Building Sustainability with Leaders in Global Climate and Smart-Working

Across the globe, leading companies are relying on smart-building technologies to deliver timely carbon-neutral and sustainability strategies.

By Graham Martin, Chairman and CEO, EnOcean Alliance

Sustainability is one of the major topics of our time. The future of the earth is synonymous with the future of humanity. Preserving our planet is the greatest challenge for the global society. It is up to each individual as well as governments and companies. With this in mind, environmental awareness is turning from an individual lifestyle choice into a political and economic obligation. From Microsoft in the IT sector, through building service providers like Dussman Group to telecommunications giants like T-Systems MMS, international corporations are recognising the need to address this obligation. Energy harvesting is one of the technologies that they are turning to.

Turning established buildings into smart buildings

Buildings use 40% of the world's energy and they are responsible for 36% of global CO_2 emissions. To meet the United Nations and other climate goals, it is necessary to make buildings energy efficient, including retrofitting our entire existing building stock. Renovating old buildings is quicker than building new ones. It is the only option that can meet the increasingly urgent climate and sustainability goals. There simply isn't time to create new smart buildings.

Sensors play a pivotal role, and wireless solutions offer clear advantages here – including sustainability. Without wires, installation is simple and quick. It is also much more cost-effective than wired solutions (up to 70%, for retrofitting, around 30% for new buildings). The result is not only improved carbon footprint of the building, but also lower energy consumption, typically 30% in commercial buildings. Sustainability is further promoted by reducing our dependency on resources such as copper and PVC needed for cables. Smart spaces which use sensors to monitor occupancy right down to seat and desk levels can enable companies to reduce necessary office space by 25% to 40%, saving significant additional costs, energy usage and CO_2 output.

Battery-free wireless technology from EnOcean goes a step further. Its modules are powered by energy harvested from the environment through movement, ambient light, and temperature differences. This in turn means there is no need to replace batteries, no maintenance, and no toxic waste. And it is a proven technology, installed in over 1,000,000 buildings worldwide. In an age where self-powered wireless is the obvious choice, the technology is spearheading the drive towards an energy-efficient, healthier, and safer world.

Smart (office) spaces

Sustainability is a crucial commitment that is followed by action. Microsoft exemplifies such a commitment. It wants to become CO2-negative by 2030 and, by 2050, all the company's emissions since its founding in 1975 are to be neutralised. Meeting these ambitious, but essential targets require transforming the way people live and work. Beyond the smart devices we use every day, smart buildings and spaces are revolutionising the way companies do business, enabling them to become faster, smarter, safer, and more sustainable.

In this context, the consistent use of building automation alone could save about 12% of our total energy consumption and 10% of our total CO2 emissions. However, only about 1% of the national building stock is actually renovated each year. This is far too little - current renovation rates need to be at least doubled.

Microsoft has been at the forefront of this trend, with innovative solutions such as Azure Digital Twins. This is an IoT service that creates comprehensive models of the physical environment. It can create spatial intelligence graphs to model the relationships and interactions between people, spaces and devices, such as sensors.

As Microsoft's IoT business lead at Azure BD, Thomas Frahler explains, "*Microsoft joined the EnOcean Alliance in 2019 with the goal to drive more standardisation in intelligent building control. With this partnership, Microsoft wants to help companies adopt digital technologies quickly and help them build their own digital competencies.*"

Sustainable (work) environments

Even though Corona precautions are lifting, we still need buildings that improve health and wellness. The COVID pandemic has also increased awareness of the need for monitoring and controlling air quality, lighting levels, temperature, and occupancy levels.

Germany's Dussmann Group with 60,000 employees in 21 countries is one of the leading providers of integrated facilities management services not only in Germany but also globally. They are investing heavily in modern, attractive work environments for their staff - and in flexible concepts for new ways of working. They want to hold onto their employees for many years to come and, at the same time, ensure high productivity and improve efficiency in their management practices.

An example of this is cited by Dussmann Services CEO, Philipp Conrads. "The *corona pandemic has shown that there is a change in the way people are using offices and are working of course. So, we have decided to implement a user-oriented cleaning concept which is ensuring that not only personnel but also products are deployed and utilised more sustainably and in a more efficient way.*"

The Dussmann Group is therefore investing heavily in the digitization of its business and administrative processes. The family-owned company is leveraging developments such as robotics and sensors in building cleaning, user-friendly apps, and intelligent tableware in catering or IoT projects (Internet of Things) as part of its strategic Next Level program "Dussmann digital".

In a 2019 pilot project in the IoT area at the global headquarters in Berlin, IoT sensors were installed in public areas on the fourth floor of the building, including two meeting rooms, the sanitary areas, and the kitchenette.

Sustainability in the new normal of work, home and play

Deutsche Telekom is another business leader that has aggressive timetables for change. It is pursuing the explicit goal of "near zero" emissions by 2040, offsetting only residual emissions. Here, a good office environment makes for more efficient and effective workers.

Deutsche Telekom subsidiary, T-Systems MMS, provides software solutions for sectors such as digital commerce, websites, intranet, social marketing, big data, mobile solutions, retail, security and Industry 4.0. It is on the front line of smart and sustainable solutions.

These technologies are integrated into the overall social corporate responsibility programme of Deutsche Telekom, as Ulrike Volejnik, SVP, Member of Management Board at T-Systems MMS explained *"We are proud of it. Sustainability is very important now in this context of new normal, new work. We are creating new solutions for buildings, especially for smart buildings for smart spaces. For example, we are integrating sensors in our buildings and our rooms, so to measure if the rooms of the buildings are used and how they are used."*

Sandor Modsching, VP Digital Work at T-Systems MMS, expands on the reasoning behind the programme, "*The smart spaces platform offers many benefits to our customers. First, is sustainability. So, since we as a company are gaining for building a digital future of tomorrow and shaping this and so it means for us of course sustainability is one of our core goals. The second is efficiency in all kinds. If you have a good climate in the rooms you work, the work efficiency is much, much higher.*"

For T-Systems MMS, the drive to reduce energy costs and energy usage is one example of what companies are doing in this context of sustainability. But it's not only one example. Further initiatives include developing new methods of software creation, reusing materials and many more.

Conclusion

Whilst the smart spaces concept is focussed more on the workplace, the technologies proven there lead equally well to smart homes, smart factories, smart hospitals and smart care homes and will be pivotal in meeting the challenges of a sustainable planet. They must succeed. Energy harvesting technology is central to this being rolled out quickly at an affordable installation cost and with minimum disruption.

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