



T.K. Maxx Optimizes Energy Consumption in Stores Throughout Europe



T.K. Maxx sells off-price, brand-name family apparel, including women's footwear, lingerie, and accessories, home fashions and other merchandise, such as luggage and toys. T.K. Maxx is part of the international TJX Companies, Inc. (www.tjx.com), the leading off-price retailer of apparel and home fashions in the United States and worldwide. In addition to T.K. Maxx, TJX's chains include T.J. Maxx, Marshalls, HomeGoods and A.J. Wright in the U.S.; Winners, HomeSense and STYLESENSE in Canada; and HomeSense in Europe.

T.K. Maxx remains the only major off-price retailer in Europe, and operates stores in Germany, the U.K., Ireland and Poland. TJX believes the European market can support over 600 stores, and is about half-way toward reaching that goal.

The Challenge

The TJX motto is "Always About V.A.L.U.E." with VALUE standing for Vendor Social Compliance, Attention to Governance, Leveraging Differences, United with Our Communities and Environmental Initiatives. The Environmental Initiatives demonstrate the company's long-standing commitment to pursuing initiatives that are smart for its business and good for the environment. One way TJX demonstrates this commitment is by maximizing energy efficiency in its many stores.

Some of the energy efficiency programs being pursued by its Energy Management Departments in the U.S., Canada and Europe include utilizing computerized Energy Management/Building Automation Systems, conducting preventative HVAC maintenance, and upgrading to more efficient fluorescent lighting.

The challenge for T.K. Maxx involved deploying a single Building Automation System that would integrate six different subsystems: heating, cooling, ventilation, lighting, security (an interface to the alarm system) and energy data collection. With each store averaging approximately 32,000 square feet, though, the investment required promised to deliver significant savings.

The Solution

The need to integrate so many subsystems from many different vendors would require standardized interfaces, and the international standardization of LONWORKS[®] technology persuaded T.K. Maxx that it would be the optimal choice. LONWORKS technology is accepted by both the International Organization for Standardization and the International Electrotechnical Commission as the ISO/IEC 14908 series of standards. T.K. Maxx also appreciated the fact that LONWORKS technology was supported by

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hundreds of vendors, and had been proven in thousands of installations.

To implement the solution, T.K. Maxx chose the Building Automation 2.0 solution from Heger Gebäudeautomation Ingenieurgesellschaft mbH (www.hgi.de) in Hörstel.

HGI's BA 2.0 solution, based on the LONWORKS technology, provides an optimal architecture for T.K. Maxx. It integrates all of the subsystems on a flat IP-based network, which creates a common infrastructure for all of the different applications and organizational processes occurring throughout the building.

All of the stores are connected to a centralized management system at HGI's headquarters, enabling all of the applications to be monitored and controlled by the HGI staff. The management system also collects and records all relevant operating and building data, creating an historical database that is useful for troubleshooting and further optimization of each application.

The entire BA 2.0 system is compatible with standard Internet technologies. For visualization, monitoring and operation of building services, HGI employs a web-based TAC Vista server from Schneider Electric. The various systems in each building, such as cooling, ventilation and lighting are all equipped with LON-based sensors and/or controls, which are then accessible via an Echelon i.LON® Remote Network Interface (RNI) or IP router.

In total, the BA 2.0 solution employs systems from these seven vendors:

- Echelon: LONMAKER® for Windows, Protocol Analyzer, i.LON 10 RNI and i.LON 600 IP Router
- Schneider Electric: TAC Vista family Server + Workstation, Trend tool and Reporting tool; and TAC Xenta family Programmable Controllers, I-O Module, STR351 Room control unit and M800Lon valve actuator
- Thermokon Sensortechnik GmbH: MDS Multi-sensor and Tsens Temperature sensor
- Sysmik GmbH: MIOX/OMDX Digital and Analog I/O Module
- BTR Netcom: LAA Analog I/O module, LAE8 Universal I/O Module, LDE10 Digital I/O Module and FAM Terminator
- NZR: FHZ Lon Energymeter (electricity), IC-Lon 2/10 Energymeter (Impuls) and Wzlon Energymeter (heating)
- Loytec Electronics GmbH: L-Proxy

The typical store has at least one RNI or IP Router, an optional L-Proxy, and about 30 multi-sensors, 15

actuators, three programmable controllers, 10 I/O modules for HVAC, and three energy meters. Across all 50 stores currently equipped with the BA 2.0 solution, there are some 3,000 LONWORKS devices in all. T.K. Maxx has plans to eventually deploy the solution in all of its stores located throughout Europe.

The Results

With HGI's Building Automation 2.0 solution, T.K. Maxx can now monitor and optimize its energy consumption around the clock. In the event of a problem, the centralized facility manager application automatically sends an email alert to the HGI service staff and any external facility manager, allowing for immediate corrective action to be taken. The 24x7 service provided by HGI ensures that faults are fixed quickly, even on weekends and after business hours. During store hours, of course, the system also prevents any inconvenience for the customers or store staff.

Being based on open standards like IP and LON WORKS technology, the HGI BA 2.0 solution is also extensible, enabling subsystems and/or applications to be added or modified to accommodate changing requirements. The peer-to-peer nature of LONWORKS technology also allows for applications to operate somewhat autonomously, with or without centralized control.

In addition, T.K. Maxx will be able to take advantage of any enhancements HGI adds to its Building Automation solution over time, including innovations such as service portals and energy benchmarking. With standardization and widespread vendor support, the possibilities for intelligent building energy management systems are virtually unlimited.

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