH

Today's building automation systems offer a wide variety of opportunities. As well as data visualization, functions can now be controlled via smartphones, tablets or PCs. However, customers and installers are often overstretched when it comes to system planning and implementation. Very few experts have the skills needed to configure a router or a fixed IP address and integrate these solutions into existing networks.

M2M COMMUNICATION

The challenge lies in developing simple and secure solutions – while at the same time further developing building automation based on future-proof technologies. The new generation of software from BSC combines EnOcean's energy harvesting wireless technology with mobile communications and thus offers both. It integrates communication with M2M cards (similar to SIM cards) into building automation and enables transparent IP Internet connections without blocking ports or translating IP addresses. Thanks to M2M, usage and consumption data is transmitted in encrypted form and thus meets high data protection standards. Users can simply download the relevant PC clients and apps for Apple and Android devices. The resulting smart home solution is secure, cost-effective and easy to configure.

www.bscgmbh.de

UNLIMITED COMMUNICATION – THANOS BREAKS DOWN BARRIERS

In addition to its unique design using top-quality materials, the Thanos multifunctional room control unit from Thermokon boasts intuitive operation via a capacitive glass surface and can record and wirelessly send room temperature and humidity values.

By Nico Gotthardt, Head of Product Management, Thermokon Sensortechnik GmbH

Thermokon is continuously enhancing both the excellent design and software of the unit. The current firmware version includes countless features that generate useful synergy effects. With the right hardware combination, the Thanos can therefore be used as a gateway to LON or Modbus, for example.

COMMUNICATION BARRIERS

The impressive energy efficiency of EnOcean energy harvesting wireless sensors enables, among other things, a rhythmic sleep/wake mode. The products, which are part of Thermokon's EasySens range, operate in a "sleeping" mode that is periodically interrupted. If a value has changed since the last "on" phase, a message is sent to the receiver. Otherwise the sensor returns to "sleep".

However, this energy-efficient behavior presents challenges when it comes to synchronized communication with actuators. The heating actuator acts as a receiver, but it also acts as a transmitter in its work rhythm. This makes synchronization difficult.

ACTUATORS FROM DIFFERENT MANUFACTURERS

The advanced intelligence of the new Thanos firmware enables direct control of EnOcean-based actuators such as the SAB02 from Thermokon – without routing through a central interface such as the Thermokon Msg Server. This gives rise to direct automation opportunities between Thanos and the actuator. What's more, the solution supports other manufacturers with a corresponding EnOcean profile and can be programmed with ease. Configuration is quick and easy via a PC application that is loaded onto Thanos using an SD card.

www.thermokon.com

INTELLIGENT LUMINAIRES

PULSE TALK enables luminaires to communicate with each other via EnOcean wireless. It requires only two steps to set up and to assign groups. User convenience in an office workplace increases significantly, operation and installation are quite simple.

By Klaus-Jürgen Hahn, Produkt Manager, Herbert Waldmann GmbH & Co. KG

In modern office environments with presence and daylight-controlled lighting, so-called "light islands" can arise due to changes in the number and location of employees in a room: with the exception of the occupied desks, the whole office remains unlighted. Experience has shown that most employees find such a scenario unpleasant. For that reason Waldmann has developed a retrofit wireless module that allows luminaires to communicate with each other and exchange presence information. Several luminaires working together as a group can thus create a light scenario that contributes to a more pleasant work atmosphere.

LUMINAIRES COMMUNICATE PRESENCE CHANGES

When one luminaire in a group detects the presence of a person, it reports this information to the other members of the group. While the transmitting luminaire activates its normal level of work light, the other luminaires in the group switch to a defined background level. The group as a whole thus reacts to the absence or presence of persons by creating a suitable lighting scenario over a broader area. Irritating "light islands" become a thing of the past.

