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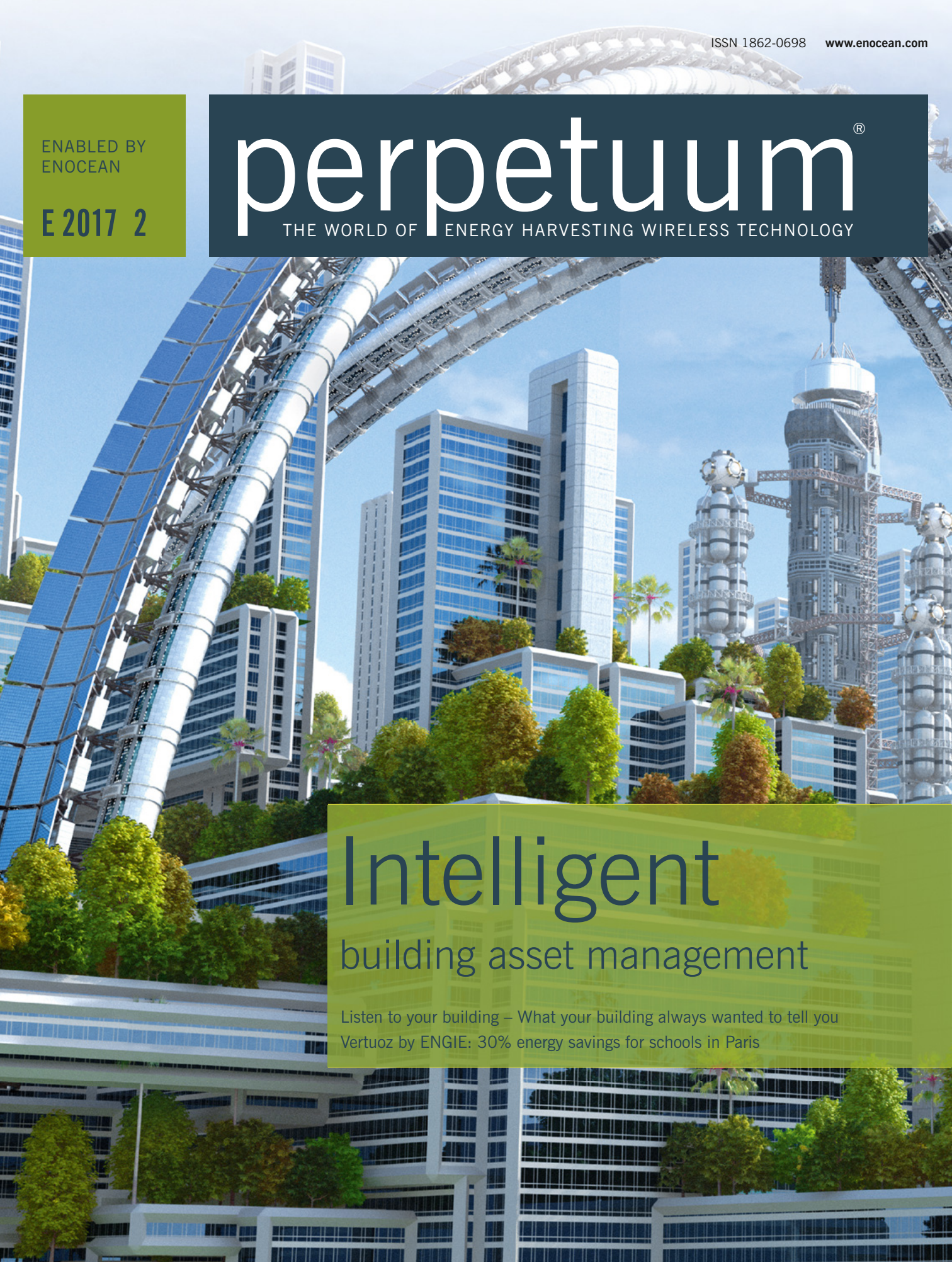

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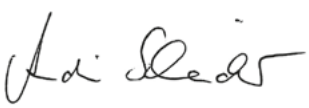
Dear reader,

Have you ever wondered what currency you are using to pay for the many innovative services on your smartphone? Clearly, the data generated by using your mobile phone provides comprehensive information about who you are, what you are interested in or how you live and is therefore worth a lot of money for companies around the world.

The Internet of Things now enables our buildings to be integrated into the network. Whether in the smart home, smart building or Industry 4.0, in the future, the raw material data will make it possible to offer innovative services in buildings that can permanently change our lives and working environments. Is this going to be a curse or blessing for the participants?

The right balance of data security, local data processing, cloud solutions and the use of artificial intelligence enables buildings and scarce energy resources to be better utilized, people to live healthier lives and to work more efficiently. In future, not all data will be collected and processed centrally. On the other hand, complex processes in buildings must also work quickly and reliably even when the “world wide web” has a cold. But it would be foolish to abandon the extensive benefits of data analysis and algorithms in a connected world, which have access to the various data sources in our buildings such as room temperature and the Internet, for example in form of weather forecasts, combining both by analyzing the typical building use.

Using this data, valuable conclusions can be drawn which are then either automatically implemented in the control technology and make our home safer and more comfortable, or give facility managers the necessary decision-making bases to manage their buildings in a more energy-efficient and cost-efficient manner. How self-powered wireless solutions from EnOcean generate raw data and help to make the “self-powered IoT” reliable and safe can be read in this issue of Perpetuum.



Andreas Schneider
CEO, EnOcean GmbH

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Full networking increases
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Listen to your building – What your building to tell you

Leading Article

Intelligent building asset management

Our buildings are more than just a roof over our heads, a home or a workplace. The greater part of our lives play out within their walls. They can support us as we go about our everyday tasks so that we save time and money. We only have to lend them our eyes and ears and give them the opportunity to communicate with us. The EnOcean wireless standard suits this purpose perfectly.

By Armin Anders, Vice President Business Development, EnOcean GmbH

The eyes and ears of a building – these are electronic sensors that already enable classic building automation systems to control the lighting, shading and room climate of a building. The "Internet of Things" adds new dimensions to classic building automation by transmitting sensor data to cloud-based IT platforms that link the data with other information available on the Internet and smart data analysis tools. This gives an entirely new dimension to services and business models.

Classic building automation: lighting, shading, HVAC

In classic building automation, lighting, shading and HVAC are controlled locally with suitably positioned wireless sensors, using so-called room controllers. The individual room controllers provide local control intelli-

always wanted

gence and are connected to each other via classic room automation buses, such as KNX, LON, BacNet, TCP, etc. The wireless connection of self-powered sensors based on the EnOcean radio standard to wall switches, window contacts, temperature sensors and motion detectors maximizes flexibility and reduces costs compared to a wired solution. In addition to switches for controlling lights and shading, window contacts and motion detectors create the perfect synergy, since they effectively combine functions such as rain protection with intrusion security and energy savings.

The EnOcean Alliance, with over 400 members in the field of building automation, offers the benefits of a comprehensive ecosystem of interoperable self-powered wireless sensor solutions.

New IoT buzzword: "building asset management"

Building asset management is an important new tool with which companies establish the requirements for the optimum management of cost-intensive use of resources in terms of space, personnel and objects. An average of 50% of the available space in a typical office building remains unoccupied over the course of a business day.

Room sensors supply detailed information on how building areas and rooms are actually being used and permit optimum room planning and assignment of employees to available spaces. Services in the area of human resource and inventory management can be significantly optimized with the aid of suitable sensors. These sensors supply detailed information on usage patterns during normal operation as well as events, and they also take into account differences in times of day and seasonal effects. Usage patterns of the building, personnel and inventory can thus be prepared to determine the optimum use of resources and security requirements.

Saving lives – even this is simplified through the use of sensors due to the ability to determine the location of a person left behind in the event of an emergency evacuation. Higher security and fewer thefts by detecting people in restricted areas prevents unauthorized access and optimizes access control.

And finally, sensors make it possible to optimize energy consumption and air quality based on the actual space occupancy.

Asset management in office spaces and hotels

Building space is an extremely expensive resource, costing up to several 100 euros per square meter per month. However, less than 70% of many spaces is used, such as office working areas, hotel rooms, conference rooms, cafeterias, hallways and storage rooms. As a result, running expenses in the millions are unnecessarily incurred for heating, lighting and maintenance. Existing hotel rooms can be upgraded without problems with the aid of wireless sensors without impairing normal building operation, which reduces energy consumption by 30% to 40%.

Suitable sensors can be used to prepare the use pattern for the building, personnel and inventory: presence detectors in the room or at individual seats; door contacts; sensors for counting people; power meters for detecting the activity of electronic devices (such as printers, copiers, soap dispensers, coffee machines, electric kettles, ventilation units). Cyclically transmitting sensors, so-called "beacons" are used to determine the locations of mobile devices and furniture. If the capacity of company facilities is only partially utilized, for example, combining multiple sites can help reduce costs. And if the building system determines that no employees enter the building before 8:00 am, the heating times can be adjusted accordingly.

Sanitary facility management

It is practically impossible to forecast the optimum maintenance and cleaning of sanitary facilities in office buildings according to their actual use. For example, toilets are often not cleaned when needed, and paper and soap dispensers are empty, which is frustrating for users. Simple monitoring of sanitary facilities with presence sensors makes it possible to efficiently clean the areas and plan resources, which, in turn substantially lowers costs and increases user satisfaction. Read more about this topic on page 12.

Analyzing the use and determining the location of devices and furniture

Current sensors in the supply line enable the use of electronic devices in a building to be evaluated. To analyze capacity utilization, a power meter located either in the power cable or the plug transmits the device's current status. Wireless beacons are used to determine the location of mobile objects. An integrated temperature and humidity sensor can also supply the ambient conditions of the inventory. To determine the location, the wireless gateway infrastructure analyses the beacon's signal strength. Electrical and electronic devices can also be turned on and off with the aid of presence sensors in order to thereby optimize the service life and energy consumption.

Monitoring buildings for insurance companies

Insurance companies incur costs in the billions every year due to the late detection of events such as water leaks, fire damage and building break-ins. This, in turn, is reflected in the constantly rising insurance premiums. In the event of flooding, fire or intrusion, EnOcean-based sensors supply in real time the data and information needed to alert the owner and the insurance company. Serious and cost-intensive incidents can thus be detected early on and resolved accordingly.

Sales areas and gastronomy

When it comes to sales and commercial space, the flow of customers correlates with staff requirements, sales figures and location attractiveness. Smart data analysis makes it possible to distribute sales personnel resources according to need and also provide an indication of any improvements that may be needed to areas where sales are weak. Presence detectors supply detailed information on parameters such as movement profiles, number of people and table occupancy. A call button on the restaurant table or at special sales kiosks, which can be used to request a waiter or sales person, can help increase customer satisfaction, for example. Small animal traps, which can be immediately emptied via special sensors as needed according to legal requirements, are also relevant.

Parking space management

Another important application in buildings is the monitoring of parking space. Pressure sensors, installed in the ground, detect the direction of vehicle travel and thus also the occupancy of parking spaces.

Maintenance of motors, gears and brakes

Facility managers generally prefer detecting down times early on, since preventive maintenance is always associated with high costs.

Presence detectors provide detailed information by highlighting areas with potential for improvement.

For example, the condition of a motor can be detected with the aid of current sensors and the status of gears and brakes via temperature sensors. For this purpose the current or temperature development, which changes as equipment wear increases, is analyzed continuously. Using suitable algorithms, the necessary equipment maintenance can be carried out as needed and in time.

Requirements for sensors and connectivity to the IoT

A suitable EnOcean IoT gateway networks sensors and actuators that meet the EnOcean wireless standard with the cloud via the Internet. The Internet protocol and suitable middleware connectors can be used to quickly and easily connect energy harvesting wireless sensors to applications on the Internet and to interact with a cloud-based platform such as IBM Watson, Amazon Echo, Microsoft Azure, Apple HomeKit, Google Home or Crestron.

This scenario forms the basis for the Internet of Things. With the aid of an interoperable network, generated data can be used for smart device and building control and to optimize facility management as well as implement entirely new services in the area of building use. It is important to detect the extensive data that a building can communicate to us, using suitable sensors based on the EnOcean radio standard, and to make good use of this information. We can thus optimize long-term workflows and processes, save money and increase the energy efficiency of our buildings. And as you surely know: many eyes can see more than just two.

www.enocean.com

left: Spending hours searching for parking lots will soon be a thing of the past. Pressure sensors, installed in the ground, transmit real-time data about the availability of parking spaces. Welcome to the Smart City.

openBerlin – welcome to the smart

While innovation has always been important, in today's competition-oriented and constantly changing markets, it has become essential to a company's success. openBerlin is part of a network of nine Cisco innovation centers worldwide and offers an open platform for developing new business and technology solutions in order to open up opportunities and markets with the aid of rapid prototyping. André Diener, the technical director of the innovation center, deliberately chose to use EnOcean technology when equipping the facility.

