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THE WORLD OF ENERGY HARVESTING WIRELESS TECHNOLOGY

Momentum for the Digital Life

EnOcean: A building's mirror image

Signify: Philips Hue now works with third party light switches

We build your IoT application.

EnOcean Gateway from BSC – the door to the Internet of Things

The EnOcean Gateway from BSC Computer connects EnOcean-based sensors and switches with other IoT devices. It enables users to easily design their individual IoT solution integrating different device manufacturers, protocols and technologies.



The EnOcean Gateway offers:

- › Access to established interoperable ecosystems like the EnOcean Alliance and Open Connectivity Foundation (OCF)
- › Highest data security based on the latest security Intel platform
- › Conformance with the OCF security specification
- › Modular and flexible design approach
- › Future-proof system expandability
- › Desktop version (internal antenna) or for installation on a top hat rail (external antenna)



Learn more about your easy route
to the IoT at www.bscgmbh.de

Dear reader,

Whether you are at the gas station filling up your car or stocking up on heating oil supplies, you will have noticed a significant increase in energy prices. It is also the end of a phase during which some investments in energy-saving technologies were put on the back-burner. Today, the non-consumption of primary energy is the energy source with the largest potential, besides renewable resources. But what does that have to do with EnOcean? Actually, a lot, since this idea is already reflected in our company name "the **ocean** of unused **energy**."

First, renewable energy from movement, light or temperature is the centerpiece of our self-powered IoT solutions. Whereas discussions about smart grids and renewable energy tend to focus on wind turbines, we focus on kinetic energy converters in self-powered wireless switches. Even solar power systems with their inverter modules and connected battery storage have a lot in common with our solar-powered sensor modules, which of course also work at night thanks to their mini energy storage units.

Second, the two systems – both with respect to macro-economic energy supplies for entire countries or continents, as well as to our micro technology systems – contain an intelligent energy management system for the efficient use and distribution of available resources. Which brings us back to saving energy.

Ultimately, both only work with the clever use of sensors, which generate the raw data for intelligent implementation. Today, we call it the Internet of Things (IoT), which enables the digitization of buildings and industrial facilities, the connection of all systems to smart cities and smart grids. In our wireless modules, we measure energy levels, turn off the power supply for non-required processes and optimize energy consumption periods, so that in the end, the required data is reliably collected on site and transferred using global wireless standards.

The wireless standard bearing our name – EnOcean – is increasingly being used for networking buildings. A high degree of transmission reliability, clever start-up methods, maintenance-free system components and an Alliance organized by manufacturers and system partners to promote the standardization of the wireless protocol – all these factors ensure the future viability of the IoT solutions.

Join us and learn more about the self-powered wireless technology and the many applications found in this magazine.
Enjoy!



Andreas Schneider
CEO, EnOcean GmbH



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EnOcean

A building's mirror image



Karantis360

Independent home living thanks
to self-powered EnOcean sensors

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EnOcean Alliance

Self-powered wireless solutions – the key to the
new Ready2Services smart building standard



A building's mirror image

Leading article

Momentum for the Digital Life

It is already a well-established concept in manufacturing: the digital twin, a virtual map of a machine across its entire life cycle. The goal is to make production much more efficient, more flexible and more individualized. Digitalization is also making rapid strides forward in buildings. The Internet of Things (IoT) facilitates a digital twin of a building, which maps the exact usage requirements in the virtual world. This leads to automated service processes in facility management, greater energy savings and a more personalized sense of wellbeing on the part of the users. The solutions range from basic smart home configurations to ambient assisted living to complex networks of disciplines in office buildings. There is one thing that all these applications cannot do without: the self-powered wireless sensor.

By Armin Anders, Vice President Business Development, EnOcean GmbH



Agami vision A

According to the study titled “Unternehmenstrends 2020” (Company Trends 2020) published by the GdW*, tenants will be in direct digital communication with property management companies in the future. Digitally collected building data allows operators to monitor technical installations in real time and to carry out necessary work just as quickly. At the same time, they can offer their tenants services that help save them money – in terms of energy consumption, for instance. To this are added intelligent systems that improve individual comfort in the apartments.

From the elevator to the apartment

In retrofit and new construction projects alike, more and more property management companies are already establishing the basis for digital functions in their buildings. Since all automation systems run on bits and bytes, it all begins with a seemingly mundane aspect: an Internet access – not only in the apartments but also in the areas of general use. With this step, automation initially starts outside the apartments, for example with the aid of wireless sensors that signal necessary maintenance and repair work on elevators, heating and air-conditioning systems or other technical installations. Digital door access systems or doorbell displays are also possible. An IoT gateway transmits the sensor data to the service provider's system via the Internet. This enables the service provider to operate the building much more efficiently, more service-oriented and using less energy.

Smart home products and services in apartments rely primarily on user acceptance. A wide range of technical capabilities are available in smart homes today. However, residents should not feel as though the technology runs their lives but instead have functions that operate behind the scenes or give them the ability to deliberately select the ones that meet their individual needs. A basic package can establish the technical requirements for smart control. Along with the Internet access, this includes primarily the blind control function. Tenants can use this function to raise and lower the blinds at the press of a button. At the same time, window contacts signal whether a window is open. Another application is a central “all on/all off” button that can be used to turn off electronic devices, such as the lights, when leaving the apartment and to turn everything back on again when the resident returns.

Smart home on demand

A fundamental network is thus already available, which can form the basis for additional smart home functions. Property managers can offer their tenants different options, such as heating control or multimedia via voice control. They can also use test installations to recommend the technical equipment and available systems. As a result, the users do not have to personally deal with the different smart home packages available on the market. This is another important service that property management companies can offer to make their properties more attractive and valuable to tenants.

* GdW Bundesverband deutscher Wohnungs- und Immobilienunternehmen e. V. (Federal Association of German Housing and Real Estate Enterprise Registered Associations): “GdW Industry Report 5 – Company Trends 2020”

At the same time, companies can use smart technology to offer entirely new, automated services, for example in the form of flat-rate power supply or billing according to room temperature level per square meter of heated space**. A kind of contracting model is also conceivable. In this case, service providers make the desired smart home infrastructure available in different packages and refinance their investment, for example through the energy savings achieved. Residents benefit from greater security and comfort.

Invisible everyday assistants

These two criteria, in particular, are important for ambient assisted living packages. In this form of building digitalization, the basic package must already include important functions, including motion sensors in rooms and mattresses as well as fall and presence sensors or flexibly positioned emergency call and operating buttons. The sensors supply the necessary information and thus become indispensable everyday helpers for senior citizens. At the same time, vital signs or sensors that detect wellbeing and activity can be optionally integrated. They significantly increase the residents' independence, since they provide support only when specifically needed. Operators of apartments suitable for seniors can include various smart home functionalities in the rent as part of a service package.

Focus on rooms

The most frequent applications of a building's digital twin are currently in office complexes. Digitalization with the aid of distributed sensors and a cloud-based infrastructure enables facility managers to develop and automate new services. This includes, for example, room use management. Presence sensors can detect at all times how many people use a conference room and how often or when the cafeteria is especially crowded. Room occupancy and thus the use of cost-intensive resources, such as heating, air-conditioning and lights, as well as staff and inventory can be optimized based on usage data.

Detailed usage patterns of the building, staff and inventory can be prepared with the aid of additional sensor data collected by e.g. door contacts, activity meters in electronic devices, etc. These patterns supply real-time information about the actual demand and allow appropriate measures to be taken to make services more efficient, energy-saving and dependent on the situation. Another example is the usage-dependent maintenance and cleaning of sanitary facilities in office buildings. Sensors supply the necessary data, such as how often the rest rooms are used or whether the toilet paper, towel and soap dispensers are running low on stock. Facility managers can use this data to organize their staff according to current requirements and always restock needed materials on time. This not only lowers costs but also increases user satisfaction in particular.

A comfortable environment

Greater user satisfaction also makes companies more attractive as landlords of office space. A comfortable atmosphere at the office has been proven to improve work productivity and to promote employee loyalty. Integrated sensors in office furniture make it possible to design the furnishings colorfully and individually according to requirements and simultaneously equip the offices, for example, with state-of-the-art multimedia and smart light and heating control. Because of hidden sensors, employees are unaware of the IoT technology and notice primarily the comfort factor.

The list of optimized processes in a digitalized building is practically endless. For example, it can include sensors that sound the alarm if a water mains ruptures or in the event of a fire or break-in and thus prevent millions in insurance losses.

Flexible wireless technology

More than 90% of buildings are existing real estate. Wireless solutions must therefore be considered for adding a comprehensive digital infrastructure. This is the only way to establish the right cost-benefit ratio.

**** MPW Consulting: "MPW Study: Energy Services in The Property Management Business," 2017**



Wireless sensors, which supply the necessary data from numerous points within the building, always form the technological foundation. In particular, the EnOcean wireless standard has become established as the communication protocol. It is used in more than 500,000 buildings around the world. Thanks to mesh technology, however, Bluetooth® and Zigbee can also be used for specific applications. An IoT gateway interconnects the sensors and actuators over the Internet with cloud-based platforms such as IBM Watson, Amazon Echo, Microsoft Azure, Apple HomeKit, Google Home and Crestron.

Self-powered IoT

This Internet of Things, with its thousands of data points within a building, can be implemented only with self-powered wireless sensors. They can be placed freely and flexibly and added to at any time – above all, without requiring any maintenance. Batteries have served out their purpose in the IoT as a source of energy for sensors. A sample calculation makes this clear: Wireless heating valves operate on two batteries, which have a service life of approximately one year. In an office complex with 10,000 wireless components installed, the facility managers would have to replace around 30 batteries per day. In addition, early failures ensure that the first maintenance work must begin shortly after installation. Once the first battery has failed within the service life, the building operator will have to replace all batteries as a precaution. This requires an incalculable amount of labor and correspondingly high costs that are not incurred with self-powered wireless components.

Environmental responsibility is another consideration. Mountains of toxic battery waste should not be the price we pay for greater energy efficiency and wellbeing in our buildings.

www.enocean.com

Self-powered wireless solutions – the key to the new Ready2Services smart building standard

In June 2018, the Ready2Services label was officially launched by the Smart Buildings Alliance in Paris. It aims to further advance the realization of intelligent buildings for smart cities, including new innovative service models. Self-powered

wireless sensor solutions and the interoperable EnOcean ecosystem play a key role in this process of digitalization.

By Graham Martin, CEO and
Chairman, EnOcean Alliance





The Ready2Services concept intends to evaluate the ability of buildings for multiple services, for example for energy flat rates or space utilization optimization. Its approach is based on three layers, including equipment and interfaces such as sensors, a network infrastructure such as IP gateways as well as services and applications e.g. cloud solutions. Each layer itself should be replaceable, thus providing multi-vendor interoperability.

Reliable sensor data

Self-powered wireless switches and sensors for maintenance-free applications optimized for building automation play a key role in supporting the targeted digitalization of buildings and enabling innovative services by providing reliable sensor data. In conjunction with intelligent IoT systems, self-powered sensor solutions help optimize

the utilization of buildings, create new service models and make buildings more flexible, more energy-efficient and altogether more cost-effective.

Interoperable ecosystem

In addition, the EnOcean Alliance, with its broad ecosystem of interoperable devices using the EnOcean wireless standard (ISO/IEC 14543-3-1X) on the sub 1 GHz band, is the perfect fit for the Ready2Services standard for smart buildings. It has proven to be a resounding success in building automation and smart homes, due to its high reliability and a radio range of up to 30 meters. Besides the technical advantages, the established EnOcean Alliance ecosystem gives users the most flexible freedom of choice to build intelligent networks and services dedicated to their specific needs.

Twelve smart building pioneers

The Ready2Services certification process can be carried out in a real estate program during its design, implementation or operation phase. Depending on the rating, the project wins one of four certification levels, ranging from “base” to “three stars.”

Twelve buildings have already successfully received this certificate such as buildings of BNP Paribas Real Estate, Ivanhoé Cambridge and Allianz Real Estate. Also, a building of Bouygues Construction was successfully awarded, including self-powered wireless solutions using the EnOcean wireless standard, proving that maintenance-free solutions on the EnOcean wireless standard are a perfect fit for the Ready2Services concept.

www.smartbuildingsalliance.org
www.enocean-alliance.org

Aruba and EnOcean bridge the IT/IoT divide

Aruba AP-315
Wi-Fi Access Point

Below: Aruba Edgeline
Gateway and Server



Easily connected via BLE radio

AOS 8.4 enables Aruba's wide range of indoor and outdoor Wi-Fi access points with integrated Bluetooth® Low Energy (BLE) radios to interoperate with EnOcean's BLE Easyfit devices. By simply selecting "EnOcean" from a drop-down menu, and then entering the location to which the EnOcean data should be sent, the access point is ready to go. Regardless of whether access points are deployed in branch offices, a single building, a campus, or a multinational corporation, the process is the same.

Single solution for data and control

Aruba ships millions of access points every year for smart home, retail, healthcare, hospitality, education, service provider, enterprise, industrial, manufacturing, airline, and government customers worldwide through a network of more than 85,000 resellers and OEMs. Example customers include The Home Depot, Jumeirah Group Hotels, NTT,

Devices in the Internet of Things (IoT) are the eyes and ears of smart buildings, and they are given voice by the secure IT connectivity infrastructure through which they talk with control applications. Aruba, a Hewlett Packard Enterprise company, is focused on IoT-friendly IT infrastructure, making control systems simpler to deploy, more secure, and easier to maintain. EnOcean is a strategic partner on that journey, and with the October release of version 8.4 of the Aruba Operating System (AOS) we will together have achieved a huge step forward. By Michael Tennefoss, Vice President of Strategic Partnerships,

Aruba, a Hewlett Packard Enterprise company

Cambridge University, United Airlines, Microsoft, and Time Warner. Today these customers require separate infrastructure for lighting control, leak detection, door/window open/close, occupancy, and temperature/humidity sensing. AOS 8.4 is a game changer, allowing customers to leverage one common infrastructure for both data and control.

A broad network

In some applications, customers may want to process EnOcean device data on site using control applications, or process and forward the control data to cloud applications like Azure IoT. Aruba has you covered there as

well. Aruba's Edgeline gateways and servers offer a variety of communication options (including cellular), data interfaces (serial, analog, digital, ModBus, CAN), CPU horsepower (up to 64 Xeon cores), and storage.

The ease with which EnOcean's Easyfit devices can be added to an Aruba network – without the need for any new IT hardware – makes the solution very compelling for customers. And Aruba's expansive customer base and broad network of resellers offer immediate new sell-to opportunities for EnOcean OEMs.

www.arubanetworks.com

The Internet of Things for smart buildings

DB Systel worked together with EnOcean to equip the Venture IoT/M2M office in Hamburg with self-powered wireless sensors and to network them via the DB IoT Cloud on a single day. The pilot project showcases the opportunities that the Internet of Things brings to smart buildings.

