

ENABLED BY  
ENOCEAN

E 2020 2

# perpetuum®

THE WORLD OF ENERGY HARVESTING



New Work and digitization:  
How COVID-19 changes the  
workplace

Aruba and EnOcean  
make a building  
smart in no time

Read the Perpetuum  
COVID-19 special online:



[www.enocean.com/  
corona-special](http://www.enocean.com/corona-special)





## EnOcean

Self-powered IoT

### EnOcean and Aruba – the secure connection of IoT and IT

EnOcean's new IoT starter kit EISKx simplifies the integration of EnOcean wireless, self-powered sensors into already existing IT infrastructure with Aruba Wi-Fi access points – for a fast, easy and secure connection to the cloud.

#### Key benefits

- Two different versions:  
EISKA for Europe and EISKU for North America
- Makes the building flexible for different and changing scenarios
- High security standard for IoT projects in smart buildings
- Reduces IoT project costs by using the existing IT infrastructure
- Easy installation of EnOcean sensors in Aruba's Wi-Fi network
- Sensors operate wireless without batteries and cables using energy harvesting technology
- Access to the EnOcean Alliance network and thus to members' interoperable IoT applications
- Certified interoperability makes your IoT projects successful

[www.enocean.com/en/aruba](http://www.enocean.com/en/aruba)



## Dear readers,

The COVID-19 pandemic has turned practically everything we were previously accustomed to in our professional and personal lives upside down. We get together in web meetings, work from home – just as I am doing right now – purchase more things online, travel with a queasy feeling and closely follow the news as an invisible virus sweeps the world in waves.

At first, we faced uncertainty in how to deal with the new situation. Just as we were unaccustomed to wearing face masks, we were equally unfamiliar with social distancing rules and hygiene concepts, limitations to our freedom of movement, closed borders and deserted office buildings and strip malls. Here at EnOcean, we kept away from each other at first, but have now come back together again in performing our duties. We've been helped in this by technologies that we've been using for a long time, and now on a massive scale.

Our business premises at EnOcean used to provide space for 50 highly motivated and dedicated employees. During the lockdown, there were sometimes only two of us on site, while the rest of our colleagues continued to work via VPN. Our maintenance-free switches and sensors were installed long ago to operate the lights and blinds. Now we are also using the data to provide offices with flexible workspaces and to comply with hygiene rules. This not only gives us the opportunity to begin using our labs and test rooms more intensively today, but also to continue growing as a company in the future in the same amount of space!

Our energy harvesting technology is an important piece of the puzzle that many partners from the EnOcean Alliance ecosystem are using in innovative ways. Sensor and switch manufacturers, platform operators, system integrators, gateway producers and automation companies are forming partnerships in order to create smart spaces. Ideas on ways to organize space in smarter, safer and healthier ways are everywhere – in office buildings, at home, in hotels and retail businesses as well as in hospitals – and they also help reduce CO2 consumption.

And we are not the only ones doing this; so are many users of our technology, as demonstrated by the articles in this issue. We hope you enjoy reading the magazine and that you will also take a look at our COVID-19 special topic online!



Andreas Schneider, Managing Director

Read more in the  
COVID-19 special online



Editorial	03
Leading article: New Work and digitization: How COVID-19 changes the workplace	06
<b>Internet of Things</b>	
CWS: Hygiene first – digital washroom solutions	09
Aruba and EnOcean: Securely bridging the IT/IoT divide	10
Microsoft: Microsoft Azure Digital Twins for building digitization	12
Tevolys: Dynamic space planning for offices	14
T-Systems: The New Work megatrend for a good work-life balance	16
Dussmann: IoT sensors tending the garden	18
IAconnects: Social distancing management in buildings	20
Sauter: Modular principle for digital building automation	22
IMBuildings: Is a person leaving or entering a building? The EnOcean People Counter knows	24
Pressac and Matrix Booking: A smart partnership to support return-to-work protocols	25
Innes: Digital signage and room booking for smart buildings	26
Nifco: Smart buckles for deliveries	27
<b>Smart Building</b>	
Goldbeck: Smart buildings in the context of New Work	28
IOLITE: Smart office reduces energy usage by 23 percent	30
Honeywell PEHA: Smart control of lights, shutter blinds and temperature in building automation with EnOcean	32
Karantis360: How assistive technology can enable independent living during uncertain times	33
BURG: Working together more flexibly in the crisis – with security	34
LAE Engineering: Museum for Environmental Protection – a place of inspiration	36
KMC Controls: One-stop turnkey solution for building control	38
BG Energy Solutions: BMS as basis for a smart hospital	39
Sauter Controls: Combining high performance with IoT architecture	40
Comepi: EnOcean-based micro switch for industrial applications	41
Contemporary Controls: EnOcean to BACnet Gateway – a new way to bridge these networks	42
Flextron: ALADIN WAVE – contactless switching in times of COVID-19	43
<b>Smart Lighting</b>	
Titanium: How a U.S. retail chain controlled lighting and HVAC during the COVID-19 crisis	44
NodOn: Control lighting with your foot	46
Echoflex Solutions: Lighting controls at the University of New Mexico	47
TRIO2SYS: New EnOcean DIN RAIL actuators	48
LA Lighting: Carbon footprint of Californian schools	49
<b>Smart Home</b>	
Ventilairsec: Fresh air without pollutants – Ventilairsec purifies room air	50
Eltako: Smart home for comfortable living	51
iRoom: iRoom's Smart Control is a no-brainer	52
<b>EnOcean Insights</b>	
EnOcean products	53
EnOcean has new Chief Financial Officer and Inside Sales Manager	54
Impressum	54
Overview of the EnOcean Alliance members	55





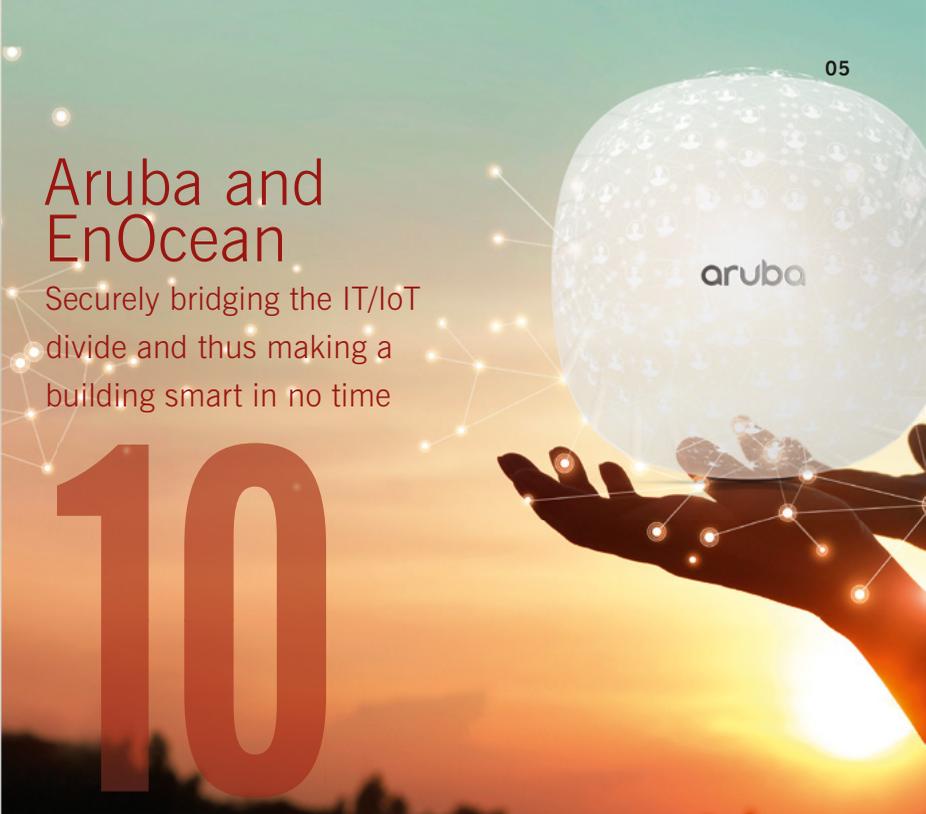
# 06

COVID-19 is an accelerant: How it is changing the way we organize our working world and office space



## Aruba and EnOcean

Securely bridging the IT/IoT divide and thus making a building smart in no time



# 10

## Titanium

How a U.S. retail chain controlled lighting and HVAC during the COVID-19 crisis



# 44

# COVID-19 is an accelerant: How it is changing the way we organize our working world and office space





It was clear that our working lives would change even before the COVID-19 pandemic. Concepts like New Work, digitalization and sustainability aspects were under intensive discussion. People were weighing opinions and calling for studies. Then came the coronavirus. From one day to the next, employees all over the world found themselves working from home. A powerful transformation in the working world, which would otherwise have lasted for many years, took place in just a few days. COVID-19 has thus proven to be fertile ground for innovative work concepts, one that helps reassess situations and allows for revolutionary ideas.

Digitalization will help us tackle the challenges of our times, starting with global megatrends such as climate change, a growing and aging population and even threats to our economy and health.

By Armin Anders, Vice President Business Development, EnOcean

### Will the office be completely deserted?

Recent surveys paint a clear picture: Many employees appreciate the benefits of working from home and would like to see a mix of days spent at the office and at home. While a mere 12 percent of all office employees worked from home before the pandemic, this figure will be approximately 50 to 60 percent in the future, as Eurocres Consulting found in a study. This development has significant consequences for utilizing space in offices. Many companies had a fairly significant amount of empty space even before COVID-19. Vacations, illness and business trips alone meant that numerous staff members were absent on a regular basis. Many managers simply accepted the unused space that resulted from this, because the financial and organizational outlays seemed

too high. COVID-19 acts as a trigger for making significant cutbacks in physical space, for instance. Eurocres Consulting expects that the amount of office area needed in Germany will shrink by 20 percent. However, it's not just about the use of space adapted to actual demand, but also energy savings, optimized cleaning practices and, above all, a work environment for employees that boosts productivity as much as possible. There is talk of a productivity increase by as much as 15 percent, thanks to "Smart Spaces" solutions.

### Shared desks at EnOcean

Wireless and sensor-controlled light and shading have long since become standard practice in EnOcean's offices. The company is now using the dynamics of the pandemic and has introduced shared desks. Employees can locate and reserve their desks in certain

rooms with an app. During phase one, EnOcean first selected several work and conference rooms, where a desk occupancy sensor was mounted at each workstation that detects whether the desk is occupied. A solar-operated activity counter has also been attached to the ceiling to detect the number of occupied desks in each room. The infrared-based activity counter uses a cloud-based, specific evaluation algorithm to supply the statistical number of people in the room with an accuracy of more than 80 percent, measured over the previous 30 minutes. This is accurate enough to determine the average occupancy level of a room, while the single-station sensors are suitable for providing a more accurate head count in real time. In conference rooms, the chairs are therefore additionally equipped with vibration sensors.

Multiple traffic counters are also installed in the building to collect additional data about the use of space. The EnOcean-based counters use an infrared light barrier to detect the total number of people in a defined area of the building and can even determine the direction in which a person is walking. The system has a detection precision of more than 99 percent and is therefore as accurate as camera-based systems. It is also wireless and can be very easily upgraded in place without any parameterization. The analyses can show, for example, when and to what extent areas of the building or other spaces are being used.

### Social distancing, but with a system

In these times of pandemic, the same Smart Spaces solution can be used for the sensor-based implementation and documentation of social distancing rules. This is done in compliance with all data protection regulations, because no cameras are used and no per-

sonal data is detected. In addition, a warning or no-entry display can be activated once a maximum permitted number of people has been reached.

Various EnOcean partners are involved in the installation. Thus, T-Systems Multimedia Solutions supplies the application and visualization and also handles system integration. Microsoft provides the Azure cloud platform, Tevolys controls the evaluation algorithm for the EPAC activity sensors to count the number of people present in rooms and ImBuildings is the expert for the people counter.

### Stage two of the shared desk solution

In addition to designating other shared desk rooms, further system enhancements are being planned successively in the EnOcean office rooms. The occupancy status of the restrooms is currently displayed on two cen-

tral screens. In the future, employees should also be able to access this status directly on their mobile phones. Self-powered radiator valves will help increase energy efficiency, especially in winter, by intelligently controlling the thermostats in the conference rooms and individual offices.

Ultimately, the introduction of a Smart Spaces concept means a comprehensive process of change within the company. The better the new work concepts and work environments are implemented, not only technically but also with accompanying HR measures, the faster a company can benefit from a more efficient use of space and motivated employees. A company in this position not only earns points among its existing employees but is also an attractive, modern and future-oriented employer for the much sought-after young high potentials.

[www.enocean.com](http://www.enocean.com)



Read more in the  
COVID-19 special online



# Hygiene first – digital washroom solutions



As the COVID-19 pandemic shakes the global economy and disrupts the way we live, work, and conduct business, we believe the role of technology is going to be more pivotal than ever for facing the new challenges in the cleaning and hygiene industry. Complementary IoT solutions and innovative technologies offer great support to our businesses. *By Annetta Lust, Head of Digital Business Solutions – Hygiene, CWS Hygiene International GmbH*

The world of the IoT is diverse and rapidly changing. One of the key challenges is making the connections between technologies for facilities in order to proactively keep up with servicing and always ensure product availability for occupants (facility managers) and patrons (customers/users). This applies especially to offices and high-traffic environments.

**What are some of the practical ways that a digital washroom solution can help in the near term?**

- Consumption information and consumables availability are a big challenge right now and provide an opportunity for an IoT solution
- Structured workflow and visibility of actual filling levels allow a target resource allocation
- Distributing consumables to the places where they are needed is a huge benefit in terms of minimizing social contact and the spread of infections
- Effectively servicing washrooms and buildings will leave many people looking for ways to increase efficiency. Our evolving capability of collecting insights from dispenser data, combined with washroom traffic information, enables smart cleaning operations and ensures that hygiene requirements are met.