SOPHISTICATED TECHNOLOGY AND EASY SETUP

The main distinguishing feature of PULSE TALK is its simple operation and installation. Its application doesn't require any specific preconditions in the building, as is the case with wired systems. The individual luminaires have an automatic teach-in function and can be easily assigned to a group without the help of additional software. Each built-in luminaire module can be assigned to one of 100 possible areas in a building. An area can be a whole floor of a building, for example. Within an area, each luminaire can be assigned to one or two groups out of the 16 available for selection. Groups are, for example, different work areas that may overlap.

One luminaire in the group can assume the function of master, also switching on/off corridor lighting equipped with a compatible actuator. Every assignment can be read or modified directly on the module.

ENHANCED CONVENIENCE

PULSE TALK ensures full interoperability with other EnOcean-based systems such as heating, air conditioning or ventilation. These are controlled by the presence information transmitted by the luminaire. Thus the presence information of the luminaires can be used for additional energy-saving potential in building automation.

www.pulse-talk.com

CONNECTING ENCELIUM AND ENOCEAN

OSRAM announces gateway of Encelium with EnOcean technology.

By Nicolai Heber, Business Development Manager, OSRAM AG

OSRAM announces the launch of its Encelium wireless gateway in the US and Canada, a market introduction for Europe is planned as well. The gateway allows the integration of EnOcean-compliant wireless sensors, switches and plug load control modules with the Encelium lighting control and energy management system. Wireless devices will now be able to be networked, aggregated and controlled across a large facility. Using this gateway, each wireless device can be addressed, controlled and configured via the Encelium Polaris 3D web-based control software.

EXTENDED ENERGY ANALYSIS

Advanced energy reporting and analysis features will also allow for centralized reporting on such data as room level energy consumption, lighting status, occupancy and load shedding status for the purpose of demand response or peak shaving. Furthermore the Encelium wireless gateway also allows for lighting status, occupancy status and temperature to be aggregated and shared with a building's BMS system via the Polaris software platform.

For the first time, customers will now benefit from the best of both worlds – the reliability and scalability of software controlled networked systems along with the reduced wiring and labor costs of an energy harvesting wireless system.

www.osram.com

INTELLIGENT WHOLE-BUILDING SOLUTION

Adura's new EnOcean Receiver interfaces with EnOcean transmitting devices, adding greater functionality, adaptability and scalability to room and building lighting controls.

By Alex Do, Director of Product Marketing, Adura Technologies

Adura Technologies is a leading provider of wireless lighting controls and energy management systems. Adura's EnOcean Receiver marries EnOcean battery-free, wireless building control devices to an intelligent, networked whole-building system. The Adura EnOcean Receiver listens to EnOcean occupancy sensors and switches and transmits the information onto Adura's wireless mesh network. In doing so, it translates EnOcean protocols to ZigBee protocols, making a seamless connection between the two systems.

CONTINUOUS COMMUNICATION

Connecting simple EnOcean devices to Adura's sophisticated network adds flexibility, scalability and adaptability to the control system and the wireless mesh network's multiple redundancies mean no single point of failure, ensuring that communication between devices is never lost. Adura's whole-building networking platform empowers users by providing greater energy management functionality, including secured communication between devices, remote programmability, connection to building software, and the option to use advanced control strategies like smart scheduling and demand response.

www.aduratech.com

JAPAN'S WAY TO ENERGY EFFICIENT BUILDINGS

When the Fukushima Daiichi nuclear disaster struck Japan in March 2011, much of the country suddenly found itself with 30% less available energy. In Summer 2011, various emergency measures were introduced to save energy, such as restricting air conditioning levels to no lower than 28 deg C (around 83 deg F), switching lights off in unoccupied rooms and setting up to 50% of elevators and escalators to idle mode.

By Graham Martin, Chairman, EnOcean Alliance

The total amount of available energy was constantly displayed on TV, on the internet and even on displays in the subway trains. In critical situations (e.g. more than 80% of available energy being used) citizens were instructed to switch off all air conditioning until the situation stabilized. As most of this control was performed manually, it soon became evident that in order to achieve greater energy savings and efficiencies, the introduction of automated systems must be a high priority. Over the past year, many major Japanese conglomerates have announced energy management systems, pilot studies or energy saving products including NTT DoCoMo, Hitachi, Osaka Gas, Tokyo Gas, TEPCO, Toyota Housing, Denso and Panasonic.