By Jörn Petereit, Head of IoT/M2M, DB Systel GmbH

The Internet of Things (IoT) can significantly improve efficiency and comfort in buildings. Classical applications such as room use, dependent heating control or the automated transmission of consumption figures save administrative, maintenance and subsidiary costs. Customizing building functions based on sensor data is a particularly fascinating aspect. This makes it possible to adapt the different disciplines, such as lighting, heating, cooling as well as services, to the current requirements in real time. The IoT cloud constantly learns new things and can continuously optimize the building system functions with the aid of the collected data.

The Proof of Concept (PoC) in Hamburg currently focuses on an ideal use of space and spatial quality in both the freely usable rooms and the meeting rooms. Users can also trigger customized actions with so-called service call buttons.

Self-powered access to all data

Data from as many points as possible within the building form the basis for smart control. Thanks to self-powered wireless sensors, the disciplines can be extensively networked on the IoT. The sensors only use motion, light or temperature differences as their energy source. Thus, they can be installed at places that are difficult to access and can be expanded at any time.

The sensors communicate via the EnOcean wireless standard (ISO/IEC 14543-3-1X),

which is optimized for ultra-low energy consumption. Thanks to standardized communication profiles of the EnOcean Alliance, products from different manufacturers can seamlessly work together.



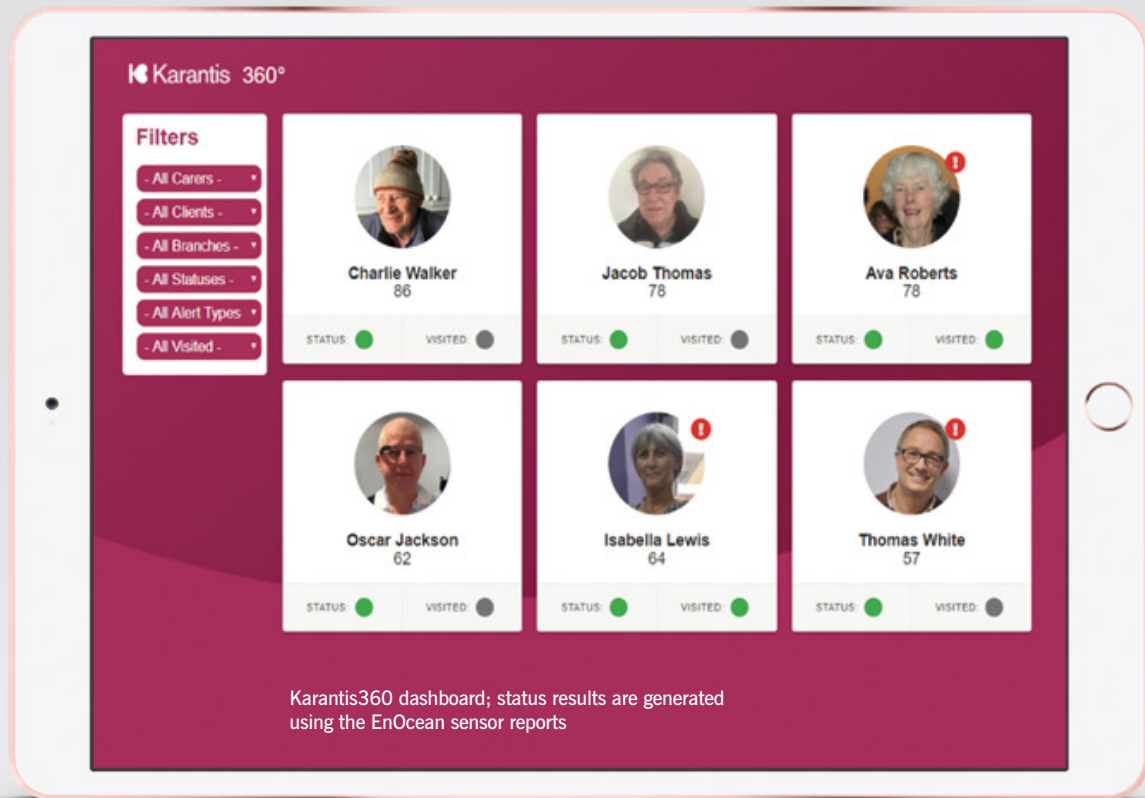
The following self-powered sensors are used in the IoT lab:

- Solar-based occupancy and presence sensors deliver data to adjust the temperature in unused rooms, turn off the lights or determine room and desk occupancy.
- Solar-based air quality sensors measure the concentration of carbon dioxide, the ambient temperature and the relative humidity.
- Solar-based window contacts signal any change in the status of windows and doors (open – closed).
- The service call button is a self-powered wireless switch that can be used for “man-machine” communication in different functions.

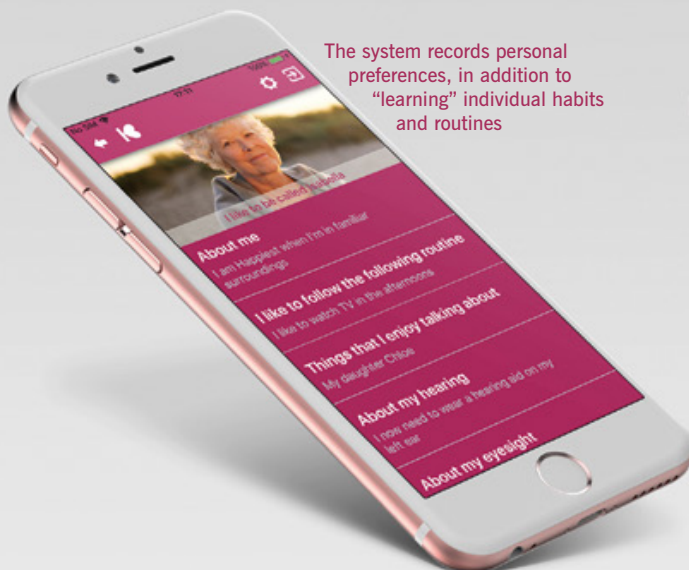
Networked via DB IoT Cloud

The DB IoT Cloud is the element connecting the sensors' physical world to the building processes. It provides the internal and external IoT technology for operating the building across the entire digitalization chain – from individual sensors, actuators or devices to the application and process world. It can identify every object by its individual Internet address and specifically target it via the network. This permits the use of economies of scale and allows the system to be optimized and adapted based on real-time data.

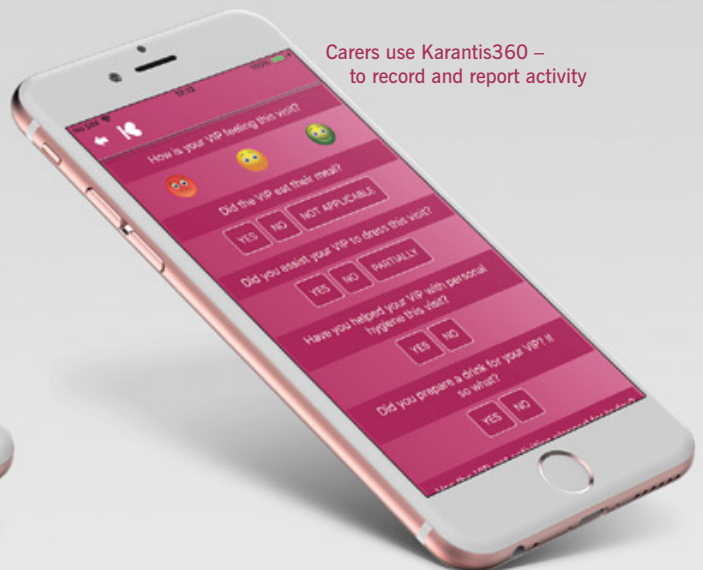
www.dbsystel.de/dbsystel-en



Karantis360 uses self-powered sensors to make **independent home living** possible – and possible for longer



The system records personal preferences, in addition to "learning" individual habits and routines



Carers use Karantis360 – to record and report activity

When Karantis360 set out to develop an automated personal monitoring and alerting system, it had very specific requirements for the technologies it would use; partnering with EnOcean and IBM guaranteed the functionality it needed.

By Helen Dempster, Founder and Chief Visionary Officer, Karantis360



Karantis360 is a specialist developer and provider of mobile applications for the care sector. The company's systems transform the delivery of care for infirm clients and those living with Alzheimer's or dementia, ensuring families are part of the care process too.

The company's most recent introduction, Karantis360, is a totally new development in assisted living: an automated personal monitoring and alerting system, using intelligent, battery-free sensors wirelessly linked to a discreet, mobile device which sends reports and alerts to carers and family members.

Unobtrusive changes

For a client with Alzheimer's or dementia, changes in their familiar environment can cause significant distress or confusion, which could lead to accidents or incidents in the home. Therefore a key criterion – and

practical challenge – was that there should be no physical changes to the client's home and no disturbance to the interior decoration. Another challenge was monitoring activity in areas without easy access to a power source, such as bathrooms. Activity in these areas is highly routine, thus an excellent indicator for exception alerts, so Karantis360 needed a solution, which would overcome the issue.

Self-powered sensors connected to the cloud

Built in close collaboration with EnOcean and IBM, Karantis360 incorporates cutting-edge technologies. EnOcean's latest generation of self-powered sensors means that the system can be placed wherever needed in the home, irrespective of access to a power supply, making it possible to monitor even the most challenging locations effectively, reliably and discreetly. IBM's secure cloud hosting and smart artificial

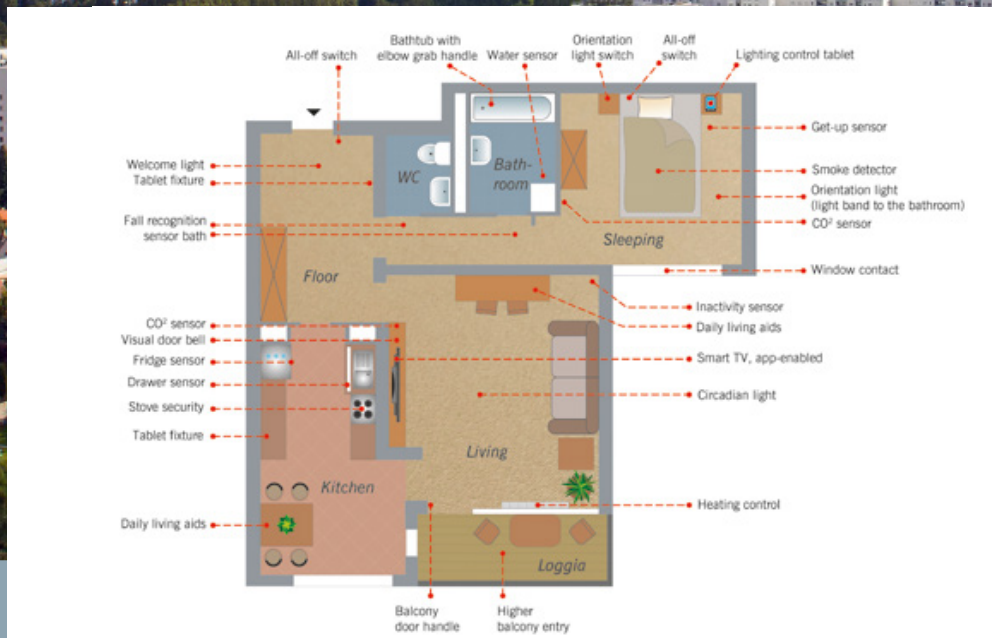
intelligence technologies provide the machine learning and discreet automatic data communication essential for a swift and appropriate response.

The Karantis360 system is now live, with clients using an initial set of four sensors: self-powered movement, door, pressure and humidity as well as water monitors. Additional sensors are being introduced from the current EnOcean-based offering, and development work is underway with EnOcean to create new sensors that will help keep Karantis360 at the leading edge of smarter care.

Karantis360 allows elderly clients to live in their homes for longer, which research says 97% of us would prefer to do: that's technology at its best.

www.karantis360.com

The apartment that looks after *its* residents



Together with AOK Nordost and funded by the National Association of Statutory Health Insurance Funds (GKV-Spitzenverband) until January 31, 2018, GESOBAU AG has studied how and whether modern technology can help preserve mobility and cognitive skills so that seniors can remain in their own homes even as their need for care increases.

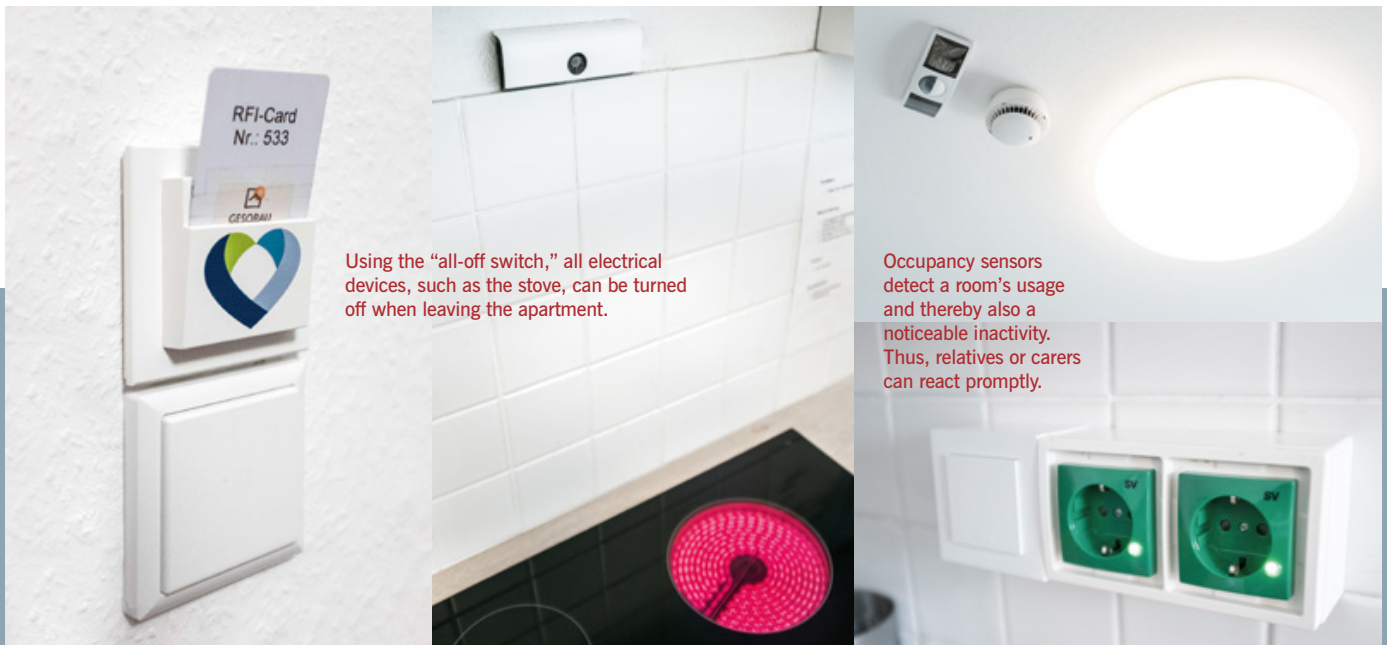
User perspectives form the basis for an interior design concept

The project focused on the user's perspective and thus on customizing the solution to individual needs. The "Pflege@Quartier" project was developed together with tenants (average age of 77 years, some requiring care) and is thus oriented specifically toward the needs of senior citizens. Over the course of the project, a concept for kitting out



90 percent of the tenants in GESOBAU AG properties in Berlin would like to live independently and self-reliantly in their own homes in old age. In 2014, this wish raised the question of what apartment solutions would look like that brought the living situations of seniors and people in need of care together with the existing approaches to home design and the increasing digitalization of our lives. This is where the “Pflege@Quartier” project comes in, an undertaking that has been in the works in the Märkisches Viertel neighborhood of northern Berlin since 2015.

