The Cold Storage Warehouse Where Wireless Doesn't Freeze Up
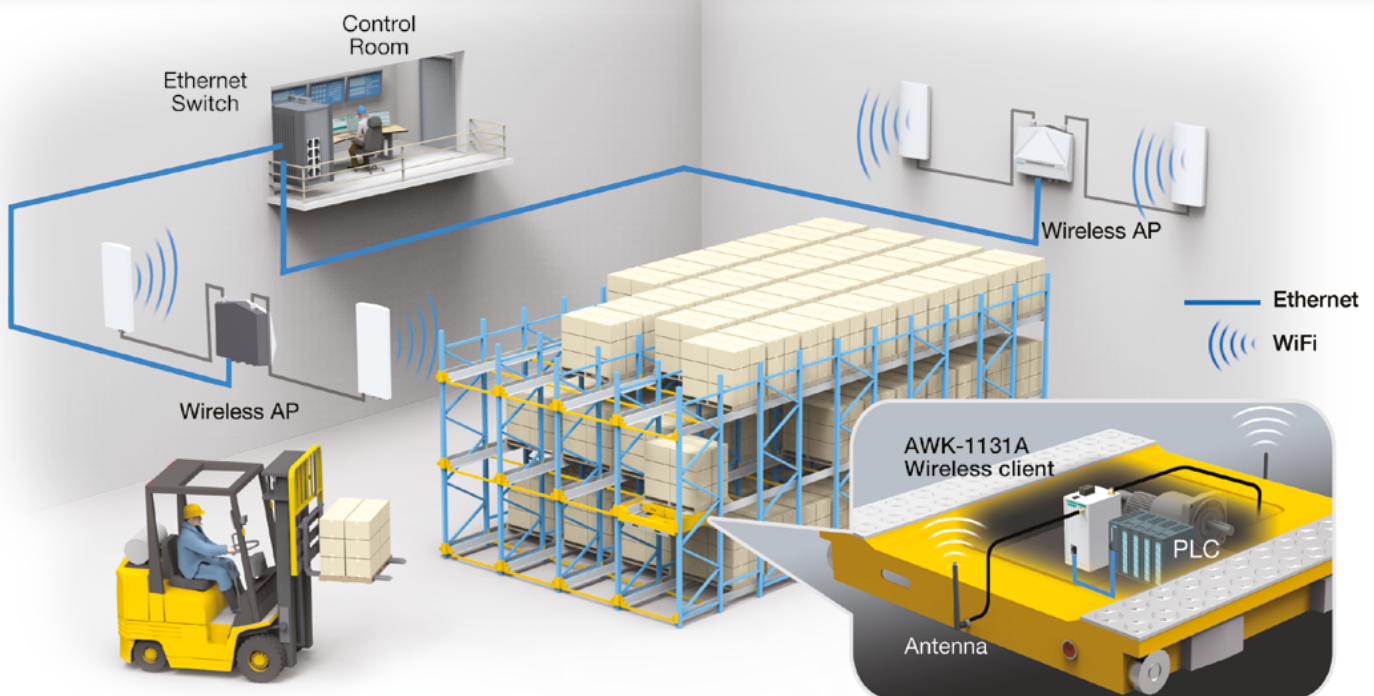
Location: **China**

Application:
Automated Storage/Retrieval Systems

Customer Needs
- Withstand low temperatures in a cold storage warehouse
- A small device to fit in limited spaces on shuttle systems
- Fast roaming performance for nonstop operations

Moxa's Advantages
- Capable of operating at -40°C
- Compact but sturdy design to deliver supreme performance in limited spaces
- Turbo Roaming supports 150 ms handover time

Project Background

An automated storage and retrieval system (AS/RS) is a smart system used in warehouses to enhance the efficiency of storage processes. This AS/RS features a shuttle-storage-shelving design that automatically moves goods up and down and back and forth between shelves, eliminating the possibility of human error. An AS/RS manufacturer in China helped a food company develop a smart storage warehouse to store fresh food at low temperatures. The application required a reliable wireless network.

At the heart of the constantly mobile equipment are wireless devices that enable communications between the control center and the large number of shuttle systems. As these shuttle systems have limited space to carry a large number of devices, the wireless apparatus has to be small but rugged in design to ensure seamless operations.

System Requirements
- Maintain normal operation even in sub-zero temperature environments
- Small-sized wireless devices mounted in space-limited shuttle systems
- Fast handover time to ensure real-time control and monitoring of shuttle systems
- Full wireless coverage on shuttle systems to stay connected with the control center
- Isolation design to protect wireless devices from electrical interference generated by motors on the shuttle systems

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Moxa's Solution

An AS/RS makes it easy to store and retrieve goods and increases productivity compared with manual processes. The success of an AS/RS depends heavily on the deployment of reliable wireless devices throughout a network. To ensure that the shuttle systems in an AS/RS operate at peak performance, Moxa's AWK-1131A wireless devices offer three benefits: a compact but rugged design, seamless roaming ability, and greater wireless coverage.

The rugged, palm-sized AWK-1131A was designed to keep wireless operations stable in harsh industrial environments, including cold storage warehouses in which the temperature could get as cold as -40°C, and to fit comfortably in space-restricted shuttle systems. Moreover, the AWK-1131A has power and RF isolation built in to protect wireless devices from electrical interference generated by motors. These two design features save space and eliminate the cost of installing extra isolator accessories.

Roaming performance is always an essential feature of wireless devices. The AWK-1131A series has client-based Turbo Roaming technology that offers millisecond-level handover times to ensure that client devices on shuttle systems can always connect with access points (APs), which increases productivity by ensuring that shuttle equipment can move smoothly between shelves.

Finally, the AWK-1131A supports the 802.11n standard to offer a throughput rate of up to 300 Mbps and MIMO technology to maximize wireless availability in shuttle systems. Installing an antenna on both the front and back of the shuttle system ensures seamless connections with APs mounted on the wall. Moreover, the 5 GHz channel offers a low-traffic channel for wireless communications to avoid unexpected timeout due to oversaturated channel usage.

Benefits

- The ability to operate at -40°C ensures nonstop operations in cold storage warehouses
- Palm-sized design to save space in space-limited shuttle systems
- Turbo Roaming's millisecond-level handoff times ensure seamless shuttle system operations
- With 500-volt insulation on power ports and level-4 ESD on antenna ports, AGV systems can withstand electrical interference, for worry-free integration
- A throughput rate of up to 300 Mbps and 2x2 MIMO technology to maximize Wi-Fi coverage for shuttle systems

Related Products

AWK-1131A-T
Entry-level industrial IEEE 802.11a/b/g/n wireless client

http://www.moxa.com/product/AWK-1131A_Series.htm

Learn more

White Paper
Five Critical Elements of Uninterrupted Wireless Connectivity for AS/RS and AGV Systems

www.moxa.com/wireless-AGV-wp

Microsite
Learn more about our wireless solutions on Moxa's website.

www.moxa.com/wireless-AGV

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