FASTEST GROWING COMMUNITY

EnOcean technology, a maintenance-free wireless solution for energy management systems, is playing a central role in a number of such developments. Within a year, the EnOcean Alliance has grown from a virtually unknown entity in Japan with two members to a flourishing local organization with over 30 member companies, including NTT, NEC, Sumitomo, Hitachi, Yamaha, Omron and Fujisoft. At the Japanese Alliance meeting in Tokyo in April 2012 we welcomed over 70 participants from over 25 companies, providing a networking platform to discuss the opportunities and current developments for energy efficiency and flexibility using EnOcean technology.

EnOcean co-founder and CTO Frank Schmidt provided a technical insight into miniature energy harvesting principles and ultra-low power wireless communication. Japanese manufacturers presented their first EnOcean based developments. Utility and telecommunications companies also discussed their energy management solutions and case studies of first buildings already installed. For example the Sony City Osaki Building in Tokyo or AEON Mall, were presented by system integrator Network Corporation.

The EnOcean Alliance is also supporting the Fukuoka Smart House Consortium and the Yokohama Smart Community to demonstrate the simplicity and flexibility of the EnOcean technology enabling significant reduction in building energy usage. All in all, Japan has become the fastest growing community within the EnOcean eco-system on the road to energy efficiency.

www.enocean-alliance.org

MULTIPLYING FUNCTION AND COMFORT

Lutuo's multi-function room sensor (LTTA) is a batteryless and wireless temperature/ humidity sensor. Incorporating a zero-power bi-stable LCD display makes this an excellent energy efficient solution for building automation.

By Tony Berges, General Manager, Lutuo

The multi-function panel sensor obtains energy from ambient light through its onboard solar cell; energy is stored in a supercapacitor that provides power to the sensor when an ambient energy source is not available. A fully charged sensor can continue to operate for up to four days in total darkness. This intelligent sensor can be used in stand-alone applications, or it can easily be integrated into a centralized system for energy management and building automation.

BROAD FIELD OF APPLICATION

The sensor includes temperature measurement, humidity measurement, fan speed control, lux measurement, and temperature and humidity set point. This sensor can also be used as a wireless light switch. Lutuo's line of intelligent sensors and controllers also work with other applications from EnOcean Alliance partners.

www.lutuotech.com

CONNECTED FOR ENERGY SAVINGS

Anywire offers an EnOcean receiver for connecting building energy management solutions to other networks and interfaces.

By Yoshitane Saito, President, Anywire

Anywire has developed the new EnOcean wireless gateway GateServer2. Connected to Anywire's sensor network, the solution enables easy connection to various EnOcean-based products to several industrial domestic controllers (PLC), open networks, and PC interfaces for monitoring of cloud-based energy savings for example. In Japan, Anywire is the only specialized producer of wiring-saving systems, covering development, manufacturing, and sales.

FOCUS ON SUSTAINABILITY

Anywire originally developed the first "four-all pile" (double duplex) communication chip, and a variety of wiring-saving system equipment in which "four-all pile" serial multiple transmission method is assumed to be core technology. These wiring-saving systems offer the best solution for each field such as factory, building, or process automation and have reduced the negative impact on the environment. This is an indispensable element not only for cost reduction but also for future sustainability.

www.anywire.jp

FLEXIBLE CONTROL

YTL has just introduced a new EnOcean based product, eKontrol, to the market. eKontrol is an intelligent lighting control system for home users that is targeted to end users.

By Yao Wu, Vice President of Engineering, YTL Technologies Ltd.

The solution consists of an EnOcean-based intelligent controller, wireless actuators, EnOcean-based switches and occupancy sensors. With this solution users can control home lighting even with smart devices (including smart phones, tablets, and PC) in any way they like. eKontrol has following characteristics:

EASY INSTALLATION

Users can install each component of eKontrol by themselves. For the intelligent controller and wireless actuators, the wiring method is simple; the EnOcean-based wireless switch and occupancy sensor can be attached to virtually any surface, such as: walls, glass partitions or tables. There is no need to run any new electric wires at all.