By Frank Druska, Investment Management, GESOBAU AG, and Helene Böhm, Public Housing Development, GESOBAU AG



Using the “all-off switch,” all electrical devices, such as the stove, can be turned off when leaving the apartment.

Occupancy sensors detect a room’s usage and thereby also a noticeable inactivity. Thus, relatives or carers can react promptly.

homes was developed, which was tested in a model apartment and in 30 tenant apartments. The basic hardware kits were selected so that they not only provided assistance for seniors but also increased comfort for people of all ages.

Requirements: low maintenance, ease of installation and user-friendliness

Solutions that were easy to use or did not require any action at all on the part of the user were deliberately chosen for the assisted living fixtures. Since the furnishings were installed in occupied apartments, care was taken to ensure that the solutions were affordable and required little maintenance. Moreover, it was necessary to install the

technology used with as little effort or intervention into the apartment as possible, which was why only radio-based systems could be considered. escos automation GmbH, the company that furnished the apartments, therefore used EnOcean-based components.

Inactivity sensors, fall recognition systems and automatic stove shutoff devices turned out to be the favored technology modules. In addition, wireless lamp switching systems, a doorbell add-on and an orientation light that makes the walk to the bathroom safer at night were met with positive reviews from the tenants. The apartment that looks after its residents is able to automatically identify emergency situations and, in some cases,

also diffuse them, for example by integrating into the system a medical alert function that calls automatically for help via an integrated connection to the Johanniter-Unfall-Hilfe emergency response or to have the tenants’ family members use the system-specific app.

Continuing the project and integrating it into everyday life

GESOBAU is extending the “Pflege@Quartier” project beyond the funding period to integrate the assisted living technology into existing properties and the rental processes beyond the pilot run over the long term by offering a residential package that “ages along with the tenant.”

www.gesobau.de



IBM South Bank Studio – Lighting Control System Upgrade

The South Bank Studio combines traditional meeting room space with informal relaxing areas; this section of the ground floor also works as an access route to utilities and a thoroughfare to other parts of the expansive South Bank facility. The challenge for the IA Connects team when tasked with revitalising the lighting scheme, while also delivering innovation, was making sure the proposed system worked well in every required scenario without compromise.

By Dave Lister, Managing Director, IA Connects Technology Ltd



IBM Studios

"Design must reflect the practical and aesthetic in business, but above all, good design must primarily serve people"

Thomas J Watson

Thanks to the flexible self-powered wireless components, the rooms of the IBM Studios could be equipped with intelligent lighting controls without the need for complex reconstruction work.



A DALI-based system is still the tried and tested go to for lighting controls. This made good sense as it's a technology both the end client (IBM) and their incumbent FM partner (CBRE) were familiar with. The first survey revealed open ceiling architecture in the relaxed spaces and traditional ceiling tiles in the meeting rooms. With little or no budget for redecoration and no major aesthetic works planned, peripheral control devices utilizing EnOcean were the obvious choice!

Simple and effective

Nothing revolutionary for the meeting rooms was required, simple on/off switching via Trio2Sys EnOcean switches kept things easy for attendees. The addition of EnOcean PIRs for presence detection were applied to the larger rooms, allowing a split lighting scenario to maximize the energy savings if rooms where only half occupied. The linking corridors also had PIRs located along their length dropping light levels by 50% when no activity was detected during normal business hours. The more informal spaces consist mainly of face-to-face chairs and sofas for

informal meetings and relaxing at lunch. The application of EnOcean PIRs directly above these spaces meant that when "not in use" light levels specific to that area only can be adjusted. Storerooms and electrical control rooms located off the corridors had PIRs added to ensure task lighting can be removed when no presence is detected thus maximizing efficiency.

Plug and play mantra

In order to minimize the enabling works required for the DALI upgrade, IA Connects supplied their Lighting Control Modules (LCMs). These devices distribute both power and DALI cabling; yet can be discretely deployed in ceiling voids and at high level above cable trays in open spaces. A similarly discreet network of Beckhoff Automation EnOcean Antennas (KL6583) meant that where possible the maximum use of existing infrastructure and minimum residual damage was achieved. The system followed the



EnOcean-based PIRs control the corridors' light as needed.

plug and play mantra ensuring the FM partner could work quickly and efficiently with the system in the future.

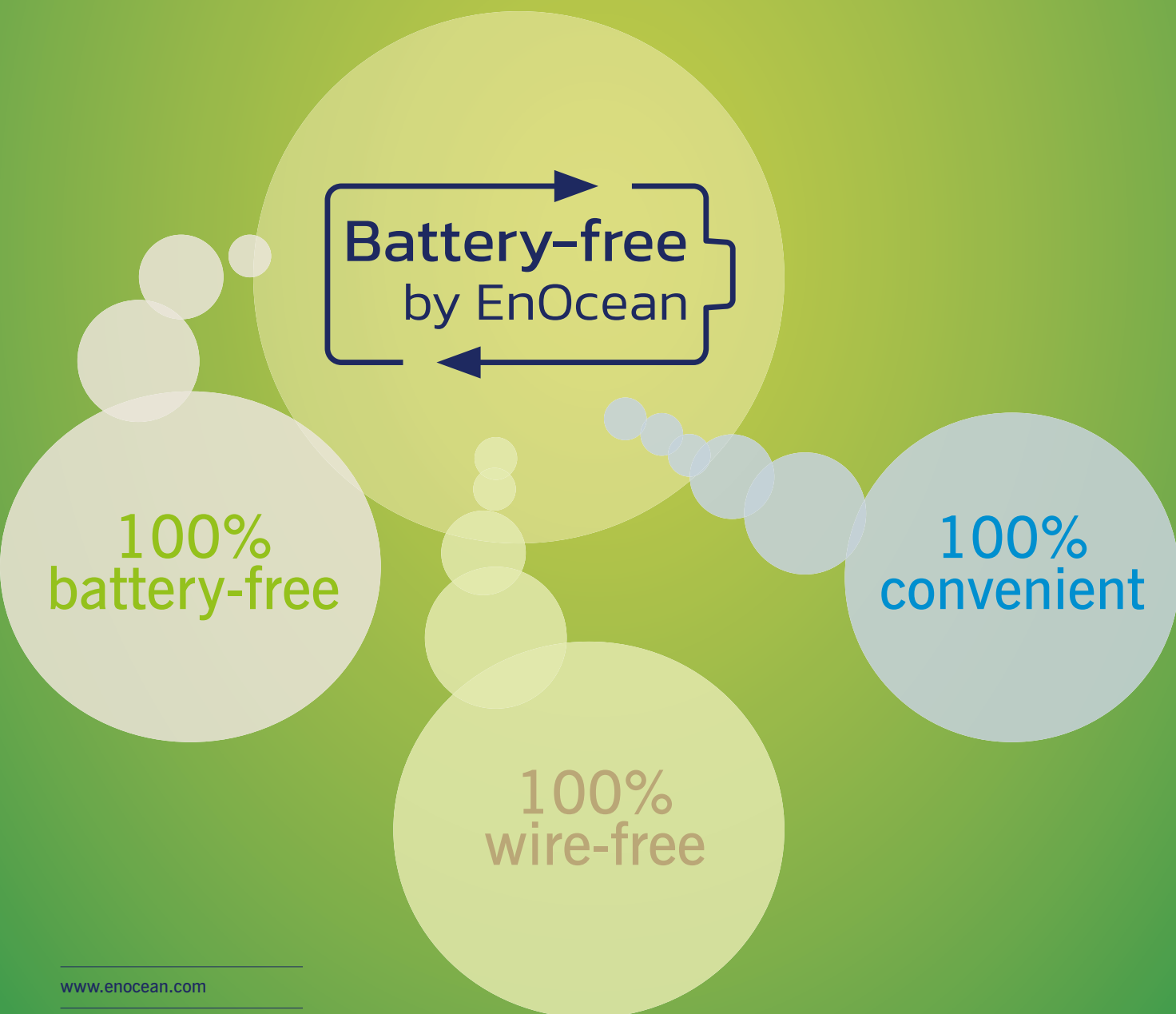
The next phase of the process will be to connect each of the newly created assets to the buildings IBM Maximo FM package. This will enable not only automated testing of the Emergency Lighting System and instant fault reporting but asset health insights for the duration of the system life cycle.

www.iaconnects.co.uk

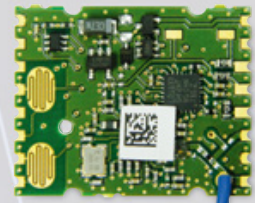
The New Seal

for Battery-free Switches

EnOcean GmbH has introduced the new “Battery-free by EnOcean” seal to make the branded switches’ benefits visible at a glance for consumers, such as battery-free and wire-free operation, maintenance freedom, flexibility and comfort. As one of the first providers, Signify is using this seal for its Friends of Hue program (see page 26).



PTM 535 – Greater range at the press of a button



With its new PTM 535 radio transmitter module, EnOcean has systematically further developed the optimum use of kinetic energy for self-powered wireless technology. The miniaturized module has a much greater range and integrates enhanced security mechanisms. Combined with the ECO 200 energy converter, it facilitates individually tailored switch solutions for the consumer market, smart homes and industrial applications.

By Matthias Kassner, Vice President Product Marketing, EnOcean GmbH

The PTM 535 is especially efficient, thanks to cutting-edge module technology. As a result, it reaches a much greater radio range with the energy supplied by the mechanical ECO 200 converter at the press of a button. Manufacturers can thus use the benefits of a self-powered, maintenance-free switch for new applications in the consumer market and industrial environments. Thanks to its attractive price-performance ratio and easy integration into a housing, the PTM 535 permits cost-effective production even of large series.

The PTM 535 can be connected to the ECO 200 energy converter via a contact spring, thus using only the pushbutton's kinetic energy. It has four digital inputs that can be used to map up to four switching states. Each telegram transmits a one-time 32-bit ID, the polarity of the energy impulse and the operating state of the digital inputs.

Security on demand

The PTM 535 also makes it possible to use enhanced security mechanisms. Transmitted telegrams can thus be encrypted and authenticated with modern security technologies, such as AES 128. This makes it possible to protect the recipient against forging of messages or replay attacks and prevent eavesdropping attacks. The additional data security assists OEMs in the development of new applications for self-powered wireless switches, for example in warning sensor systems.

Tailor-made applications

With the great-range PTM 535, the possible wireless switching applications are now practically unlimited. They extend from industrial switches in car manufacturing to stop buttons in public buses to mini-switches that enable users to activate household appliances, for example, or place an emergency call.

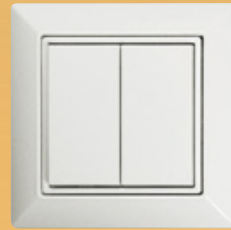
The PTM 535 is currently available for the EnOcean wireless standard in the 868 MHz frequency (Europe and China). It is mechanically and functionally compatible with the existing PTM 330 and PTM 335 modules.

EnOcean is the world's leading developer of self-powered wireless technology and a reliable partner for energy harvesting applications. Manufacturers benefit from sophisticated self-powered platforms that ensure fast product development for building and industrial automation applications, smart homes, LED light control and the Internet of Things.

www.enocean.com



Bluetooth® products from EnOcean



An Introduction to Bluetooth®

Bluetooth® today is one of the most well known wireless technologies used for a broad variety of applications ranging from mobile phones to accessories and even health monitoring devices. More recently, the addition of mesh network capability has sparked great interest in new application areas, including lighting control and building automation. This also opens up enhanced abilities of self-powered EnOcean switches and sensors supporting the Bluetooth® standard.

By Matthias Kassner, Vice President Product Marketing, EnOcean GmbH

Origin of Bluetooth® and Bluetooth® SIG

The history of the Bluetooth® radio standard dates back to 1994 when a number of companies looked for a mechanism to replace wired connections. As a result, the five companies Ericsson, Nokia, Intel, IBM and Toshiba formed a special interest group (SIG), which was officially established in 1998. Today, Bluetooth® SIG has more than 33,000 members, making it one of the largest standardization bodies in the world. Beginning with Bluetooth® version 4 (released in 2009), an ultra-low power (ULP) form of wireless connectivity – called Bluetooth® Low Energy (BLE) – has become part of the standard Bluetooth® stack.

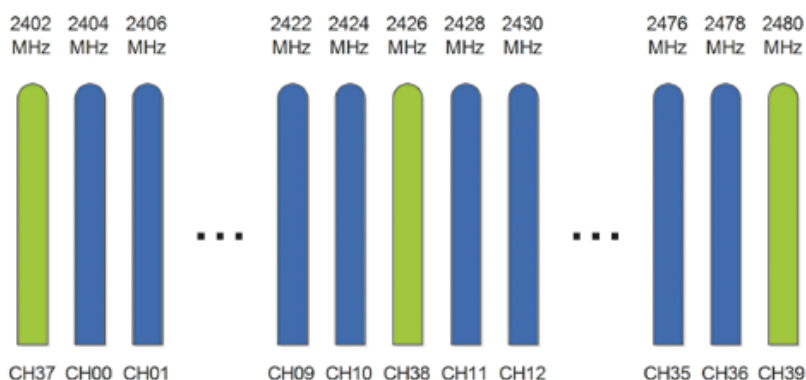


Bluetooth® Technology

Bluetooth® communication is standardized as IEEE 802.15.1 and uses the 2.4 GHz ISM (Industrial, Scientific and Medical) radio band. This band had been set aside worldwide for non-telecommunication applications, including medical devices and even microwave ovens. Using the 2.4 GHz band for communication therefore provides worldwide usability but also leads to two key disadvantages.

Firstly, the 2.4 GHz band is used by a lot of devices ranging from WiFi-enabled smart phones and tablets to wireless audio and video systems, door bells, remote controls and of course Bluetooth® devices. Regulated bands, which for instance enforce low transmission duty cycles, such as the 868 MHz band in Europe, ensure much less interference and thereby a higher quality of service. Secondly, the communication range, i.e. the distance between sender and receiver that can reliably be covered using a certain amount of transmission power, is much lower in the 2.4 GHz band than in lower frequency bands such as the 868 MHz band. Bluetooth® uses specific techniques to mitigate these two effects. To address the issue

2.4 GHz Worldwide Unlicensed ISM Band



Bluetooth® Channel Structure

Due to mesh network technology, self-powered switches and sensors can communicate with each permanently installed Bluetooth® device in such a system (e.g. lighting or access points). Thus, the same sensor information can be used for numerous additional purposes including advanced comfort and security services – making data a much more valuable asset than in classical building automation systems.

of interference, Bluetooth® uses frequency hopping spread spectrum (FHSS) communication. In this, the communication frequency is chosen from a set of individual carrier frequencies and changed at periodic intervals according to a pre-defined “hopping” mechanism.