We perceive a growing interest in an IoT solution from the market leaders in the cleaning industry. Partnering with EnOcean and members of the EnOcean Alliance, we stay visionary and keep innovating solutions and business models that will enable us to contribute to a healthier and safer tomorrow.

[www.cws.com](http://www.cws.com)

Read more in the  
COVID-19 special online



# Aruba and EnOcean – securely bridging

Integrating IoT devices with IT infrastructure is a challenge for many customers because of security concerns. Chief Information Officers (CIOs) and Chief Information Security Officers (CISOs) expect all devices to meet a common set of IT security and visibility criteria before they're granted network access. The challenge is that many IoT devices weren't designed to support certificates, secure tunneling, and other IT security mechanisms.

By Michael R. Tennefoss, Vice President of Strategic Partnerships, Aruba,  
a Hewlett Packard Enterprise company

Until now the workarounds to IT security objections were either to deploy dedicated networks just for IoT devices, an expensive proposition, or to bypass the IT network altogether with a gateway and broadband connection, a practice that can introduce new attack surfaces that cannot be remediated by IT security systems.

The ideal solution is to securely bridge IoT devices directly with the IT infrastructure, thus leveraging existing networks, security practices, and network management tools. Doing so requires close collaboration between the IoT and IT network vendors to ensure interoperability, ease of installation,

and insightful diagnostics. Done correctly, security and visibility will be appropriately addressed, and the IoT solution will be economical to deploy because it makes use of existing infrastructure.

Aruba, a Hewlett Packard Enterprise company and one of the world's largest IT vendors, and EnOcean have collaborated to deliver a solution that securely bridges the IT/IoT divide. With the release of Aruba Operating System 8.7, Aruba Wi-Fi access points can now be used with products from virtually any EnOcean Alliance vendor. Customers gain instant access to thousands of EnOcean Alliance member IoT devices,

and Alliance members gain access to Aruba's massive, worldwide installed base of education, enterprise, government, healthcare, hospitality, industrial, manufacturing, retail, and transportation customers worldwide.

Installation is simple. Just insert an EnOcean 800/900MHz USB radio into the USB port of an Aruba Wi-Fi 5 (802.11ac) or Wi-Fi 6 (802.11ax) access point, and enter the IP address of the target on-premise, private cloud, or public cloud IoT application. Aruba's zero trust network automatically establishes a secure Websocket connection and bi-directionally streams data between the EnOcean-compatible devices and IoT application.

# the IT/IoT divide

The Aruba logo is centered on a large, semi-transparent globe. The globe is covered in a network of white lines and small circular icons, representing a global network or IoT ecosystem. The background of the entire page is a sunset or sunrise scene with a bright sun low on the horizon, creating a warm orange and yellow glow. In the foreground, the silhouettes of two hands are shown holding the globe. A network of glowing white nodes connected by thin lines is overlaid on the scene, extending from the globe towards the right side of the page.

aruba

The EnOcean integration aligns perfectly with the micro-segmentation principal of Aruba's zero trust framework, where wired and wireless IoT devices can be automatically segmented over a secure tunnel to access the targeted IoT application after they have been identified by the network. The feature allows IoT devices to share an enterprise network without ever having access to, or visibility into, any other traffic on that network. That capability will check the security box for CIOs and CISOs.

---

[www.arubanetworks.com/solutions/technology-solutions/](http://www.arubanetworks.com/solutions/technology-solutions/)

---



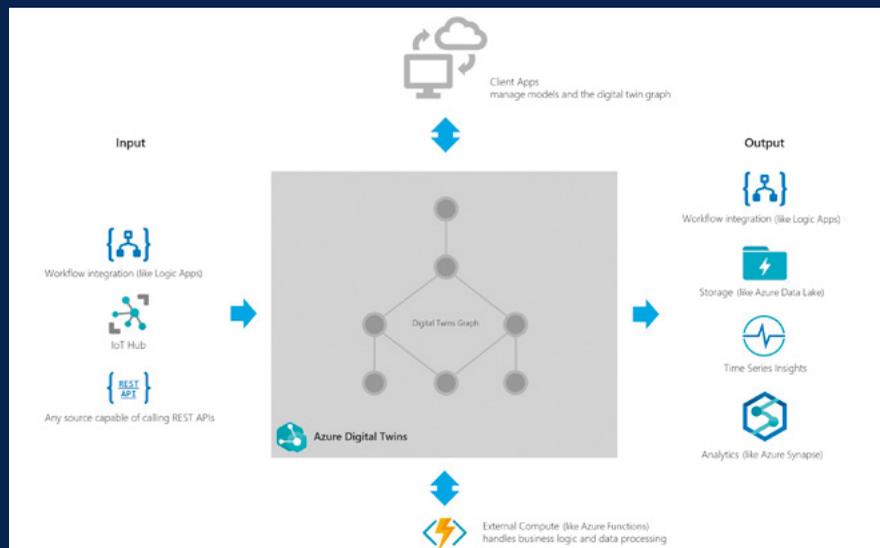
Microsoft Azure

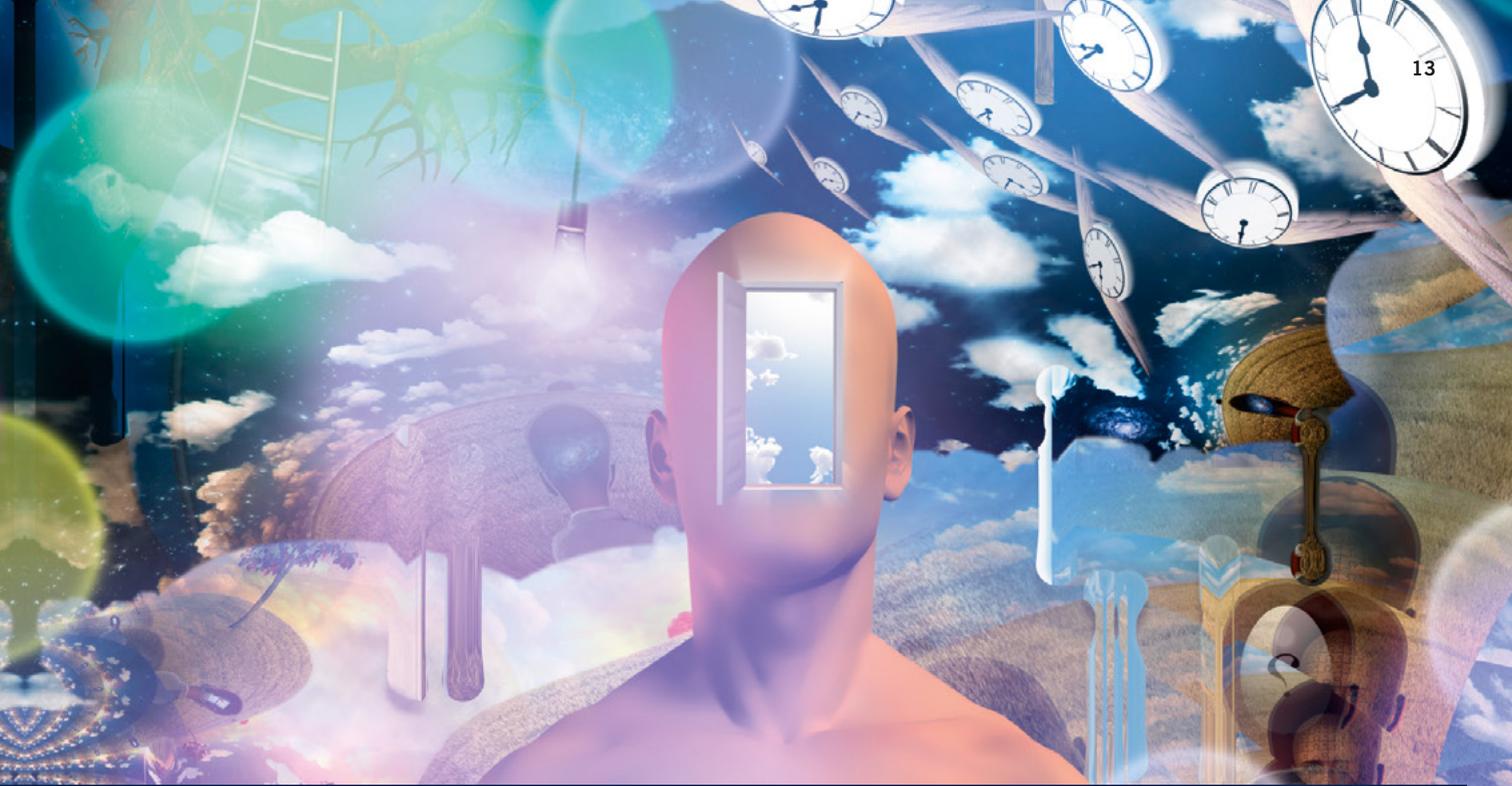
# Digital Twins for building

For the digitization of buildings and related processes, the raw data from sensors is an important component. As digital sensory organs, it provides the information for further processing in the cloud, for example to be able to digitally map entire buildings or individual areas. By Thomas Frahler, Business Lead Internet of Things, Microsoft

Many facility managers and system integrators are leading the way when it comes to expanding their offerings with new digital services. As different as these services are – they range from smart spaces in buildings and demand-oriented cleaning processes to efficient energy management – what unites them is that they are based on sensor technology and cloud services.

Products with EnOcean-based technology, like the maintenance-free wireless sensors, make it possible to capture valuable data in the physical world, transfer it in real time to an IoT cloud platform via a gateway and analyze it there. Using Azure Digital Twins,





# digitization



users can thus connect their sensor data to many powerful Azure services.

New features for Azure Digital Twins, the IoT platform that enables the creation of next-generation IoT connected solutions that model the real world, drive this development further.

Azure Digital Twins makes the creation of sophisticated digital twin solutions easy. You can apply domain expertise on top of Azure Digital Twins to design and build comprehensive digital models of entire environments.

Using Azure Digital Twins, you can gain insights that drive better products, optimization of operations, cost reduction, and breakthrough customer experiences. This can now be done across environments of all types, including buildings, factories, farms, energy networks, railways, stadiums – even entire cities.

### Input from IoT and business systems

You can easily connect assets such as IoT and IoT Edge devices, as well as existing business systems such as ERP and CRM, to Azure Digital Twins to drive the live execution environment.

You can now use a new or existing Azure IoT Hub to connect, monitor, and manage all of your assets at scale, taking advantage of the full device management capabilities that IoT hub provides. The ability to use any existing Hub makes it easier to add Azure Digital Twins to existing IoT solutions incrementally.

Azure Digital Twins lets you bring digital twins to life using data from IoT and other data sources such as EnOcean-based sensors, creating an always-up-to-date digital representation of your environment that is scalable and secure.

<https://azure.microsoft.com>

# Dynamic space planning for offices

About 85 percent people-counting accuracy with a wireless, battery-free solution



Office space is one of the main cost drivers for companies, comprising from 400 to 800 euros per square meter per year in France, for example, which is roughly 10,000 euros per user per year. For a long time, the objective has been to maximize space occupancy. It was formerly done via periodic reorganizations aligned with the building life cycle. With the massive and forced adoption of telecommuting during the coronavirus pandemic, things have accelerated. Dynamic space planning is becoming a key competitive factor for companies. It is therefore becoming more important than ever to predict and monitor occupancy in detail in order to build efficient space planning skills. And the game is worth the effort! As an example, being able to leverage 1% additional telecommuting can generate value of up to 90 euros per user per year. There is a trend toward increasing telecommuting by 5 to 15%. By Denis Marsault, Director Marketing and Sales, Tevolys



### People counting – a view of the past

Measuring presence and counting people have always been difficult, especially in existing buildings. Very often, a retrofitting project involves complex wiring, system integrators, costly sensors and camera systems. The only solutions available, such as stereoscopic cameras, come from the security industry. However, the balance between accuracy and cost is not well suited to smart buildings and office occupancy monitoring. What if we could build a solution with a cost of ownership 10 times cheaper and with a counting accuracy of over 80 percent?

### Combined strengths lead to a new approach

By combining the benefits of EnOcean and the expertise of Tevolys, a leader in space management and IT for smart buildings, a dream has come true. EPACA sensors are ceiling-mounted sensors that detect people's motion activity in the sensing range below the sensor. The device is wireless and solar-powered, meaning that no batteries or maintenance are needed under typical lighting conditions. Because it is wireless, it is also easy to install in retrofit projects. The remaining challenge was to bridge the gap between motion activity sensing and people counting. This is exactly what Tevolys achieved by combining a tuned lens cover and a predictive algorithm. The EPACA sensor can now achieve an unprecedented people-counting accuracy of up to 85+ percent.

### Cost savings due to optimized space management

Space is becoming a scarce resource that has to be managed cost-effectively. Tevolys and EnOcean have enabled a dynamic space management solution for retrofit projects as well as new buildings that provides about 85% people-counting accuracy, is easy to deploy (wireless), requires no maintenance (no battery) and is accessible for any size company. The Tevolys technology is available for integrators in an OEM version or as a turnkey solution.

[www.tevolys.com](http://www.tevolys.com)

Read more in the  
COVID-19 special online



# The New Work megatrend for a good work-life balance

The “war for talents,” the latest public health guidelines and pressure to optimize costs are accelerating the New Work megatrend. Companies are suddenly faced with the challenge of devising strategies for digitalizing company processes and rethinking the use and design of office space. The choice between working from home and at the office did not use to be a matter of course everywhere. The contact limitations made necessary by COVID-19 have forced businesses to come up with a new approach. Facility managers, in particular, are now being challenged to find solutions that can be put in place quickly.