MULTIPLE WAYS TO CONTROL

Users can use switches, occupancy sensors, or mobile devices to control lights (turning on/off and dimming) and electrical shading. Furthermore, eKontrol also provides multiple features such as scene control, area control and timer control.

DO-IT-YOURSELF CONFIGURATION

Users can set up the configuration for eKontrol by themselves using either a smart phone, tablet or PC. The control and configuration software can be downloaded from the Apple Store and Google Place Space. The configuration can be modified by users at anytime. No professional service is needed.

www.ytlcn.com

EXTENSIVE BUILDING MANAGEMENT

As an enterprise in China possessing three international standards in the field of intelligent buildings and smart homes, TIANSU has introduced KNX/EIB technology, EnOcean energy harvesting wireless sensor technology and DALI lighting control technology, carried out independent R&D of automated chip-level technology and successfully participated in formulating the national standard of home and building control systems.

By Weijiang Wang, President and General Manager, Nanjing Tiansu Automation Control System Co., Ltd.

EnOcean wireless button panel

As a typical EnOcean wireless button panel, TSBP-02XXEO1 & TSBP-04XXEO1 can realize ON/OFF, UP/DOWN, BRIGHT/DARK and SCENE functions for most devices from the EnOcean family; it needs no batteries to send EnOcean radio telegrams, using only the energy from button-pressing.

EnOcean wireless window contact sensor

TSWL-02XXEO1 is generally designed to detect the status of a door or a window (OPEN/CLOSE). It is powered by ambient light. Weak light can be used for its fast startup while long time daily light harvesting can realize a long-term operation. TSWL-02XX can work even in a totally dark environment for four to five days.

EnOcean wireless switching actuator

TSSD-0105EO1 is a quite useful device for a switching control solution. The maximum output current is five amperes, which is sufficient for indoor lighting control. EnOcean-based button panels, window contact sensors and occupancy sensors with typical EEPs (EnOcean Equipment Profiles) can be learnt by TSSD-0105EO1 and control the actuator at the same time. Additionally, the solution can report its relay status for system monitoring.

EnOcean wireless presence sensor

TSPS-0102EO1 is a useful sensor to detect human presence. It has two large size solar panels which can provide more energy for such wireless energy harvesting sensors. Users can easily set the desired delay time by a very simple operation. TSPS-0102EO1 can also detect the brightness and storage energy, and report this data within each sent telegram.

www.tiansu-china.com

AN INTELLIGENT SOLUTION CALLED ERMINE

The ermine is a small animal that lives deep in the forests of Shinshu. It is intelligent and has great jumping ability. These characteristics mirror the features of ERMINE, the new solution from ITEC, which uses EnOcean wireless technologies.

By Toshiyuki Hattori, CEO, ITEC

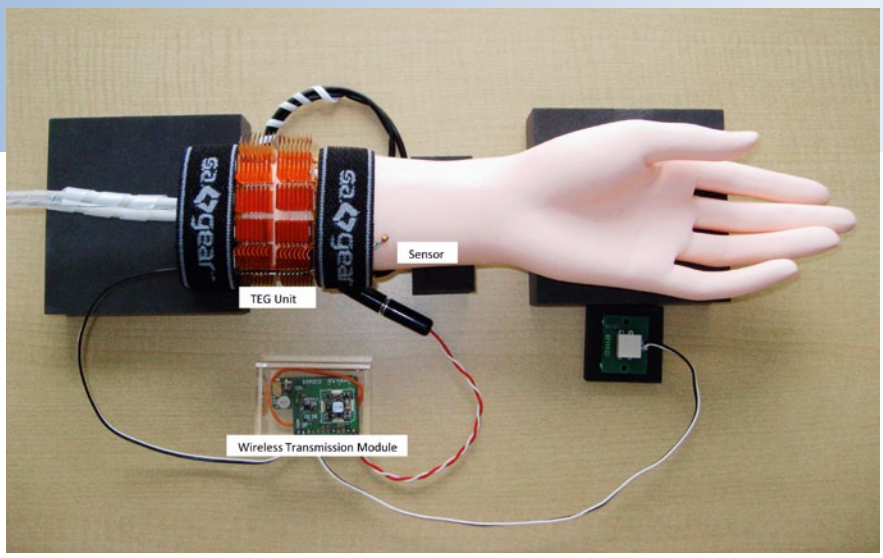
ERMINE is a product suite of transmitters and receivers integrating energy harvesting wireless technology. The solution includes:

ERMINE CALL is a wireless emergency call button for use in hospitals and nursing care or as a safety feature for elderly people living at home. Working without

HEAT FLUX FROM HUMAN BODY

YAMAHA has developed a new sensor solution with energy harvester and thermoelectric generator.

By Yuma Horio, Deputy General Manager, YAMAHA Corporation



The heat absorber and thermoelectric generator are attached to the body. The power generated by YAMAHA's thermoelectric generator module makes it possible to transmit the information from the monitoring sensor to a PC using EnOcean modules (STM 312).

UNIQUE IN MATERIAL AND TECHNOLOGY

Here, YAMAHA has developed new types of bismuth-telluride based thermoelectric compounds which are prepared by a rapid solidification technique and a shear extrusion process. These unique materials and technologies have been gaining attention for some years now on account of their fine grains and unidirectional crystal orientation. And the technology has already been applied for the commercial production of thermoelectric cooler (TEC) modules.

www.yamaha.com

cables and batteries, the call button can be carried flexibly throughout a building and is maintenance-free, avoiding battery failure.

ERMINE TAG is a small RF transmitter for active RFID, sending information on regular basis.

ERMINE MAT is a batteryless smart floor type transmitter sending data wirelessly when stepped on or off.

ERMINE MAGNETIC SENSOR, which uses light as its power source, can be installed as a window or door contact, sending a wireless signal when a window or door is opened to support energy savings and safety in a building.

ERMINE CATCHER U receives the wireless information from ERMINE transmitters and outputs it to the host, e.g. a TCP server.

Watch an online video showing ERMINE CALL at this QR-Code.

www.ermine.biz

PASSION FOR MUSIC

My name is Niklas. I have been a working student at EnOcean for over four years now. When I'm not working or studying, I'm a free-lance guitarist.

By Niklas Biessenberger, working student at EnOcean

I have played in several bands and various musical genres, ranging from Pop Punk to Death Metal. With these bands I have stood on many stages all around Munich and the surrounding area. The view onstage onto a crowd of fans is something really amazing that you cannot describe but only experience.

I started making music about ten years ago and developed a passion for it. On the one hand, making music can be incredibly liberating, as it allows you to express different feelings that you might not show in everyday life. On the other hand, it can also be just "mindless" fun you can enjoy with your friends.

Music can be whatever you want it to be – a form of social criticism, a way of dealing with personal problems, or a party, and that's what makes music such an amazing thing.

By the way: more on the working students and interns at EnOcean can be found at
www.enocean.com/enocean_students_interns

ENOCEAN RELIES ON WORLDWIDE DISTRIBUTION

International partnerships strengthen the company's sales network and global growth.

EnOcean has expanded its existing partnership with Farnell. The international distributor is now shipping low volume quantities of EnOcean's energy harvesting wireless sensor modules direct or via its website worldwide. Customers can order small samples as well as single copies via Farnell and benefit from the distributor's fast order and delivery channels and comprehensive design-in expertise.

EXTENDED OFFERING

The extended offering includes for example the EnOcean Dolphin platform. Major components of the Dolphin system architecture are bi-directional and uni-directional wireless modules featuring an interface with different energy converters. All modules come in standard frequency versions of 868 MHz or 315 MHz. The platform is completed by a developer kit and the EnOcean ESK 300 starter kit for an easy way to get started with battery-less wireless technology. OEM partners can purchase Dolphin and other EnOcean products for all countries at www.farnell.com.