Interview with André Diener, technical director of the openBerlin innovation center, Cisco

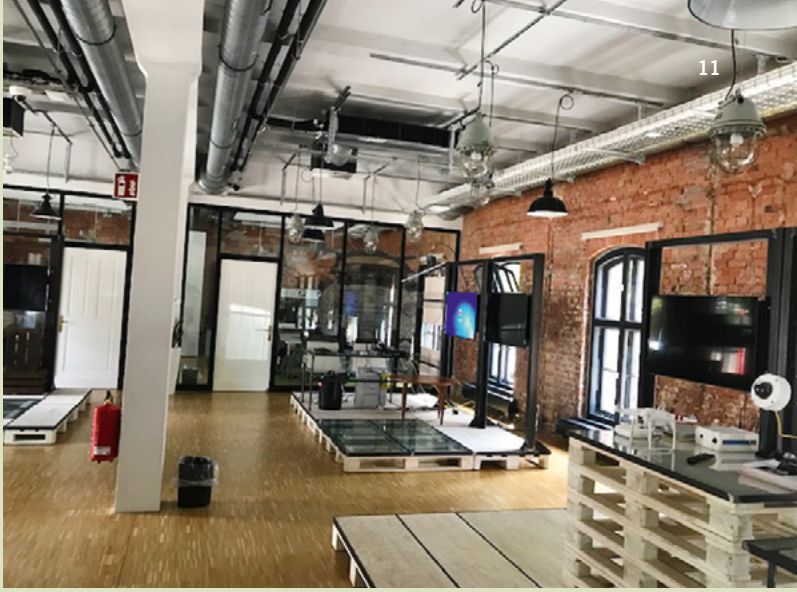
Mr. Diener, could you briefly explain what openBerlin is exactly?

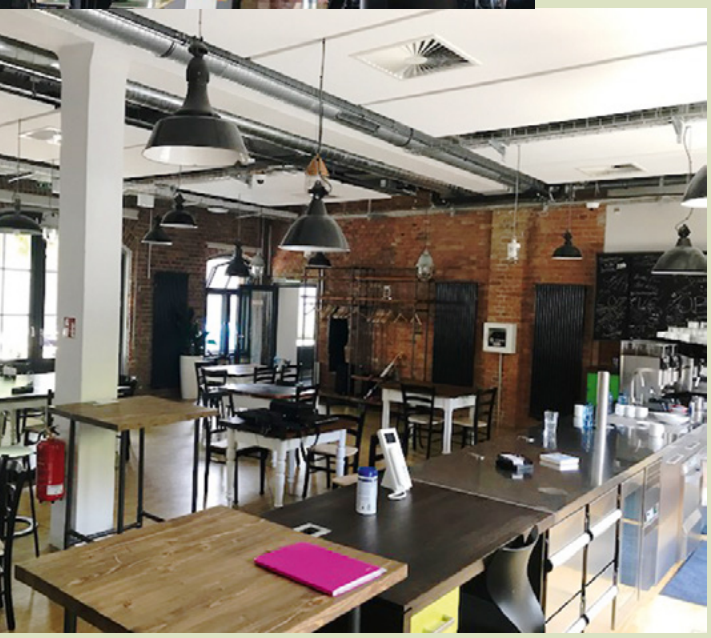
In the openBerlin innovation center, we work on innovations with a vast ecosystem of partners and thereby create new business and technology solutions. We help local and global organizations improve their business results by using intelligent data preparation and digitalization. As an innovation center and workplace for customers, partners, startups, universities and open developer communities, openBerlin has innovative meeting rooms, software and hardware development rooms and demonstration areas where new ideas, concepts and technologies can be created.

What arguments spoke in favor of choosing an EnOcean-based solution when equipping the innovation center?

With openBerlin, we wanted to provide an innovative building that is simultaneously energy- and cost-efficient. Since our efforts involved upgrading a building that had an open brick design, we couldn't consider a solution that required wiring. Therefore, we knew from the very beginning that the solution had to be wireless. We found it especially important for the sensors to be self-powered in order to ensure maintenance-free and reliable operation. Easy installation was another requirement. In an innovative building, one also never knows whether the rooms will be used in the same way several weeks from now. This means that it had to be possible to flexibly position the products. The EnOcean-based products met all these requirements. The energy and cost savings that also resulted were another determining factor.

digital, building





What products and solutions are you using?

Implementing the openBerlin project involved reconstructing the building, installing heating and air conditioning systems as well as new lighting technology. The retrofit of EnOcean-based window sensors and motion detectors now enables us to automate the light control and monitor the windows. With the aid of ceiling-mounted presence detectors, we can generate additional information about the room occupancy and use it to optimize the capacity utilization of the existing workstations.

All collected data is transmitted in real time to an interactive dashboard for visualization and controlling the building automation system. openBerlin users can access the dashboard from websites or smart phones and thus control the building. The combination with the Smart EnOcean Gateway from Digital Concepts ensures communication between the EnOcean wireless standard and the IP protocol, the latter of which forms the basis for integrating the data into standardized, open platforms. This facilitates a completely interoperable network, in which the collected data can be used to intelligently control different devices.

We use our own Meraki cloud-based network solution in the openBerlin innovation center. We also employ a face recognition solution from Stonelock for access control. And we use our own Cisco Mobile Experience WLAN solution for the precise positions of people within the building. This provides us with exact information on WLAN usage, user statistics and location heat maps in openBerlin.

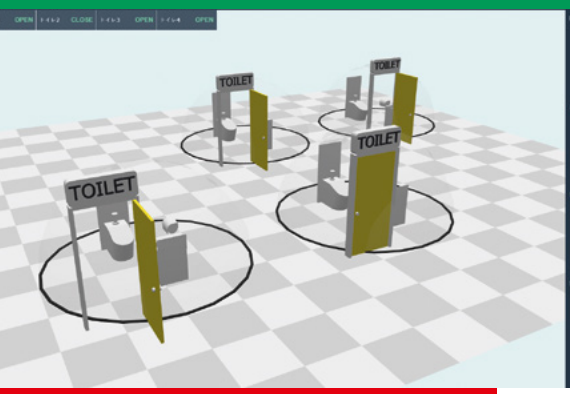
What positive changes in your operating procedures have arisen from your use of the new solution?

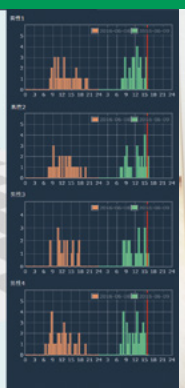
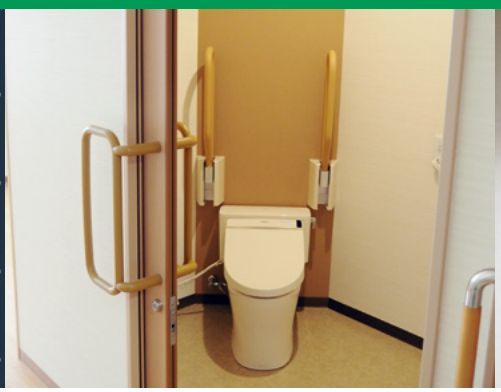
We were able to reduce our energy and maintenance costs through the use of the EnOcean technology. Our flexibility in the use of space has also improved. The rule-based building control system and integrated remote control function also increase comfort, as users can individually set the lighting at their workstations according to their specific needs.

Mr. Diener, thank you very much for talking to us.

www.openberl.in
www.digital-concepts.eu

Efficient
office buildings




The overpopulation of Japanese cities has presented urban planners with the challenge of accommodating many people in a relatively small area. This also results in a serious problem for building managers of large offices: the number of toilets available is often insufficient, or the occupation of the sanitary facilities is often suboptimal. An office building in Japan shows how easy this problem can be solved. **By Kamarq Exploration K.K.**

Time saving and comfort for employees

Using a cloud service, which provides information about the occupancy of the toilets, users are informed in real time which toilets are currently unused. Thus, the waiting time outside of sanitary installations is reduced significantly and annoying queuing is no longer necessary, since employees are automatically directed to the nearest available toilet. In addition, the user receives the information as to how long a toilet is likely to be occupied or free. This eliminates time-consuming searches for a free toilet, and the shortened waiting time helps to spend your break most effectively.

Saving costs and time in case of retrofit

The retrofitting of conventional, cable-bound sensors would have led to considerable rebuilding measures since complex cabling would be necessary both for the power supply and for the data transmission. Battery and wireless sensors with EnOcean technology can be easily retrofitted and connected directly to the cloud via 3G transmission. The conversion costs are also greatly reduced.

Efficiency and flexibility in everyday life

This solution benefits not only employees but also the building manager and the cleaning staff. With the help of the cloud-based solution, the use of the sanitary installations can be precisely monitored. Instead of cleaning every single toilet every hour, the toilets that are most frequently used can be cleaned first. The timing for cleaning the toilets can be optimized and the distribution of cleaning staff can be adjusted accordingly. This increases the efficiency of the cleaning staff and ensures enormous cost savings.

www.kamarqx.jp

Intelligent office utilization

Businesses face increasing financial pressure to ensure the effective utilization of buildings as regards occupancy, usage of rooms and desks. For this reason, the analysis of the optimal use of the building is becoming more and more important in order to increase energy efficiency and to reduce operating costs. By Alastair Morrison, Commercial Coordinator, Pressac Communications Ltd.

The IoT-ready under-desk sensor detects the presence of people sitting at desks and reports accurate real-time data of desk occupancy within offices and meeting rooms to identify inefficiencies and help create a productive environment within buildings.

Making the most of your building

The data can help manage and predict team moves, expansions, and disposals; for example, renting or selling off building or floors which are underutilized. This can also help realise energy efficiency improvements, reducing environmental impact, in turn creating a more efficient work environment and presenting cost saving opportunities.

Non-invasive installation can be conducted by a low-skilled fitter. Installation and on-going costs are kept to a minimum. The sensor utilizes the EnOcean radio protocol allowing true IoT interoperability within the EnOcean ecosystem.

www.pressac.com

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Easyfit – the perfect fit for lighting systems

LED lighting has revolutionized the lighting industry and creates completely new market conditions. LED-based lighting uses approximately 75% less energy and lasts 25 times longer than traditional incandescent lighting (Source: Office of Energy Efficiency & Renewable Energy, online article "LED Lighting", https://energy.gov/energysaver/led-lighting). Today, lighting systems continue to be responsible for controlling the luminaires, and they often also generate and transport a large amount of sensor data into the cloud. In order to meet all these requirements, LED lighting control is the most effective choice based on standardized radio standards, since it allows easy and fast installation and can be expanded easily and flexibly. By Jürgen Baryla, Vice President Sales, EnOcean GmbH

Easyfit products are self-powered switches and lighting control solutions that use wireless standards, such as EnOcean and Bluetooth, to enable energy-efficient, flexible and lower-in-cost LED lighting solutions. Since they gain energy from the press of a button, the Easyfit wall switches are maintenance-free, freely positionable and allow intuitive operation.

Easyfit for EnOcean lighting systems (902 MHz for North America)

With its Easyfit portfolio, EnOcean offers a complete portfolio for the North American market for LED lighting control based on the EnOcean radio standard. Self-powered sensors, switches and LED control units can be easily configured with an intuitive commissioning tool, making them the ideal solution for new buildings and retrofits, for example in schools. Lighting manufacturers and system integrators can easily integrate the products into their system solutions. They can be operated as a stand-alone solution or easily integrated into the intelligent building technology of buildings or combined with existing systems using the EnOcean radio standard.

Easyfit for Bluetooth lighting systems

EnOcean also offers wireless and self-powered wall switches for Bluetooth lighting control systems in 2.4 GHz to luminaire manufacturers. The Easyfit BLE switches are available in two different design versions: the Easyfit switch with standardized 55x55mm frame for Europe and the Easyfit switch in the North American design. The self-powered and wireless Easyfit switches with Near Field Communication (NFC) allow simple or complex lighting scenes and effects, and enable simple, flexible installation of lighting applications.

www.easyfit-solutions.com

EASYFIT
by EnOcean

Easyfit LED controls portfolio (EnOcean 902 MHz for North America)

Easyfit switches for Bluetooth lighting systems

Switch or smartphone? The smart answer is: both!

"Smart" lighting isn't just about controlling lighting from your mobile phone. Despite the numerous obvious advantages, smart devices are only one part of the solution.

By Saara Guastella, Marketing Manager, Casambi Technologies Oy

Advantage of new technologies

Today's mobile electronic devices are incredible tools for controlling lighting. Intuitive touchscreen control, advanced computing power and high-speed connectivity make them ideal for tasks like commissioning lighting, setting up preset scenes and animations, or controlling color in a sophisticated and professional manner. Casambi harnesses these abilities, allowing users to control luminaires directly using Bluetooth Low Energy (BLE) – the standard optimized for modern lighting control – that's built into every smartphone, smart watch and tablet. All the user needs is a Casambi-ready lighting system, and an Android or iOS device equipped with the Casambi app.