By Nicolle Quaitsch, Head of Center of Excellence Microsoft, T-Systems Multimedia Solutions, Tino Mager, Senior Azure Architekt, T-Systems Multimedia Solutions



## Smart Spaces for efficient use of resources

The Smart Spaces solution from T-Systems Multimedia Solutions supports this approach. Employees can select their workstation based on sensors. They view the current occupancy status throughout the entire office space on an employee app or the Intranet. What’s special about the solution is that the data is always updated in real time. This is done by sensors mounted in the appropriate areas. The facility management team can also adapt the basic conditions in keeping with COVID-19 parameters (number

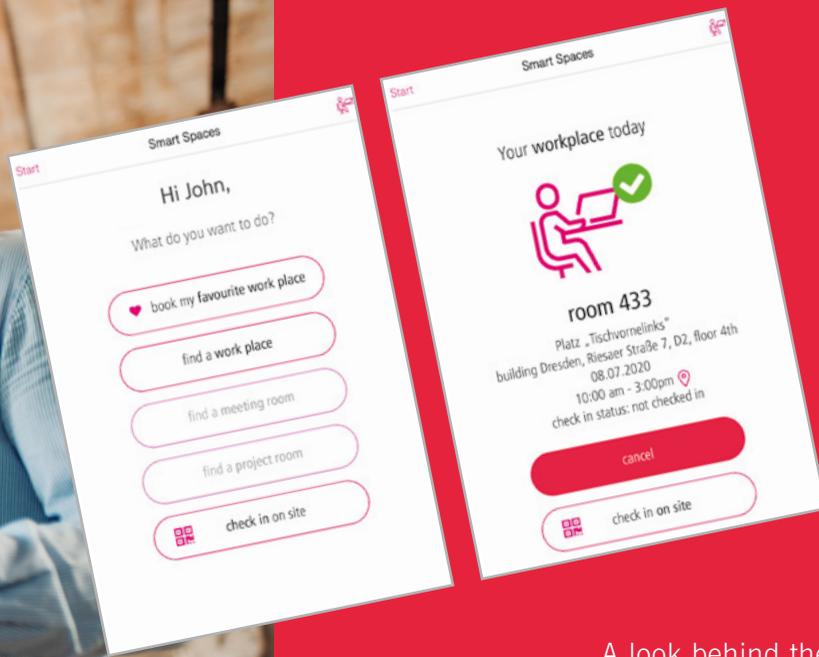
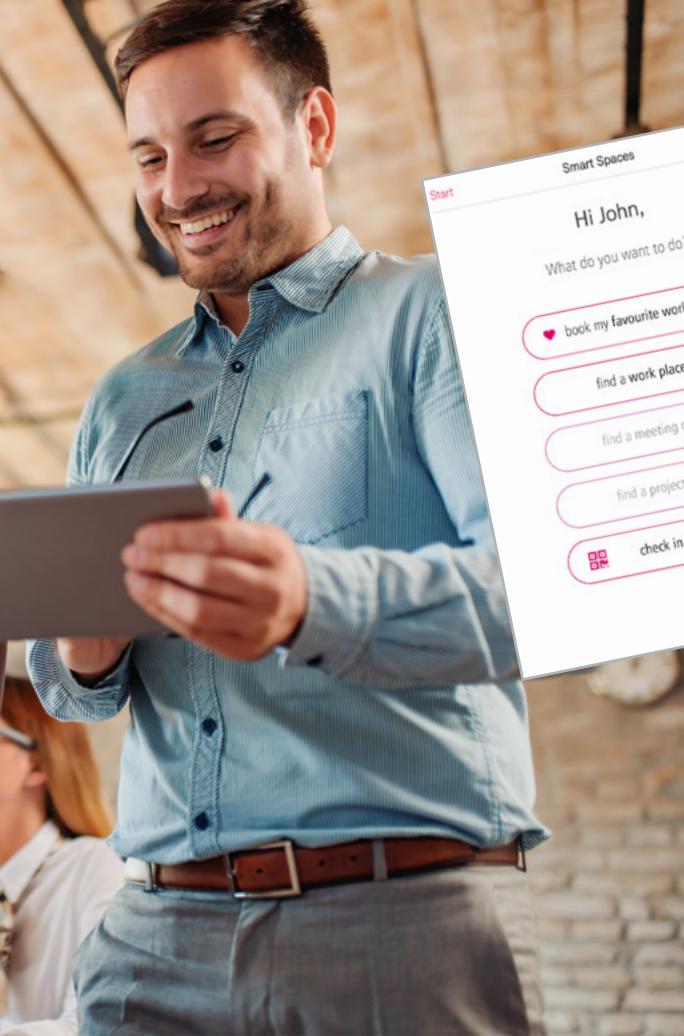
of people in the space/per room) via the dashboard provided – for example, by blocking or releasing individual workstations or areas.

The sensor data is transmitted to an IoT platform based on Microsoft Azure. A digital twin is created with the aid of the IoT platform. This means that the physical building is mapped digitally in its real-time state. For example, Smart Spaces collects data on the number of people in the room or building, the rooms used and the temperature and air quality. It then correlates this information

with capacity utilization figures or energy consumption. Based on historical data, forecasts are made for the future capacity utilization of the space, thus giving facility management a flexible planning tool.

The efficient use of resources associated with this is a common thread running through the solution concept. Solar-operated EnOcean sensors that are both maintenance-free and self-powered are used to collect the data.

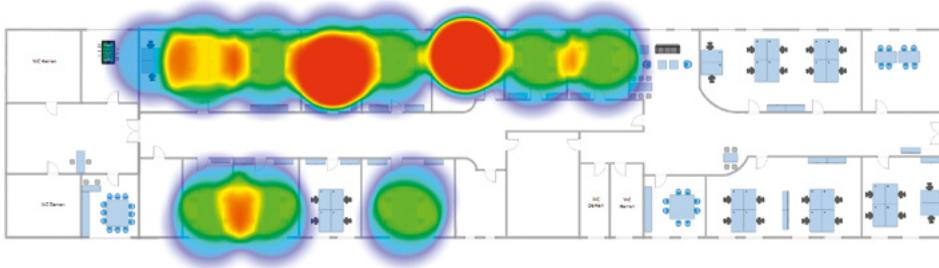




### A look behind the scenes

Employees at T-Systems Multimedia Solutions have already benefited from a flexible work routine for many years.

**Employee app:** Office space and meeting rooms can be individually booked quickly and easily, including status checks. Booking and presence information is combined so that employees can, for example, use rooms that have been booked but are not in use.



Heat maps use infrared sensors to display the current occupancy status.

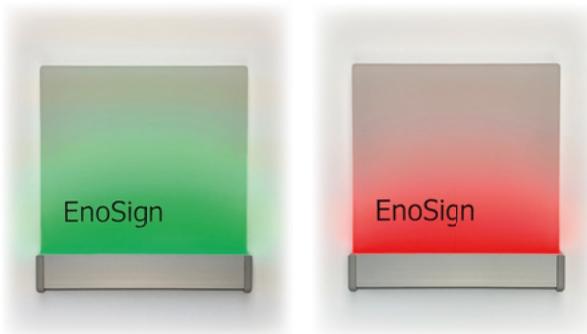
**Monitors at the POI:** Monitors in the hallways display company news, including the booking status of the rooms.

**Illuminated door signs:** EnoSign, a radio-based, illuminated and barrier-free room display that is controlled via the EnOcean protocol, was integrated in collaboration with DEUTA Controls.

The way in which companies implement the New Work idea depends on the particular circumstances. For companies, this means giving employees room for individual freedom, thereby ensuring greater productivity, self-determination and creativity.

[www.t-systems-mms.de/en](http://www.t-systems-mms.de/en)

The EnoSign color panel shows whether the room is free (green), occupied (red) or booked but not in use (yellow).



Read more in the COVID-19 special online



Dussmann digital –

# IoT sensors tending the

Long-term success only comes to those who continue to develop and deal with new ideas and concepts. The Dussmann Group invests heavily in digitizing its business and administrative processes. The family enterprise stays up to date with developments, such as robots and sensors used to clean buildings, user-friendly apps and smart tableware in catering. Internet of Things (IoT) projects are a part of its strategic, next-level “Dussmann digital” program.

By Juri Wildenhain, IT Project Manager, Dussmann Group



Recording water temperature, water quality, relative humidity and water level reduces the amount of monitoring and maintenance work performed by the Dussmann technician.

# garden



## IoT pilot project at the Dussmann Group

The Group IT department, among others, is responsible for this program. The Dussmann Group has been carrying out an IoT project at its global headquarters in Berlin since August 2019. This pilot project involves installing IoT sensors in public areas of the building's fourth floor, including two conference rooms, the sanitary facilities and the break room.

As part of the "Evaluating sensor-supported cleaning" project, the "vertical garden," an enormous plant wall, was also equipped with sensors that monitor humidity, light level and water temperature, among other things. The Dussmann Group decided to go with self-powered wireless sensors based on EnOcean technology, which obtain their energy from their immediate surroundings without cables or batteries. For example, a very small solar cell is all that's required to enable the sensor to send the detected data to the cloud via a gateway.

## Vertical garden with a tropical atmosphere

When visitors enter Dussmann-Haus, the first thing they see is a plant wall measuring 18 meters high and 15 meters wide, which extends over five floors. Designed by the French artist Patrick Blanc, the vertical garden has around 6,700 tropical plants of 157 different species, which grow in a space of 270 square meters without any soil and using a sophisticated irrigation system. Visitors can sit right under the plant wall in a restaurant that is open to the public.



### Sensors

### Purpose

Light sensors

Plants require certain lighting scenarios for optimum growth. Sensors monitor the light intensity and adapt it to the dormant and growth phases.

Humidity sensors

Since the plant wall is equipped with an irrigation system and humidity is essential to plant health, appropriate industrial multisensors were selected.

Water temperature sensors

An optimum water temperature must prevail for the plants' well-being. Sensors constantly measure the temperature and report the data to the company technician.

Water level detectors

In the past, water levels occurred that were either too low or too high. Sensors with a soil probe provide information on the fill level. For example, they signal when the minimum and maximum water levels have been reached.

### Sensors

The project's strategic goal is to modernize, automate and simplify processes. In the case of the plant wall, a variety of self-powered wireless sensors were used for this purpose.

The project has noticeably reduced the amount of maintenance by the company technician when it comes to water temperature, water level and water quality. The technician now has a dashboard customized to

his specific needs for maintaining the vertical garden. Since the data is collected continuously, the Dussmann facility management team is notified of critical deviations by email. This ensures the best operating climate – and not only for the plants.

[www.dussmanngroup.com/en](http://www.dussmanngroup.com/en)

# Social distancing management in buildings

As the world emerges from the lockdown enforced by the coronavirus pandemic, business owners and facilities managers will be under pressure to manage the occupancy of their buildings extremely prudently. Office and desk spaces will need to be adapted in order to comply with social distancing guidelines, and communal areas will also require close monitoring to prevent overcrowding. By Pete Smith, Head of Business Development, IAconnects



With this in mind, IAconnects has adapted its proven people counting, desk management and room occupancy solutions to include new social distancing management functions. Combining the data taken from occupancy sensors, such as the EnOcean Ceiling PIR, and with the addition of Digital Display Units, IAconnects can display the access and occupancy status of specific areas, rooms and desks. This enables business owners and building managers to monitor occupancy and display availability and cleaning status accordingly.

People will understandably be apprehensive about returning to work post-lockdown, particularly if they work in buildings with a smaller floor area. By adding local notifications via digital display units to our proven solutions, IAconnects can help businesses

and employees adhere to social distancing regulations in the workplace.

## Proven in practice

IAconnects recently worked on a project in Florida in the U.S. with one of the largest global utility companies to deploy a workplace desk occupancy solution, including the MobiusFlow Gateway and over 600 EnOcean PIRs, initially utilized to monitor occupancy levels in relation to social distancing regulations.

## The solution comprises

- IAconnects MobiusFlow Edge Gateway
- IAconnects MobiusFlow EnOcean WiFi Connectors
- Over 600 EnOcean PIRs
- Connection into IBM TRIRIGA



advertisement

# Combining high performance with IoT architecture

## modulo 6



### A platform open to many connections

MobiusFlow is an IoT Edge platform which can work in the cloud, on closed secure networks or on WiFi-based systems, or it can utilize its own data connection (3G/4G) when used in conjunction with IA's custom hardware. It enables actuators, sensors and controllers to connect, control and communicate with each other and with the cloud, so that IoT solutions using scalable monitoring, visualization and predictive analytics can provide valuable insights into your business and act upon them automatically.

[www.iaconnects.co.uk](http://www.iaconnects.co.uk)

Read more in the  
COVID-19 special online



### SAUTER modulo 6

Setting new standards in building automation.