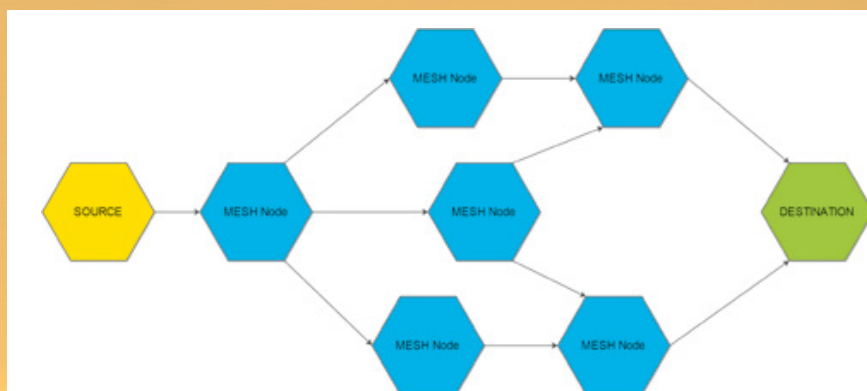
Bluetooth® uses a set of 40 such carrier frequencies for communication. Three out of those 40 channels – the so-called advertising channels (marked green in the illustration above) – are used by Bluetooth® devices for their initial pairing and by BLE devices for their data exchange.

Mesh Network

To address the issue of limited range, Bluetooth® has introduced a mesh network topology where messages can be relayed from the source to the destination via intermediary devices. This approach greatly extends the communication range and allows covering larger areas with a Bluetooth® Mesh network.

Mesh systems have shown good potential in lighting applications which naturally provide a high node density coupled with readily available power supply. Light sources are typically available within less than five meters from each other, making the communication distance between them very low.

Establishing a Bluetooth® Mesh network based on these lighting fixtures therefore creates a readily available low power network infrastructure with low to medium



Bluetooth® Mesh Network

bandwidth. Such a network is ideally suited for the communication of energy harvesting wireless switches and sensors that can provide input data for a building-level Internet of Things (IoT).

Valuable Data Asset

That way, lighting systems become a data backbone for IoT applications. Besides traditional lighting, the system generates and transports a wide variety of sensor data to the cloud. Taking the example of a lighting system with occupancy sensors, the basic functionality continues to be controlling the light. In addition however, the occupancy sensor data can be used to determine the office space utilization. Furthermore, the wireless network established between the light sources can be used to transport sensor data which is not directly related to lighting control, e.g. temperature, humidity or air quality sensors.

EnOcean Bluetooth® Solutions

EnOcean GmbH joined the Bluetooth® SIG in September 2016 and officially released the first energy harvesting Bluetooth® products – PTM 215B, EWSxB and ExRPB – to market at the beginning of 2017.

Up to now, the company collaborates with numerous leading providers of intelligent Bluetooth® control systems for a widespread adoption of self-powered wireless devices and their unique benefits in the industry. The partners include Fulham, Helvar, Aruba, Sylvania, Casambi, Silvar, Vossloh-Schwabe Lighting Solutions, Wirepas and Xicato.

In addition, EnOcean is working with the Mesh Workgroup within Bluetooth® SIG to standardize the unique energy harvesting capabilities of its products. Stay tuned for exciting product releases soon!



Easy to use tools
for product manufacturers:

3 Steps to find your EnOcean Product

By Christian Bach, Application Engineer, EnOcean GmbH, and Alan Tejada, Application Engineer, EnOcean GmbH

EnOcean is synonymous with energy harvesting wireless technology, offering modules and finished products under the brands Dolphin and Easyfit for batteryless applications in the Internet of Things. They are used for building and industrial automation, smart homes, LED lighting control and outdoor environmental monitoring. The EnOcean products are based on miniaturized energy converters, ultra-low power electronics and robust radio technology in open standards like EnOcean, Zigbee and Bluetooth® Low Energy.

Which module or product for which application? The EnOcean Product Finder rapidly answers this question online. Here's how it works:

1. For which application?
2. For which product type?
3. For which region / frequency?

Below is a list of EnOcean modules and/or finished products. Click on a suitable option for a detailed description. Try it out now:

www.EnOcean.com/Product-Finder

Product manufacturers will get comprehensive support for designing-in the self-powered wireless technology from EnOcean, such as application notes, system specifications, development tools and kits. Find out more at:

www.EnOcean.com/support



1. For which application?
2. For which product type?
3. For which region?
For which frequency?

Result for instance

Example
SWITCH MODULE

Switch

Wall Switch

Europe
EnOcean 868 MHz

PTM 215



Example
SWITCH MODULE

Switch

Wall Switch

Worldwide
Bluetooth/Zigbee

PTM 215B/PTM 215ZE



Example
FINISHED PRODUCT
FOR SENSOR

Sensor

Contact Sensor

Europe
EnOcean 868 MHz

EMCS



Example
MODULE FOR SYSTEM
PRODUCT

Controllers & Gateway

Gateway

North America
EnOcean 902 MHz

TCM 515U



Support

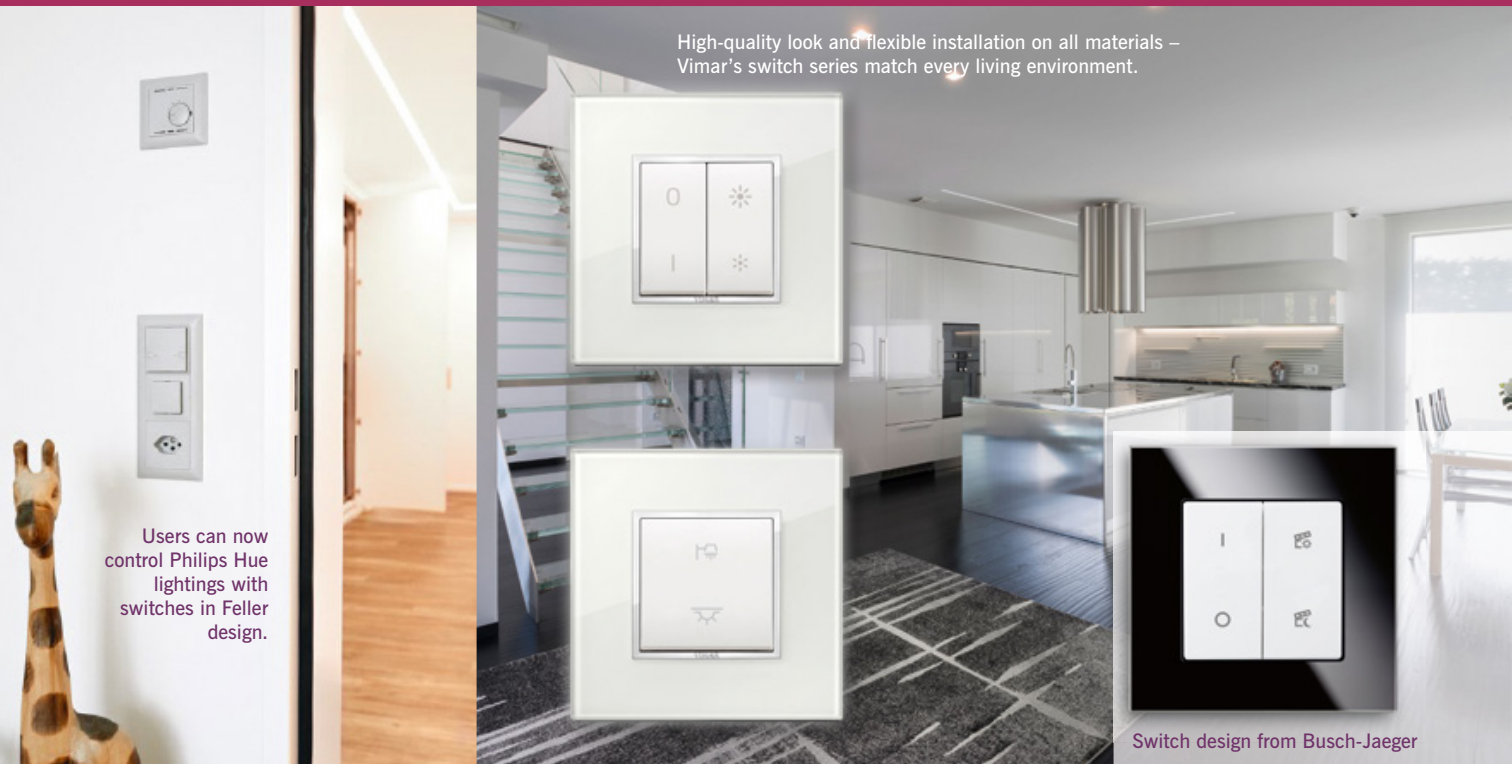
- User Manual
- System Specifications: EnOcean Radio Protocol 1,
- Starter Kit ESK 300 & Development Kit EDK 350

- User Manual
- Bluetooth System Specifications
- Zigbee System Specifications

- User Manual

- User Manual
- System Specifications: EnOcean Serial Protocol 3, EnOcean Radio Protocol 2
- EnOcean Radio System Specifications
- Development Kit EDK 350U
- Application Notes

Philips Hue now works with third-party



Signify, the world leader in lighting, introduced three new partners in the Friends of Hue program at this year's Light + Building. Offering an extensive range of battery-free, wireless wall switches in a variety of designs creates more freedom of choice to control your Philips Hue smart lighting system. The new Friends of Hue partners are leading lighting control manufacturers Feller, Niko and Vimar as well as Busch-Jaeger and Illumra, who joined the program in September 2018. By Marijn de Jong, Global Product Manager

Friends of Hue, Signify

The Friends of Hue switches offered by these leading brands will turn your Philips Hue lights on or off, dim and recall your favorite scenes. Thanks to EnOcean's energy harvesting technology, the switches work without batteries and need no wires. In a variety of colors and styles, they are designed to fit seamlessly into your home decor, whatever your taste and existing interior design. They can also be combined with existing switches and wall outlets from the same brand as they fit in their specific single and multiple gang wall frames.

"The new switches developed by our partners are the perfect way to bring the benefits and features of Philips Hue to a wider audience and are an addition to the existing control options such as the Philips Hue app, wireless dimmer switch, voice control, schedules and sensors. With the flick of a switch you and your guests can use the smart wall switch to control your Philips Hue lights, without interrupting

The Friends of Hue program is a partnership where Signify supports partners with integration, marketing and activation. It is open to luminaires and switch manufacturers worldwide.



light switches



At the Signify booth at Light + Building, visitors could experience the products of the new “Friends of Hue” partners for the first time.



The self-powered switch beside the bed, in this case a Niko design, now also controls Philips Hue lightings in the bedroom.

power to the system, as would be the case with a standard wall switch,” said Marijn de Jong, Global Product Manager Friends of Hue, Signify. “This is part of our ongoing commitment to grow the Philips Hue ecosystem to make connected lighting experiences more accessible to our customers in their homes.”

Benefits for the customer

The Philips Hue system offers many control options, such as the Philips Hue app, wireless switches, motion sensors, voice control and smart routines. And while Philips Hue lights can also be controlled by a traditional light switch, all of the features of a smart system require the light to remain online and available to the system. This is why you would ideally turn off the lights using any of the smart control options rather than cutting power, so consumers can reap the full benefits of their smart lighting system in any situation.

Control for the entire family

Smart control options are great and appreciated by many, but how would a visitor, friend or less tech-savvy family member discover and use these, or even be aware that there is a smart lighting system in place. That’s why smart light switches offer control options for a smart lighting system that are comprehensible to everyone and keep all smart features accessible.

Working with partners

Switch manufacturers understand like no other that there is a huge variety of designs, tastes and personal preferences when it comes to a switching program in the home. Consumers have already chosen a brand and design for their switches and wall outlets, and the ideal smart switch should integrate seamlessly.

Besides the design aspect there is the variety in electro-mechanical standards and executions in different countries around the

world. To handle the diversity in tastes and designs Philips Hue works with local partners with a strong local network in retail, distribution and new home construction to bring the benefits of smart switches to its user base.

Advantage of setup in app

The Philips Hue app sits at the heart of the Philips Hue smart lighting system. While wireless switches are available, the unique advantage of Philips Hue is that setup and configuration happens in the Hue app, just like Philips Hue devices. The consumer is guided visually, step-by-step to commission and configure the smart switch, and has access to a wide variety of configuration options including scene recall and digital dimming.

Signify has been Philips Lighting’s new company name since May 16, 2018.

www.meethue.com/integrate

Vimar
and Signify –
a new partnership
for solutions
with high added Value

As part of VIEW, Vimar's approach to the IoT for smart homes and buildings, the company has forged an important partnership with Signify, the world leader in lighting.

By Luigi Cervato, Product Manager, VIMAR SpA

Announced by both companies during the Light + Building 2018 exhibition in Frankfurt, the partnership witnesses the introduction of Vimar to the Friends of Hue program, launched to extend the Philips Hue ecosystem to include more options for consumers in controlling their smart lights. Today, the technological experience and design of Vimar, at its best in its range of residential series, combined with wireless technology, provides smart control designs for the Hue lamps by Philips

Energy harvesting technology

The new Vimar controls – which will be available from the end of 2018, in line with the Philips Hue development plan – are based on the ECO 200 energy converter for motion energy harvesting from EnOcean and ensure that the user has full control over the wireless lamps. Thanks to the EnOcean technology, the device is powered

by exploiting the energy generated by pressing the buttons, requiring no batteries.

These new one- or two-rocker button controls are the ideal solution for ensuring applicability, freedom of installation and versatility: the devices can be positioned almost anywhere, even on glass or wood surfaces. And without the need for masonry work, as it doesn't need a flush mounting box.

Wireless communication

The device's usage is so simple and intuitive that it "installs itself", being active as soon as it is installed: the signal is transmitted via radio without the need for any wired connections. An ideal solution for renovations, redevelopments and furnishing updates, or any installation that has regulatory or architectural constraints.

The new Vimar controls are based on EnOcean's energy harvesting wireless

PTM 21x switch module, which is available for different wireless standards such as Zigbee 2.4 GHz, EnOcean 868 MHz and Bluetooth® 2.4 GHz. Therefore, Vimar switches are compatible with several systems including Philips EasyAir (Zigbee) or Xicato and Casambi (Bluetooth®) and various manufacturers of the EnOcean ecosystem.

Admired design

Characterized by a design in line with the admired stylistic standards of the Italian company, the new devices are available within the three main residential series by Vimar – Eikon, Arkè and Plana – to ensure a look that is a perfect match with the energy and data sockets and the full range of different flush-mounted devices in the Vimar catalogue.

www.vimar.com



Vimar's self-powered switches integrate the ECO 200 kinetic energy converter from EnOcean and support EnOcean, Zigbee and Bluetooth® radio standards.



Sylvania lets efficiency and control fly high at FLYINGGROUP, Antwerp Airport



Changing over to LED lighting is a simple and effective way to make significant energy and cost savings. However, an LED solution is only effective if you turn it off when no one is there. You may think “just use a switch”. However, installing a switch is often problematic. You may need to add new wiring, requiring the walls to be cut, and on glass partitions, how can you add wiring through glass? These challenges have often caused many installations to opt out of using any form of controls or, limit it to occupancy sensors with no manual control.