The Casambi solution allows simple control of individual lighting units as well as industrial systems with cloud-based remote control, monitoring and data acquisition.

When the smartphone meets its limits

But users can't always be expected to have a smartphone or tablet to hand, charged, unlocked, and with the app installed, ready to go. When someone wants to simply switch or dim the lights right now (or when a guest or occasional visitor to a home, restaurant, hotel or office wants to do so), the good old-fashioned light switch is still hard to beat. Fortunately, there's no need for users to choose between the two.

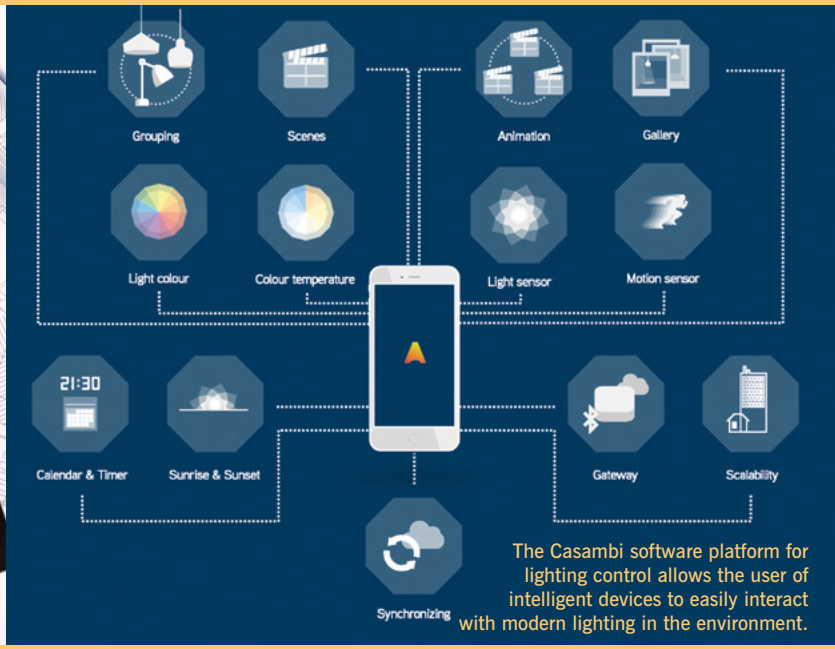
the Easyfit switches to be used as portable remote controllers across the entire Casambi network. The control logic of the switches can also be easily changed on-the-fly using the Casambi app.

Intuitive commissioning and control

The app employs gesture control: users simply tap a luminaire to turn it on or off, swipe side-to-side to adjust brightness, up and down for color temperature, or hold to

Smart lighting control in user´s hand

Combining Casambi´s lighting solution with a device such as Easyfit completely reduces the need of new wiring – reducing installation costs dramatically, creating an attractive choice for retrofit applications and buildings where fitting new cables is a challenge or prohibited. Sensitive heritage buildings can now benefit from the best in digital lighting control, just as easily as a new build. Casambi and Easyfit are also a great option



The Casambi software platform for lighting control allows the user of intelligent devices to easily interact with modern lighting in the environment.

Combining forces

Easyfit BLE switches are the perfect complement to Casambi's app-based control. Once paired with the network, they provide a quick and familiar way for users to switch or dim lights, while the Casambi app can be used when a switch isn't to hand, or to access more advanced functions such as color changing, timers and sensor control.
Thanks to Casambi's user-friendly interface, commissioning the Easyfit switches is simple. They can be instantaneously paired with a complete network of devices, rather than users needing to systematically pair switches with individual receiving units. This allows

change the color. Timers can also be set based on time and date or lights can be controlled using motion sensors. It's easy to group luminaires and set up light scenes and animations to create the perfect ambience.

Casambi's unique gallery feature makes control more intuitive than ever. Users simply take photos of a space, or upload a floor plan to the app, and mark the positions of the luminaires. The images then appear in a gallery in the app, with luminaires shown, and users simply tap the one they want to control. No more having to come up with names for each luminaire and try to remember which one is which.

for pop-up venues, where only a temporary set-up is required.

App-based lighting control has huge advantages, but to realize a truly "smart" lighting control system the familiarity of switches, needs to be combined it with the best in cutting-edge digital control. In this way, Casambi and EnOcean are working together to take the complexity of smart lighting away, and put control in the user's hands.

www.casambi.com

Bluetooth Mesh – a milestone in the evolution of smart lighting technologies?

In July 2017, the Bluetooth SIG has adopted the specification of Bluetooth Mesh. This new open standard for low-power wireless communication has been designed to meet the challenging requirements of professional lighting environment. What does it bring to the table?

By Szymon Rzadkosz, Content Designer, Silvair Inc.

The state of technology

One of the major problems that connected lighting keeps struggling with is scalability. Our expectations towards connected LEDs in commercial settings have grown to epic proportions. In the IoT era, lights are supposed not only to make autonomous decisions based on real-time data from a dense network of sensors, but also to deliver all kinds of new services. Suddenly we are talking about some serious network traffic which poses a big challenge for low-power, low-throughput communication protocols typically used in the IoT. To address this challenge, Bluetooth Mesh has been optimized for transporting very large amounts of very small data packets. This minimizes the probability of radio packet collisions, significantly increasing reliability and robustness of high-density networks. Leveraging ultra low-power characteristics of Bluetooth Low Energy, the new mesh protocol is also perfectly suited for BLE-based lighting control solutions using self-powered Easyfit wall switches from EnOcean.

Multi-service lighting networks

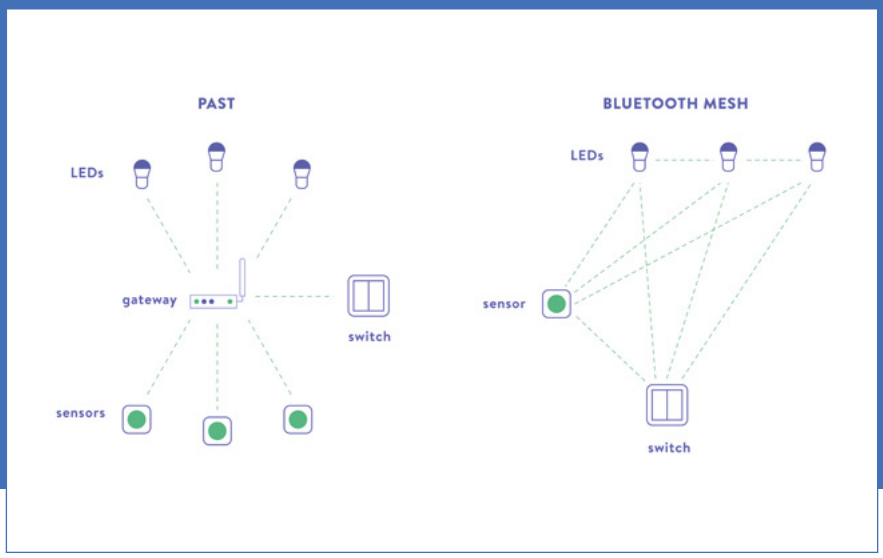
What kind of use cases and applications can be realized by using Bluetooth Mesh? First of all, Bluetooth Mesh enables the ease of deployment, flexibility of configuration, robust lighting control options and predictive maintenance capabilities. No physical electrical control circuitry means more freedom in lighting design, while allowing contractors to bring designs to life easier and quicker. This is particularly true for retrofit projects since existing lighting systems can be integrated with wireless sensors and switches at much lower cost and with little or no office downtime.

Bluetooth Mesh supports advanced lighting control strategies, including occupancy sensing, daylight harvesting and time scheduling, so any combination of these can be implemented easily to cut energy spendings or ensure compliance with building energy codes. Smart network nodes can also regularly report their operational parameters, such as lamp temperature, power consumption or color temperature, which allows early detection of problems and monitoring of performance against manufacturers' guarantees.

Furthermore, occupancy-aware mesh networks can help identify, measure and visualize pedestrian foot traffic. Such data can be put to work to improve a number of processes – from cleaning services and overall space utilization in the office environment to more efficient product display in the retail space. Once sensors are deployed, occupancy analytics can be integrated with other building systems, such as the entire HVAC infrastructure, paving the way for intelligent, responsive and sustainable buildings.

On top of that, Bluetooth mesh networks can deliver a range of unique location-based services, such as precise indoor navigation, beacons-via-lighting or asset tracking. These disruptive technologies are enabled by proximity sensing capabilities of the Bluetooth radio and the fact that Bluetooth can be found in virtually every smartphone on the market.

www.silvair.com



Van Gogh Museum conserves energy – and art!

Serving over 1.5 million visitors per year, the Van Gogh Museum in Amsterdam is host to 200 paintings, 400 drawings and 700 letters by Vincent van Gogh, the largest such collection in the world, as well as travelling exhibitions of other artists and collections. For conservation of the precious artwork and to increase savings in energy and maintenance, in January 2017, the administration of the musuem began a phased process of converting all of the lighting in both the Van Gogh Museum and the Mesdag Collection in The Hague. **By Jay Shuler, Director Product Marketing, Xicato Inc.**

Mission: Conservation

Light degrades the dyes used in paintings and tapestries, therefore Museums carefully calculate and control the amount of light exposure each artwork receives to balance the mission of public display against the need for conservation, and to minimize the frequency of restoration work. By calculating lux-hours and by knowing the spectral power distribution (SPD) of the display lighting, museums can determine how many hours, days and weeks a work can be displayed, and how brightly it can be illuminated.

As has traditionally been the case in most museums, artwork in the Van Gogh was illuminated by halogen incandescent mounted to kilometers of track lighting. House lights were PLL compact fluorescent. Also like many museums, the Van Gogh is often open after hours for special events. Unfortunately, after-hours events increase the light exposure of artworks, contributing to degradation, especially when lighting is controlled by simple on/off switches. The Van Gogh musuem found that their paintings were degrading faster than expected – or desired.

Solution: Increasing quality and savings

Xicato´s lighting solution fits the expected requirements: the Artist Series generates light that not only matches the color-rendering quality of halogen lighting, but – even among LED solutions – is also less damaging because it radiates less energy in the harmful, high-energy blue-violet and UV spectrum. The company´s new XIM Gen4 modules with wireless Bluetooth control, especially in combination with occupancy and ambient light sensors, could provide uncompromised light quality and visitor experience, while absolutely minimizing light exposure.

Phase one: Keep it simple

To minimize disruption, and frankly because the museum was hesitant to commit to a new technology, phase one of the installation involved simply replacing the existing halogen track lighting with Mike Stoane Lighting TTX2.70 fixtures with Xicato XIM 9mm Artist Series intelligent LED modules. These modules are capable of both 0–10V control and Bluetooth control. In the initial phase, lights are controlled using EnOcean´s energy harvesting Easyfit BLE switches to independently switch the art lights and house lighting zones for cleaning.

Phase two: Add sensors

The next phase of the installation was to add Xicato intelligent motion and lux sensors (XIS) and program the lights to respond to scheduling, occupancy and ambient light levels, to further reduce both energy and light exposure. Individual luminaire programming was done using Xicato Control Panel software, and the programmed settings – including secure network, group and scene membership, scene settings, and individualized sensor responses – are stored in each Xicato module, eliminating the need for centralized controllers or hubs. The lights themselves contain their individual

Mike Stoane Lighting TTX2.70 track lighting

schedules, listen to sensors, switches, and app commands, and make independent decisions about how to respond.

Phase three: Central management

Like a little computer, XIM stores configuration and status information about itself, including module type, hardware and firmware revision, its programmed maximum flux level, control interfaces (e.g. Bluetooth + 0–10V, or Bluetooth + DALI), total operating hours, on/off cycles, and histograms of its lifetime intensity and temperature states. Of course, the module also stores its network, group and scene membership, as well as its programmed settings. In addition, XIM periodically broadcasts information about its immediate operating status, including Device ID and name, intensity (dim percentage), current LED and PCB temperature, power supply voltage and ripple, and overall status. Xicato Intelligent Sensors (XIS) also broadcast sensor data into the Bluetooth network. Occupancy, lux levels, temperature, and humidity can be used not only to control lighting, but to remotely monitor the room for the purposes of environmental control or – of particular interest to the Van Gogh – lux-hour tracking on individual paintings. All of this data can be collected via Bluetooth, either locally by a PC, Mac, or mobile device, or remotely over the LAN by use of a Xicato Intelligent Gateway (XIG). The Van Gogh expects to deploy XIG in order to enable lux-hour management, to proactively monitor and manage the luminaires, and to remotely control lighting from the reception desk. The availability of this data creates a significant opportunity for third parties to develop application software running on a server either in the museum itself or in the cloud. Xicato shares its API with any interested third party software developer, and several have begun developing to the Xicato interface. Experimenting with Beacons, the XIM based luminaires, sensors, and gateway can also be programmed with Bluetooth beacons, including iBeacons, AltBeacons, and Eddystone-URL (URI) Beacons. This will allow the museum to offer location-based information and wayfinding services, Control Panel log screen, showing real-time operational data, allowing them to deepen the visitor experience with data that is not practical to display on the wall, including audio and video content. This information can be tied to web and social media, and presented on mobile devices that visitors already have in their pockets.