INTERNATIONALIZATION

Since April 2012 EnOcean has also been partnering with Future Energy Solutions (www.futureenergysolutions.com) as worldwide distribution partner covering larger quantities. Together with the extended partnership with Farnell, EnOcean has aligned its distribution network much more closely with the demands of international markets. The company is thus consistently pursuing its strategy for internationalization and is able to fulfill individual customer needs in all geographical markets around the world much more rapidly.

www.enocean.com/distributor

NEW PEOPLE

KAZUYOSHI ITAGAKI, SALES MANAGER JAPAN, ENOCEAN

With increased interest in energy-efficient buildings, Japan is becoming one of EnOcean's key markets. Kazuyoshi Itagaki is Sales Manager of EnOcean in this region. One of his responsibilities is to educate the local market and relevant industries on the energy harvesting wireless technology. In this effort Kazuyoshi Itagaki can draw on his extensive professional experience in the telecommunication and chip industry. From 2004 to 2011 he was Vice President Product Management at Deutsche Telekom K.K. (Japan) and Deutsche Telekom AG (Germany) respectively. Before joining Deutsche Telekom he worked as Product Marketing Manager for Intel's Computing Handheld Group Products in Japan and the US. Other positions he has held include Group Leader of PC audio business operation and multimedia products at Asahi Kasei Microsystems Co., Ltd. and Marketing Development of optical disk as well as Researcher for optical disk recording materials at Asahi Chemical Industry Co., Ltd. Kazuyoshi Itagaki holds a master degree in Materials Science and Organic Metal Chemistry from Toyohashi University.

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BRYAN EDELMAN, FIELD APPLICATION ENGINEER, ENOCEAN

In July 2012, EnOcean welcomed Bryan Edelman in his new position as Field Application Engineer. Based at the US office in Salt Lake City, Bryan will provide customers with design-in support in order to further grow the suite of products that utilize EnOcean technology. Most recently, he worked in software for financial services. Previously, he also worked on 700 MHz LTE for Public Safety Communications and is excited to rejoin the wireless community with EnOcean. Bryan holds a master's degree in telecommunications from the University of Colorado, with a focus on wireless systems.

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MATTHIAS POPPEL, CHIEF OPERATION OFFICER, ENOCEAN

Since April 2012 Matthias Poppel has been supporting the EnOcean team as Chief Operation Officer (COO). In this newly created position, Matthias is responsible for the management, control and organization of technology development, including quality management. Matthias Poppel is a distinguished electronics industry expert. He brings to the company a respected 15-year career with success in developing highly profitable products and new markets. Most recently, he was EMEA Director Embedded Processing Marketing and Applications at Texas Instruments (TI). His responsibilities covered the full TI Embedded Processing portfolio, from microcontrollers and microprocessors to wireless transceivers. In this position he was instrumental in leading a comprehensive product strategy that ensured market share growth. Prior to this, Matthias held the position of General Manager of TI's C2000 Controller product line where he was a key contributor in re-orienting the business. Over the years, Matthias has held several management positions in Sales, Marketing, and Product Management at TI's Semiconductor Group. Matthias holds an engineering degree in Electrical Engineering and a MBA.

