

Wireless LAN: The Missing Piece for Building Automation

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Building automation uses a control system to monitor and command the mechanical, lighting, security control, or fire alarm systems in a commercial building. The intelligent network functions to keep building temperature within a specified range, control lighting and monitor performance of all systems. For years, building automation systems have required a network of wires to link components such as switches and sensors to an automation system. The expense of laying cable, particularly in a retrofit scenario, has meant existing buildings don't always get the benefits associated with optimal automation.

For smaller buildings, the ROI related to implementing a BAS just isn't acceptable as building owners and facility managers are unlikely to spend \$50,000 in first costs to save \$5,000 a year in energy. Today, leveraging a building's already existing wireless backbone can bring about enhanced monitoring, measurement and control to buildings that have limited BAS systems or no existing BAS at all.



Magnum Energy Solutions of

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Hudson, Ohio has successfully merged the technologies of wireless and LAN into a full building automation program. Using energy harvesting modules from EnOcean, Magnum has put together an extensive portfolio of products capable of automating virtually any type of building. Having teamed up with German based BSC Gmbh, they have released an innovative and scalable access point, enabling integration with a building's existing TCP/IP infrastructure to create a building-wide EnOcean to LAN ecosystem.

Combined with the VenergyUI software tool, energy saving controls for lighting, HVAC, CO2, air quality and LAN based cameras can be utilized, and the system can also initiate PC shutdown as well as interface with smart meters. All this occurs using wireless to LAN products. The new access point provides for unlimited range of wireless product offerings and the ability to buffer over 3 million EnOcean signals per access point.

A wireless LAN building automation system also has the ability to easily commission new products and remotely manage devices, making the integration of replacement devices into the system a virtual experience using the VenergyUI software. If products fail, a notification is sent automatically and a replacement device can be integrated through a "drag and drop" process. This method simplifies the pairing between EnOcean modules and the IP based automation system.

The access point provides for unlimited radio range extension and can send and receive EnOcean telegrams over the Internet with a switching time of 40 milliseconds, making the range of EnOcean products unlimited. The access point uniquely guarantees interoperability of EnOcean products, relying on the VenergyUI software as a translator. EnOcean based devices can also be controlled through a smart phone application, where users can realize location independent visualization and management of all objects like switches, sensors or actuators in buildings. Real-time video monitoring is also available.



The wireless LAN solution provides

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for a variety of benefits to the building owner or facility manager, including monitoring of actual power consumption and pricing information. These advantages are part of the reason why this already proven solution is being deployed at a major university, covering 4,200 dorm rooms that will achieve full automation. The customer is requiring occupied/unoccupied control, central access, HVAC controls, easy maintenance and full monitoring capability.

To achieve ease of installation and fulfill the customer's desire to have limited to no maintenance, building owners can utilize EnOcean's self-powered (batteryless) wireless radio technology, a building automation standard deployed in over 200,000 buildings worldwide, and integrate these devices with an access point, for a full scale solution. This university install will realize cost savings during installation, renovation, daily operations and cost savings due to energy efficiency. Students will even be able to monitor and control the operational functions of their dorm rooms using their smart phone.

Magnum's CEO Mike Giorgi clearly sees benefits for the building community through wireless LAN applications. "Engineers, architects, integrators, facility managers, building owners in any industry can benefit from a move to a wireless LAN-based automation system." Giorgi continues, "Everything today is TCP/IP, allowing the user to integrate virtually anything into the system. Furthermore, wireless LAN creates true interoperability, connecting devices to each other and to existing building systems."

Magnum's access points are different than traditional gateways, which also integrate wireless end devices based on EnOcean protocols into existing building automation systems like BACnet or LON. Gateways, however, can be expensive, particularly if there is more than one BAS inside of a building, necessitating multiple layers of gateways. A gateway is limited by its ability to only control 32 devices and each gateway has to be programmed. Magnum's solution can support an unlimited amount of devices.

Using access points and software applications, EnOcean Alliance member companies can see their end devices brought to a new level of interoperability and functionality, one that alleviates traditional range limitations without the need for repeaters. The next phase for Magnum includes an access point that will be WIFI compatible, making this solution less expensive, but without the extensive functionality found in the LAN access point. Magnum's access points are intelligent and can activate themselves even if their server is down, allowing the functions of the building to be continuously managed as a fail-safe measure. Even with all its robust features, the access point from Magnum draws under two watts of power, which for an electronic device, is very low. Buildings that incorporate this solution can expect to save 30 percent with respect to energy and can realize the benefits of EnOcean enabled building control products with the added benefit of having a wireless LAN based automation system that ties it all together.

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