The Xicato Intelligent Gateway provides performance enhancements, remote monitoring, configuration and control access as well as protocol conversion between Bluetooth and IP-based protocols.

Results

Approximately 1,300 light points have been replaced so far. The work is being done entirely after hours, without disrupting normal operations, and without moving or replacing either the artwork or the existing lighting infrastructure. No new track. No wires. No holes in the wall. No dust. So far, the Van Gogh Institute loves the lighting quality and energy savings at the Van Gogh and Mesdag museums, and is delighted with how quickly and inexpensively they have been able to deploy controlled lighting. Urban Larsson, the museum director is extremely pleased with the energy savings, and is looking forward eagerly to realizing even more savings with the help of the installed sensors.

www.xicato.com

Climate control
at its best

Since 1962, the Swiss confectioner Läderach offers premium handmade Swiss chocolate specialities to gourmets all over the world. The pleasure the company derives from quality sets it apart not only in developing new compositions but also in distributing and presenting goods in more than 50 chocolate boutiques in Switzerland and abroad. For this purpose, various boutiques were equipped with the self-powered wireless sensor system EasySens® from Thermokon. To keep the chocolate safely stored in the boutiques, a 24/7 climate control was required.

By Thorsten Kresin, Head of Marketing, Thermokon Sensortechnik GmbH

For the perfect sensation of taste, the products of the premium chocolate confectioner depend on constant room conditions. In order to control the climate conditions in the boutiques around the clock, Läderach was looking for a solution that would maximize reliability, minimize installation costs and maintain high flexibility. Data monitoring was centralized in Switzerland to relieve the local sales staff's workload. High priority was given to the use of a standardized wireless protocol enabling the possibility for retrofit upgrades and extension in addition to the benefits of a proven technology.

Building Automation with EnOcean-based Technology

The system integrator, Soltris GmbH, decided to use the self-powered wireless EasySens® devices from Thermokon. Based on the EnOcean technology, EasySens® offers the prerequisites for a fast and easy installation and provides highest possible flexibility with regards to specific sensor locations. In this case, IT Läderach was responsible for the implementation and commissioning.

The sensors were selected based on the individual application: The temperature sensor SR65 was chosen for measuring the outdoor temperature in the entrance areas of the boutiques, the wall-mounted room sensor SR04 for a permanent measurement of air temperature in the warehouse as well as the combined temperature/humidity sensor SR04rH for perfect ambient conditions in the sales rooms. The Thermokon repeater SRE – also part of the complete solution – guarantees the needed radio range from the bidirectional Thermokon gateway STC-Ethernet to the sensors, covering even longer distances.

Thanks to the wireless EnOcean technology, the installation costs could be reduced to a minimum. Several sensors in the indoor area could be assembled by means of an adhesive foil. Only the outdoor temperature sensor had to be screwed to ensure resistance against environmental impacts. The gateway, transmitting the measured values via an internal network to the Läderach headquarters in the Swiss canton Glarus, is installed invisibly for visitors in the back office.

Numerous climate data always in focus

Monitoring, evaluation and control of the climate data is guaranteed 24/7 through the headquarters in Switzerland. On site, several measured data are imported into the building automation system iBricks and are graphically displayed. Because all measured data is continuously updated, fast response times and contemporary interventions are guaranteed. In case of deviations to predefined set temperatures, the system automatically generates an e-mail to the client service in charge. Furthermore, several data are saved for quality assurance in addition.

The Thermokon solution has proven highly reliable in daily operations. Daniel Schmidt, project manager at Läderach, also appreciates the EasySens® system due to its energy-harvesting technology reducing the maintenance costs significantly. In addition to the already retrofitted 47 Läderach boutiques, more boutiques will soon being upgraded with the EasySens® solution.

www.thermokon.com

Satisfied with the result (f.l.t.r.): Daniel Schmidt, Project Manager/ IT administrator, Läderach (Switzerland) AG; Franco Bonutto, CEO, Soltris GmbH; Richard Raschle, CEO, Thermokon Sensortechnik Schweiz AG

In the area of the **educational institutions**, legal regulations or climate change globally strengthen the desire for energy efficient buildings and intelligent building automation solutions.

The following two international examples show, which different approaches for realizing intelligent and maintenance-free sensor solutions can be implemented.

30% energy savings for schools in Paris

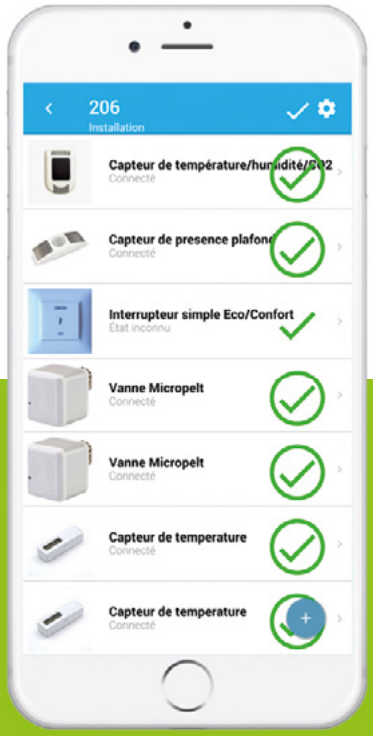
In 2016, an ‚energy performance contract' (CPE) that concerns 140 Parisian schools was launched by the City of Paris and is financed by the local authority in the amount of €84 million in the investment program planned for this term. ENGIE committed itself to cutting the schools' energy consumption by at least 30% on the basis of renovation work using energy harvesting technology.

By Olivier Gresle, CEO, Vertuoz by ENGIE

A total of 42 schools have already been renovated and the work will continue during the school holidays in 2017 and 2018. The renovation work, which is adapted to the specific architectural and thermal characteristics of each school, concerns the renovation of buildings and the installation of a remote smart energy performance monitoring and control system, thereby guaranteeing the optimal management of the energy used. Innovative connected devices facilitate the energy transition process and make the buildings smarter and less energy-intensive.

Integrated building control to increase energy efficiency

Guaranteeing the comfort of more than 21,000 pupils, teachers and municipal employees throughout the year is the project's primary requirement. This is met by replacing the most dilapidated boilers and fitting self-balancing valves to each radiator to homogenize the temperature within each area and ensure a comfortable temperature regardless of the circumstances. Further installations are temperature and presence sensors in each classroom, so that only occupied premises are heated. Additionally, an on/off switch for the heating system has been installed in each classroom, so that the economy setting may be overridden and the comfort setting activated outside of the usual heating program.



The “Vertuoz Live” App helps to create simple rules for controlling devices and allows visualization of measured data and equipment conditions in every classroom in every school.

Inconspicuously integrated: maintenance-free sensors and actuators can be easily retrofitted and flexibly positioned.

All of the building‘s controls are contained in a single connected system, enabling the user to manage the amount of energy consumed while ensuring the occupants remain comfortable. In some classrooms CO_2 sensors are installed to turn on the ventilation system when the CO_2 level is too high, so that air quality is improved to help enhance the students’ attention.

Easy to retrofit thanks to energy harvesting

All temperature sensors, CO_2 sensors, occupancy sensors, switches and valves are based on the wireless and batteryless EnOcean radio standard. A total of 15,000 maintenance-free EnOcean-based sensors and switches will be installed in all the 140 schools. The solution offers significant advantages, such as reduced installation costs due to less installation time as well as no cabling costs. The sensors can also be positioned anywhere suitable, providing flexibility for future changes.

Smart heating for energy savings and comfort

The combination of the Overkiz Minibox with Ubiant’s smart building system ‘Hemis’ enables the implementation of a complete smart heating system in the 140 schools in Paris. The Overkiz Minibox, a single-protocol gateway, connects the EnOcean-based products with the IP world and makes it possible to control multiple devices from various manufacturers. Using the Overkiz cloud platform, the ‘Hemis’ app allows users to simply manage all self-powered devices from the “Vertuoz Live” smart phone app by controlling the consumption, identify malfunction and potential cost saving or improving the comfort of occupants.

This recent project is an excellent example of how energy harvesting technology enables schools in France to become more energy-efficient and sustainable.

www.engie-vertuoz.fr
www.overkiz.com

The Ivy League University, based in New York, was challenged with finding a new lighting control system, which is IoT-enabled and – according to the number of buildings – easy to retrofit. Not an easy task, as the campus encompasses 36 acres of upper Manhattan real estate and is consisting of 360 buildings and hundreds of thousands of lighting fixtures.

By Ara Bederjikian, CEO, OBX Computing Corporation

The future is now – Profile of IoT-ready University Campus

The Challenge

The existing lighting environment was very fragmented with a patchwork of multiple vendors and technologies. Moreover, mass fixture replacement strategy was not logistically feasible so the new system had to be compatible with the legacy lighting fixtures. Since a complete replacement of all lighting units could not be realized, the new control system had to be compatible with the existing lighting units.

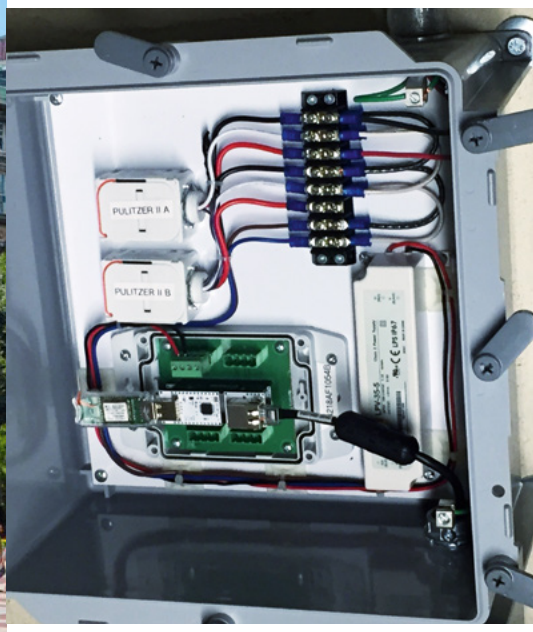
In order to ensure a simple and cost-efficient retrofitting within the framework of the large-scale project and to prevent an intervention in the existing building structure, a wired solution was out of the question. Also the maintenance effort was to be as small as possible, therefore a solution using batteries was no option as well.

The requirement was to implement a platform that provides full automation, where every aspect of lighting can be controlled through a single interface. But the real challenge was to integrate the entire campus lighting – new and existing luminaires, interior and exterior lighting as well as various technologies such as LED lamps, fluorescent lamps, metal vapor lamps, etc. – into the new system. More importantly, a lighting control system was required that is scalable and interoperable with IoT devices to convert the campus into a smart IoT ready environment.

The Solution

In order to meet the specific requirements, the decision was made to use the Universal Gateway System (UGS) of OBX Computing Corporation. The OBX UGS not only met the requirements for full automation and independency of the manufacturer and technology, but has also convinced with wireless mesh connectivity and current measurement

The UGS provides wireless control of lighting, easy configuration of scenes and lighting rules as well as monitor and report functionalities.



functions. The combination of the UGS with self-powered lighting controls based on energy harvesting technology enables the definition of lighting scenes and rules which allows enormous energy and cost savings. For example, presence sensors can be used to determine whether a room is occupied or not. If no student is present, the system turns off the lighting and enables energy-efficient operation.

In addition, the cloud-based system provides remote monitoring and 24/7 automated support services. EnOcean-based sensors help to generate reliable data and send it to the cloud via UGS. Access to the OBX system is done with authorized login data via an authenticated web browser, encrypting all communications and system data.

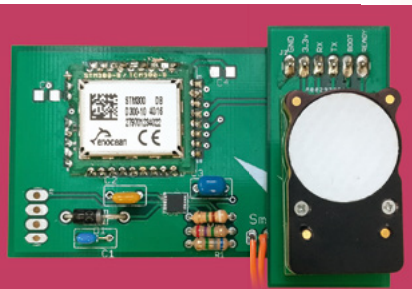
In order to avoid disturbances of the university operation as far as possible, the system was installed in several phases. The user-friendly OBX customization options have been used to configure switching rules for the presence and ambient light sensors in accordance with the different requirements of different environments. A positive side effect was the improvement of WLAN coverage in previously underserved areas by the hotspot function of the individual OBX gateways.

The Ivy League University is therefore setting a good example and demonstrates how universities in the USA can use an intelligent, IoT-capable lighting control to enable energy-efficient and cost-effective operation.

www.obxcc.com

Smart and ready for the Internet of Things

The Arcadia Group, a British multinational retailing company headquartered in London, has recently started the upgrade of their Top Shop and Top Man brand in partnership with Smart Buildings. The first implementation was in the Top Shop store in Edinburgh, the resultant energy saving has been an immediate success. By Mark Davenport, CEO, Smart Buildings Ltd.