#### Performance

- ▶ Small but powerful
- ▶ Impressive storage for historical data
- ▶ High speed processing and response

#### Integration

- ▶ BACnet/IP
- ▶ Field bus protocols: Modbus, M-Bus, KNX, BACnet MS/TP
- ▶ Integration of EnOcean room operating units and sensors
- ▶ Combines the heating, ventilation, air conditioning and electrical systems to create a stable, reliable system

#### Security

- ▶ Integrated network separation of internet and building technology
- ▶ Web server with encrypted communication
- ▶ BACnet SC-capable
- ▶ Integrated user authentication
- ▶ Audit Trail

#### Operation

- ▶ Integrated web server «moduWeb Unity» for operation
- ▶ Via Bluetooth with a smartphone for commissioning and maintenance
- ▶ Via the local operating unit "LOI" with a high-resolution graphical colour display for priority operation (EN ISO 16484-2)

#### IoT and Cloud

- ▶ Integration of IoTs with MQTT
- ▶ Data backup via MQTT in cloud
- ▶ Cloud services for control, management and engineering

#### Investment protection

- ▶ Backwards compatible with modulo 5
- ▶ Enables refurbishment of existing systems in budget-friendly stages
- ▶ Long term availability

More information:

[www.sauter-controls.com](http://www.sauter-controls.com)

Systems  
Components  
Services  
Facility Services

**SAUTER**  
Creating Sustainable Environments.

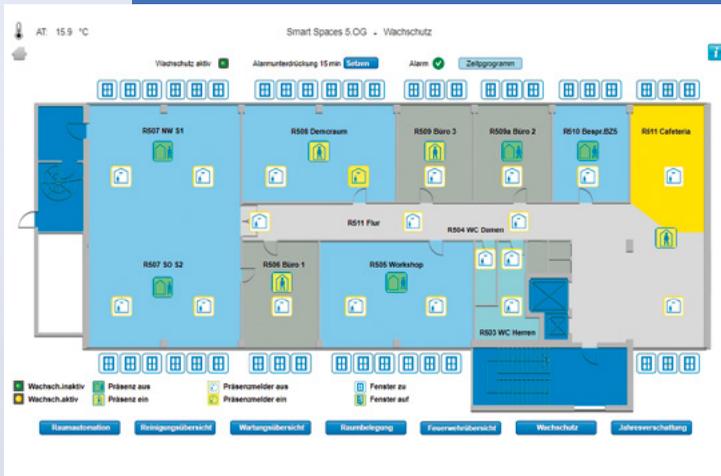


# Modular principle for digital building automation

The demand for smart building solutions is growing continuously. Along with basic needs such as heating, cooling and shading, options such as demand-dependent cleaning and maintenance as well as workplace finders are also gaining in importance. SAUTER, the medium-sized specialist, showcases different application scenarios in its new “Smart Spaces” demonstration floors at its company headquarters in Freiburg, Germany. *By Murat Türksöy, Head of Business Development Digitalization and IoT, SAUTER Germany*



The modular system from SAUTER consists of modules for everything from sensor-based analysis of room and parking space occupancy to cloud-based room control.



### The technical backbone

The building automation system installed in SAUTER’s Smart Spaces is based on the company’s EY3600, Ey-modulo 5 and modulo 6 product families. The integral room automation function essentially consists of SAUTER ecos504 room controllers in preassembled system distributors. The heating, air conditioning and ventilation room disciplines are combined with lighting and sun shielding, making it possible to implement interdisciplinary functions. To this are added EnOcean and KNX multisensors as well as a DALI lighting system and shading with SMI. The SAUTER Vision Center (SVC) gives facility managers the latest visualization interface for building automation. It can be used to visualize, analyze

and control all functions installed in smart spaces, including sensors and room occupancy.

### Cleaning according to requirements

This approach enables smart spaces to be cleaned as needed. The rooms to be cleaned are integrated by evaluating the presence signal of the EnOcean multisensor, which is identified over time (with a room occupancy of around 3 hours for office/training rooms and approximately 1.5 hours for restrooms) and marked red in the associated SVC floor overview. The lights in the rooms are automatically dimmed to 20 percent, letting the cleaning crew know that the room needs to be cleaned. A sensor-based maintenance

overview for restrooms and the cafeteria in SVC also displays the status of towel and soap dispensers as well as the coffemaker.

### Monitoring the status of different elements

SAUTER uses an EnOcean-based solution specifically when it comes to monitoring the status of towel and soap dispensers.

While the EnOcean wireless technology used to be employed mainly to distinguish between two states – light switch on/off, window open/closed – or to operate room control panels with a short radio pulse, the towel and soap dispensers are now equipped with a self-powered vibration sensor. When the device is actuated with the preprogrammed intensity, the vibration triggers a counting pulse. When the relevant number of pulses is reached, SVC automatically alerts the FM staff to the need to take action.

Another possible application of the vibration sensors was implemented in the area of desk sharing. In open-plan offices with the freedom to choose a workstation, the office chairs are equipped with EnOcean sensors, which report the occupancy of a desk to the system as soon as an employee sits down on the chair. The SVC user interface thus makes it possible to determine at any time where and how many workstations are available.

SAUTER wants to do more than just demonstrate the possibilities of a modern, smart building with smart spaces. “At the same time, we attach enormous importance to presenting a modular system that lets customers choose whatever they need,” says Werner Ottilinger, Managing Director, SAUTER Germany.

Is a person leaving or entering a building?

# The EnOcean People Counter knows

IMBuildings is extending its product range with a new People Counter that uses the wireless EnOcean protocol. The sensor system works with infrared technology. The principle is based on the interruption of a horizontal infrared beam.

By Ronald Conen, Manager Software Solutions, IMBuildings

This means that no cameras are installed and no personal data is gathered for counting the people passing by. Therefore, the system is automatically compliant with the European data protection laws (GDPR).

The counter set consists of two parts: an infrared (IR) transmitter and an infrared receiver. The IR transmitter sends the infrared signal and the IR receiver receives the intelligence and establishes communication with the outside world.

The IR transmitter points the IR beam horizontally towards the IR receiver at a recommended height. When this beam is interrupted, the algorithm determines if a person passed the sensor. Additionally, it detects the direction of movement. This makes it possible to know which direction the person walked

through the beam. This data can be used, for example, to learn whether a person was leaving or entering a building. Counts of the two directions are stored separately.

## Key benefits at a glance

- Wireless solution, ideal for retrofit
- GDPR-compliant
- Up to 8 meters sensor coverage
- Two detection beams detect direction of movement
- No need for setup or calibration

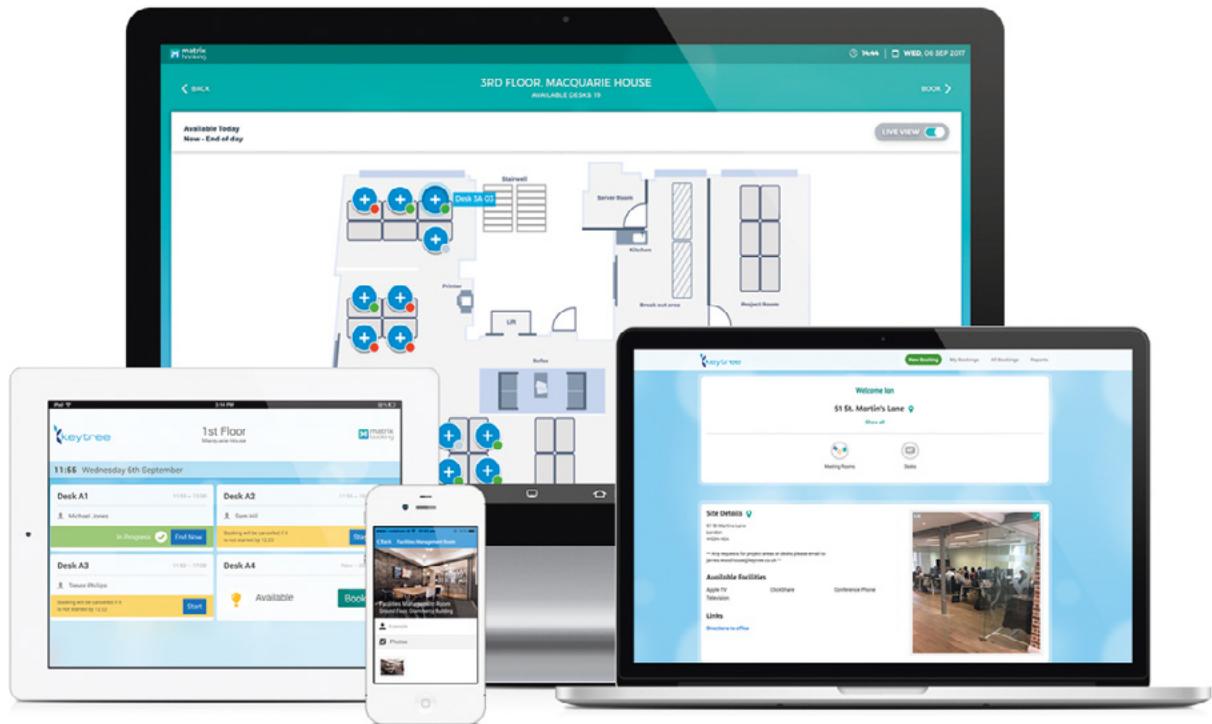
The collected data can be used to make strategic operational and marketing decisions. IMBuildings offers a counting system in four dimensions that makes it possible to create an accurate motion map of an area.

---

[www.imbuildings.com](http://www.imbuildings.com)

---





# A smart partnership to support return-to-work protocols using wireless sensors



The partnership between Pressac, a sensor manufacturer, and Matrix Booking, a workplace management software provider, is designed to relieve the headache of managing new return-to-work practices by helping facilities and building managers to comply with social distancing requirements, maximum occupancy guidelines and increased cleaning demands.

By Jamie Burbidge, Digital Solutions Product Manager, Pressac Communications

As part of the EnOcean Alliance, Pressac produces smart sensors to monitor a range of factors in the workplace. These sensors can provide crucial real-time data for return-to-work practices, including when a workspace is occupied, when it becomes unoccupied and needs cleaning, and when it has been reserved but not used.

The small wireless occupancy sensors can simply be stuck onto the underside of a desk or table or on a wall so that the office does not look any different and there is no need to drill holes or wire them in. The data is sent securely via the EnOcean protocol to

Pressac's gateway, which converts it into the easy-to-use JSON format and makes it available in the cloud. This enables Matrix Booking to easily integrate real-time sensor data in order to ensure the correct maximum occupancy in workspaces and to develop cleaning regimes while the guidelines are in place.

But this partnership also offers strong long-term solutions that take organizations into the new post-COVID-19 working world. "It's a fact that remote working is now a way of office life, as it has proven to work well for many staff and employers alike," says

Matrix Booking Director, Joe Harris. "New logistical challenges will likely be in managing potentially smaller workspaces with flexible occupancy. Having accurate, real-time data can help businesses develop tailored long-term strategies."

[www.pressac.com](http://www.pressac.com)

Read more in the  
COVID-19 special online



# Digital signage and room booking for smart buildings



Thanks to its brand of electronic equipment, Qeedji, INNES SA can now complete its digital signage devices with EnOcean sensors and push buttons based on Bluetooth Low Energy (BLE).

By Franck Dupin,  
CEO, INNES SA/Qeedji

The need to optimize the workspace requires the installation of intercommunicating devices, making it possible to bridge the gap between the real situation of occupation of space and the resources initially reserved. Digital signage must also be able to participate in displaying up-to-date information on the availability of a workspace.

Building on the development of the SMH300 gateway, Qeedji makes it possible to connect BLE sensors from EnOcean with the meeting room reservation system (MS-Exchange/

Microsoft 365, GSuite, etc.). The information acquired can be displayed on a SLATE106 e-paper screen. This 6-inch wireless screen has an autonomy of more than 3 years. It is even able to interconnect with an access control system, thanks to its integrated NFC/MiFare badge reader. Finally, because availability often needs to be reported remotely, the Qeedji SBL10e indicator light can be used for color signage synchronized in BLE with the rest of the system.

[www.qeedji.tech](http://www.qeedji.tech)

# Smart buckles for deliveries

Nifco often breaks new ground with its developments. The Japanese company has a strong focus on plastic products ranging from the automotive industry to daily necessities. One of the latest inventions aims to make our everyday life easier – smart buckles for goods delivery.

By Takaaki Nakamura, Manager, Home Solutions Company, Nifco Inc.

## EnOcean inside

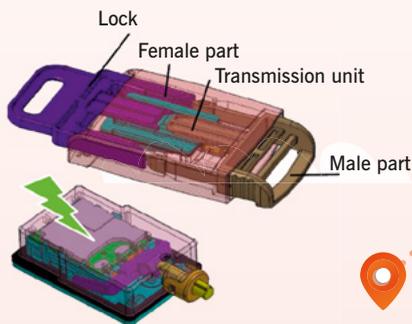
There were strong demands from companies already using buckles to be able to receive a radio signal to confirm the status (open/closed) of the buckle. The smart buckle Nifco developed utilizes EnOcean's ECO 200 energy harvester and its PTM 535x wireless radio module. As it is a wireless energy harvesting system which doesn't use any

batteries, there's no need to ever change the batteries. That is why Nifco has been able to build a completely waterproof and dustproof buckle.

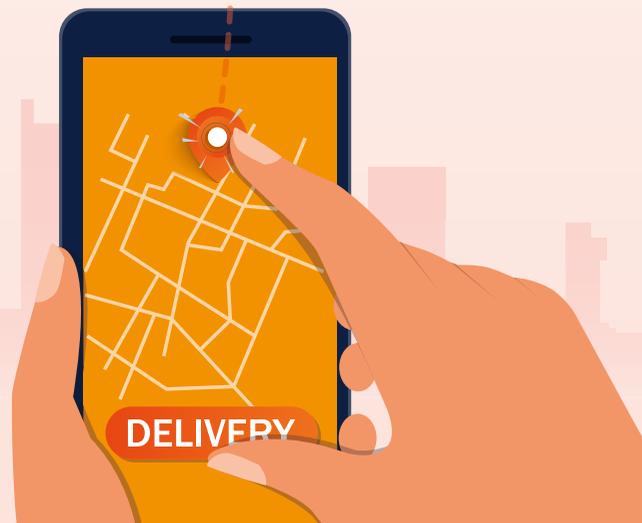
## Use cases range from food delivery to classic logistics

The smart buckle can be attached to a delivery box or can be used together with a shipping bag or box. The adoption of the smart buckle makes it possible for the receiving end to confirm the delivery status and for the logistics industry to check the opening status of the package.

The smart buckle could also be implemented in a food delivery box. Most smartphones already use GPS signals, making it possible to transfer the open/closed signal from the attached smart buckle to a cloud server. When there's a delivery, it can immediately be seen when the delivery staff closes the smart buckle on the box and when it is opened by the recipient.



