Location: Japan

Smart Wireless Sends Warehouses Into Smart Territory

Application:

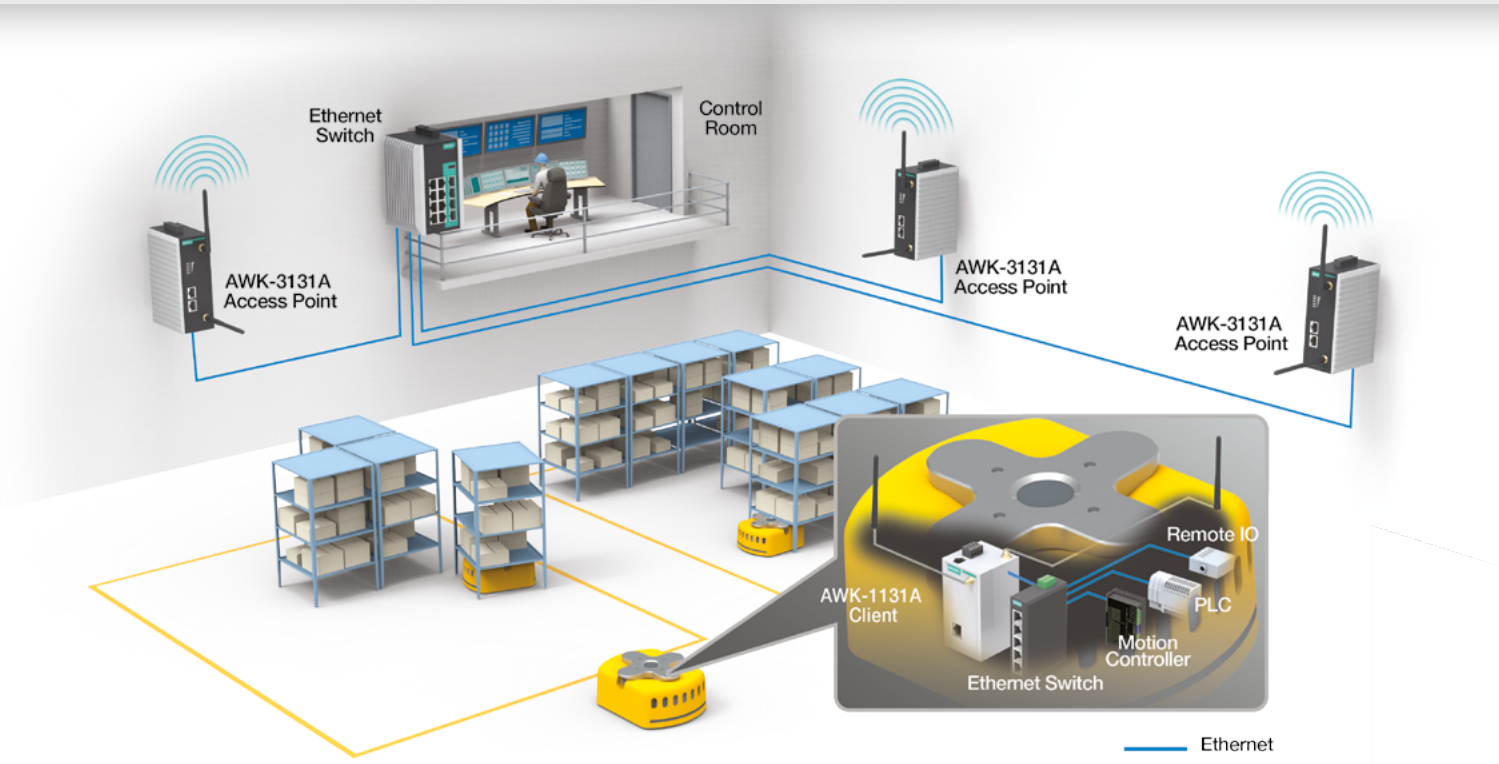
Automated Guided Vehicles

Customer Needs

- Fast roaming time under 200 milliseconds
- The ability to configure roaming sensitivity to adapt the same solution in different-sized factories
- Industrial-grade design to withstand harsh environments