Impressive results

Smart Buildings are innovating the way the Arcadia portfolio manages their energy – with ultra smart integration of their retail network. Learning how the network operates and the understanding of strategic applications is paying big dividends for the high street retailer. Applying the smart expertise has already provided a saving on electrical energy of more than 30%. Starting with simple wins through to complex software algorithms the return on investment (ROI) is coming out at less than 12 months per store.

Connected to the cloud

Once the system has been applied to the store network access and management of the building, it is directly connected via any smart device hosted within the cloud. The user parameters and control limits are set per user's access level and defined within the cloud. For instance, the room temperature set point can be easily managed to restrict change to an agreed value against set point.

The system is made up of a series of apps and these are smart device ready, so users can view and change the parameters locally. Engineers can access the information from anywhere in the world via the cloud and the Arcadia headquarter can keep updated on the performance, energy usage and initiate automated services such as the Smart Maintenance tool kit.

The use of battery-free temperature and CO_2 sensors enables maintenance-free monitoring and control of the building while at the same time ensuring cost and energy savings.

Self-powered and easy to retrofit

The retrofit requirement was that the store continued to trade unhindered during the upgrade, this was made possible by utilizing the wireless and battery-less EnOcean technology. No new cables had to be pulled. The system is using temperature, humidity and CO_2 EnOcean-based sensors in order to feed back the sensing data to control and monitor the environment to achieve energy and cost savings. EnOcean-based switches and sensors are used comprehensively within the application and these are reducing plant run times by monitoring the CO_2 and automatically sweeping the store shutdown on the wireless final exit key switch. The AC is also benefiting from the use of EnOcean PIRs and these are sensing the occupancy within the rooms and reducing the run time of the AC as well as controlling the lighting within the space. Another benefit from this service is the reduced service and maintenance requirement, as there are no batteries used. This case study is a great example of how easy self-powered and smart devices can be retrofitted without disturbing running operation. In connection with cloud-based services, connected devices enable new possibilities and massive savings concerning energy and costs.

www.smart-buildings.co.uk

Equipped for the future –

Renovating a landmarked city hall

The renovations of the administrative building in the district town of Düren, Germany, with its approximately 200 office and ancillary rooms, a cashier hall, conference rooms, an assembly hall, as well as several rooms for other municipal institutions, were completed in 2015. The requirements stipulated for the renovation project, which took nearly three years, were shorter lines of communication within the administration and freedom from barriers as well as "state-of-the-art technology and equipped for the future".

By Sven Trapp, Sales Manager North, DELTA DORE SPEGA GmbH

The use of modern technology can be ideally combined with the bright, open room design. The wireless self-powered sensors and switches can be flexibly placed on different surfaces.


Stadt Düren

The city administration set its sights on cutting-edge technology even in the room automation system. With the premise of not only being energy-efficient but also flexible in dividing up the office space and minimizing installation work, they deliberately chose a room automation concept that seamlessly integrates the leading field bus protocols. In the present case, the e.control™ room automation system from spega combines the internal SMI blinds and the DALI control system for the lights with a wireless room operating unit concept based on EnOcean technology.

Energy-efficient room automation solution

The e.control™ room automation system provides the full range of functions of the building automation efficiency class A in accordance with DIN EN 15232, i.e. room temperature regulation, anti-glare and lighting control are combined into a single system at the highest level. All functions, such as changing the setpoint temperature, adjusting workstation brightness and operating the shades, are controlled via EnOcean-based temperature sensors with a setpoint generator as well as radio-based light and blinds switches.

Individual and flexible control

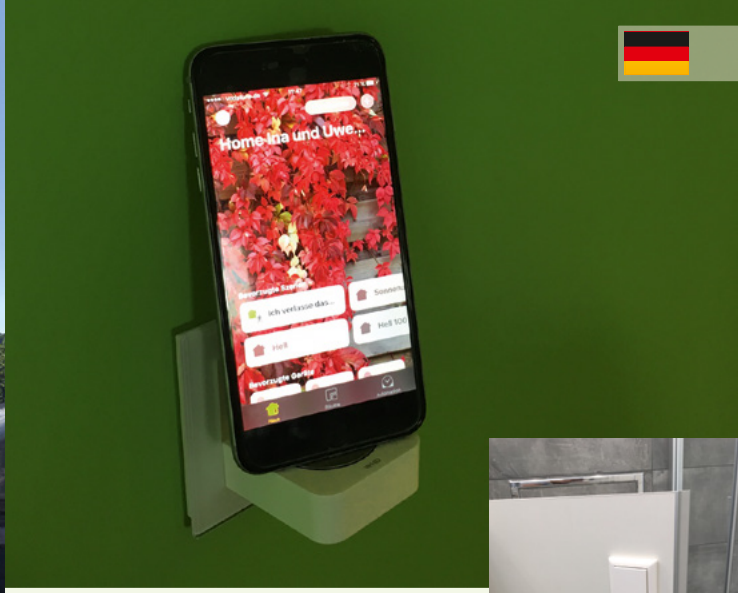
The multisensors from spega monitor room occupancy and ensure a constant light intensity at the workstations. A particular highlight is the integrated EnOcean receiver, which integrates all wireless sensors into the automation system. As a special enhancement, the room automation system provides the “dialog Web” web server, which enables every user to operate the system from a web interface. Employees can thus influence all room conditions from their PCs at their workstations.

The modular M series of the e.control™ system, whose modules were placed in floor and small distributors, depending on the installation situation, are used to control the SMI blinds, DALI lights and radiator valves for the heating and cooling ceilings and to evaluate the window contacts. The room automation system, with its more than 650 smart devices, is integrated floor by floor into the IP backbone of the building automation system via IP routers and thus ensures particularly efficient energy use in interaction with the DDC technology.

www.deltadore-spega.com

Energy efficiency and comfort at the workplace: The room automation system allows intuitive operation and control of the room conditions.

North-east view of the house with garden and terrace. LED spotlights at roof overhang could be turned on via the alarm system to illuminate the exterior.



Above: Control via Apple HomeKit in a wall docking station from OPUS.

Right: Freely positionable OPUSgreenNet wall switch for lighting control.

Smart technology from the basement to the roof

– the dream of owning your own smart home

Left: Temperature control via Afriso wall thermostat. Roller shutter and lighting control via OPUS® switch design Inform.

Middle: Cozy living room: The kitchen and the dining room are equipped with InnoGreen LED stripes in the stucco of the ceiling, the control takes place over the Casambi app.

Right: Visual display of the status of the terrace doors or the entrance door via EnOcean REG actuator. Red is open, off is closed.

Personalized and flexible, thanks to wireless technology

The smart OPUSgreenNet building system from Jäger Direkt increases everyday comfort and flexibility in the Fischbach family's new house. The lights as well as the heating and shutters/blinds can be controlled individually and without complications based on the EnOcean technology.

To minimize the amount of maintenance work required for the different devices, when it came to choosing a smart home solution, the owners quickly selected a self-powered solution with the EnOcean wireless standard, since a wired installation would have been much more expensive and too inflexible. During installation, not a single light switch was wired in the conventional way to simplify planning and avoid having to determine the position of these switches as many as two years before the family moved in. Only the outlets had to be determined. The wireless and self-powered switches for controlling the lights and shutters, as well as motion detectors and thermostats, were placed only after moving day, which meant they could be relocated individually later on. This made it possible to save time and money during installation as well as increase flexibility and comfort in terms of the room use.

Welcome to the smart home

The smart technology starts right in the entrance to the home: For example, when the mailman rings the bell, the Doorbird intercom routes the signal to all connected smart phones, regardless of their location. This makes it possible to respond to the mailman even if the homeowner is out shopping. A visual display in the hallway provides reliable information about the status of the entrance and terrace doors, triggered by window sensors as well as EnOcean REG actuators from Eltako. The self-powered SecuSignal® window handles from Hoppe provide additional protection against intruders by transmitting a signal directly to the smart phone if the window is undesirably opened.

The temperature in the guest room is conveniently regulated with an Afriso wall thermostat and thus ensures a pleasant room climate. The shutters and lights in the bedroom are controlled with a flexible OPUSgreenNet switch directly on the bed. The lights in the bathroom can also be conveniently controlled from the tub using a self-powered wall transmitter. The maintenance-free technology is also used in the conservatory. The self-powered thanos room control unit from Thermokon makes it possible to control the temperature as needed and also has eight more functions for controlling lights and shutters.

Smart networking

The user-friendly MyHomeControl software from BootUp makes it possible to visualize all functions in the house and also to implement other complex features, such as photovoltaic or ventilation systems as well as preconfigured scenarios. The system also takes into account the latest trends, and numerous functions in the house are controlled from a smart phone, thanks to Apple HomeKit. The Apple Home app is one of the possible applications that permit easy remote access or the configuration of very simple rules. If one forgets to turn off the lights upon leaving the house, this can be done from the road with little effort. Thanks to Apple's Siri®, all HomeKit functions can even be switched directly by voice control, e.g. by issuing the command, "Siri, I'm leaving the house". One could hardly wish for more comfort or energy efficiency.

The ease with which it is possible to get started with a smart home is made clear on the basis of this practical example. With all the possible solutions in today's smart world, it is nevertheless essential to plan such a smart home in detail, find a suitable retailer and finally clearly document the project. Starting with a simple automation solution, open systems can then be expanded flexibly at any time. With these simple prerequisites, homeowners can gradually fulfill their dream of owning their very own smart home – according to their own specific needs.

Many people dream of owning their own home. As the technology grows so does the desire for a smart home. This can be accomplished without complications with the aid of smart systems based on EnOcean technology and networking them with other technologies such as Apple® HomeKit™. **By Ina Fischbach, Marketing Director, Jäger Direct**

www.jaeger-direkt.com

Full overview also in case of absence: When the doorbell rings, the Doorbird-intercom routes the signal to all connected smartphones. With the help of an appropriate app, residents can also answer when they are out of home.

Smart control
for Johnson Controls office in Wuxi

To optimize the management functions and save energy, Johnson Controls is equipping its 500-square-meter office in Wuxi, China, with a presence-dependent lighting control system.

By Marketing Department, Beijing SECO Information Technology Co., Ltd.

Within the framework of this retrofit project, Johnson Controls R&D Center for Asia decided to combine SECO's wireless and self-powered presence sensors based on EnOcean technology with SECO actuators to provide the desired intelligent lighting control and management functions.

Efficient building management

When the occupancy sensor detects a person within the area, and the light level is lower than preset value, the lights will be turned on. After the person leaves the area, the lights will be automatically turned off in a few minutes. This saves energy in case the staff forgets to turn off the light when leaving the office, and can improve the building management efficiency. At the same time, EnOcean wireless and battery-less switches from SECO have replaced traditional wired switches, and make the daily operation safer.

Overall Cost Saving

Thanks to EnOcean energy harvesting wireless products from SECO, the installation time is greatly saved, the whole retrofit only took two days, and there were only limited changes to the existing wires. The installation consumable materials, labor costs, noise and dust are also significantly less than with a traditional solution. What's more, the entire retrofit didn't interrupt the normal operation of the work place, thus helping Johnson Controls Wuxi Office maximum its overall saving.

www.secotech.com.cn

A new era in wireless technology – Easyclick in office and commercial buildings

The Easyclickpro wireless system from Honeywell PEHA can also be integrated into CentraLine's building automation solutions, effective immediately. The wireless system with wall switches and flush-mounted receivers based on EnOcean technology permits flexible use in a variety of areas – especially in office and commercial buildings. By Volker Galonske, Marketing Director, Honeywell PEHA

Functional variety and flexibility

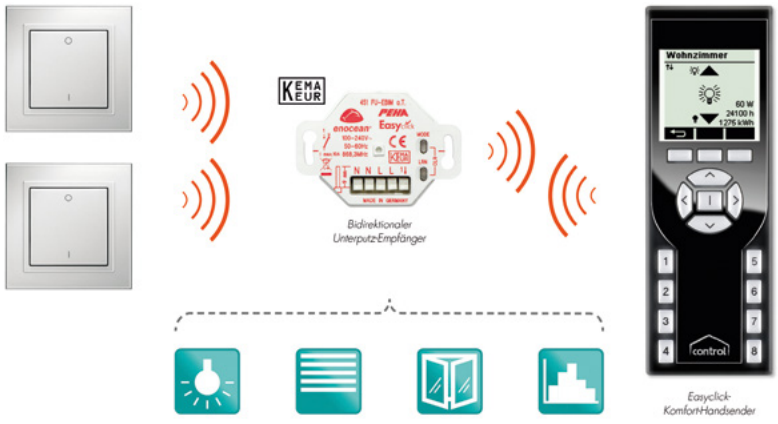
The Easyclickpro receivers make it possible to control light circuits, blinds (with louver adjustment), shutters and radiator valves. The wireless Easyclickpro wall switches and sensors can be positioned anywhere in the room and are merely glued or screwed on. The bidirectional flush-mounted/plug-in switch modules not only receive commands via wireless signals but also return their status whenever the latter changes. In this way, Easyclickpro devices can be fully integrated into the building control system from CentraLine by Honeywell.