To address these issues, Sylvania has launched SylSmart Standalone Room – a solution that bridges the gap between basic PIR-based products and complex DALI-based solutions. SylSmart Standalone Room is designed to be a solution with minimum installation, while offering maximum control; whereby old luminaires can be replaced simply with SylSmart luminaires which require no additional control cables. Therefore the solution provides the flexibility to control each and every luminaire like a more sophisticated system but without the burden of cost or complex wiring. The user can take full control of light levels by using



Client: FLYINGGROUP - Antwerp, Belgium
 Installer: Elektro Rudi Embrechts bvba



wireless occupancy sensors and EnOcean's BLE Easyfit wall switches (Bluetooth® Low Energy).

Flexible placement and easy configuration

With no mains wires, the EnOcean switch can be placed anywhere, giving you lots of flexibility to put it wherever you want without the need to tear down a wall to gain access to the wires. No batteries either, which means it does not require any maintenance. Furthermore, using the app, the wall switch can be configured quickly and easily via NFC with up to four different

functions entirely at the users' choice, all without needing a qualified engineer to do so for them.

Smart controls with minimal effort

FLYINGGROUP, Antwerp Airport in Belgium wanted both a more energy-efficient and visually comfortable solution for their meeting rooms. They also wanted more control over their lighting in different locations in the room and implement scene setting for presentations. Using SylSmart Standalone Room, Sylvania delivered energy-efficient Officelyte luminaires with SylSmart inte-

grated wireless controls which saved FLYINGGROUP 48% energy. The EnOcean BLE switches could be easily added anywhere in the room and required no new wiring, giving the customer a fully controllable, energy-efficient solution with minimal disruption.

www.sylvania-lighting.com



Figures of the EnOcean World

With the Internet of Things, the digital transition of buildings is rapidly picking up speed – thanks to energy harvesting wireless technology and the EnOcean standard.



→ **70 %** of the real estate sector agrees that the digital modeling of buildings throughout the entire life cycle has a great impact on cost reduction and the reliability of decisions and predictions.*

→ **58 %** of the real estate sector sees facility managers and technical building services providers playing a key role in digitalization.*

→ **76 %** of Chief Operating Officers reported that increasing automation in facility and asset management will have a positive impact on operational efficiency. **

→ Only **67 %** of space in commercial buildings is fully utilized. ***

→ Buildings use about **40 %** of global energy, **25 %** of global water and **40 %** of global resources. ****

→ The EnOcean technology has already been installed in more than

500,000 buildings worldwide.

This results in total energy savings of approx.

56 TWh since installation.



* ZIA Zentraler Immobilien Ausschuss e. V. und Beratungsgesellschaft EY Real Estate, October 2017

** Butner, Karen, Dave Lubowe and Grace Ho. "The human machine interchange: How intelligent automation is reconstructing business operations." IBM Institute for Business Value, October 2017

*** The Economy of Things Extracting new value from the Internet of Things, IBM Institute for Business Value 2015

**** UN Environment Programme

→ Visit the self-powered EnOcean world on the web: www.enocean.com / www.enocean-alliance.org

Why it is Essential to Certify Your Product

Last year the EnOcean Alliance implemented a uniform Certification Program to ensure the highest possible interoperability of all devices based on the EnOcean standard. It is an easy to use but powerful tool for labeling the reliability and high quality of our members' products. Since July 1st, 2018, the EnOcean Alliance product data base has only shown certified products by default to emphasize their importance for our ecosystem and the user benefits of certified devices.

By Armin Pelka, Certification Manager, EnOcean Alliance



As a member of the EnOcean Alliance, it is essential to certify your products. It is a quality seal of seamless communication and a key indicator for users to decide on an EnOcean-based solution.

At the same time, you take full advantage of all EnOcean Alliance promotional activities for certified products, including the technology logo. Up to now, more than 600 products of our Promoter and Participant members have already been certified – and the number is increasing every day.

Two certification levels

Set up as a free-of-charge self-certification process, the steps needed to certify your product can be done without any additional development effort. There are two certification levels, depending on a product's market availability:

■ **Certification Level 2.0** applies only to legacy products available on the market up to December 2017. Unless they have already done so members can still easily certify their legacy products to this level. There is no cut-off date for Certification Level 2.0.

■ **Certification Level 3.0** is mandatory for all newly developed products coming onto the market from 2018. It includes the additional Radio Performance Certification Specification to ensure high quality products with appropriate radio range in the field and also the Profile Certification to greatly enhance identifying potential interoperable products in the field to benefit the entire ecosystem. Additionally, it covers the Energy Harvesting Specification to ensure correct energy budget management and specification.

All steps of the certification process can be found at www.enocean-alliance.org/products/how-to-certify-a-product. Start to certify your product right now.

Technical Power for the EnOcean Standard

**enocean®**

Wireless Standard

ISO/IEC 14543-3-1X



Since its foundation ten years ago, the EnOcean Alliance with its Technical Working Group (TWG) has created a comprehensive portfolio of technical specifications to enhance and further improve the EnOcean standard and to support its members in the development of interoperable products. Additionally, the specifications provide standardized powerful tools for future-proof solutions in the field of cognitive buildings and the Internet of Things. Learn more about the technical specifications in this overview or visit www.enocean-alliance.org/what-is-enocean/specifications.



Communication Profiles – EEP

The EnOcean Equipment Profiles or EEP are a common device protocol that ensures that products from different manufacturers can seamlessly communicate with each other. The EEP is the Application layer, defined by the EnOcean Alliance, which adds to the Physical, Data Link and Networking layers of the EnOcean standard ISO/IEC 14543-3-10/11.



Communication Profiles – GP

Generic Profiles or GP are the advancement of EEP and describe generic rules of data communication based on the EnOcean standard independently from the application. GP define the grammatical rules for all options of data encoding for ultra-low power and energy harvesting radio communication. Due to this generic language, the same product can be mapped dynamically to different applications.



EnOcean over IP

EnOcean over IP provides the rules to generate the IP abstractions of profiles defined (EEP or GP). This enables the mapping of EnOcean communication to standardized IP technologies. It addresses manufacturers and users of IP gateways and provides a generic REST-API with JSON format of data.* Therefore, it enables seamless communication in the Internet of Things by connecting the EnOcean wireless standard with IoT platforms. The TWG is now working on the 2nd generation of the EnOcean over IP specification to further simplify this process.



Remote Management and Remote Commissioning

The specification defines the basic rules for remote access, configuration and a uniform procedure of parameterization of EnOcean-based devices over the EnOcean radio standard, including commissioning tools. This significantly optimizes and simplifies the control and configuration of building automation networks while ensuring the interoperability of EnOcean-based devices from different manufacturers. Currently, the TWG is working on the 2nd generation, including remote commissioning via repeaters, security and bi-directional communication.



Product ID and Labels

The Product ID identifies an end device and its specific characteristics. This unique reference enables the user to clearly identify a specific device in a network and gives access to an electronic data sheet that describes the full range of features. The Product ID can also be applied by a commissioning tool to automatically provide all needed device information.



Device Description Files

This standardized electronic data sheet fully describes a device's capabilities and its remote commissioning features. This includes the supported EnOcean Equipment Profiles (EEP) or Generic Profiles (GP) as well as specific functionalities, operational modes and the requirements of parameterization.



Security

This specification describes the security concept of energy harvesting wireless devices using the EnOcean standard. It includes basic security features such as unique 32-bit identification number (ID) as well as enhanced state-of-the-art encryption such as a maximum 24-bit rolling code (RC) and AES 128 encryption algorithm. Thus, communication within EnOcean networks is protected against replay attacks, forging of messages and eaves-dropping attacks.



Smart Acknowledge

The concept of Smart Acknowledge enables a bi-directional communication with energy harvesting sensors and actuators. This enables a sensor to send and receive data as well as enter into dialogue with the control system. For instance, an energy harvesting actuator can receive commands / settings and confirm its reception.

www.enocean-alliance.org

* REST (Representational State Transfer) JSON (Java 132 Script Object Notation) API (Application Programming Interface)



Wireless and remote operation protects a historic site

After a thorough restoration of its interior, the Johanniskirche church in the German city of Zittau will now be somewhat cosier. An automation solution from SAUTER not only ensures comfortable temperatures inside, but also protects the historical walls and precious artworks of this 700-year-old building. By Andreas Eisele, Manager Services, SAUTER Deutschland

Historically significant

The St. Johannis church in Zittau dates back to the year 1291. It has been expanded over the years and, after being destroyed in the 18th century, was completely rebuilt. Today, the classical interior is still true to its original design and abounds with historical treasures – a late romantic pipe organ, rounded apsis niche with a statue of Christ offering blessings (a reproduction of the original by Thorvaldsen from the Church of Our Lady in Copenhagen) and a wooden pulpit with inlaid images.

www.johannis-kirche-zittau.de



Whether for church services, weddings or concerts, the Johanniskirche can seat over a thousand visitors. However, as attendance varies for different occasions, this poses a major challenge when it comes to heating.

The parish of St. Johannes in Zittau wanted churchgoers to feel warm – all year round and in any part of the building. A solution was called for that controlled temperatures in different areas of the church and yet was suitable for this extremely old building. Above all, the sensitive building structure and priceless works of art had to be protected from sudden temperature changes. The comprehensive and efficient concept put forward by SAUTER won the planners' approval immediately.

User-friendly and precise heat delivery

While being restored to its former glory, the floor was also fitted with fan coils and a hot water underfloor heating system. The Johanniskirche has a vast nave and high ceiling with multiple adjoining rooms. Several heating circuits were laid. The temperature in the nave can therefore be controlled independently of the other rooms. Further fan coils were installed in the altar and entrance areas, along with static radiators in the gallery.

A modular automation system, with components from SAUTER's EY-modulo 5 range, monitors, controls and regulates the heating installations precisely and efficiently. EnOcean remote sensors were installed and integrated into the SAUTER EY-modulo 5 automation system for monitoring room air conditions. Whatever the event, the heating circuits work in perfect harmony, and if any adjustments are needed, a nearby touch panel is at hand.

The ingenious system also has another trick up its sleeve: fully-automatic remote operation. Before an event is set to start, time programs defined in moduWeb Vision – SAUTER's web-based building management system – switch on the heating at just the right time to warm up the church where needed. This means that, if a small church service is taking place, only the front pew rows are heated. A total of ten individual control scenarios are in fact available for heating the church interior.

Integrated solution for treasured historical monument

The SAUTER system is also used for energy management, thereby heating the church efficiently. To document consumption, the energy values of the installed meters are centrally recorded and evaluated via M-Bus. If consumption rises unexpectedly, operators

can take immediate action. The recorded data also enables the parish to charge event organisers for the exact amount of electricity and heating they have used.

SAUTER's intelligent solution keeps a watchful eye on temperatures in the St. Johannes church. Not only does it maintain a comfortable climate around the clock, it also maximises energy efficiency. Modern solutions such as EnOcean wireless components and web technology protect the valuable structure of the church. At the same time, accurate recording of conditions inside ensures that the heritage site and its art treasures are preserved – allowing them to be enjoyed by generations to come.

Slow heating for cosy atmosphere and protection of church

The SAUTER solution has a special feature to preserve the historical building and valuable artworks. It ensures that the temperature in the church never rises or falls by more than 1.5 kelvin per hour. Heating the floors, air and pews slowly guarantees a comfortable ambience for concerts and other events. And when an event ends, the heating isn't just switched off; the automation system lowers it slowly.



The ANDRITZ Group relies on hybrid solution with KNX and EnOcean

The international ANDRITZ technology group, based in Graz, Austria, employs approximately 25,500 people worldwide. The ANDRITZ GROUP is one of the world's leading suppliers of systems, equipment and services for hydroelectric power plants, the pulp and paper industry, the metalworking industry and the steel industry as well as municipal and industrial separation of solids and liquids. ANDRITZ's corporate headquarters in Graz were equipped with KNX and EnOcean components in hybrid fashion. The Vienna-based Siblik company supervised the project and was also responsible for the rollout.

By Stefan Mainka, Marketing & Business Development, BAB TECHNOLOGIE GmbH



EIBPORT V3 links the building control to the Ethernet network and applies visualization, automation and integration of third party applications. Thus, KNX and EnOcean components can ideally be connected.

ANDRITZ Group counts on latest technologies. In its headquarter, it benefits from an optimized working atmosphere and reduced energy consumption thanks to a combination of KNX- and EnOcean-based solutions.



The best of both worlds

Components such as sensors, actuators and gateways, along with the most beneficial bus system in each case, were selected based on the functionality required and the local conditions and linked to each other intelligently via EIBPORT.

Extensive function portfolio for an efficient working environment

The system was built upon an IP base. The individual lines are interconnected via line and IP routers. The efficient and especially comfortable individual room control in the office areas was implemented with EnOcean V3 EIBPORTs, which provide control and automation functions. Multiple EIBPORTs are distributed among the different office wings and are also used as IP and EnOcean interfaces. Ninety percent of all functions, such as light control, shading and room temperature control, are controlled via maintenance-free EnOcean components from

Eltako and Thermokon. A total of 1,384 KNX and 688 self-powered EnOcean components were installed.

Integrated functions and disciplines

- Complete lighting control indoors and outdoors
- Switched feeder – grounding contact, display elements, etc.
- Complete outdoor shading – blinds, louvers and anti-glare shields
- Complete individual room control throughout the building – EnOcean and KNX
- Integration of status messages as well as error messages, including forwarding to GLT

Products used

A total of nearly 1,400 KNX and 700 EnOcean components, such as thermostats and pushbuttons, were installed. Products manufactured by BAB TECHNOLOGIE, Berker, Theben, Elsner, Thermokon and Eltako were used.

Values such as basic setpoint defaults and operating modes (heating or cooling mode) are preset by the building control system. The EIBPORT then handles control as well as communication with the KNX heating actuators. The EIBPORT's intuitive visualization function allows all relevant functions in each office wing to be controlled individually, for example lighting control, shading and room temperature. Its extensive automation functions guarantee an optimized working climate as well as low energy consumption without neglecting individual user preferences.

www.bab-tec.de



Flexible automation instead of costly renovations

The new SkyPort office and administrative building of Flughafen Stuttgart GmbH (FSG) showcases a future-oriented office complex. At the airport authority's new headquarters, an interdisciplinary solution maximizes flexibility when it comes to room automation. By Uwe Dieter, Electrical Engineering Sales, WAGO Kontakttechnik GmbH

The SkyPort open-plan office building encompasses 13,700 m² of space and provides a workplace for approximately 320 people. The new company headquarters is also Gold-certified according to the German Sustainable Building Council (DGNB) and as a result reflects FSG's sustainability concept.

New approaches to building automation

However, it is not only modern architecture and sustainability that make the SkyPort stand out but also its building automation technology. It is the first building in which FSG's office communication functions are fully integrated into its measurement, control and regulation systems.