[www.nifco.co.jp](http://www.nifco.co.jp)





# Smart Buildings in the context of New

The working world is changing, and the current coronavirus pandemic seems to be speeding things up. This change is also impacting the buildings where people work. The construction and real estate industry is therefore focusing more and more on concepts for both New Work and smart buildings. By Niels Bartels and Gerhard Weilandt, Innovation Managers, GOLDBECK

The term “New Work” was coined by Professor Frithjof Bergmann in the 1980s. It encapsulates a philosophy of the future of classic wage labor and the way in which people combine their private lives with work. It was therefore not originally a technological term or one involving the direct working environment of workplace design but rather a visionary concept of a new work culture.

## Building concepts for smart buildings

The philosopher’s guiding question is this: “How do we really, really want to work?” Bergmann emphasizes the repetition of “really”. The construction and real estate industry, which plans, builds and operates the workplaces, can supply a crucial part of the answer to this question. After all, tailor-made building concepts and smart buildings form the spatial basis for trans-

forming the work culture. They can help turn the vision of “how we really, really want to work” into reality.

GOLDBECK provides a variety of room concepts for this purpose, and customers can choose the right one for their purposes. In addition to the concepts of open space and 1-, 2- or 4-person offices, the company also offers teamwork spaces, quiet work spaces and social meeting points. New work spaces are also integrated into the work areas.

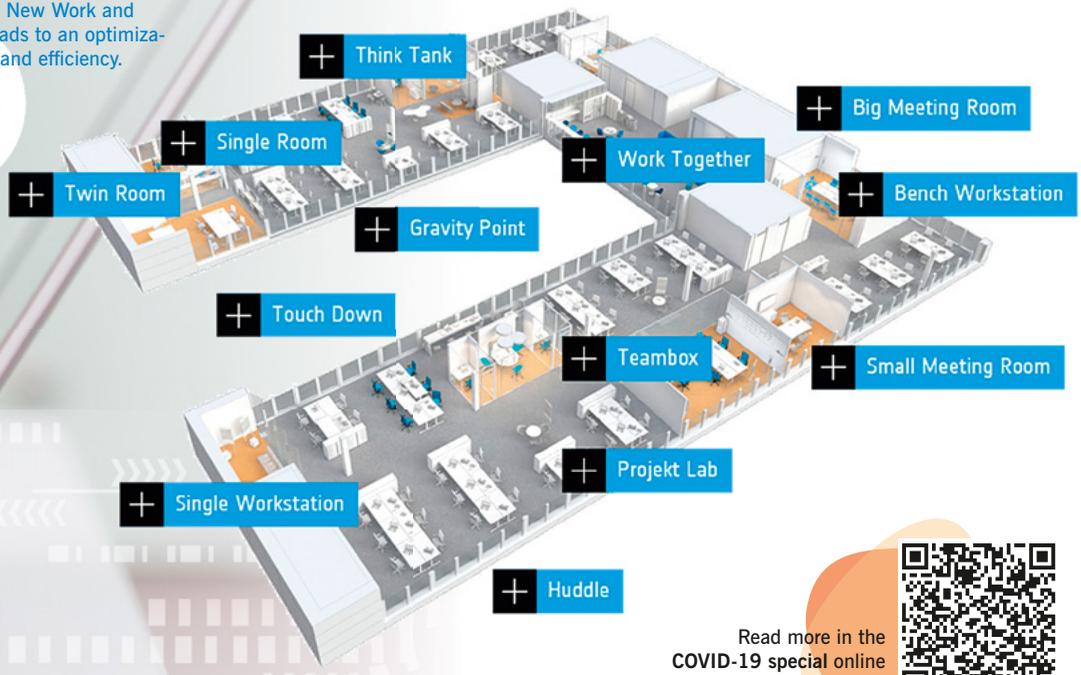
## Thinking New Work through to the end

But is this really New Work? We think that New Work will do a whole lot more. The customization opportunities for the individual employee can be driven by smart buildings. For example, computers and smartphones are key work tools in today’s office routines. Workstations can now be reserved

online from home using a smartphone or PC. However, the ability to automatically record and process these workstations is also required.

Smart buildings can manage the individual workstations and make them available, for example, in a booking system. As a GOLDBECK partner, EnOcean provides part of the sensor system needed to do this. Existing partnerships and standards already in use, such as EnOcean, will be integrated into the smart building solutions. GOLDBECK is developing an integrated New Work portfolio for its customers, with the sensors, automation programs and appropriate work areas working closely together.

The connection between the various room concepts for New Work and smart buildings leads to an optimization of well-being and efficiency.



# Work

Read more in the COVID-19 special online

## thermokon®

HOME OF SENSOR TECHNOLOGY



### NOVOS 3 SR x – SELF-POWERED ROOM OPERATING UNITS

- » Up to three integrated sensors (temperature, humidity and CO<sub>2</sub>)
- » Available with operating elements (potentiometer / occupancy button)
- » EnOcean encryption (optional)
- » Power supply by solar cell (optionally with AA battery)



Advertisement





IOLITE offers a complete solution package for building smart spaces, covering the entire digitalization lifecycle – from planning and consulting, through installation, to support. IOLITE's platform approach enables scalable and flexible deployments in different types of buildings, including family houses, multi-story residential properties, offices and schools. By Grzegorz Lehmann, CTO, IOLITE



## Smart office

# 23 reduces energy usage by percent

IOLITE IQ GmbH, a joint venture of IOLITE GmbH and Deutsche Wohnen Beschaffung und Beteiligung GmbH, has developed a sustainable and maintenance-free solution to transform office spaces into energy-efficient, comfortable and healthy smart offices.

### Pilot project in Berlin

In a pilot project in Berlin, an existing office space was retrofitted with EnOcean components connected to a touchscreen gateway running IOLITE platform software. The hardware included solar-powered motion, temperature and humidity sensors, energy-harvesting heating valves and rocker switches that transform the mechanical energy of a button-press. In addition, an existing KNX bus was connected with the IOLITE gateway in order to control HVAC.

For an objective energy efficiency evaluation, one of two symmetrical wings of the office space was digitalized and one was left as is. During the winter heating period, the energy usage of the former was reduced by 23%.

### Smart office spaces

The IOLITE software platform supports a wide range of IoT use cases, including adaptive heating as well as window blind and lighting control. For example, users of an office space can configure heating routines per room and day of the week via an intuitive app or the touch-based, wall-mounted gateway. Presence monitoring automates the lighting, while window blinds are adjusted based on the sun's current position.

### Compliant with data protection regulations

The facility management teams can analyze insights generated by IOLITE's data analytics components and presented in a central building dashboard. The solution does not require a constant cloud connection and runs on premise, giving customers the option of absolute data privacy.

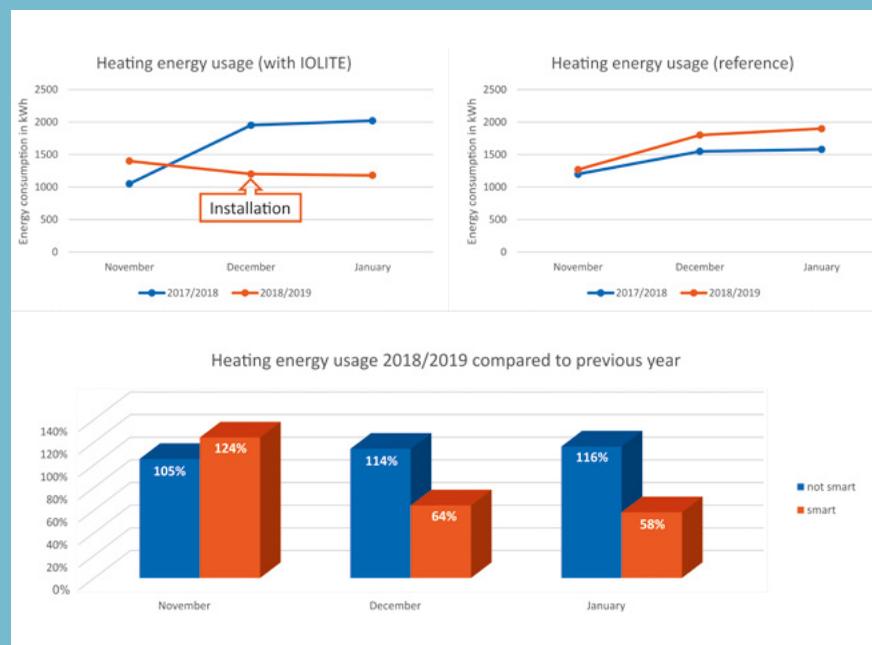
### The IOLITE solution package includes

- Planning and consulting
- Renovation-free installation of devices, sensors and gateways
- Intuitive user interfaces in app or on wall-mounted touchscreens

- Building dashboard with data analytics insights for facility management teams
- Compatibility with industry standards (e.g. EnOcean, KNX)
- OTA Updates, 1st and 2nd level support
- Flexible deployment options: on-premise or cloud

As our office spaces evolve in the post-COVID-19 world, smart building technologies like IOLITE will support social distancing and reduce physical interaction with devices (such as switches or heating valves) by means of intelligent automation.

<https://iolite.de/en>



# Smart control of lights, shutter blinds and temperature in building automation with EnOcean

The EasyClick system from Honeywell PEHA makes it possible to integrate a wireless solution for controlling lights, blinds and temperature into the building automation system without problems, using EnOcean technology. Users can thus achieve A classification for energy-efficient buildings that meet DIN EN 15232 requirements for building control in upgrade, renovation and restoration situations as well as in flexible new building installations. By Dominik Kirylo, Customer Marketing Leader EU, PEHA Elektro, a Honeywell Company



The wireless EasyClick system from PEHA by Honeywell allows lights, blinds and temperature to be controlled with EnOcean technology.



## Easy integration into the CentraLine building management system

The EnOcean EasyClick application and sensor information is integrated into the CentraLine system via bus-capable antennas, which can be distributed within the building. The antenna bus is connected to either the HAWK 8000/EAGLEHAWK NX controller (for a hardware solution without a supervisor system) or the ARENA NX supervisor. 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 access the EasyClick components so that, for example, in addition to the functions in the room, the precise position of the blinds, including the louver orientation, can be controlled centrally. The energy consumption values of connected devices as well as the operating hours of lamps can also be detected for effective maintenance. Lamp failure can also be detected and reported, while sensor data can be provided for processing and analysis. It is also possible to integrate lighting functions into a fire detection concept.

# How assistive technology can enable independent living and peace of mind during uncertain times

As countries around the world emerge from lockdown and continue to try and prevent the spread of the coronavirus, more attention has rightly been focused on the safety and well-being of older adults, vulnerable individuals and those considered at high risk. By Tim Payne, Chief Marketing Officer, Karantis360

For these individuals and their families, the pandemic has brought substantial worry. However, technology can be used to safely and remotely monitor people in their own homes. In addition, the strain on hospitals and bed management can be significantly reduced by enabling early release from the hospital for those for whom monitoring is deployed. Knowing they are still being looked after and living independently brings immense reassurance, both to the individuals and to their families.

Karantis360 deploys sensors throughout the home (or residential facility) to closely follow the daily activities of at-risk older adults and vulnerable people being cared for. Changes in a normal daily routine, which could point to a potential problem, are flagged to families and caregivers through a mobile app, enabling them to react accordingly and implement the correct safeguarding procedures immediately.

Using battery-free, energy harvesting IoT sensors based on EnOcean technology and an EnOcean gateway from Pressac, Karantis360 utilizes its AI and advanced analytics, running on the IBM Cloud, to identify and learn an individual's typical behavior based on indicators like movement, temperature and humidity readings. Through a mobile app, Karantis360 then flags any potential areas of concern to caregivers and family members.

[www.karantis360.com](http://www.karantis360.com)



Karantis360, utilizing EnOcean-based IoT systems, has already provided non-intrusive safeguarding solutions to customers in Europe, the Middle East and the U.S.

Dashboard for Antosha Wellingtonovitch, 50. Last Updated: 04-09-2020 16:29:01. Refresh Now.

**Most Recent Visit:** Tim Mac, 04 Jun 2020 16:28. View All.

**Alerts:** No alerts so far. (Unresolved only, Red, Amber)

**Health & Status:** Dementia: No; Eye Sight: Not too good; Hearing: A bit selective; Mobility: Excellent. VIP STATUS: ON; CARER VISITED: ON; HUB STATUS: ON; AT HOME: ON.

**Location Log:** Cloakroom Wall, Cloakroom, Office Door, Office, Kitchen Door, Kitchen, Kitchen Movement, Kitchen, Cloakroom Cistern, Cloakroom, Hallway Table, Hallway, Mattress, Mattress, Cooker, Kitchen, Dining Room, Mantelpiece, Dining Room.

**Safety:** Office Door: Open.

**Activity:** 8 visits, 0 last, 0 at 16:27.

**Kitchen Usage:** 0 last, 0 at 16:25.

**Environment:** 18.7 °C, 16.5 °C, 57.8% humidity, 20.7 °C.

**Sleep:** 0 last, 0 at 16:24.

**Bathroom Usage:** 1 last, 0 at 16:24.

IBM Business Partner logo at the bottom.

Read more in the COVID-19 special online





# Working together **more flexibly** in the crisis – with **security**

How an intelligent locking system landscape with EnOcean opens up new possibilities

The coronavirus pandemic in particular is changing our working world at a rapid pace. Even before the crisis, four out of ten German companies had offered their employees the opportunity to work from home. In the first few weeks of the crisis, studies showed that COVID-19 increased this proportion significantly. Trend researchers assume that the change in the world of work will continue even after the crisis. Employees will increasingly work from their home office and from anywhere in the world. This change means that workplaces will have to be designed according to new standards. In the future, less space in the company will be used by a larger number of employees in rotation. By Andreas Lüling, Head of Innovation, BURG F.W.Lüling KG



“Desk sharing” will be part of everyday life. Although the employees share the workplace, not only notebooks, project documents, and tools, but also the employees’ personal belongings should be immediately available when needed. Intelligent networked locking systems make this possible in the smart office.