The devices are integrated into the CentraLine system via bus-like antennas, which are distributed within the building. The antenna bus is connected to either the CentraLine HAWK or EAGLEHAWK controller. Bidirectional Easyclickpro components can then be automatically detected by the controller and integrated into the controller program with a simple drag & drop operation. The controller program can thus access all functions of the Easyclickpro components.

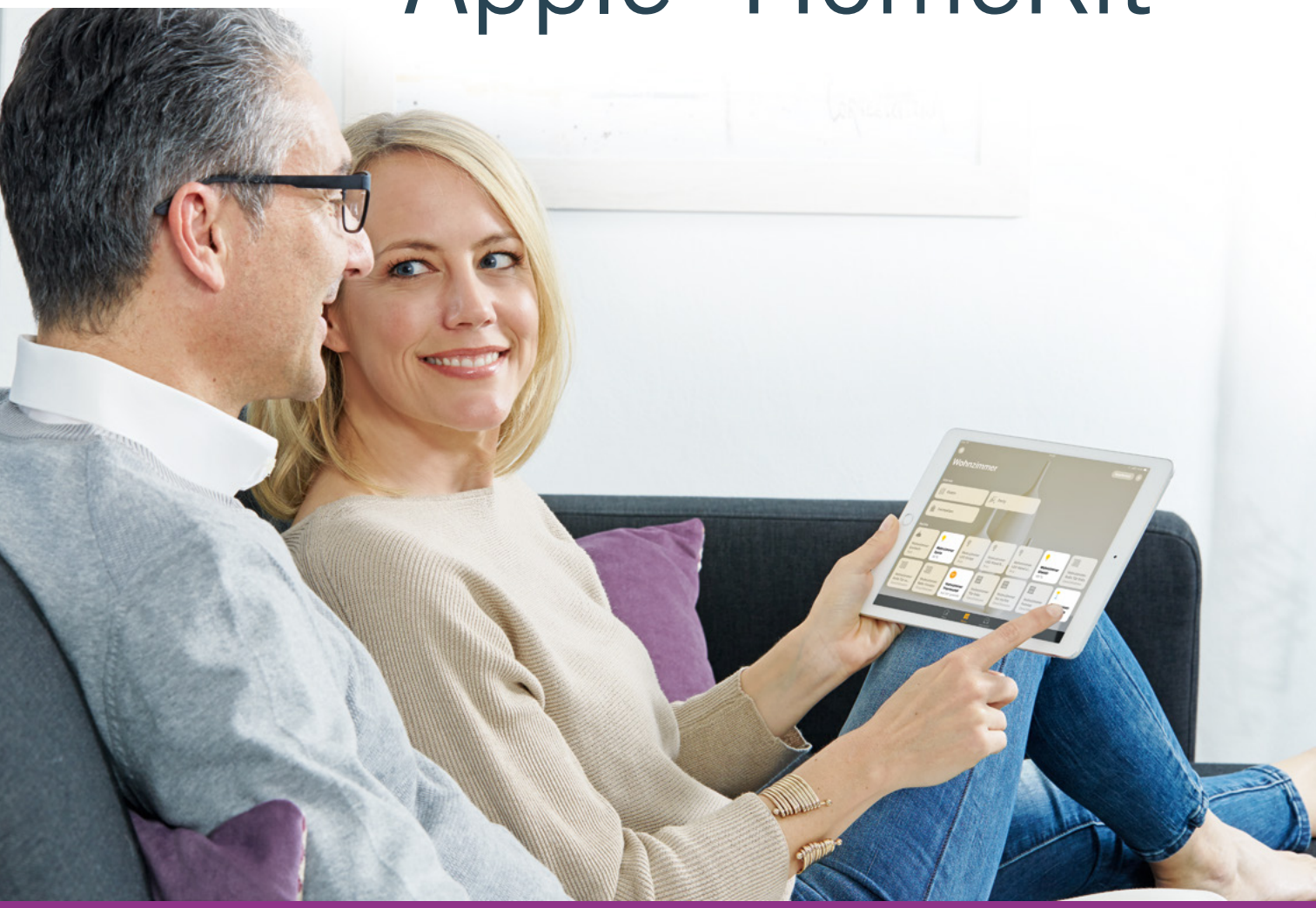
Comfort and safety for building users

The building control system visualizes, for example, the current switching states of light circuits and the position of blinds and can additionally perform higher-level control tasks. Building users benefit from increased safety, since the building control system makes it possible to automatically open blinds and shutters in the event of a fire and fix them in their raised position with the aid of information from the fire detection system.

www.peha.de
www.centraline.com



WeberHaus to feature Apple® HomeKit™

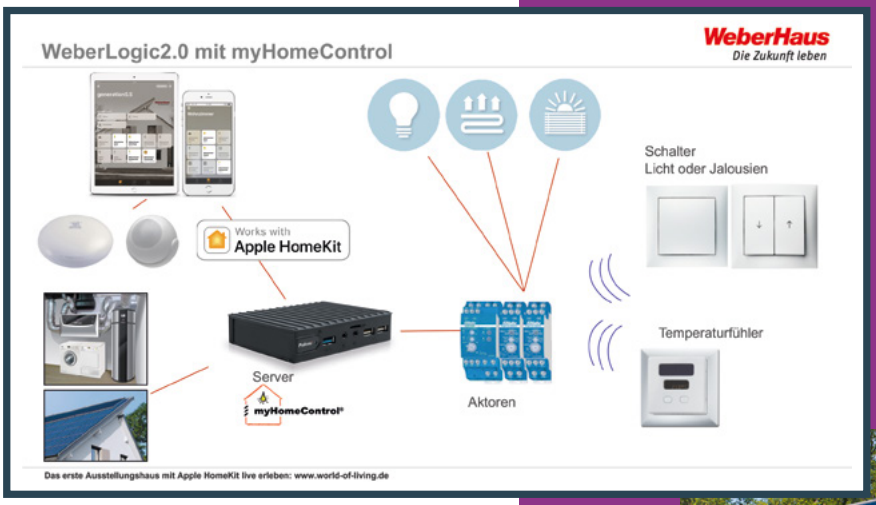


As the first European pre-fab home manufacturer, this year, WeberHaus will integrate Apple HomeKit into its SmartHomes. WeberHaus has been offering an intelligent home control system with WeberLogic 2.0 and Bootup software MyHomeControl for years. In combination with a gateway for Apple HomeKit it's possible to connect the Apple world with the EnOcean world and in the SmartHome everything can be controlled comfortably and securely with iPhone®, iPad® and the Apple Watch® as well as the voice assistant Siri®.

By Klaus-Dieter Schwendemann, Head of Marketing, WeberHaus

“Hey Siri, I‘m back home!”

Apple is the first company to integrate home control into a major operating system with HomeKit technology as the global standard for the smart home. Apple HomeKit is designed to offer a simple and secure way to control home accessories with iPhone, iPad or Apple Watch. HomeKit brings interoperability between different brands and accessories throughout the home, a simple and secure setup experience, and ability to control your home even when you’re away.



Above:
The pilot project has succeeded in connecting the Apple world with the EnOcean world using the software MyHomeControl from BootUp.

Left:
The graphic illustrates the interplay between WeberLogic 2.0, myHomeControl and Apple HomeKit. This connects the classic home installation with Apple HomeKit components.

Below:
Everything at a glance: The Apple Home app allows homeowners to intuitively and comfortably control all devices.

Individual control

With the Apple Home app you can set up and control each accessory in your home from one place and have all of them work together using scenes. The Home app is deeply integrated into iOS so you can quickly control your home with your voice using Siri, with a card in control center, and receive rich notifications such as when someone is at your door. With a home hub such as an Apple TV® or iPad, you can control everything while you are away and automatically by time of day, your location, or sensor detection.

Efficiency and comfort

With the Apple Home app, and Siri, home owners can control main home systems like underfloor heating, blinds and the installed light system as well as additional HomeKit enabled accessories including light bulbs, smart plugs, radiator valves, sensors for measuring air quality and water leaks, and more. Many of the top brands in the smart home are already supporting HomeKit and many more are adding support this year. Home owners can add more devices over time and have them work seamlessly with the WeberHaus HomeKit packages.

www.weberhaus.de/apple

The Zuhause Plattform-EcoSystem: All functions. One system.

The Zuhause Plattform building technology brings the Internet of Things into buildings that have many residential and business units and digitalizes management processes. Zuhause Plattform, or ZP for short, combines the main functions of video intercom, electronic access, smart heat control, real-time consumption detection and manager communication into a complete system for the first time. The goal is to save resources in building construction, management and use.

By Jan Frederik Harksen, Managing Director, ZP Zuhause Plattform GmbH

Combining building technology with a management platform

The ZP-VerwalterPortal is a modern building management tool. Announcements and information can be made easily accessible with only a few clicks of the mouse, and they appear immediately on the ZP-Wohnungs-Adapter. The residents' concerns and status messages can be processed directly online.

The ZP-WohnungsAdapter forms the interface to the apartment and the resident

The digital heart of the infrastructure is the ZP WohnungsAdapter, developed in-house, as the communication end point in the apartment: an interface to the resident and to the linked ZP components. The resident can intelligently control the heat at any time, view the heat consumption and significantly reduce this consumption with an assistant system while maintaining greater comfort. At the same time the ZP-EcoSystem supports communication between the stakeholders involved and facilitates many additional applications. A wide range of functions can be activated, from the alarm system to the weather station to the in-home Internet.

The ZP-HausAdapter makes the front door and doorbell system smart

The ZP-HausAdapter can be installed instead of a conventional intercom.ZP-Wohnungs-Adapter systems turn into a video intercom with a flexible, digital doorbell panel and an intelligent access system; the video function

Left: The ZP-EcoSystem combines areas of the building equipment that used to be separate into one product family and implements communication within the building and remotely via a future-viable IP infrastructure.

Below: The ZP-HausAdapter replaces the analog doorbell panel and facilitates digital communication between the front door and the apartment.

increases security for residents and the building, and the wide-angle camera guarantees that visitors are recognized. Digital keys are managed with the ZP-Verwalter-Portal. Access to multiple properties can be enabled or quickly and easily blocked if the keys are lost.

The time has come. And so has the technology.

Digitalization gives apartment managers the opportunity to quickly and easily evaluate and bill available meter readings at any time. With its self-powered sensors and actuators, EnOcean provides the ideal solution for apartment managers, since the energy harvesting technology reduces maintenance work within the building and thus saves time and money. The ZP-EcoSystem combines areas of the building equipment that used to be separate and implements the communication of different radio-based devices within the building and remotely via a future-viable IP infrastructure. EnOcean-based products can thus be controlled without complications from an intuitive user interface. The EnOcean standard gives the ZP-EcoSystem a high degree of flexibility for retrofits and upgrades.

Open standards such as the EnOcean radio standard, wireless MBus/OMS, remote detection systems and web-based billing software result in a well-functioning overall system and pave the way for independence in controlling residential space, and they also eliminate previous meter reading processes.

Insourcing instead of outsourcing

The HP Heizkosten Plattform GmbH provides apartment management companies, building associations and managers the opportunity to achieve independence and data sovereignty. It eliminates previous limitations caused by laborious coordination, proprietary building systems and long contract terms.

One platform. All meters.

The ZP Zähler Plattform GmbH offers an extremely wide range of top quality products in the area of sub-metering. A large warehouse with many types of meters from different manufacturers forms the basis for launching a self-billing system. The ZP Zähler Plattform GmbH consistently relies on the open Wireless M-Bus (OMS) wireless standard. Parameterization services and ready-to-install meters and complete packages round out the portfolio for all kinds of properties.

www.zuhause-plattform.de

Combining sustainability with energy efficiency

The hybrid passive house

The model home of the Luxembourg-based construction company, Arend & Fischbach, which was built under the "massive passive" label, has a trailblazing design aimed at recycling management and demonstrates how cutting-edge technology can be combined with sustainable and energy-efficient living

By Claude Lahr, CEO, E2Architecture

In designing the hybrid passive house, special attention was paid to minimizing the use of polystyrene and construction foam, instead working with sustainable materials such as wood products, foam glass and hemp. With the aid of smart building systems from rms.lu, the house also adapts to new standards of comfort.

Smart control

From smart lighting control and well thought-out blinds control to targeted, room-specific ventilation control, the house is built around the 60 actuators and 40 sensors that cover all areas of everyday life. Depending on the field of application, these devices are controlled from a tablet or smart phone, automated by sensors or via self-powered wireless switches. The cables in the house are laid in a star configuration. As a result, all light groups are wired to the switch box separately, which makes it possible to use potential-free power cables and thus reduce the electromagnetic load, among other things. The equipment is controlled centrally by a fanless industrial PC, which performs its work noiselessly in the switch box.

The usage of self-powered wireless wall switches combines newest technology with sustainable energy-efficient living.