In a comparison between three room automation systems, flexROOM® from WAGO, combined with EnOcean, made the cut. The

WAGO system's easy, convenient configuration and high communication capability were plus points in the airport authority's view. EnOcean scored points because its operating devices could be mounted anywhere wirelessly and required no maintenance.

Flexibility with flexROOM®

flexROOM® is a variable building automation concept, which permits smooth coordination between lighting, shading and individual room control. It is based on the spatial axes of a building and divides the automation functions into zones. All necessary functions are already preprogrammed in the associated software application.

FSG's works employees therefore no longer have to do any complex programming work to redistribute the office space. They can

now easily make new settings via a web-based user interface that can be accessed from nearly any terminal device. For example, if they need to remove a wall or put a new one in place, they can reassign the EnOcean operating units at the click of the mouse.

The Peter Nägele GmbH Elektrotechnik company was hired to install the building technology. Several flexROOM® units are mounted in sub-distribution boxes in utility rooms on each floor. The lights as well as the presence sensors and brightness detectors are controlled via DALI. The operating units are controlled via the IT network, using Ethernet TCP/IP. The EnOcean wireless systems integrated into the distribution boxes wirelessly connect the self-powered light and blind switches as well as the room operating units for the air-conditioners.

Blinds that track the sun's position

The blind controllers, which track the position of the sun, are particularly fascinating to the employees. The blinds in this office are lowered at sunrise and adjust gradually according to the programmed lighting configuration. The position of the louvers, and thus the level of brightness in the offices, adapts to the defined light intensity. This is possible because a flexROOM® weather distribution box collects the most important weather data and makes it available to all room automation disciplines. For the best possible light conditions, the weather distribution box calculates the exact position of the sun and precisely adjusts the blind louvers.

The great depth of the SkyPort building technology is also an advantage when it comes to energy management, thus supporting FSG's sustainability efforts. The automatic networking of heating, ventilation, lighting and blinds saves on air conditioning in the summer and heat in the winter. Another example of ways to save energy is the motion-controlled lighting and ventilation technology in the rest rooms. The system gives FSG the highest degree of room automation flexibility.

www.wago.com

The WAGO application controller (750-884) was developed specifically for running flexROOM® applications and forms the heart of the SkyPort building automation system.



Guiding the SkyPort building automation project: Peter Schlang, Matthias Kolb and Thomas Kirschbaum (left to right) of the Stuttgart Airport Authority.



EnOcean
self-powered
products are
chosen by
Tencent for
IoT Restroom
solution

Battery-free door contact sensors, that obtain their energy from miniaturized solar cells, report the restrooms' occupancy. The EnOcean-based sensors can be installed without the need for wires and work maintenance-free.



Co-developed by Yunnan Provincial People's Government and Tencent, a leading provider of internet services in China, "Travel in Yunnan" has been officially launched online on June 1st 2018. As an intelligent platform for holistic tourism in Yunnan, the mobile application leverages artificial intelligence and the widespread use of mobile telecommunications to make it a secure, objective and user-friendly app.

By Marketing Department, Nanjing WinShine Network Technology Co., Ltd.

Using the "Travel in Yunnan" App tourists see where to find available restrooms at a glance. Thus, there remains more time for sightseeing.



Covering all of tourism resources in the 16 cities, autonomous prefectures and 129 counties and districts in Yunnan, the "Travel in Yunnan" app can provide better services for tourists before, during and after their travels in Yunnan. For example, tourists can view the scenery of a tour destination in advance and use e-guide services in scenic spots on the app. Of course, tourists can shop, pay and file complaints immediately via the app, not to mention other functions like trip planning, hotel and ticket booking, reserving parking areas, plats recognition and so on.

Practical and user-friendly functions

The "Travel in Yunnan" app features a very practical function: restroom finding. This function can help tourists to find the location of the nearest restrooms, and it provides real time information on the restrooms' environment, the number of available toilets, and waiting time etc. This eliminates time-consuming searches for a free restroom, and helps to improve travel experiences.

The IoT Restroom solution developed by Tencent is equipped with various functions,

including smart guides, people counting, environmental monitoring, toilet occupancy, emergency assistance, and energy management. IoT products such as self-powered sensors, an emergency call button as well as a multi-functional gateway are supplied by the EnOcean Alliance member WinShine.

Efficiency and flexibility of EnOcean-based products

The installation of the wireless sensors will not affect the star rating of restrooms, because there is no wiring. And the restrooms can be retrofitted fast and easily under normal operation.

Thanks to EnOcean energy harvesting wireless technology, the maintenance effort and cost are also greatly reduced. There is no need to periodically send staff to change batteries for the sensors in widespread restrooms.

What's more, the EnOcean signal covers a better range, compared to 2.4 GHz radio. The connection is very stable even in relatively large restroom with partitions.

Large product ecosystem

Many products from the EnOcean ecosystem could be used in IoT Restrooms, for example, solar-powered door sensors or kinetic-powered slide switches to indicate the occupancy of the toilet, temperature & humidity sensors, and gas sensors to monitor the environment of the restroom, actuators to control lighting, ventilation and water valves, PIR sensors to detect occupancy of the whole restroom, and water sensors to detect water leakage. All these products can be connected to Tencent and other systems via WinShine's gateway (EnOcean to 4G/WiFi/NB-IoT).

www.win-shine.com



Smart awning control with Omnio

The headquarters of Marché International in Kempththal was the first office building in Switzerland to have a real zero energy balance when it was completed. It is certified with the Minergie-P Eco label and plays a pioneering role in Switzerland's world of ecological architecture. True to the principles of sustainability, health and community, which the company follows in its restaurants, the building is not only energy-efficient, but its workstations also have a pleasant and inspiring design. The building won the main prize under the 2008 European Building-Integrated Solar Technology Award, among others.

Open and expandable

During the course of modernizing the awning control system, the three-story wooden structure was equipped with Omnio E-Bridge. The most important consideration was to provide a cost-effective and expandable solution, based on open technology, for controlling the required automation tasks. RS485 gateways and 4-channel blind actuators were used, which were mounted in distributor boxes floor-by-floor on the east and west sides of the building.

Each awning can thus be conveniently operated individually from the workstation via a

Omnio E-Bridge connects different zones within a building via an RS485 bus and ensures bidirectional n:n connections with EnOcean wireless technology at both ends. This makes it possible to easily implement any central commands even in large buildings without requiring expensive control systems. By Beat Zbinden, Product

Manager Omnio, AWAG Elektrotechnik AG

maintenance-free handheld transmitter, and another handheld transmitter is used as a central switch for controlling all awnings.

Weather-dependent

An outdoor sensor collects the weather data and forwards it to the Omnio evaluation unit. If wind or rain threatens, the awnings are raised for protection, while they are lowered if the sunshine is too intense.

The temperature is controlled via a room sensor, which measures the temperature inside the building, and can be simultaneously

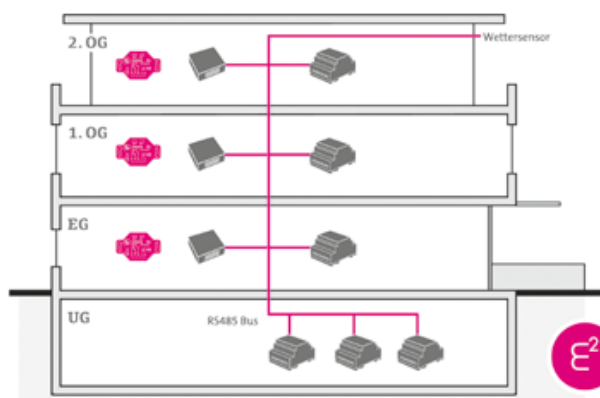
used to enter the setpoint. If the building gets too hot, the awnings are lowered to maintain the room climate.

A year time switch is also integrated into the system, which can be configured individually by the user. This ensures that the system can respond quickly and without complications to extraordinary or irregular events.

Customizable to individual requirements

The Omnio E-Bridge is controlled by one of the blind actuators, which is configured as a master in addition to its normal function. Any Omnio REG actuator can be programmed as the master. The E-Tool software is used to configure the overall system.

www.omnio.ch/en



Ready-to-Use Smart Home in Boxes

Leroy Merlin, a French leading DIY solutions provider, offers with Enki the most flexible smart home platform on the market. True to the company's core commitment, Enki enables users to individually tailor their home control in accordance with their specific needs. Up to now, more than 100 products under 20 different brands are supported with the aim of having 200 products of 35 vendors by the end of 2018. Several of them use the EnOcean energy harvesting wireless standard.

By Raphaël Bordes, Head of Retail, Leroy Merlin France



The core objective of Enki is to offer an adaptive smart home solution that allows the user to control connected devices from different brands, based on different technologies and protocols with a single application. This gives customers the maximum freedom of choice of smart home scenarios that flexibly adjust to their habits of life and personal needs.

The Enki App

The Enki App is the solution's core interface. Via this single app, available for free for iOS and Android systems, the user can install new products and connect them to other devices as well as to the Enki Box. At the same time, it allows creating individual scenarios. The handling is very user-friendly and intuitive, not requiring any technical background knowledge.

The Enki Box

The Enki Box is the solution's second pillar. It adds to the Enki App and can connect a much wider range of sensors, switches, relay receivers etc. to the intelligent system.

Pre-defined scenarios can automatically run via the box and be flexibly adapted whenever needed. In addition, the user can expand the smart home system with new devices at any time – not restricted to one brand or technology.

The box ensures a seamless communication of different products from different vendors using different protocols. Several of them are self-powered wireless sensors and switches based on the EnOcean technology which allow a highly flexible installation and require no maintenance, due to their batteryless operation. Besides Leroy Merlin's brand "evology", this includes products from e.g. Legrand, Somfy, Debflex, Aidsen, Myfox, Trio2sys, Nodon or Hoppe.

The Enki Kits

Leroy Merlin offers a number of ready compiled Enki Kits for getting started easily and at low cost. The kits cover the following applications: heating control, indoor climate

control, security, shutter and door control, smart lighting and a starter kit.

Rollout to more than 900 points of sale

In April, Leroy Merlin announced a partnership with Auchan Retail, a large retailer with 55 years of experience, and Boulanger, a leading provider of electrical devices and multimedia. This collaboration is unique on the market and creates the largest ecosystem of interoperable smart home solutions. It makes Enki available at 927 points of sale in France and in the partners' online shops. Besides this broad market availability, the three companies will also add new connected devices, functionalities and services to the Enki platform for almost endlessly customizable use cases. In addition, as a family member of Mulliez Group, Leroy Merlin targets the group's huge customer base with smart services to a greater extent than ever before.

www.leroymerlin.fr

Trophy Catch

Echoflex Solutions improves a fish farm with a monitoring system that utilizes the EnOcean protocol.

By Jacob Coakley, Marketing and Communications Specialist for ETC, Echoflex Solutions, Inc.

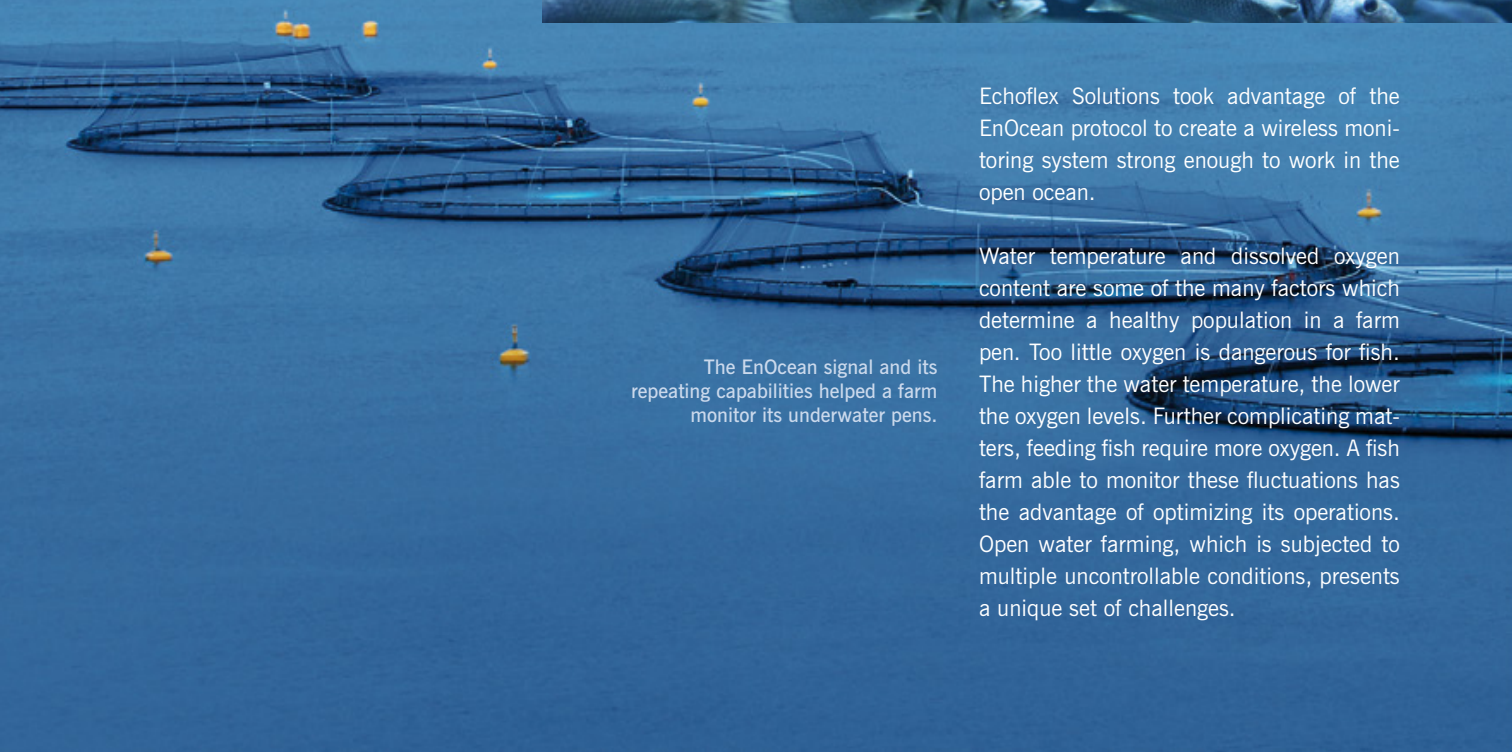
A fish farm was able to more accurately feed their crop thanks to an ingenious solution from Echoflex Solutions.



Echoflex Solutions took advantage of the EnOcean protocol to create a wireless monitoring system strong enough to work in the open ocean.

Water temperature and dissolved oxygen content are some of the many factors which determine a healthy population in a farm pen. Too little oxygen is dangerous for fish. The higher the water temperature, the lower the oxygen levels. Further complicating matters, feeding fish require more oxygen. A fish farm able to monitor these fluctuations has the advantage of optimizing its operations. Open water farming, which is subjected to multiple uncontrollable conditions, presents a unique set of challenges.

The EnOcean signal and its repeating capabilities helped a farm monitor its underwater pens.