### Optimized furniture requirements

For the last four years, German locking system manufacturer BURG has been developing various electronic locks with code or RFID technology that can be wirelessly networked on the basis of EnOcean as standard and OEM solutions. The important thing here is that furniture can be retrofitted at low cost. The “retrofit” involves replacing the existing mechanical locks with smart locks. The EnOcean functionality makes cabling superfluous, saving the company money and giving it the decisive advantage that the fur-

niture can still be used flexibly in different locations.

### Simplified management

These wireless locking systems make life much simpler, especially for administration. Whether in storage compartments, changing rooms, or parcel lockers – the locks of several locations, departments or facilities can be monitored and controlled centrally via EnOcean radio in an encrypted cloud. Lockers can be locked, released, and reallocated. So a forgotten code or the loss of an RFID chip no longer entails bureaucratic effort. Authorizations can be deleted and simply reassigned without the need for facility management to be on site. Another advantage is that the use of locks in the cloud can be statistically evaluated. In this way, the company can see the actual use of the furniture in real time. If something is not needed, it can be used elsewhere.

### Healthy solution

The flexibly networkable locking systems also support the implementation of company-wide hygiene concepts aimed at keeping the risk of infection among the workforce as low as possible. Centrally controlled locker solutions ensure that working materials are used efficiently and across different people despite the ban on contact, thanks to contactless transfer of packages and tools. And in the locker room, individual lockers can be deactivated via the cloud if necessary to ensure that the minimum distance within the locker room is maintained. In this way, a crisis becomes a driver of innovation.

[www.burg.de/en/](http://www.burg.de/en/)

Read more in the  
COVID-19 special online



Advertisement

# EnOcean to BACnet Gateway



Integrate your EnOcean sensors and actuators easily to a BACnet/IP building automation network

- Webpage configuration – no special tools or software required
- Webpage-based remote commissioning of EnOcean devices
- Each EnOcean device appears as a virtual BACnet device



BACnet™



EnOcean to BACnet Gateway

CONTEMPORARY CONTROLS®

Learn more at [www.controls.com/enoceangw](http://www.controls.com/enoceangw)

# Museum for Environmental Protection – a place of inspiration

The Museum for Environmental Protection is the new tourist attraction in the Rhine-Neckar district. An innovative information and experience center was created on 26,000 m<sup>2</sup>, which sensitizes people to a sustainable approach to the environment and shows prospects for their own responsible actions in the four subject areas of housing and energy, lifestyle and consumption, and mobility, as well as climate change and the energy revolution. By Frank Lettmann, Head of Planning, LAE Engineering

## Integral planning as the key to success

LAE Engineering GmbH from Wiesloch, Germany proved to be the ideal project partner, with the teams from electrical engineering planning and building automation design developing a complete solution that takes into account both the large number of different communication interfaces – KNX, Modbus, EnOcean TCP, M-Bus or GENIbus – and the extensive interfaces to other disciplines such as heating, electrical, ventilation, network, etc.

## Innovative approaches for optimal energy efficiency

The sustainable energy concept for heating and cooling is based on an “ice reservoir.” Using the energy of crystallization, heat and cold are stored in the form of water or ice. A high level of energy efficiency is achieved by combining all available energy sources. In addition to solar energy, the concept also takes into account the energy from the earth and the air and feeds it into underground concrete containers. A brine/water heat pump supplies the building with heat. In addition, an evaporative cooling system has

been implemented, a solar thermal system produces heating water for the kitchen and three photovoltaic systems generate electricity.

## Intelligent building automation with comprehensive integration

Such a concept can only be implemented thanks to intelligent automation. In addition to execution and installation planning, building automation took over the tasks of

- Heating and cooling circuit distribution
- Individual room control
- Volume flow control with CO<sub>2</sub> sensor in the exhaust air
- Integration of temperature and humidity sensors via EnOcean
- Connection of the lighting control to the management and operating device (MBE) via KNX
- Connection of the blind control, consumption meter and ice storage to the MBE via KNX
- Ventilation monitoring
- Timer program control



The ice reservoir stores heat and cold in the form of water or ice.



The concept takes into account the energy from the earth and the air and feeds it into underground concrete containers.



The team installed nine room control units, 97 room temperature and humidity sensors and 18 EnOcean antennas and EnOcean repeaters. The components are used for individual room control and display of the room quality on the management and control unit (MBE). A WAGO PLC is used as the controller and a WINCC for visualization. If the museum itself is to serve as an example of

the careful use of resources, its full potential can be realized only through optimal control.

<https://lae.eu/en>



## One-stop turnkey solution for building control

KMC Conquest series controllers are designed to operate HVAC and other building automation system equipment. With integrated alarming, scheduling, and trending, these fully programmable and interoperable BACnet controllers are powerful edge devices for the modern smart building ecosystem. By Jason Mills, Marketing and Communications Director, KMC Controls

### Wireless gateway supports EnOcean

By taking advantage of EnOcean's radio standard, KMC's new Conquest Wireless Gateways (HPO-9007) enable quick, easy communication between Conquest Controllers and KMC's new Conquest Wireless Sensors (STW/THW series temperature sensors with optional humidity sensing and setpoint adjustment), as well as other third-party EnOcean wireless sensors. KMC opted to use EnOcean's radio standard because the technology combines energy harvesting with ultra-low power electronics, allowing energy harvested from the installed environment to power the device. In many applications, these devices may operate without requiring a battery.

This makes the EnOcean standard ideal for facilities where it is inconvenient to run wire, such as historic buildings or multizone spaces.

KMC's new Conquest Wireless Gateways and Sensors use solar to harvest energy for operation; each sensor has a battery backup option for applications in low or inconsistent light. KMC Conquest Wireless Sensors are available in 902 MHz for North American installations and 868 MHz for European applications. Conquest controllers and the new Conquest Wireless Gateway are configured to map data from sensors directly to BACnet objects.



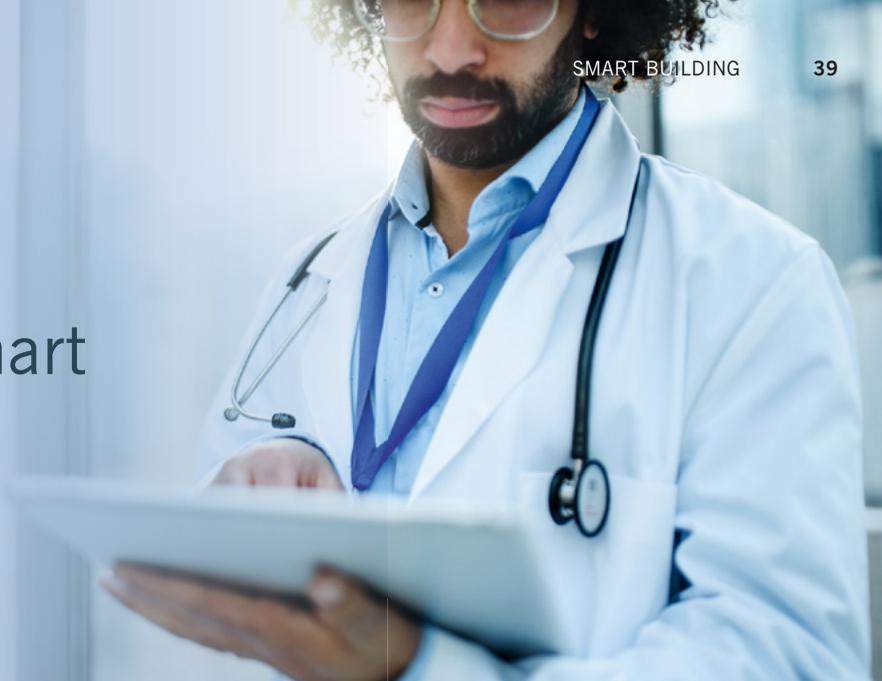
### Up to 16 sensors per gateway

The gateways plug into the room sensor ports on KMC Conquest controllers using standard Ethernet cables. Because EnOcean uses equipment profiles, known as EEPs, to recognize different types of wireless devices, each gateway can connect with up to 16 EnOcean sensors.

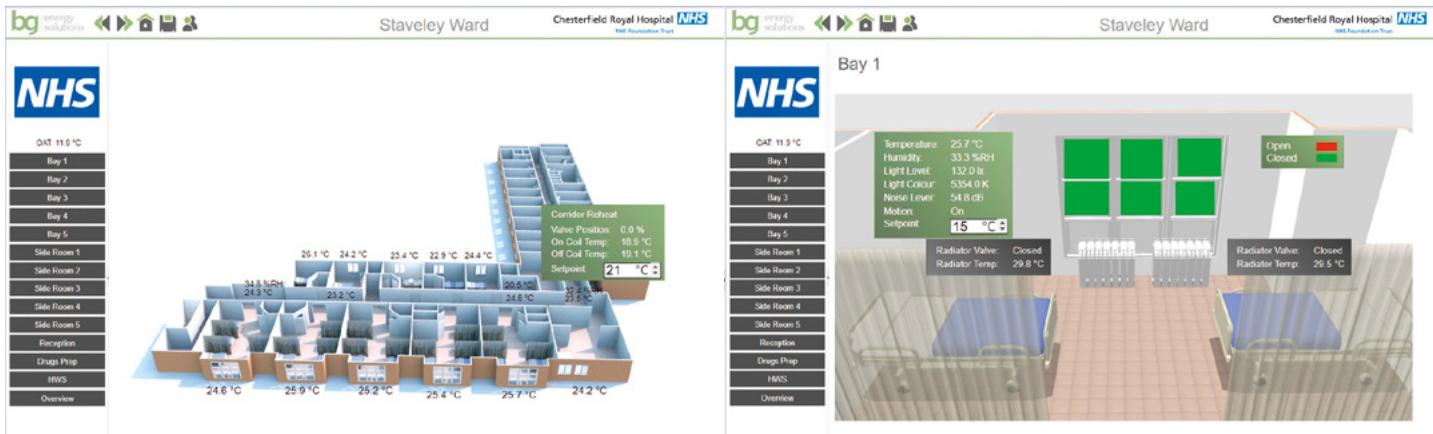
[www.kmcccontrols.com](http://www.kmcccontrols.com)

# BMS

## as basis for a smart hospital



BG Energy Solutions (BGES) has maintained the Building Management System (BMS) at Chesterfield Royal Hospital for about 20 years and always seeks to utilize the best of breed and latest innovative technologies where practicable. By Simon Shaw, Senior Project Manager, BG Energy Solutions



The whole installation is 3D visualized to the nurses via an interactive touchscreen panel located in the nurses' reception, giving them total control and monitoring capabilities for the ward.

When it was recently decided to modernize a ward at Chesterfield Royal Hospital, BGES presented the building management team with an appropriate concept. The concept included forward-thinking IoT Edge EnOcean wireless technology blended with traditional hardwired solutions and the Delta O3 Hub multi-sensor hub. The blend of technologies allowed BGES to offer Chesterfield Royal Hospital enormous amounts of data and control potential over traditional BMS installs.

### Individual adjustments of environmental parameters

Using the Delta O3 Hub, BGES can monitor every bed bay for temperature, light level, light color, noise level, humidity and motion detection. This information is then fused with multiple EnOcean window contacts to control the space temperature via EnOcean self-powering radiator actuators. The system is further enhanced by additional EnOcean self-powering space-temperature and

humidity sensors strategically located to offer better coverage and granularity where needed. The single-bed bay rooms are further enhanced with the addition of local set-point control allowing occupants a few degrees of adjustment to meet their individual needs.

# Combining high performance with IoT architecture: SAUTER modulo 6



SAUTER modulo 6 comprises compact, powerful hardware, intuitive cloud-based software, a wide range of integration options and strong data security, thus enabling future-oriented systems – from smart heating, ventilation and air-conditioning control to networked building clusters.

By Roland Hofstetter, Product Manager Building/Room Automation, SAUTER Head Office

SAUTER modulo 6 provides thus far unequalled performance in terms of the number of data points per automation station, memory space and processing speed – all of this while taking up minimum space in the cabinet.

## Barrier-free communication

SAUTER modulo 6 is based on BACnet/IP and integrates all of the usual field bus protocols such as Modbus, M-Bus, KNX, BACnet MS/TP, EnOcean, etc. for the control of heating, ventilation, climate, lighting and energy, while combining all systems into one stable, secure overall system.

The traditional separation of systems is being replaced by the world of the Internet of Things (IoT) and the cloud. EnOcean sensors, buttons and room operating units can be integrated directly into

modulo 6 automation stations using the SAUTER EnOcean Gateway. Via MQTT, data can be stored automatically in the cloud as required, or it can be integrated into the local system from the cloud. Cloud services are available for controlling, operation and engineering.

## User-friendliness

During product development, the focus was on ultimate user-friendliness. modulo 6 connects to a smartphone or tablet via Bluetooth. An intuitively operated app enables access to measured values, control variables and system parameters. As an alternative to smartphone operation, Modulo 6 also has a local operating unit (LOI) with a high-resolution graphical color display.

# EnOcean-based micro switch for industrial applications



The Comepi wireless, battery-free devices with EnOcean technology have been designed to deliver maximum reliability and flexibility for any industrial application. The modular micro switch can be used in three different product types: pushbuttons, foot switches, and limit switches.

By Dario Broggi, Product Manager, Comepi

The micro switch also fits Comepi enclosures with pushbuttons for implementing wireless and highly customizable remote controllers. The range of possible applications can be extended with a special device suitable for pull rope actuation.

All devices can be paired with a specific receiver with four independent output relays and five different operating modes. All devices are available with operating frequencies of 868 MHz and 902 MHz for applications in the European and North

American markets (U.S. and Canada), based on approvals and validations according to country-specific directives and regulations. A simple programmable interface, maximum usage flexibility and excellent transmission range performances make the Comepi wireless and battery-free products the ideal solution for sustainable and reliable industrial communication.