Moxa's Advantages

- Turbo Roaming supports 150 ms roaming time
- The ability to adjust roaming parameters to fulfill different roaming requirements
- Dual isolation protects power and RF ports from inrush current interference



Project Background

Many Automated Materials Handling (AMH) systems have been implemented in factories to increase productivity. AGV is a common AMH system used in factory logistics to enhance operational accuracy and efficiency. One of our customers in Asia, who provides logistics services, wanted to deploy AGV systems in warehouses. Their aim was to provide real-time goods delivery so that their customers could achieve zero inventories in retail stores.

These AGV systems rely on wireless networks to communicate with a control center. Any single point of device failure interrupts wireless connections, which leads to goods delivery delays and increased operation costs. To take advantage of AGV systems, the wireless device must be reliable and rugged enough to provide seamless wireless communication while AGVs are on the move.

System Requirements

- Seamless roaming ability is a must to ensure wireless connections between different access points (APs) when AGV systems move around inside warehouses
- The ability to allow users to adjust the roaming parameter to adapt to the requirements of different deployment venues
- Isolation design to protect wireless devices from inrush current interference generated by motors on AGV systems
- Anti-vibration design to ensure continuous wireless device operation under constant moving conditions

MOXA®

Reliable Networks ▲ Sincere Service

Moxa's Solution

Reliable wireless networks are required to enable AGV systems in warehouses. Different requirements from APs and clients (devices) determine the formation of a reliable wireless network. In this case, AWK-3131A wireless devices have been used as APs to provide Wi-Fi coverage. The AWK-3131A supports 802.11n with 2x2 MIMO antenna output, allowing a wider coverage of Wi-Fi communication. Furthermore, it provides sufficient bandwidth with a 300 Mbps data rate, keeping your options wide open for possible future system expansions. With 5 GHz channel support, AGV systems can operate in a cleaner environment than under the over-saturated 2.4 GHz frequency. As the ideal wireless client in an AGV system, the AWK-1131A wireless device offers three benefits: compactness, ruggedness, and mobility.

The space-limited vehicled system needs compact wireless devices to fit into AGV systems, which makes our small-sized AWK-1131A the perfect solution. The rugged design of the AWK-1131A can endure harsh onboard conditions. The device isolates both power and antenna ports to prevent unexpected electrical interference. For example, when a wireless device shares the same power source with motors, wireless communication can easily be interrupted due to inrush current generated by the motors. With 500-volt insulation on power ports and level-4 ESD on antenna ports, a wireless device can isolate any unwanted electrical charges.

More importantly, optimized device mobility is the major concern for AGV systems. The AWK-1131A supports client-based Turbo Roaming technology that provides 150 ms handoff times between APs to enable seamless mobile operations for warehouses.

Benefits

- Millisecond-level handoff times offered by Turbo Roaming technology ensure seamless AGV system operation on the move
- A configurable roaming threshold to ensure reliable roaming performance in different-sized venues
- With 500-volt insulation on power ports and level-4 ESD on antenna ports, can withstand electrical interference on AGV systems—for a worry-free integration
- Up to 300 Mbps throughput rate and MIMO technology to maximize Wi-Fi coverage for AGV systems—for cost-saving and future-proof technology
- Anti-vibration design meets the IEC 60068-2-6 standard, protecting wireless communications under constant motion

Related Products

AWK-3131A
Industrial IEEE 802.11a/b/g/n wireless AP/bridge/client

http://www.moxa.com/product/AWK-3131A.htm

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

Location: China

The Cold Storage Warehouse Where Wireless Doesn't Get Frozen

Application:

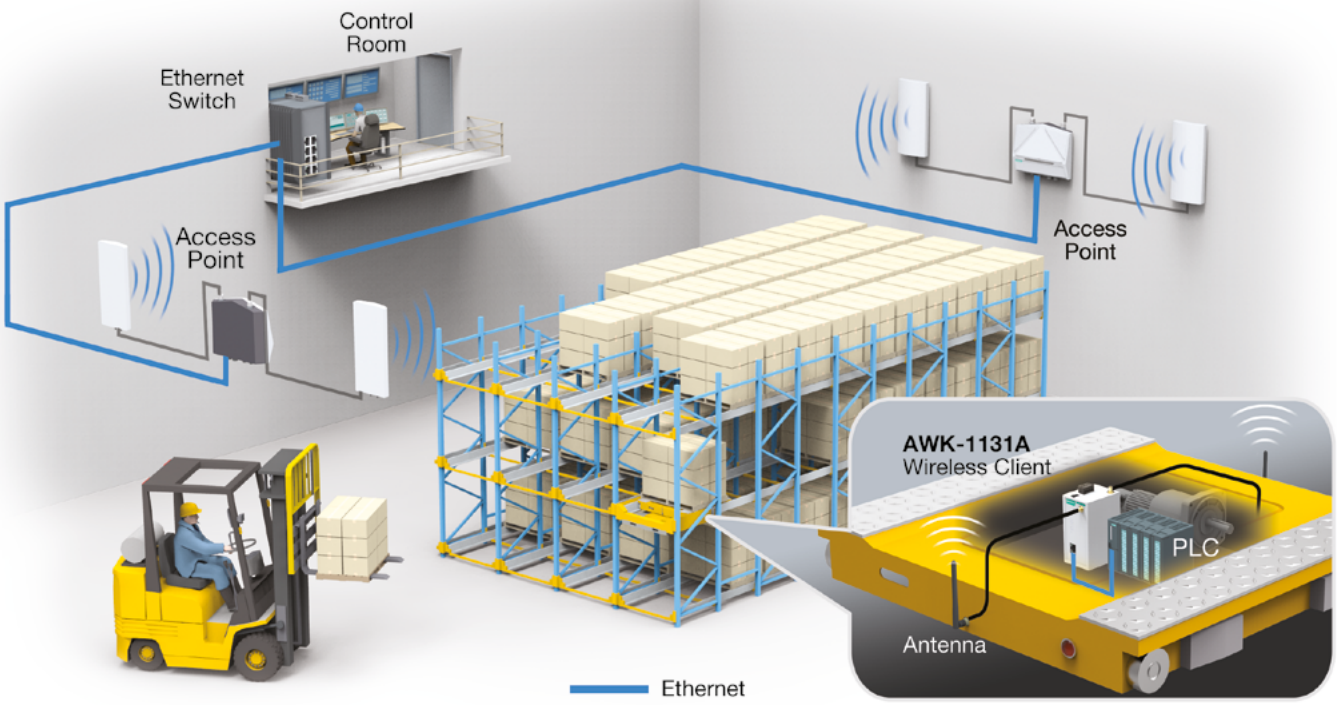
Automated Storage/Retrieval Systems

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 ensures real-time control and monitoring the status 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

MOXA®

Reliable Networks ▲ Sincere Service

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 maximized wireless availability.

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 handover times in milliseconds to ensure client devices on shuttle systems can always connect with access points (APs), so that shuttle systems can move smoothly between shelves to increase productivity.

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 the front and back sides 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 time-out 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
- Millisecond-level handoff times offered by Turbo Roaming technology ensure seamless shuttle system operations
- Withstands electrical interference on shuttle systems with 500-volt insulation on power ports and level-4 ESD on antenna ports—for a worry-free integration
- A throughput rate of up to 300 Mbps and 2x2 MIMO technology to maximize Wi-Fi coverage for shuttle systems—for cost-saving and future-proof technology

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