Reliable communication via established protocol

The Echoflex team began joining technologies with its sister company PENKO Engineering B.V. in the Netherlands and developed a system to measure, monitor and document temperature and oxygen in seawater. The sensors developed by Echoflex gave rise to the birth of Echoponics, Echoflex's food production brand.

Echoponics offers both a Water Temperature Sensor, to monitor water temperature, and a Dissolved Oxygen Sensor, to monitor oxygen levels. The sensors connect to small transmitters at the surface that wirelessly transmit the data back to monitoring electronics. The team at Echoflex knew they'd need a wireless solution capable of performing in challenging situations. And they also knew the EnOcean protocol would be up to the task.

"We've always relied on EnOcean, and we knew this would be no different," says Shawn Pedersen, general manager of Echoflex. "We were confident the EnOcean signal would perform flawlessly. And as we used solar power throughout the system, deployment was quick."

Real-time sensor data to the cloud

The Echoponics sensors are powered by tiny solar panels, and communicate wirelessly with a "black box" that collects the data. The box then uploads all collected data to the cloud via a built-in GSM modem. Once in the cloud the data can then be analyzed from anywhere in the world, thanks to a custom-built web portal. Equipped with an appropriate level password, users can see real-time oxygen and temperature measurements, track trends, and create reports



The Echoponics DOS (Dissolved Oxygen Sensor) from Echoflex Solutions uses the EnOcean signal to wirelessly transmit data about water characteristics.

based on historical data. Comparisons between some or all farms can also be viewed at a glance.

After an extended pilot period proved the system is reliable, this solution was implemented in multiple locations that can be monitored and controlled using secured connection anywhere in the world. Using the EnOcean protocol, Echoflex was able to expand its products across industries and provide a tailor-made solution.

www.echoflexsolutions.com



Gateways connect

EnOcean devices to the Apple HomeKit world



EnOcean devices are well established in the world of professional building automation. But with IT groups such as Apple, Google and Microsoft entering the market, the smart home is gaining ground. Private users want to control not only TV and audio but also building functions from tablets or via voice assistants. A gateway from Digital Concepts is now opening doors for EnOcean device manufacturers to the attractive smart home market. By Marek Machacek, Head of Sales & Marketing,

Digital Concepts GmbH

Combined with a gateway, EnOcean wireless technology is becoming a prime example of smart and more secure IoT applications. The self-powered and wireless components are perfect for modernizing residential buildings and turning them into smart homes. However, ease of operation is paramount here. Apple® thus plans to tap this market with its HomeKit® technology. Users should be able to control everything — TV and audio, lights, heating, fans, security systems and a whole lot more — from an iPhone®, iPad® or via Siri®. Technically, however, EnOcean wireless devices cannot be directly connected without a gateway.

To provide a first-class user experience, vendors also need to obtain certification in order to dock their devices to the Apple world. They must follow implementation guidelines and pass usability and conformity tests. As a result of this year-long certification process, Digital Concepts has developed a catalog of HomeKit measures that can be used to integrate EnOcean devices into the HomeKit “home user concept.”



EnOcean providers can market this gateway under their own brands

The HomeKit-certified Smart EnOcean Gateway from Digital Concepts makes it possible to comfortably control EnOcean devices via Siri and from an iPad. Digital Concepts makes the gateway technology available to developers and manufacturers as an OEM product. Manufacturers and integrators of EnOcean products can thus offer their devices for the Apple HomeKit environment and either add to the OPUS greenNet product range or enter the smart home market with their own gateways.

The gateway makes the particular manufacturer's EnOcean portfolio ready for Apple HomeKit in one go, thus minimizing their own certification efforts and providing access to an attractive market. Moreover, the voice control function can also be used in professional building technology. JÄGER DIREKT is now the first manufacturer to upgrade its OPUS greenNet line to a HomeKit-compatible smart home system with the Digital Concepts gateway.

www.enocean-gateway.eu

Simple. Smart. For everyone.



Apple certification is finally complete. OPUS® greenNet from JÄGER DIREKT is therefore the only flush-mounted switch programme that makes professional smart home solutions simple, cost-effective and retrofittable without the need for renovations.

By Nico Pollmann, Head of Project Management
OPUS Gebäudesystemtechnik, JÄGER DIREKT

The certified complete system combines conducted 230V cabling with EnOcean technology. Therefore, smart solutions can be retrofitted in existing buildings (private, commercial and industrial) without renovation and can be continuously expanded or adapted. The unique concept is suitable for both private end customers and professional system integrators.

Key to the smart home

The key to the user-friendly system is the OPUS SmartHome Gateway. In combination with Apple HomeKit, it serves like a true all-rounder: The compatible OPUS greenNet

components (identified by the logo “works with OPUS SmartHome Gateway for Apple HomeKit”) are controlled via iPad®, iPhone®, Apple Watch® or Apple HomePod™. The Siri® language assistant provides additional flexibility. The creation of rules, scenes and automations increases the living comfort of the user.

For consumers (home)

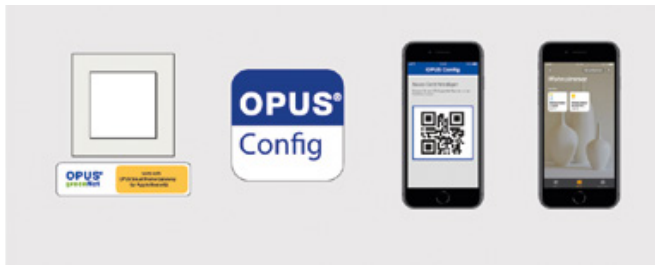
It takes just a few steps to make OPUS greenNet controllable via Apple HomeKit. After connecting the OPUS SmartHome Gateway to the WLAN router, the user can activate and manage the OPUS greenNet compo-

nents using the free OPUS ConfigApp by scanning the QR code. Once activated, the components can be operated via Apple HomeKit.

For the electrical specialist (professional)

With the OPUS ConfigTool, the manufacturer JÄGER DIREKT provides an installation aid to meet the professional requirements of electrical specialists: OPUS ConfigTool makes it easy to plan, configure, modify and document installations.

www.myOPUS.eu



Configuration process for the end user



Configuration process for electrical specialists

Smart panic buttons

It is a common thing to see switches installed where they can be seen and accessed easily by anyone but in some cases they need to remain “in the background.” By François Pillet, Export Sales Manager, TRIO2SYS

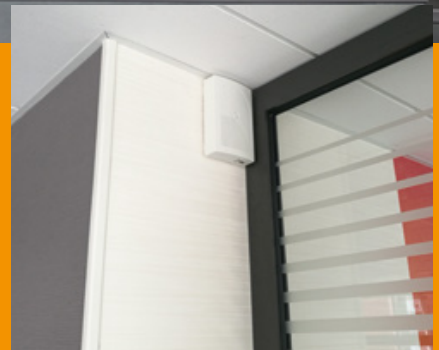


During talks with a nationwide insurance company, several stories of emergency cases and aggressive acts were brought to the attention of TRIO2SYS. The question asked by this company was simple: how to avoid such situations and help our employees feel safer at work?

In choosing the EnOcean technology, the benefits proved to be a decisive factor. Wireless and batteryless switches can be placed freely under the clerk's desk, and the EnOcean radio signal is used in a variety of applications. This flexibility was a great advantage in terms of planning, optimization and cost competitiveness in comparison with any wired system.

More security for over 500 agencies

Examples of use cases include the activation of a siren connected to an EnOcean DIN RAIL relay and the automatic sending of an emergency SMS to a private security



operative or calling emergency stations automatically, thanks to a local 3G gateway installed in the agency.

The standalone configuration also reassured employees as they knew that the system will trigger the alarm even if the Internet connection is temporarily off. Moreover, the absence

Simple and individual room operation.

SAUTER ecoUnit355



of batteries also guarantees operability over years. Overall, more than 500 agencies have been equipped with smart panic buttons and accessories. Deployment was carried out by TRIO2SYS teams within five months throughout France.

A model for other applications

Since then, other partners have expressed interest in such alert systems. In schools and public buildings for instance, smart panic buttons are a solution of choice in case of an attack or an emergency. In the coming months, several primary schools on the outskirts of Rouen will be equipped with this smart and non-intrusive system.



This project is a relevant example to demonstrate the adequacy of wireless & battery-free solutions to bring existing assets into the age of smart buildings.

www.trio2sys.fr

Intuitive, easy and clear

- ▶ all information such as temperature, brightness, humidity, air quality, operating mode (heating/cooling mode), fan speed, auto/manual mode, ECO mode and the date and time at a glance
- ▶ room-temperature sensor
- ▶ large LCD display with backlight
- ▶ intuitive, easy operation via 5 function buttons
- ▶ 8 function buttons can be added with the ecoUnit358 push-button unit

Economical and flexible

- ▶ compatible with mounting frames for switch/socket configurations with inner dimensions 55 mm x 55 mm

Continuous communication

- ▶ regulates and controls room lighting, room climate and sun-shading together with the ecos504/505 room automation station or the ecos311 room controller



For more information, visit:
www.sauter-controls.com

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SAUTER
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Smart Home has never been so simple

Eco-Touch by OGGA is a smart home system that automatically adapts itself to the users' behavior. The heating system is automatically programmed depending on the residents' habits, lighting and standby are switched off when rooms are unoccupied, a mobile app allows users to monitor energy consumption and operate their homes remotely.

By Lada Plyatsok, Executive Assistant, OGGA

The wireless EnOcean technology permits the solution to be installed and upgraded effortlessly and to add other options such as roller shutter operation. There is no need for programming or configuration, ensuring easy handling. This was the major factor that led the French housing association Immobilière Rhône-Alpes to integrate Eco-Touch in their projects.

Your home, not you, changes its habits

Eco-Touch learns habits and regulates heating systems with the greatest possible energy efficiency. "The reason for our cooperation with OGGA is easily explained. We make energy-efficient buildings but we have realized that their energy performance can be reduced and the bills grow depending on

the occupants' habits," says Flavien Dauphin, Project Manager of the Property Development Direction at Immobilière Rhône-Alpes.

Simplicity is the key

To make the system as simple as possible, Eco-Touch has a switch that is installed near the entrance. It allows users to set the periods of absence and presence when leaving home or upon their return. Once it is done, Eco-Touch will do the rest.

Flavien Dauphin: "The smart home has to be available to everyone. This system replaces thermostats that are often very complicated to configure. Eco-Touch offers all the advantages of a smart home but is very easy to use." Our tenants say that even a six-year-old child can use it.

Smart building: energy savings with greater comfort

With the constantly increasing electricity prices and quality of life, comfort and energy efficiency have become a must have. Property developers are looking for solutions to monitor a building's consumption and detect potential energy leaks to reduce its maintenance costs. This is another option that Eco-Touch offers.

Flavien Dauphin: "One thing is for sure: the property development sector lags behind other industries in terms of assimilating new technologies. Solutions such as Eco-Touch are the future. They will allow us to provide our tenants with greater comfort and give them control over their electricity bills."

www.ogga.eu



Work faster with smarter solutions

The increasing shortage of skilled labor means that work methods must become more efficient. Which is why the Breman Kampen company decided to launch a transformation project in Arnhem, the Netherlands, aimed at using smarter solutions from Honeywell PEHA.

By Lammert Hooiveld, Rayon Manager, Honeywell | Peha Elektro B.V.

The Breman installation group has a total of 36 branch offices and 1,600 employees in both the Netherlands and Germany. Since well-trained skilled workers are in increasingly short supply, the company decided to carry out projects with so-called installation teams. Together with Schutte Bouw & Ontwikkeling, based in Zwolle, the Netherlands, Breman therefore developed an installation process that allows apartments to be made ready for occupancy in a very short period of time so that they can be rented out as quickly as possible.

Preassembled plug connections

The preassembled Socketline Connect wall sockets from Honeywell PEHA are an important part of this process. They are completely prewired and can be installed immediately after the walls have been put up. The included dust caps prevent the components from becoming damaged or dirty. The preassembled solution also integrates the self-powered, maintenance-free Easyclickpro switches, which are based on EnOcean technology. A press of the switch

is all it takes to generate enough energy for a wireless signal with the aid of a mechanical energy converter. As a result, the sockets do not need either cables or batteries, and they permit flexible, wireless control of the lights (EnOcean wireless standard ISO/IEC 14543-3-10).

Easy handling for an effective solution

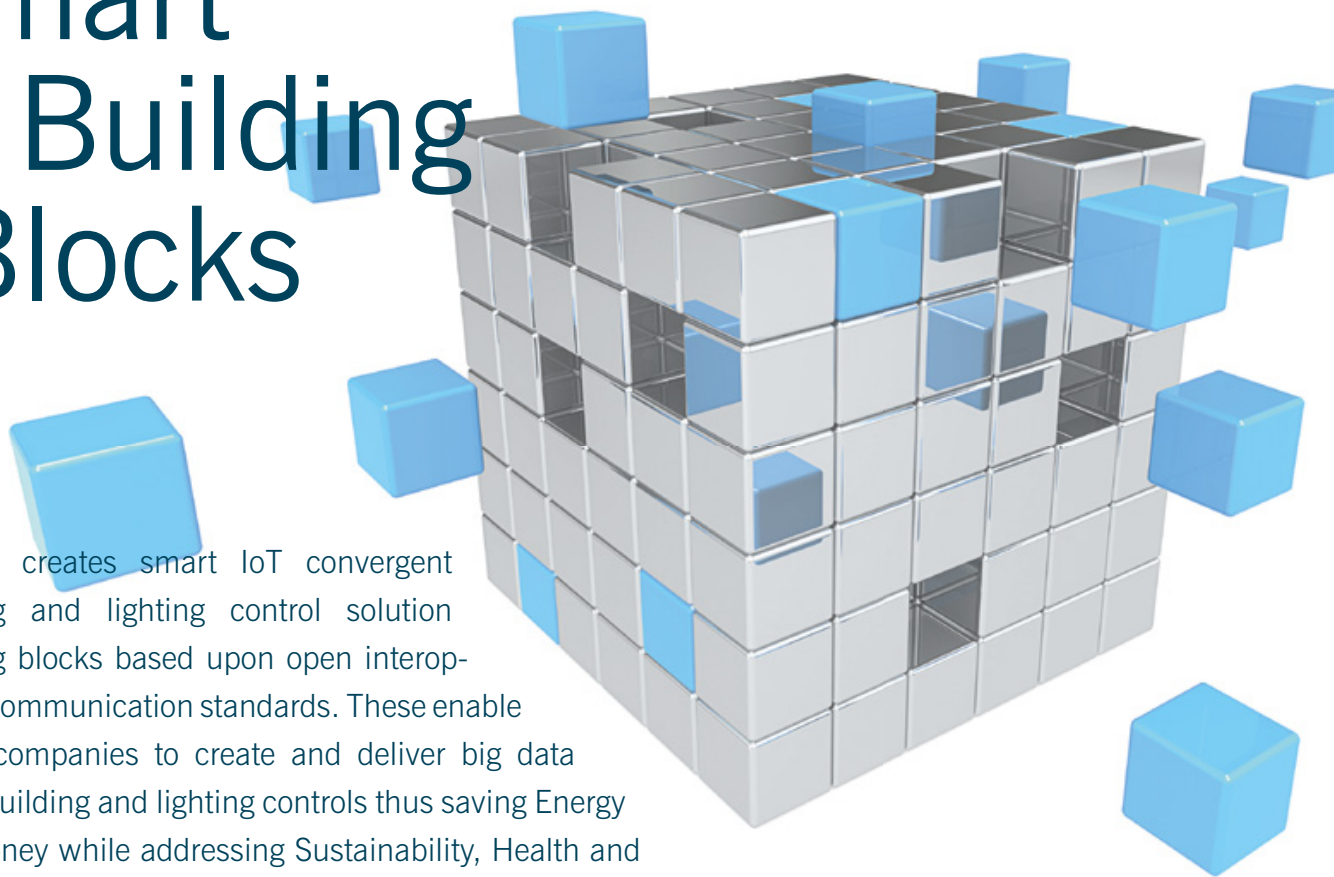
“We decided to collaborate with Honeywell PEHA to guarantee fast production over the long term,” reports project manager Henk van den Berg of Breman Kampen. “By using smart, preassembled solutions, we can currently install an electrical system in 20 apartments per week. This would never have been possible without the self-powered and wireless Easyclickpro switches and the preassembled Socketline Connect wall sockets. This project thus saves us up to 85% of the installation time and minimizes the cost of downtimes due to delayed project completion.”