[www.comepi.it](http://www.comepi.it)

# EnOcean to BACnet Gateway – a new way to bridge these networks

Contemporary Controls' EnOcean to BACnet gateway makes it easy to integrate EnOcean devices into BACnet networks. The gateway allows users to discover and select EnOcean devices on their network. The gateway will then create new virtual BACnet devices for the BACnet network. These virtual devices will have the appropriate BACnet objects. By Bennet Levine, R&D

Manager, Contemporary Control Systems



The process begins by selecting the appropriate EnOcean Equipment Profile (EEP) for the EnOcean device. This provides the gateway with enough information to know which BACnet objects to create for this virtual BACnet device and how to map the received EnOcean data to these objects. This virtual device will have the properties of the EnOcean device contained in its BACnet objects and will update this data whenever the EnOcean device transmits new data. As more EnOcean devices are added to the gateway, more virtual BACnet devices will be created. All of these BACnet devices exist in their own virtual network. This allows BACnet head-ends to easily discover these devices and receive the EnOcean data via BACnet.

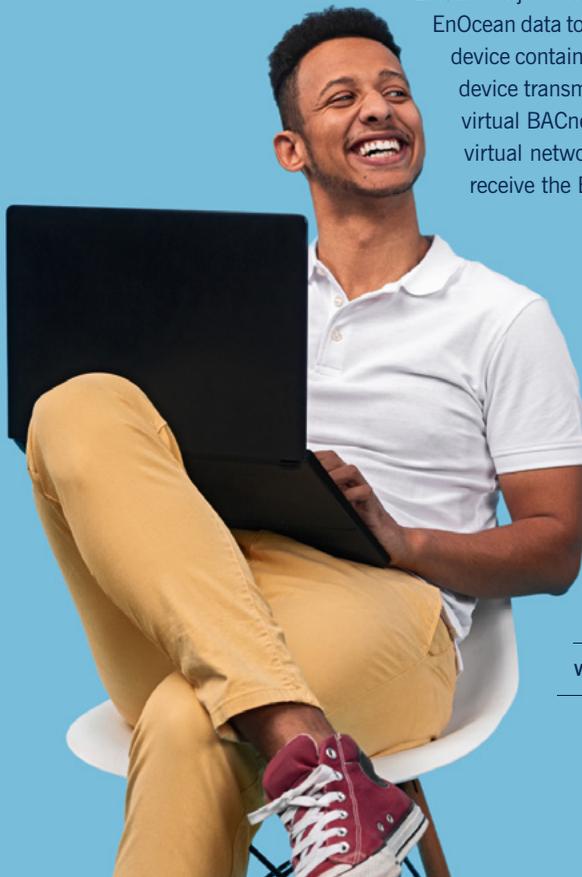
For multiple EnOcean devices of the same type, many BACnet head-ends provide the ability to copy/paste these virtual BACnet devices, including their objects, schedules, trends, graphics, and alarms, to simplify integration. For example, you could configure the head-end with the objects from the first virtual BACnet device along with its selected features and copy/paste it for each identical EnOcean device in your facility, thus saving considerable effort.

All configuration occurs via the built-in webpages of the gateway using a standard browser without the need for separate applications and hardware.

---

[www.ccontrols.com](http://www.ccontrols.com)

---



# ALADIN WAVE – contactless switching in times of COVID-19



Shortly before the COVID-19 pandemic began, Flextron AG from Switzerland launched a brand-new switch technology with the EnOcean protocol: the contactless ALADIN WAVE® proximity switch. By Fritz Liechti, CEO, Flextron AG

No one had any idea that our everyday lives would change completely a short time later or that hygiene, protection against viruses and contactless operation to avoid smear infections would become so important. Equally rapid was the growth in demand for door and light controls in hospitals, nursing homes and public buildings that could be immediately equipped with contactless ALADIN WAVE proximity switches (which detect hand movements at a distance of up to 10 cm).

To protect employees and customers, retail stores have often been retrofitted with the new contactless ALADIN WAVE Mini switch,

which detects hand movements even through glass or partition walls made of acrylic glass. When combined with the new ALADIN Bell wireless doorbell, which can also be quickly and easily installed by the operator as a power outlet unit, restaurants, hotels, doctor's offices, etc. meet the challenge of continuing to operate under the new safety rules despite a smaller staff.

ALADIN WAVE devices operate with extremely small amounts of energy. The button battery used thus promises a service life of more than ten years. This was achieved through a technology partnership with Picosens. The ALADIN WAVE devices also

enjoy the benefits of EnOcean wireless technology and are compatible with the existing product portfolio of ALADIN actuators.

Flextron is a leading provider of EnOcean wireless technology in Switzerland and has been offering a wide range of products for more than 15 years.

---

[www.flextron.ch](http://www.flextron.ch)

---

Read more in the  
COVID-19 special online



# How a U.S. retail chain controlled lighting

Due to the COVID-19 shutdown, a U.S. retail chain with over one hundred locations in nine states was forced to reduce store hours. The retail chain uses Titanium technology to control its lighting and HVAC, which includes over 20,000 network wireless devices covering 10,000,000 square feet both indoors and outdoors. The chain was considered an essential business and thus remained open. As a result, many employees did not go into the office and therefore worked from home. By Ara Bederjikian, President, Titanium Intelligent Solutions



## COVID-19 shutdown challenges

The first challenge was to revise the rules for controlling thermostats, indoor lights, and outdoor lights as quickly as possible to prevent energy waste. The second challenge was to be able to revise the rules remotely from wherever an employee was located.

Given the non-interoperability of traditional control systems, the U.S. retail chain would need to send a person on-site or, in some cases, access multiple systems to reflect the new COVID-19 hours.

# and HVAC during the COVID-19 crisis

## Remote control

The U.S. retail chain took full advantage of Titanium interoperability features by remotely and easily making these changes within a few hours. The new COVID-19 rules were cloned and then modified to reflect the revised hours and set points. The benefit was energy savings. After the country started reopening, the hours were effortlessly reverted to the previous settings.

## Remote monitoring & alerts

Titanium control and monitoring can be done from anywhere using any internet-enabled device. Titanium provides real-time data and analytics. It has structured automated alerts for managing risk-based temperature swings and other operational issues. An escalation process can be used to automatically identify issues to multiple managers based on the alert's importance level.

## Sustainable technology

Titanium is an advisory-based solutions platform built using sustainable technology. The platform minimizes hardware and maximizes software, which reduces e-waste, significantly lowers installation costs, reduces project costs, and yields virtually no hardware maintenance costs.

## Enterprise management

Titanium's multi-network capabilities can turn a locally-managed building into an enterprise-managed intelligent building. It is the ideal platform for multi-location, multi-region customers.

Titanium is an enterprise IoT management platform with advanced capabilities for monitoring, control, analytics, and savings.

## EnOcean Alliance benefits

The EnOcean Alliance is dedicated to promoting interoperability among its Alliance members. The U.S. retail chain benefited from this interoperability by using products from four different EnOcean Alliance members. With interoperability, it had remote monitoring and control capabilities for over 100 stores. Ultimately, the collaborations among the Alliance partners within the IoT spectrum help to develop new business opportunities.

---

[www.titaniumintelligentsolutions.com](http://www.titaniumintelligentsolutions.com)

---



Read more in the  
COVID-19 special online



# Control lighting with your foot

The smart solution is composed of a floor switch to turn the light ON/OFF without touching wall switches. It works with an ON/OFF lighting relay switch and allows anyone to activate the lighting with their foot, so that it is no longer necessary to regularly disinfect wall switches.

used almost anywhere – for example in schools, offices or medical facilities. Furthermore, the switch is shockproof and resistant to cleaning agents.

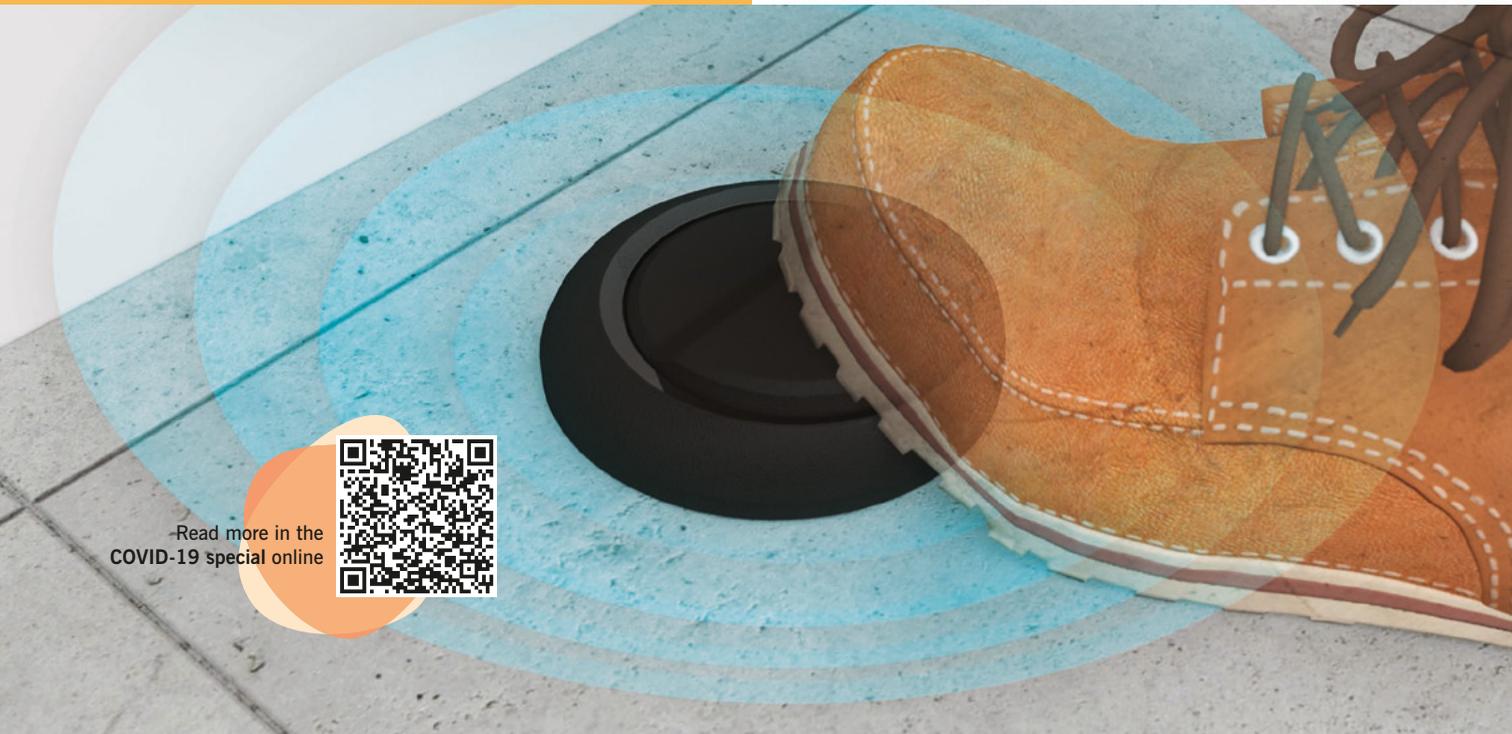
[www.nodon.fr/en](http://www.nodon.fr/en)

## Easy to install and to use

The new device is easy to install on the floor or on a baseboard because it operates wirelessly and battery-free. This means that the Floor Switch allows an easy retrofit of lighting systems in existing buildings. The compatible ON/OFF lighting relay switch is installed in less than ten minutes. In the next step, the Floor Switch is paired with the relay switch in less than one minute and installation is complete. The solution can be

In response to COVID-19, NodOn has developed a solution to fight the spread of the virus. The French company has designed the Floor Switch, a new device using EnOcean technology to control lighting with a foot to ensure health and safety.

By Coralie Feillault, Marketing & Communications Project Manager, NodOn



Read more in the  
COVID-19 special online



## Echoflex Solutions controls light at the University of New Mexico

At the University of New Mexico, the new Physics & Astronomy Interdisciplinary Science (PAÍS) facility offers 139,100 square feet of space for classes, laboratories, and offices. It also needs to adhere to strict energy standards. Echoflex Solutions supplied wireless sensors, switches, and controllers based on EnOcean technology to meet those standards and make the facility human-friendly. *By Jacob Coakley, Marketing and Communications*

*Specialist for ETC, Echoflex Solutions*

### Installation was a walk in the park

Angel Becerra is a facilities engineer for the University of New Mexico. Part of his responsibilities for the new building was reviewing each electrical drawing to ensure each room had proper coverage in terms of lumens, occupancy and daylight sensors, and control stations. Echoflex took his careful work and used it in their pre-commissioning process to create a system that was a breeze to install.

“The installation was easy because the rooms had already been programmed,” says Becerra. “The contractors just had to match a room controller with the switch, and they all came pre-labeled. So all the contractor had to do was install the gear. They didn’t have to do a complicated series of button pushes or any other kind of programming.”

### Easy adjustments after reality check

Of course, the really tricky part of a new building comes when people start to use it. “Sometimes an occupancy sensor has been located right behind a person at a desk, so it won’t sense movement and it turns the lights off. Sometimes daylight sensors are a little too sensitive. The interface on Echoflex gear means adjustments like that are easy,” explains Becerra.