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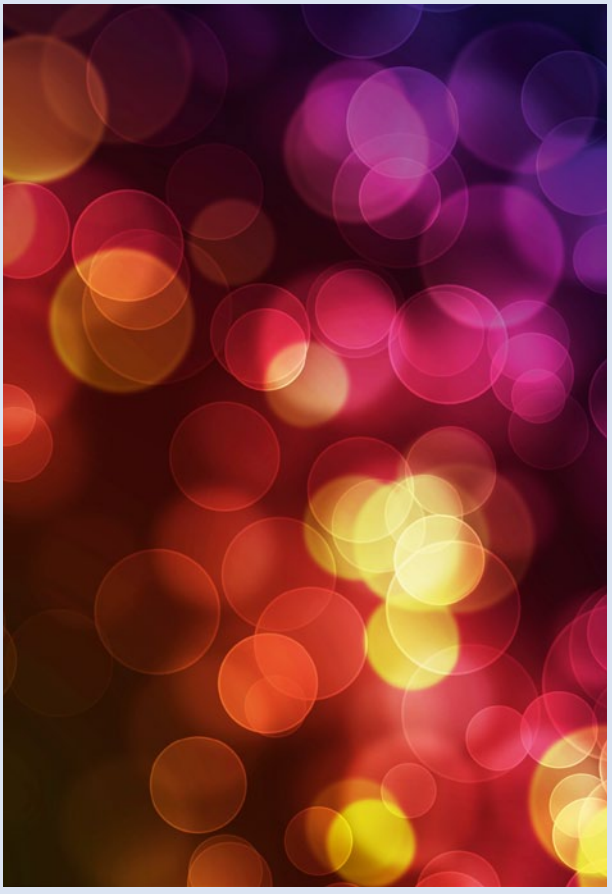
SCOTT MOULTON, DIRECTOR OF PRODUCT MANAGEMENT, ENOCEAN

This year, Scott Moulton joined the EnOcean team in Salt Lake City as Director of Product Management, where he will be responsible for the OEM white label finished products. Scott brings to the company comprehensive experience in this field. Prior to joining EnOcean, he served Verve Living Systems as Director of Product Management, starting in 2010. In this position, he developed a line of EnOcean-based energy-saving products for the hospitality and higher-end markets. Before that, he held product management responsibilities for Control4's ZigBee-based lighting and HVAC product lines, which target home automation, working in this capacity since its early start-up phase in 2004. Scott trained in manufacturing engineering technology and holds a bachelor's degree from Brigham Young University.

E-Mail: scott.moulton@enocean.com

OSRAM SYLVANIA WINS INNOVATION AWARD AT LIGHTFAIR 2012

The PRO-Flex LED Dimming Drivers of North American lighting leader OSRAM SYLVANIA have been selected as a winner of the prestigious Innovation Award in the Ballasts, Transformers and LED Drivers Category at LIGHTFAIR 2012. The award reinforces the company's commitment to leading the market in the development and delivery of cutting edge lighting technologies. The LIGHTFAIR Innovation Awards recognize excellence in new lighting products and technology introduced in the past twelve months. Judged by an independent panel of renowned lighting professionals, the award is one of the highest industry honors.



The PRO-Flex family of constant current LED dimming drivers, designed to adapt LED luminaires for use in EMerge Alliance-compliant low voltage ceiling grids supplying 24VDC power. The new PRO-Flex drivers feature the flexibility of programmable current levels and three different user interfaces – EnOcean wireless; 0-10 Volt wired; and DALI wired – ensuring the most appropriate dimming control solution for nearly any LED luminaire type in retail, education, office, restaurant and other commercial installations.

www.sylvania.com

THE ENOCEAN PRODUCT FINDER

Which module for which product? The EnOcean Product Finder rapidly answers this question online. Here's how it works: just click on the desired product category, then choose the product and frequency – and the Product Finder shows you the appropriate EnOcean module. A further click takes you to the detailed product description.
Try it out now:
www.enocean.com/product-finder

WIRELESS TECHNOLOGY – A SMART STRATEGY FOR TAX AND ENERGY SAVINGS

It's no secret that commercial building and facility owners today are investigating a wide variety of ways to cut energy usage and costs. EnOcean Alliance members provide the building automation industry with innovative products developed with sustainability in mind which can result in significant energy cost savings for building owners. What some facility owners don't know, however, is that energy harvesting technologies may also help them qualify for significant tax deductions.

By Capital Review Group

The Energy Policy Act of 2005 includes a tax deduction for investments in "energy-efficient commercial building property" designed to measurably reduce the heating, cooling, water heating, and interior lighting energy cost of new or existing commercial buildings. This energy-efficient commercial building property must be placed into service between January 1, 2006 and December 31, 2013. So, a building owner or a tenant/lessee who has paid for energy efficient construction or improvement projects may be eligible for a tax deduction of up to $1.80 per square foot for improving the energy efficiency of their existing commercial buildings or designing and integrating high efficiency into new buildings. For government owned buildings, the person primarily responsible for designing the building or project may be able to claim the deduction.