“Since the product can be handled without problems, we can also have untrained employees carry out the work. The well-trained skilled workers can thus take on supervisory roles. In addition, customized product deliveries mean less waste, which helps protect the environment,” Henk van den Berg adds.

www.edelwonen.nl



Smart Building Blocks



Fulham creates smart IoT convergent building and lighting control solution building blocks based upon open interoperable communication standards. These enable global companies to create and deliver big data smart building and lighting controls thus saving Energy and Money while addressing Sustainability, Health and

Wellness issues. By Mike Welch, VP Controls Business Development, Fulham Lighting Company Limited

Fulham's EnOcean for Tridium's Niagara Framework is an example of this "Building Block" approach. It has created the licensed Niagara Framework EnOcean driver software and commissioning tools, enabling any suitable locally sourced Niagara Framework platform and EnOcean Equipment Profile compliant energy harvesting wireless sensors and switches to become by their own efforts a world-class smart IoT convergent EnOcean solution for building and lighting controls.

Smart and IoT convergent lighting control

Fulham is rolling out such an approach for its own global facilities. The most recent is its Shanghai R&D center. Fulham employed its China Partner, Shanghai Gline, to design, install and commission the EnOcean and DALI fully Niagara convergent smart IoT solution. Not only will this be of benefit to

Fulham's operations but will improve the working environment of its staff and provide an excellent demo facility for "end clients" (building developers, owners, managers and users) to experience the possibilities. This facility will undergo continuous upgrading to reflect the latest possibilities for the future.

Interoperable approach

The locally sourced EnOcean devices used include self-powered wireless switches, temperature, humidity, CO₂, PIR and light level sensors. Providing almost zero maintenance and energy consumption they offer simple and flexible installation based upon open interoperable standards. They connect seamlessly and directly to Niagara BMS platforms delivering "real-time" device value data access for any suitable analytics, AI, Machine Learning cloud based applications.

This "building block" approach separates this solution from those of other solution providers, whose business models deliver "shrink wrapped" single vendor fixed solutions. Fulham's building blocks enable any suitable Niagara BMS, BAS, BEMS, BACS or IoT Edge controller platform to become a smart IoT convergent EnOcean wireless commissioning and controls product, empowering partners to create and deliver the world's most vendor independent world-class smart IoT convergent controls solutions, while creating their own local IP and brand value.

www.fulhamcontrols.com

More choices for managing energy

Wattstopper Wireless Occupancy Sensors mark the company's participation with the EnOcean Alliance.

By Daniel Stankovich, Product Manager for Wattstopper at Legrand,
North & Central America

Legrand's Wattstopper EOXX Series RF wall switches are ideal for retrofit applications with or without neutral wires where the switch location is not suitable for sensing occupancy, and it is difficult to install a wired ceiling sensor. The wall switches, paired with wireless PIR occupancy sensors, are perfect for retrofitting small conference rooms, private offices, executives offices, hallways and storage rooms. The sensor mounts on the ceiling and provides a 360° passive infrared coverage.

This wireless offer makes it easy and cost effective to install code-compliant controls in existing buildings, or wherever wired occupancy sensors aren't the best fit. In addition, the EnOcean-enabled product line includes dual relay controls, which allow for separate pairing of each controlled load (relay) to the integral switch buttons as well as time-saving functionality.



Wireless highlight

These products highlight the participation of Wattstopper by Legrand in the EnOcean Alliance, which member companies develop innovative solutions based on the EnOcean energy harvesting wireless standard. Wireless solutions simplify installation and save labor

and materials, as no power pack or low voltage wiring are required. The wireless sensor is also packaged as a kit with a single or dual relay RF switch and are factory-paired for even faster installation.

www.legrand.us/wattstopper



Individual room automation concepts for increased comfort

With the ASV 215, SAUTER has developed a new VAV compact controller which also regulates the temperature and room air quality as well as the volume flow. With all critical regulating functions combined in one device, this state-of-the-art VAV controller guarantees optimum operation.

By Peter Schönenberger, Product Manager,
SAUTER HeadOffice

Compact technology for more comfort

With the wider input and output options, room automation concepts can be directly implemented through the compact controller. There is much less wiring required because the room functions have been moved to the integrated controller and because wireless sensors and room operating units based on EnOcean are being used. This ensures maximum flexibility and increased room comfort.

Communicative and economical

The compact controller tackles a variety of room automation tasks without the need for additional automation stations in the room. This makes it a highly integrated solution, which is resource-efficient and yet allows flexible use, in addition to optimized volume flow and climate regulation.

The ASV 215 can be easily combined with the SAUTER ecos504/505 room automation solution. This ensures full integration into the SAUTER Vision Center building

management system. Therefore, in addition to air pressure, air quality and air temperature, lights, window blinds and heating or cooling equipment can also be controlled via BACnet from any location. It is also compatible with EnOcean sensors and room operating units.

In two versions

The new SAUTER ASV 215 VAV compact controller comes in two versions and is therefore optimized for the pharmaceutical, chemical and food industries, as well as for use in hotels and office spaces. The actuator motor's remarkably fast running time of just three seconds in the life sciences version means that the SAUTER ASV 215 can be used in all critical environments. The high torque, static differential pressure sensor and configurable inputs and outputs in the standard version ensure maximum flexibility and room comfort.



Multi-function with appealing design:

EasySens® “JOY SR FUNK” fancoil/room controller

Appealing design, intuitive operation and flexible enough to adapt to most diverse requirements: The EasySens® “JOY SR FUNK” fancoil/room controller from Thermokon makes for an efficient and comfortable climate control in room applications.

By Nicholas Berns, Marketing, Thermokon Sensortechnik GmbH



The visual experience is already convincing – a flat housing, precious touch interface made of scratch-proof glass, a power button framed in an exclusive stainless steel ring as well as the large and clear backlit display provide for a unique user experience. The LCD screen shows current HVAC values and settings.

The three different EasySens® EnOcean models with RS485 interface provide flexible building infrastructures that meet customer requirements and permit integration into the existing BMS.

Energy efficiency at the point

Further energy-efficiency functions are included already. One contributing factor is the ECO function, which intelligently adapts HVAC

functions (e.g. set temperature and fan stage) to current demands and thereby saves resources while still allowing for individual user profiles.

Also additional functions/sensors, e.g. dew-point sensors, window contacts or key-card switches, can be logically connected by using the digital inputs of the “JOY SR”. Changeover applications can be realized either with an external temperature sensor or digital relay input.



Simple control of motorized shutters in homes and buildings

The NodOn® EnOcean Roller Shutter Module is ultra-compact and easy to install behind the wall switch that controls the motorized shutter. By Coralie Feillault, PR & Communication Officer, NodOn SAS

The particularity of this module is its auto calibration feature, which simplifies its configuration, as no adjustment is needed. Using the latest EnOcean specifications, this innovative module can be commissioned without any physical intervention from the installer. And once installed, it only needs a few seconds to be paired to a new EnOcean controller, remote or wall switch.

Compatible with all types of motorized shutters

The module was designed and created to be compatible with any types of motorized shutters: roller shutters or awnings, metallic shutters for shops, etc. This ultra small

module, concentrate of technology, has a great cost-benefit ratio. Launched only a few months ago, it is already installed in many homes and buildings.



More comfort in homes and buildings

The NodOn® new Roller Shutter Module makes it possible to control the shutter from a central point, remotely or automatically. As an interoperable EnOcean product, it is compatible with most of the smart home hubs on the market. The module is perfect for enhancing comfort with scenarios, such as opening the shutters by only 20% in the morning to permit the user to wake up gently. As all devices designed by NodOn®, this module enhances comfort in homes and buildings, and allows more energy savings.

www.nodon.fr

AFRISO is continuously expanding its smart home portfolio, thereby offering customized solutions from a single source. The latest additions are a door and window contact as well as a temperature and humidity sensor. Both products use the EnOcean wireless standard and harvest their energy with a miniature solar cell. As a result, they require no maintenance and can be effortlessly glued to the right location.

By Michael Stoll,
Smart Home
Product Manager,
AFRISO-EURO-
INDEX GmbH

Compact sensors for the smart home

The AMC 20 door and window contact

is a self-powered and wireless sensor that signals any change in status, "window/door open/closed," to the AFRISOhome gateway via a magnetic contact. In a smart home, it can be used flexibly for a wide range of security and comfort applications.

The FTM 20 TF temperature and humidity sensor

measures the room temperature [-20°C/60°C] and humidity at regular intervals and immediately signals any significant change in the values to the AFRISOhome gateway. This data is then used as parameters, for example to control the AVD 30 self-powered radiator valves, the CosiTherm® individual room temperature controller or exhaust fans with EnOcean wireless technology.

Light as a source of energy

Thanks to a solar cell, both sensors gain their energy from the ambient light, so that they require no maintenance and can operate without a battery (which can be optionally used). An integrated energy store ensures that the sensors can operate in total darkness for several days.

Flexible mounting with adhesive tape

Thanks to their compact housing, the sensors can be easily attached to windows, door frames or cabinet doors as well as to walls and furniture using double-sided adhesive tape. As an option, the FTM 20 TF can also be placed with a metal plate on a horizontal surface, such as shelves, sideboards or windowsills.

www.afrisohome.de/en





Energy savings with efficient air conditioning integration

The range of IntesisBox EnOcean gateways allows the control of air conditioning systems via self-powered EnOcean wireless SENSORS. By Sofia Osés, Product Manager, Intesis Software S.L.U



The interoperable wireless technology combined with the air conditioner gateways are the perfect solution for energy saving in offices, hotels or shops. In addition, these solutions offer innumerable advantages such as easy installation, no need for maintenance, enhanced comfort and advanced control.

Bidirectional communication

IntesisBox is directly wired to the AC unit and also connected to the EnOcean network. It receives signals from EnOcean-based thermostats, presence detectors, key cards, etc. and initiates the required action to the AC unit. Due to the bidirectional communica-

tion with the AC unit, alarms and errors can also be reported to the EnOcean network. With IntesisBox, customers can efficiently meet the individual needs of their automation projects.

www.intesisbox.com



Thermostat



Presence sensor



Window contact

Award-winning Visualization

The exclusive EnOcean building visualization system is very easy to set up and operate. Now, timers with an astro function, scenes and logic can be used to create smart home functions by dragging and dropping them directly into the user interface.

CUBEVISION 2, the German Innovation Award-winning visualization system, is available to all users of the CUBEVISION MODULE at cubevision.info as a free download. The sophisticated user interface scales automatically on almost all display devices. Smartphone, tablet and co. become the control center for the intelligent home in no time.



www.bab-tec.de



SOUND AND VISION



RVS/RCS DUAL TECH

Dual Tech wireless ceiling sensors

from

Echoflex Solutions

Echoflex's new Dual Tech occupancy/vacancy sensors couple sensitive acoustic detection with strong passive infrared technology, ensuring your system knows exactly when a space is occupied or not. Combined with other Echoflex Solutions sensors, controllers and switches, the RVS and RCS Dual Tech sensors help users create a building that meets and exceeds energy standards.

Echoflex's focus on clean technology means that every installation benefits from our wireless, wired, and hybrid systems, and makes intelligent control possible in any space.

Features

- Wireless
- Reliable operation, even in low light
- Adjustable PIR & acoustic sensitivity levels
- Two lens options for small & large movement detection
- Multiple installation methods

mTRONIC – the security specialist from MACO

The mTRONIC multisensor monitors every window in partnership with the tried-and-tested EnOcean wireless technology. The small security pro is always active and keeps a constant eye on the window status. It thus makes life difficult for thieves.

By Stefan Wajand, Product Management, MACO Group



Security 24/7 thanks to mTRONIC: Is the window open, closed or tilted? The multisensor detects the window status via a magnet. Although other sensors do the same, MACO takes a slightly different approach: The smart mTRONIC not only records the window status but also tracks its operation.

If the windows are pried open in the closed or tilted position, the sensor transmits an alarm signal without being activated. The signal can then be processed locally by the signal transmitter or in a gateway of a smart home system. MACO uses the reliable and low-emitting EnOcean wireless protocol, making it perfectly easy to combine mTRONIC with all common smart home systems; the Somfy TaHoma box is available as of October 2018. The window can thus

also be monitored remotely with a smart phone.

Comfort and security

It is also possible to secure the building locally by coupling the long-lived mTRONIC with indoor sirens or light signals, thus "arming" the monitoring system. Upgrading to a smart home can thereby be done at any time without problems. Thanks to modern wireless equipment, the multisensor thus becomes a building security jack-of-all-trades for windows, sliding elements and entrance doors. When it comes to comfort, the system again leads the way. For example, the digital solution makes it possible to turn down the heat when mTRONIC signals "window open."

www.maco.eu

MASTHEAD

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www.enocean-alliance.org/products



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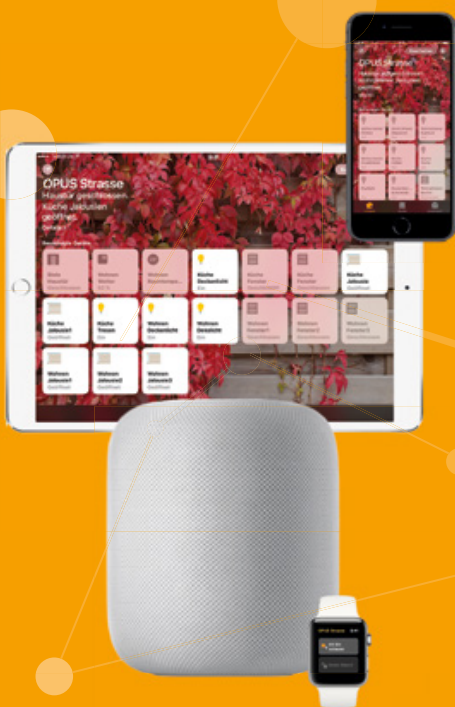
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- › Smoke detectors

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