Comfort and energy efficiency

However, one of the main innovations of the building systems installed here is the smart ventilation control system. Using nine steplessly controllable dampers, it divides the house into four different ventilation zones, which are individually monitored with CO_2 and moisture sensors. For example, if the CO_2 concentration in one of the bedrooms exceeds a certain limit value, this room alone is additionally ventilated. This approach saves electricity, since the ventilation system does not have to supply the entire house with additional fresh air, which also minimizes energy losses during heat recovery. The power of the ventilation system itself can, in turn, be steplessly controlled using an EnOcean module.

The energy harvesting EnOcean technology has also proven to be successful as a basis for controlling the blinds. Thus, rooms can be controlled manually, according to sunrise and sundown as well as according to a predefined plan. In excessively high winds, all blinds are raised automatically to avoid possible damage.

Reliable monitoring around the clock

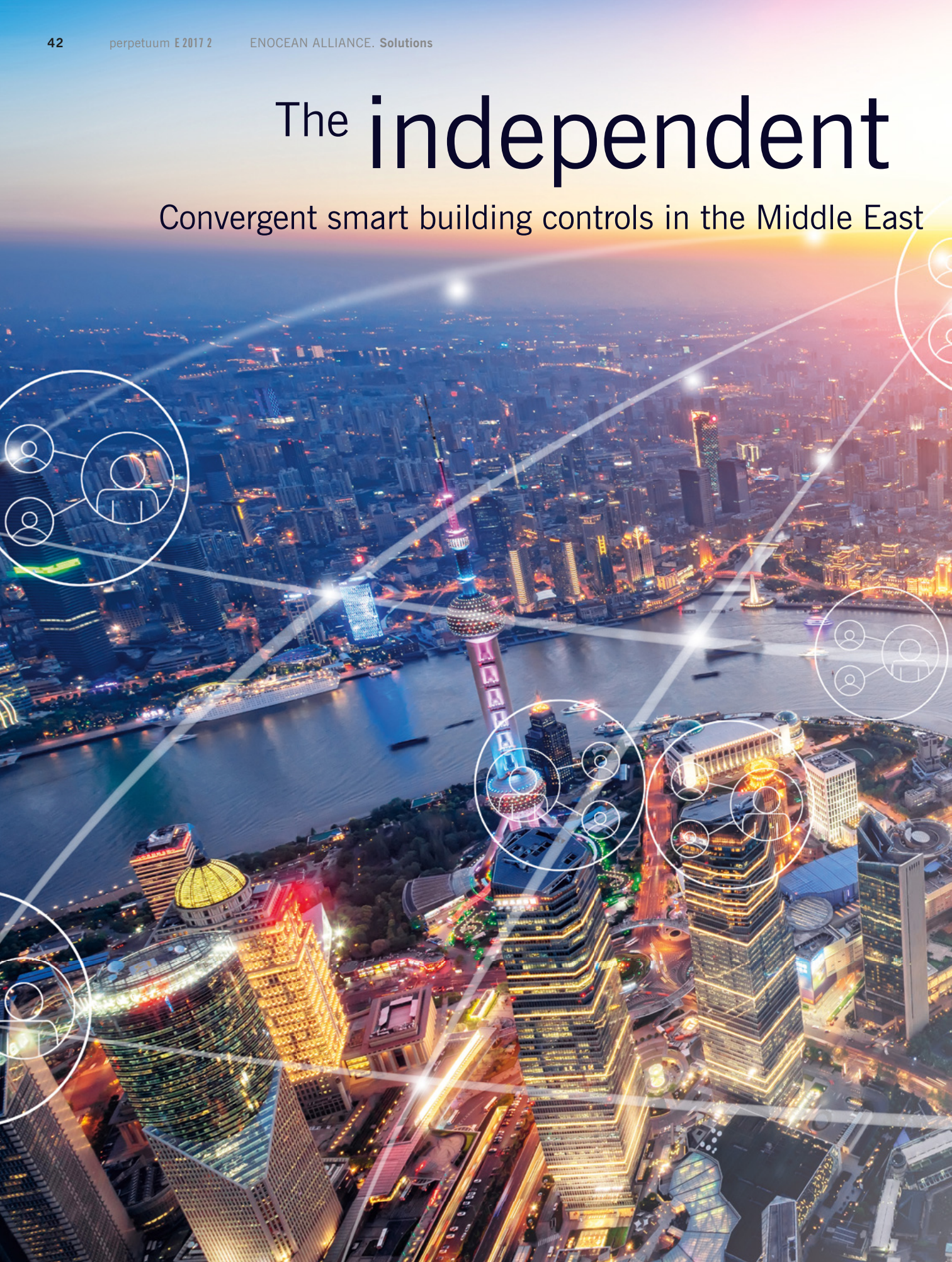
Monitoring also played a key role in this project. For example, an EnOcean sensor is used to monitor water consumption. Power consumption is measured via a MODBus interface. These functions offer residents several benefits, such as the ability to estimate utility expenses or to monitor the property in their absence. It was thus possible to automate an entire house at a manageable financial cost in order to provide future residents with a comfortable and energy-efficient home.

www.rms.lu

Clever combination: Besides sustainable materials, innovative and energy-efficient automation solutions have been implemented.

The independent

Convergent smart building controls in the Middle East



marketplace –

and Asia-Pacific regions

Increasingly encountered across the mature building and lighting control sectors is the desire for interoperable convergent control solutions that offer real-time access to value data and reduce building running costs, without the need for several stand-alone solutions. Yet, as they are traditionally dominated by vendor dependant control providers, these markets often struggle to support or act as a catalyst for innovation consequently resulting in an unchallenged status quo.

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

Cost effective and convergent control solutions

Contrary to this are the Middle East and Asia-Pacific markets, where facilities and building managers within this region are actively seeking an alternative – and employing the most cost effective, convergent control solutions available today. Interoperability is perceived as a key requirement, ensuring the building control systems can effectively communicate with all system components. This intrinsic value, achieved by adhering to open standards, increases system flexibility and its ability to evolve and adapt to changes in building use throughout its lifespan.

Flexibility and interoperability

One such a solution is Fulham's EnOcean for Niagara Connectivity kit. This vendor independent control solution provides customers with total flexibility, including the choice of device manufacturer, platform and installer. Connecting any EnOcean product manufacturer's self-powered wireless switches and sensors that conform to EnOcean Electronic Profiles (EEP) to any suitable Niagara BMS platform via Ethernet, such a solution enables harnessing the power of EnOcean technology seamlessly within Tridium's Niagara Framework technology.

Cost and energy savings

Reducing initial investment costs by using previously installed BMS hardware, EnOcean-based interoperable convergent control solutions offer end clients additional cost and energy savings, eradicating the need for separate energy consuming controls. For example, research by the Building Services Research and Information Association (BSRIA) has found that convergent building control solutions can reduce energy use by up to 30% and operational costs by 58%. Offered to the market by independent system integrators, (BSRIA) recently found that these independent system integrators dominate the building automation and control sectors within China, India, Africa and the Middle East. Competing with larger established control providers, independent integrators are leading the way, providing customers with cutting edge, interoperable solutions. They also have demonstrated real savings through "Convergence" in smart building controls.

Expected to be the fastest growing markets for building automation and controls in the coming years are Russia, China, India, Turkey, Saudi Arabia and the United Arab Emirates. By seeking interoperable, energy harvesting control solutions during this instrumental growth stage, this will deliver continued energy and cost savings as well as a converged building control system that many trapped in the more mature markets can only dream of.

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www.fulhamcontrols.com
www.control-network-solutions.co.uk

Are you ready for take off?

Growth with scalable IoT systems

It has long been apparent that the IoT market is limited to maker communities, pilot projects and niche business areas. Far from reaching growth expectations, people usually ask each other quietly and in confidence, „And have you already made any money with that?“ With few exceptions, the answer must usually be „no.“ Good news: Those days are over, at least in the building digitalization sector.

By Marek Machacek, Marketing Director, Digital Concepts GmbH

There are three reasons for this. Thanks to energy harvesting, the EnOcean technology offers clear advantages, such as self-powered operation and the elimination of cables. The second important cornerstone is the EnOcean Alliance. Larger investments are possible only, if there is an single ecosystem, which guarantees neutrally compatible manufacturers and long-term standards, minimizing risks of being locked in a closed system.

IoT-capable automation solutions

So far, so good. But that is not nearly enough in order to do business. This is where Digital Concepts appears on the scene. For the first time in the industry, we now have an overall framework that does not reach its limits at 100 apartments or 20 single-family homes, not to mention an office complex with 5,000 offices. The system handles the entire communication that takes place between devices, applications and the cloud. In simple terms, if you want to install three sensors and three actuators in 3,000 offices, automation is the only option to get the deployment, installation and commissioning done with a reasonable amount of effort. If you want to operate a scalable infrastructure, this can be done through business application frameworks such as IBM Watson and Microsoft Azure, or in the consumer segment using Apple HomeKit or Google Home. When it comes to realizing your business model, the choice of application is up to you as the operator. The software from Digital Concepts has the appropriate architecture enabling the connectivity and guaranteeing compatibility with these frameworks.

Cloud No. 7 Apartments GmbH

The road to success

Back to business: Only when real added value, a healthy ecosystem and efficient operation, along with logistics and installation, come together, is business scalable. Which means that everyone involved in the supply chain can also grow. The combination of the gateway from Digital Concepts, the EnOcean Alliance and energy harvesting technology is what makes this possible.

www.digital-concepts.eu

Building Automation
Always in Control

User comfort and reliability combined with energy efficiency:
WAGO helps you achieve this definitively with a solution that skillfully combines lighting, shading and single-room control.
Knowing What's Possible!

www.wago.com/building

WAGO

Connecting smart devices

While there is a large number of smart home systems currently available on the market, very few people have had access to them so far. This can be ascribed to the old solutions tending to be both expensive, time consuming to install and difficult to use.

By Odd Eivind Evensen, Product Development Manager and Co-Founder, Futurehome AS

Futurehome is a smart home system that allows you to control and automate your home from wherever you are in the world via a user-friendly app. The user-friendly solution enables the centralized control of household heating, lights and appliances. It also improves security and lowers your household bills by reducing energy consumption. The products are wireless and the Smarthub, your smart home's brain, supports solutions running on EnOcean. Thanks to wireless and batteryless EnOcean technology, this requires much less maintenance and is considerably easier to install than the traditional cabled versions of smart homes.

Convenient usage and functionality

Futurehome also wanted to innovate the way consumers buy their smart homes. CEO Erik Stokkeland believes that smart buildings and homes will be standard in just a few years and wanted to accelerate the process: "We have created a portal where everyone, tech interested or not, can design their own smart home through an online smart home builder, and have it fully installed by a certified Futurehome installer at a fixed price."

The app itself is designed to be as user friendly as possible with symbols and colour schemes to make the controlling go as smoothly as possible. With a quick glance at the dashboard you will get an overview of your whole house. How many lights are on? Is the door locked? Did I remember to turn off the coffee machine? The system requires almost no effort and no extra cost for the customer. This leads to more added value and functionality.

Futurehome's Smarthub makes it possible to connect all the smart devices, and get them to work together from the same application. It acts as a wireless router for smart devices and communicates on open industry standards such as EnOcean, Z-Wave, and over Ethernet.

www.futurehome.no

Clever contacts for smart windows

The requirements that windows must meet have increased. Windows must operate without any technical problems and, at the same time, meet high aesthetic standards. Wireless contacts mounted in visible locations that signal an open window therefore tend not to fit the concept, even though they are useful for many smart control scenarios.

By Alexander Wieczoreck, Product Manager, Aug Winkhaus GmbH & Co. KG

Unobtrusive and yet smart

The concealed FM.V wireless contact from Winkhaus is different. It is seated right in the rabbet and is therefore not visible when the window is closed. The EnOcean-based wireless contact works without cables and can therefore be coupled with many compatible smart home systems to monitor the windows of a building.

Flexible retrofits

Connectivity to wired alarm systems is also possible. These systems can be connected to the FM.V wire contacts with the aid of the wireless relay from Winkhaus. This eliminates the need to laboriously lay cables in the wall. Certified by VdS-Home, the association of property insurers, this solution is especially suitable for retrofitting plastic and wooden windows with a rabbet depth of at least 24 mm.

www.winkhaus.com

Seamless integration

The bidirectional KNX to EnOcean Gateway

The IBOX-KNX-ENO-A1, a bidirectional gateway from IntesisBox™, enables the connection between KNX and EnOcean protocols. This enables a seamless integration of sensors, actuators and bidirectional EnOcean devices into KNX systems.

By Josep Ceron, General Manager, Intesis Software SLU

In the area of building automation, sensors provide large amounts of data from various devices such as rockers, window contacts and thermostats. The IBOX-KNX-ENO-A1 gateway is used to update the collected data in the status communication objects of the gateway and send it to the configured group address. This information can also be called up as required.