CERTIFIED FOR ENERGY EFFICIENCY

To qualify for the full deduction, a building owner or tenant must make investments designed to reduce energy costs by 50% or more compared to an IRS predetermined baseline. A partial deduction of $.60 per square foot is available for investments in one of three subsystems – lighting, heating and cooling; or building envelope. The baseline for efficiency evaluation is ASHRAE 90.1-2001. Depending upon the year of retrofit or new build determines the necessary percentage of reduction from the standard 90.1-2001.

BUILDING AUTOMATION IS KEY

EnOcean Alliance innovations such as energy harvesting lighting devices, architectural controls, dimmers, occupancy sensors, photo-sensors, relay panels and timer switches naturally form the foundation of a whole-building automation system that is an important part of an effective energy efficiency plan. Building automation systems are one of the most effective means of reducing energy consumption while maximizing occupant comfort and cutting operating costs. Sensors can be programmed to dim or switch off lights when adequate daylight is present, switch off lights and HVAC when an area is no longer occupied, and detect an open window and reduce heating or cooling in the area until the window is closed. Up to 30% energy savings may be realized when these technologies are employed.

MAXIMIZING POTENTIALS

Instead of looking to outside funding sources or reducing valuable equity to fund energy efficient wireless technology and other systems, it makes sense to enlist the skill and knowledge of qualified professionals to coordinate green building improvements and provide the necessary third party certification for §179D deductions. This will allow building owners to not only meet their sustainability goals, but also maximize potential tax benefits and ensure energy savings for years to come.

www.capitalreviewgroup.com

OCTOBER 2012

09–11 Smart Homes, Amsterdam, Netherlands, EnOcean Alliance and partners exhibit. www.smarthomes2012.com

10–11 Building Services – The CIBSE Conference & Exhibition, London, UK, EnOcean Alliance and partners exhibit. www.buildingservicesevent.com

Oct 30–Nov 1 Hi-Tech Building 2012, Moscow, Russia, EnOcean Aliance and members Thermokon, Beckhoff and Evikon exhibit at booth no. 1-300b. http://htbh.ru/en/hthb/

NOVEMBER 2012

Oct 31–Nov 2 World Energy Engineering Congress, Atlanta, USA, Cindy Woudenberg from Capital Review Group gives a speech for the EnOcean Alliance. http://www.energycongress.com/

06–09 Interlight Moscow, Moscow, Russia, EnOcean Alliance and members exhibit. http://www.interlight.messefrankfurt.ru/

07–08 Energy Harvesting and Storage USA, Washington DC, USA, EnOcean exhibits. www.idtechex.com

11–15 Equip'Hotel, Paris, France, EnOcean and Alliance partners exhibit at booth G50. www.equiphotel.com

13–16 electronica, Munich, Germany, EnOcean exhibits. www.electronica.de

14–15 Wireless Congress 2012, Munich, Germany, Presentations "Data security in energy harvesting wireless networks" (Frank Schmidt, Nov 14, 2012) and "The international ISO/IEC standard 14543-3-10" (Andreas Schneider, Nov 15, 2012). www.wireless-congress.com

14–15 Greenbuild 2012, San Francisco, USA, EnOcean Alliance exhibits. www.greenbuildexpo.org

JANUARY 2013

28–30 AHR Expo 2013, Dallas TX, USA, EnOcean Alliance and partners exhibit. www.ahrexpo.com

FEBRUARY 2013

26–28 Embedded World, Nuremberg, Germany, EnOcean exhibits. www.embedded-world.de/en

MARCH 2013

05–07 Ecobuild, London, UK, EnOcean Alliance and partners exhibit. www.ecobuild.co.uk

12–16 ISH 2013, Frankfurt, Germany, EnOcean Alliance and partners exhibit. http://ish.messefrankfurt.com

APRIL 2013

23–25 Lightfair 2013, Philadelphia PA, USA, EnOcean Alliance and partners exhibit. www.lightfair.com

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