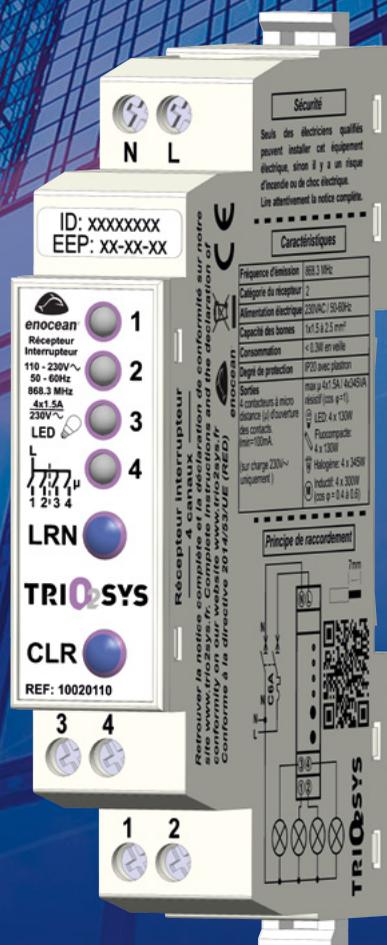
---

[www.echoflexsolutions.com](http://www.echoflexsolutions.com)

---

# TRIO2SYS with upgraded EnOcean DIN RAIL actuators

Considering the prevalence and the variety of LED luminaires within new and existing buildings, more and more integrators are concerned with the integrity of their radio control equipment. Furthermore, their cabling process is to be optimized at any opportunity for extra competitiveness. As a consequence of these two market requirements, TRIO2SYS teams have upgraded their range of EnOcean DIN RAIL actuators with additional compatibilities and features. By François Pillet, Export Department, TRIO2SYS



On the one hand, the smart “zero-crossing” technology offers full compatibility with LED fixtures but also with traditional components, thus making the radio relay truly technology-agnostic.

On the other hand, the actuator offers independent control of four separate channels from a single module. Such a feature becomes all the more relevant when cabling and electrical cabinets are to be optimized. The integration of the EnOcean technology is facilitated by mutualizing the costs of numerous lighting points through common radio modules.

Whether in smart modular constructions or condominiums, the benefits are evident in the improved installation process, faster schedules and the easy inclusion of smart services based on radio technology.

With regard to energy savings, this new actuator also transmits energy metering telegrams and includes a master control protocol to turn off every channel with a single order.

# Carbon footprint of Californian schools

Proposition 39 Zero Net Energy Schools Pilot Program is a measure intended to reduce the carbon footprint throughout the California educational system. In many schools, the number-one overhead expense is typically the electricity bill. Inefficient lighting fixtures and ballasts, as well as 24-hour operational usage for unoccupied rooms are often identified as areas in need of improvement. *By Jeff Flores, Marketing Manager, LA Lighting*

The San Bernardino Community College District (SBCCD) office was selected to participate in the pilot program with the guidance of Southern California Edison (SoCal Edison). In order to achieve Zero Net Energy at the district offices, the aging infrastructure was either updated, upgraded, or replaced altogether. LA Lighting, a U.S. manufacturer for LED and fluorescent luminaires, is one of the companies selected by SBCCD and approved by SoCal Edison to provide the new LED lighting system for the college district.

Replacing more than just the fluorescent fixtures with LED luminaires, LA Lighting incorporated EnOcean's wireless controls into each of the LED luminaires and retrofit solutions. Combining EnOcean's daylight harvesting sensors with motion or occupancy sensors, the LED luminaires automatically dim throughout the day as the sunlight illuminates the rooms or offices throughout the district buildings.



The pictures on the top show the previous state with fluorescent bulbs. On the bottom left is a custom LED retrofit solution designed specifically for the fixture with EnOcean Controls; on the bottom right are the indirect/direct LED fixtures with EnOcean Controls.

Additionally, with the motion sensors and occupancy sensors, lights that would normally be left on for 24 hours turn off when no motion is detected. Installing EnOcean's wireless controls into each of LA Lighting's luminaires increased the overall energy savings SBCCD incurred in achieving Zero Net Energy.

Based on real-time data collection and monitoring from SoCal Edison, SBCCD reduced its lighting energy consumption by more than 60% on average. Currently SBCCD estimates that its total energy consumption will be reduced by almost two gigawatts for the initial year.

[www.lalighting.com](http://www.lalighting.com)

# Fresh air without pollutants – Ventilairsec purifies room air

Countless numbers of people spent the lockdown in their houses and apartments. Air pollution caused by production facilities and traffic declined significantly during this period. However, room air is normally as much as eight times dirtier than outdoor air. Particularly when we suddenly spend a whole lot more time at home in closed rooms, the question arises as to how to reduce substances in the air that threaten our health. By Mathilde le Febvrier, PR Manager, Ventilairsec



- 1 Air supply
- 2 Suction and filtering
- 3 Air is preheated
- 4 Blowing the air into the living room creates a slight overpressure
- 5 Exhaust air is led outside

The French Ventilairsec Group is one of the world's leading providers of positive input ventilation systems and a member of the EnOcean Alliance. The company has been developing ventilation systems for more than 30 years to improve the indoor air in buildings and especially in residential structures.

Ventilairsec has launched the VMI® PUREVENT VISION'R onto the market. It is an easy-to-install and highly efficient ventilation system for filtering air in the home.

## Protecting against environmental pollution from outdoors

Thanks to its high-performance filter, VMI filters the outdoor air and prevents particles from getting inside.

## Continuous replacement of ventilated air

Blowing in the air removes harmful substances (CO<sub>2</sub>, VOC, radon, etc.) and excess moisture. VMI communicates with radio-controlled air quality sensors, thanks to the EnOcean protocol. This enables the air quality to be regulated differently in each room, depending on the measurement results.



## Seeing the invisible

The mobile and wireless application via the EnOcean wireless protocol allows the room air quality to be monitored in real time and the ventilation system to be controlled remotely.

In these times, in particular, regular ventilation is a sensible way to prevent illness, and a solution like VMI helps keep out particles, pollutants and contaminated air.

[www.ventilairsec.co.uk](http://www.ventilairsec.co.uk)

# Smart home for comfortable living

It's all in the mix – DALI and EnOcean for lighting control in the smart home. Eltako now combines the best of both worlds. In the Professional Smart Home system from Eltako, users can enjoy the benefits of the EnOcean wireless protocol and the DALI lighting standard. By Ulrich Ziegler, Chief Business Development Officer, Eltako

DALI is a global standard for professional lighting control, characterized by easy installation, control and communication of individual lamps and lamp groups. The light control can be customized to individual requirements, thanks to features such as synchronous dimming, programmable dimming times and individual operating unit response.

The DALI FDG14 gateway is an established component of the Professional Smart Home system from Eltako. It can be used to control DALI devices with EnOcean wireless transmitters via the FAM 14 wireless antenna module. In this way, smart home users have the ability to connect a wide variety of wireless sensors into a system, based on EnOcean technology.



## Radio-based tubular motors control roller shutters at home with EnOcean

The Eltako FRM60 wireless tubular motors make life even more comfortable within one's own four walls. They have an integrated soft brake and a "whisper mode" that enables roller shutters to be raised and lowered almost without a sound. Holding down the pushbutton starts "slow travel" mode, which protects the shutters and extends their lifespans.

The EnOcean technology and the internal wireless module ensure that Eltako FRM60 can be taught in with only a few steps. Simply connect the motor and teach in the pushbutton. The individually desired end positions can be entered and stored directly from a smartphone. The shutter's exact position is signaled and displayed after each travel. The FRM60 motors from Eltako are the smart solution for roller shutters and textile sunshades.

---

[www.eltako.de](http://www.eltako.de)

---

# iRoom's Smart Control is a no-brainer

Easy installation and operation, openness to future upgrades and universal connectivity were important criteria for iRoom when designing the new control platform. The compact IO Smart Control modules turn any existing light or shade switch into a smart switch.

By Arthur Laub, Marketing Manager, iRoom



## Smartphone or voice assistant

Thanks to Wi-Fi integration, iRoom's IO modules connect to the home network and provide communication with all popular IoT services. Lighting and shading obey voice commands or can be operated from a smartphone or tablet in nothing flat via Apple HomeKit®, Amazon Alexa® or Google Assistant®. Additionally, all EnOcean-compatible battery-free products can be used – for instance, a wireless light switch can be installed anywhere in the house without the need to run cables or to ever replace the battery. The functions of the iRoom IO system can also be integrated into existing control systems, such as Crestron, Control4 and many others. Contactless control via NFC is also possible simply by holding a smartphone near an iRoom NFC sticker, which can be put anywhere.

## Easy installation

Installation is a no-brainer. The modules (switches, dimmers or shade controls) are installed in the switch box behind the existing light or shade switch. An app provides easy configuration of the system or options to add additional devices such as rain,

wind, light or proximity sensors that trigger control functions when the defined threshold is reached.

[www.iroomsidock.com/?lang=en](http://www.iroomsidock.com/?lang=en)

# EnOcean products



EnOcean offers maintenance-free wireless sensor solutions for self-powered applications in the Internet of Things that are used for building and industrial automation, smart homes and LED lighting control.

- 868 MHz products:  
EnOcean for Europe and other countries adopting R&TTE/RED specification
- 902 MHz products:  
EnOcean for North America adopting FCC/IC specification
- 928 MHz products:  
EnOcean for Japan adopting ARIB specification
- 2.4 GHz products:  
for Bluetooth® and Zigbee networks (worldwide)

Energy harvesting wireless modules for maintenance-free sensor solutions



Energy converter	For battery-free wireless switches	For energy harvesting wireless sensors	For controllers and actuators	Tools

Finished products for wireless and self-powered IoT and lighting systems

## EASYFIT by EnOcean

EnOcean Products: [www.enocean.com/products/](http://www.enocean.com/products/)  
[www.easyfit-controls.com](http://www.easyfit-controls.com)

Product Finder: [www.enocean.com/en/products/product-selection-guide](http://www.enocean.com/en/products/product-selection-guide)

# EnOcean has new Chief Financial Officer and Inside Sales Manager

EnOcean has appointed Dr. Peter Klein as Chief Financial Officer. In this position, and together with Andreas Schneider, CEO, he will strategically expand EnOcean's business in accordance with the long-term

growth strategy in the self-powered IoT for the core markets of building automation, smart home, industrial automation and LED lighting control.

Dr. Peter Klein has more than 15 years of experience as CFO and General Counsel in tech companies, leading strategic growth projects and projects dealing with national and cross-border M&A transactions. His expertise ranges from managing KPI-driven high-performance teams to extensive know-how in M&A and corporate development as well as a broad understanding of finance and legal concepts.

[www.enocean.com](http://www.enocean.com)



As the latest addition, Claus Brauer has joined the EnOcean, Inc. team as Inside Sales Manager. With his engineering degree from Germany and extensive experience in automation and business management, he will be a valuable asset to the sales force of the rapidly growing market in North America.



## MASTHEAD

perpetuum – the innovative magazine for customers and partners of EnOcean GmbH  
EnOcean GmbH, Kolpingring 18a, 82041 Oberhaching, Germany  
Phone: +49 89 6734 689 0, Fax: +49 89 6734 689 50, [perpetuum@enocean.com](mailto:perpetuum@enocean.com), [www.enocean.com](http://www.enocean.com)

Published by: EnOcean GmbH, Munich,  
Andreas Schneider & Dr. Peter Klein, Managing Directors  
Edited by: EnOcean GmbH, Veronika Bliem,  
Communications Manager, [veronika.bliem@enocean.com](mailto:veronika.bliem@enocean.com)

Concept and design  
artcollin Kommunikationsdesign, [www.artcollin.de](http://www.artcollin.de)

Photo credits:  
[www.gettyimages.com](http://www.gettyimages.com): p1 title (all), p5 (laughing woman, hands in front of dawn, hand on keyboard), p10-11 (hand on keyboard), p12-13 (all), p16-17 (couple), p20-21 (woman from behind, man with business bag and face mask), p22-23 (wooden building blocks), p24 (man going through revolving

door), p27 (illustration, biker/mobile phone delivery service), p28 (hand on keyboard), p30 (woman looking at screen), p33 (woman in bed), p36-37 (paperworld), p39 (doctor), p42 (young laughing man), p43 (hospital bed), p44-45 (illustration, woman shopping, woman sitting on office table), p49 (Asian student),

Copyright: Reproduction permitted stating the source "perpetuum 2 | 20, EnOcean GmbH" and with voucher copy



Frequency: Semi-annually  
Reader's service: [perpetuum@enocean.com](mailto:perpetuum@enocean.com),  
Phone: +49 89 6734 689 0

EnOcean®, Easyfit®, Navigan® and perpetuum® are registered trademarks of EnOcean GmbH. If other trademarks are mentioned, the rights to these are held by their respective owners.

You will find our privacy policy at [www.enocean.com](http://www.enocean.com).

The Deutsche Nationalbibliothek has archived the electronic publication "perpetuum international edition" which is now permanently available on the archive server of the Deutsche Nationalbibliothek +++ ISSN 1862-0698

perpetuum 1 | 2021 (German & English)  
appears in March 2021  
Editorial deadline: November 2020



**enocean alliance**  
Building Smarter Connectivity

# Overview of the EnOcean Alliance Members

[www.enocean-alliance.org/products](http://www.enocean-alliance.org/products)

PROMOTERS			
		<b>EnOcean</b> Self-powered IoT	<b>Honeywell</b>
		<b>T-Systems</b>	<b>Vertuoz</b> by ENGIE

PARTICIPANTS											

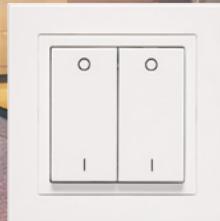
... and more than 200 associate members

# EASYCLICKPRO & CENTRALINE

# ENOCEAN WIRELESS INTEGRATION FOR BUILDING MANAGEMENT



Easyclickpro flush-mounted receiver without energy measurement



Easyclickpro flush-mounted receiver with energy measurement and dimming function

Easyclickpro is an intelligent and energy-efficient radio system that works without batteries and without maintenance. It uses the latest EnOcean technology to control lights, shutters and other electrical devices and is compatible with all common building automation systems with EnOcean interface – a future-proof investment.



For more information: [www.peha.de](http://www.peha.de)