Furthermore, KNX devices, such as room controllers, or systems can be used to control self-powered wireless EnOcean actuators. When the control communication objects receive the new data, the EnOcean telegram is sent over the air addressed to the previously learned device and the action is performed accordingly. Bidirectional devices both transmit and receive EnOcean telegrams. This allows the easy integration of these devices into the KNX system as if they were native products.

www.intesisbox.com

The smallest on the market – and yet so secure

The smallest gateway is also secure at the same time: The new KNX ENO 626 secure from Weinzierl supports encrypted wireless communication with EnOcean-based devices and also has a brand new design. **By Florian Kreutz, Head of Sales and Marketing, Weinzierl Engineering GmbH**

The device is commissioned in the usual way: the encryption can be activated individually on all channels. EnOcean-based sensors and actuators that support security can then be taught in as usual. This approach gives users more security without sacrificing comfort. The 626 model has eight channels and is suitable for installation in a flush-mounted outlet, due to its highly compact design. Power is supplied from the KNX bus.

www.weinzierl.com

Flexible heating control thanks to remote management

Radiator valve actuators are used to control heating on a single room level. Apart from energy savings based on scheduling, reduced target temperatures and elimination of overheating, it does also maintain the comfort temperature of choice. The new Micropelt iTRV enables more flexibility in the installation, operation and maintenance of space automation solutions thanks to the EnOcean remote management function.

By Fritz Volkert, CEO, EH4 GmbH

Intuitive und flexible configuration

The recently introduced Micropelt generation with optional remote management (ReMan) further simplifies installation, operation and maintenance. Customers can now choose between manual teach-in and remote teach-in using simple barcode scans. ReMan commands integrated in the gateway then connect and configure the drive automatically.

In addition, each drive can be controlled by up to three gateways within range. For a smooth configuration, functions such as device reset and the activated 10-second radio interval can be carried out via remote commissioning (ReCom). ReCom also contains internal operating parameters of the drives such as radio inter- val or safety position.

The batteryfree and thus maintenance-free wireless actuators are a time- and cost-efficient alternative to cable-bound solutions and are particularly suitable when wiring-dependent retrofitting is difficult or impossible or interference with the building structure is undesirable.

www.micropelt.com

Europe-wide use

The valve actuators are also being used in building automation solutions from Vertuoz by ENGIE (refer to pages 24 - 25). 140 schools in Paris are currently being automated with approx. 6,000 radiators, with the aim of reducing heating costs by at least 30% per year. With changing room occupancy and absence times on certain weekdays and weekends there is enormous potential for saving energy and costs.

Full networking
increases comfort and security

Cloud-based software that makes it possible to monitor individual locks has been added to Burg‘s electronic locking systems with EnOcean technology for lockers in sports and wellness facilities.

By BURG F.W. Lüling KG

Reliable remote control

The system makes it possible to monitor all electronic locks in an installation at a glance. An operator with more than one installation can combine his data. All lock functions can be set by remote control. EnOcean is the wireless protocol of choice, since it consumes very little energy and provides encryption.

TCM 515 Inside

TCM 515, the latest generation of continuously powered transceiver modules, enables new applications for the EnOcean radio standard, thanks to increased computing power, lower power consumption and a smaller form factor.

Networking with the cloud

Not only do clearly organized graphics make it possible to see which lockers are open and which are closed, but statistics can also be generated in real time. If desired, the system will furthermore send a push notification of events at individual locks to a mobile phone. Thanks to the EnOcean technology, the data can be transferred to the software via a GSM module.

www.burg.de/en

BURG networks its electronic locking systems and makes it possible to visualize the status of each individual locker lock digitally.

Fully networked: Each lock transmits its status wirelessly and increases comfort and security in the fitness studio.

Impressively simple

BACnet single-room controller

As a freely programmable BACnet MS/TP controller, the SAUTER ecos311 is a cost-efficient solution for smaller installations that is also suitable for subtle refurbishments. By SAUTER Head Office, Fr. Sauter AG

Economical HVAC compact controller

The SAUTER ecos311 single-room controller is perfect for automating the climate in offices and hotel or hospital rooms. It has all the interfaces needed, to which a maximum of two SAUTER ecoLink I/O modules can be added. Multiple room controllers can be combined to create room segments and zones by means of the master-slave function. The integrated real-time clock allows the use of local BACnet time programs. SAUTER ecos311 supports the Change of Value (COV) transmission type, thus relieving the data communication.

State-of-the-art room operation

SAUTER ecos311 is ideal for migrating room control from a proprietary standard to BACnet MS/TP. SAUTER ecos311 has also proven itself to be simple and open when combined with the room operating units of the SAUTER EY-modulo 5 system family, such as SAUTER ecoUnit 3 or ecoUnit 1 with EnOcean wireless technology. The additional RS-485 interface also enables the SAUTER EnOcean antenna (EY-EM 580) to be connected as a SmartAck receiver and the highly reliable bi-directional SAUTER EnOcean room operating units (ecoUnit 1) to be used together with the new BACnet MS/TP SAUTER ecos311 controller.

www.sauter-controls.com

Welcome to the family

In order to enable intelligent and affordable radio control, the range of TRIO$_2$SYS DIN RAIL radio receivers has been extended by new technological features. The self-powered radio receivers enable the cost and energy-saving control of electrical devices such as incandescent lamps, halogen lamps, electronic ballasts, as well as ventilation and heating devices using wireless and self-powered EnOcean wireless transmitters.

By François Pillet, Export Department, TRIO$_2$SYS

More features for the installer

On top of actuating their relays with EnOcean radio signals, the new receivers integrate a repeater function to increase radio range when distance between devices is problematic. Besides, the bidirectional radio test function offers the installer the possibility to check if the radio range is correct but also to confirm the device's status remotely. Moreover, the standard DIN RAIL format facilitates the installation and access in an electrical board since all receivers are located at the same place.

More flexibility for users and building owners

As the receiver can operate a remote control switch, users turn a device on and off a device by simply pushing any button of the switch, enabling a more instinctive configuration thanks to an intuitive interface. The preset timer can be used to automatically turn off an energy-intensive appliance after a certain amount of time, enabling optimized energy savings and increased comfort.

More fields of application

If required, the building owner can keep the conventional switches in the building by simply connecting them to the radio receivers thanks to their wired input. It is thus possible to control relays from both radio and wired switches simultaneously and reduce the impact of the retrofitting process as a smaller amount of switches needs to be replaced.

www.trio2sys.fr

Wired input DIN RAIL receiver with remote control and timer functionality

2-channel 5A DIN RAIL receiver

1-channel 5A DIN RAIL receiver

A safer, more comfortable and more economical home

INSAFE+ Air
Carbon monoxide detector
and air quality monitor

INSAFE+ Origin
Smoke detector
and hygrothermal
comfort monitor

Imagine a smart home that protects itself, looks after your safety and comfort, and saves you money. The new INSAFE Connect® sensors by NEXELEC do all of this.

By Claire Iooss, Marketing and Communication Manager, NEXELEC

A multi-sensor approach

INSAFE Connect® includes a set of different sensors: temperature, humidity, smoke and carbon monoxide. Users get the advantages of a complete detection network without having to purchase additional sensors.

Stay informed of the air quality in your home

INSAFE Connect® not only keeps your home safe, it also looks after your comfort. It monitors the temperature, relative humidity and even the quality of the air you breathe.

Why measure air quality? Because we spend nearly 85% of our time in confined environments, where the air may actually be five to seven times more polluted than outdoors.

In fact, indoor air pollution has become a major public health issue. Good air quality is essential for certain risk profiles (e.g. pregnant women, infants, asthma sufferers), and can help prevent pathologies such as allergies, eczema, and rhinitis.

An all-in-one B2B solution

INSAFE Connect® operates with a wide choice of radio protocols such as the EnOcean radio standard. It can also be customized for integration with different connected systems. Since the solution provides so many features in a single product, it is an ideal solution for service providers in areas such as insurance, asset management, remote support and home care.

www.insafe.fr

Switching on the future

We have now expanded our tap-radio portfolio to include new Eltako tap-radio pushbutton actuators. The refined design makes it possible to exchange existing pushbuttons and switches quickly and easily.

By Michael Länge, Sales Assistant Export, Eltako GmbH

After the development of the tap-radio sensors and actuators, the new programm will be supplemented by the new pushbutton actuators. They combine the functions of a pushbutton and a permanent actuator connected to it. This makes it much faster and simpler to replace existing switches or pushbuttons.

Save all your options.

Depending on the model, the tap-radio actuator used in the pushbutton actuator has the same functionality as existing tap-radio actuators for switching, dimming and blind activation and can be supplemented by many other wireless sensors.

Local change, global control.

It turns a classic switch into a pushbutton switch with several pushbutton positions in an instant, or replaces existing blind switches with additional options such as central activation, visualisation or app control. Pushbutton actuators are available in various sizes so they can be integrated in existing switch systems.

The new tap-radio pushbutton actuators turn your home very quickly into a smart home. By applying EnOcean technology, all doors are open to you, allowing you to integrate other smart devices into your project.

www.eltako.com
www.tap-radio.com

Dolphin Products

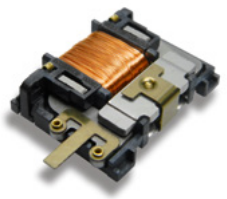
EnOcean's Dolphin product portfolio includes self-powered wireless modules and white-label end products, enabling product manufacturers to develop reliable and maintenance-free wireless sensor solutions for global use.

DOLPHIN
Self-powered IoT by EnOcean

Products with 868 MHz – EnOcean for Europe and other countries adopting R&TTE/RED specification
Products with 902 MHz – EnOcean for North America adopting FCC/IC specification
Products with 928 MHz – EnOcean for Japan adopting ARIB specification
Products with 2.4 GHz – for BLE & zigbee networks (worldwide)

Energy Converter

Energy converters collect and save the tiniest amounts of energy from their environment.

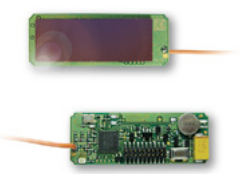


Energy Harvesting Wireless Switches

Energy harvesting switches use kinetic energy for switching applications in buildings and the Internet of Things.

For Energy Harvesting Wireless Sensors

Solar-powered energy harvesting sensors monitor and sense the environment to transmit this data to a wireless node.



For Controllers and Actuators

Wireless transceiver modules and products receive sensor data and also transmit values to other devices.

Tools

Starter kits and development tools help OEMs to implement energy harvesting wireless modules and products easily.

EnOcean Products: **www.enocean.com/products**

Product Finder: **www.enocean.com/en/product-finder/**

Welcome to the team:

Jürgen Baryla, Vice President Sales EMEA and Japan, EnOcean GmbH

On April 1, 2017, Jürgen Baryla took over the position of Vice President Sales EMEA and Japan at EnOcean. In this function, he and his team are responsible for sales and business development in these regions; he is also part of EnOcean's management team. Jürgen Baryla has over 25 years of experience in building technology as well as several years of experience in the field of smart home applications. Prior to joining EnOcean, he held various positions in worldwide sales and marketing from major companies such as Grundig Sat Systems, Somfy and the US company tyco.

juergen.baryla@enocean.com

Congratulations on the new position:

Matthias Kassner, Vice President Product Marketing, EnOcean GmbH

Matthias Kassner joined EnOcean as a product marketing director in 2013 and was responsible for the definition of new solutions for LED lighting control as well as the development of the 2.4 GHz portfolio. Since May 2017, Matthias Kassner has officially held the position of Vice President Product Marketing and is also part of the EnOcean management team. In his position, Matthias Kassner manages the definition of future, innovative EnOcean products and is responsible for the product marketing activities for the current portfolio.

matthias.kassner@enocean.com

MASTHEAD

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Figures for the EnOcean ecosystem

The EnOcean technology frees sensors and switches from batteries and helps to make buildings more energy and cost-efficient – an important basis for the Internet of Things. These figures show why buildings, which are more energy efficient, are desirable.

Buildings are the number one contributor to CO_2 emissions.

Worldwide, buildings consume **42%** **of all electricity,** up to 50% of which is wasted.

(Source: IBM: Cognitive Building Management: Increasing Efficiency and Performance; March 28, 2016)

75% of the building stock **in the EU** is not energy-efficient.

(Source: European Commission, Accelerating the Transition to Clean Energy in Buildings, November 30, 2016)

Operation costs account **for 71% of the total cost of a building's ownership,** with **energy costs** alone representing about **30%** of an office building's total operating costs.

(Source: IBM: Cognitive Building Management: Increasing Efficiency and Performance; March 28, 2016)

In a large system with **10,000** wireless units that are powered by two batteries with a lifetime of **2** years, the facility manager has to replace about **30** **batteries a day.**

The **energy efficiency of non-residential buildings** can be increased **30 to 50%** thanks to **modern building technology and operational**

(Source: VDMA, Lösungskompetenz Gebäudetechnik, June 2014)

The Enocean wireless standard for worldwide usage:

868 MHz for Europe and China, **902 MHz** for North America and **928 MHz** for Japan.

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

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