How a New ISO/IEC Standard Will Drive Demand for Building/Home Automation

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The success of new technologies that reduce energy consumption in buildings and homes has led to a burgeoning of wireless solutions aimed at simplifying how building automation solutions are installed. Among the building automation solutions available, some wireless devices stand out because they are powered by limitless sources of energy that are omnipresent in buildings. For example, wireless devices can now be powered by indoor light, minute temperature differentials or by the motion used to press a button or a switch. Now, de facto standards in the field of wireless energy harvesting have been accepted as an international standard - ISO/IEC 14543-3-10. So, what are the advantages to the building and home automation industry, and how will the technology spur growth in the marketplace?

Without question, the drive to improve energy efficiency and reduce carbon emissions remains strong. Buildings, which account for 40% of total energy consumption in North America, need to become more efficient at saving energy and lowering their CO2 output. Sensors and switches are a vital part of the solution. By combining sensors and switches with energy harvesting capabilities and ultra-low power radio technology, system integrators can now deliver maintenance-free wireless sensor solutions and cash in on the promise of smart buildings. Energy harvesting wireless technology adds unparalleled flexibility and rich paybacks on investment and operational cost.

The Interoperability between different EnOcean-based end products has always been a paramount objective while establishing the technology in the market. The industry has long sought standardization of communication profiles that ensure devices from one manufacturer will communicate with devices from another. For example, a wireless sensor engineered by vendor “A” should be able to communicate with receiver gateways manufactured by vendors “B” through “D.” EnOcean’s commitment to interoperability was solidified and validated by the ISO/IEC stamp of approval as a new wireless standard.

An alliance was formed in 2008 around EnOcean's wireless and energy harvesting technologies. The EnOcean Alliance is a consortium of more than 250 companies working to further develop and promote self-powered wireless monitoring and control systems for sustainable buildings. The EnOcean Alliance creates the application profiles which sit on top of ISO/IEC 14543-3-10 layers and are defined to achieve interoperability between products from different vendors. These application level protocols are referred to as EEPs (EnOcean Equipment Profiles).

The new standard, ISO/IEC 14543-3-10, provides a "Wireless Short-Packet" (WSP) protocol optimized for energy harvesting. This protocol is suitable for energy-harvested devices in the building/home environment as it is the only standard specifically designed to keep the energy consumption of such sensors and switches extremely low, an order of magnitude lower than alternative standards. The wireless communication is energy efficient, allowing the use of small, cost-effective, maintenance free energy harvesters that can compete with similar battery-powered devices.

The structure of ISO/IEC 14543-3-10 is almost identical to most wireless standards such as with Bluetooth sitting on top of IEEE 802.15.1, Wireless HART/ZigBee/RF4CE above IEEE 802.15.4, or WiFi and IEEE 802.11. Upper application layers of the protocol are governed by EnOcean alliance and sit on top of the physical, data link and network layers defined by the open international standard.

The need to reduce energy consumption in buildings has given way to an exponential increase of interest for wireless technology, particularly energy harvesting wireless technologies. The EnOcean Alliance is continuing to prove, through a market-leading installation base of over 250,000 buildings worldwide, that wireless solutions provide better payback than traditional wired solutions. Although wired devices can be at first glance seen more economical, the reality is that wired solutions involve considerably more time and labor and can disrupt daily operations, which drive up total cost of ownership. Further market penetration, product innovation and strategic partnerships with suppliers are helping to bring down the costs of wireless solutions. Self-powered wireless solutions enable integrators to save on installation costs and provide proven energy management solutions that pay for themselves.

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