Solution Overview

Tropos wireless mesh networks for industrial process control

Key wireless value propositions

- Wireless networks provide cost effective communications for process control and sensors, reducing overall cost of installation and improving ROI
- Wireless mesh networking provides redundancy for highly reliable communications
- Ruggedized products and remote monitoring and management minimize ongoing maintenance costs and downtime

Applications enabled

- Mobile workforce access to process control software
- Process instrumentation, automation, and control
- Mobile video applications
- Power automation and process electrification
- CCTV and IP camera integration
- Facility access control and safety systems
- Operator, engineer, contractor and guest internet access in plant

Tropos technology differentiators

- Reliability meets or exceeds factory automation requirements
  - Tropos Mesh OS leverages multiple RF paths, channels and bands
  - Controller-free architecture, no single points of failure
  - Rugged hardware for industrial use (indoor and outdoor)
- Many applications over one network
  - High capacity, low latency
  - Interoperability/open standards-based
- Secure – multi-layer, defense-in-depth security architecture
- Easy to deploy – wired backhaul required for only 10-20% of routers
- Performance – multi-megabit capacity, low latency

A communication network is a fundamental necessity in most modern industrial operations to support process control and other factory applications. In many industrial facilities, wired communications is difficult to install or not flexible enough to support quick process reconfiguration, making wireless an ideal choice. A Tropos wireless mesh network provides customers with the flexibility to install the type of network they need, including support for remote locations and mobile equipment.

Multi-use networks for industrial facilities

Tropos wireless broadband mesh network solutions provide a scalable and reliable foundation to securely support multiple concurrent network-based industrial applications including:

Mobile in-plant access to process control software – enables access to ABB System 800xA and other process management and automation software from the factory floor.

Process instrumentation, automation, and control – collect process and diagnostic data from field devices and provide communications to programmable logic controllers (PLCs) and distributed control systems (DCSs).

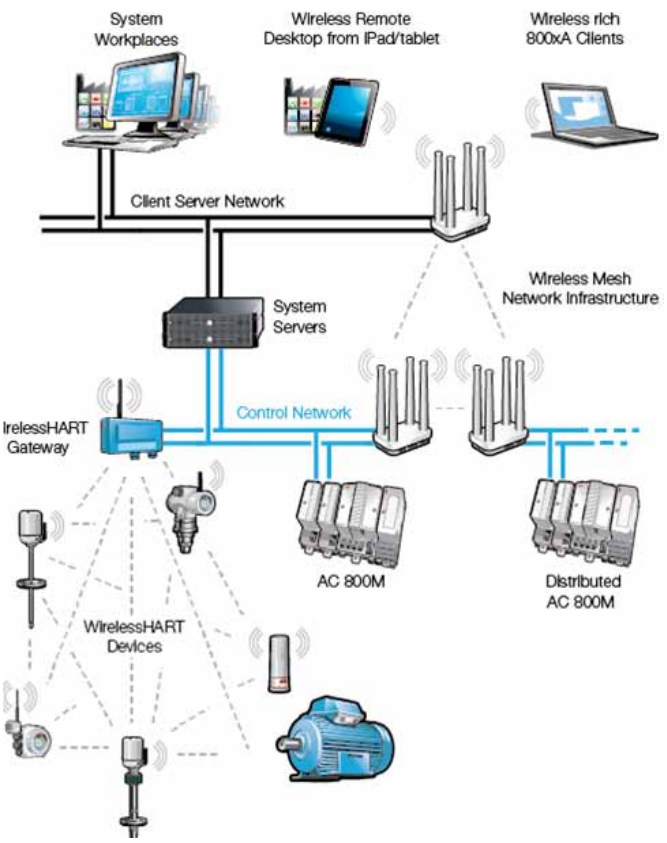
Mobile video applications – provide video feeds to and from handheld or wearable devices for maintenance, process management, and security anywhere in the facility.

Power automation and process electrification – enable advanced electrical distribution functions such as load shedding, peak shaving and power consumption prediction.

CCTV and IP camera integration – remotely monitor video cameras in real-time, improving site security and safety.

Facility access control and safety systems – use key cards, fobs, keypads, or biometrics to control and record access to the facility or specific areas within the facility; network fire and gas detection and suppression systems as well as shut-down systems.

Worker and guest internet access in plant – enables Wi-Fi access to internet or enterprise applications throughout the plant for workers and guests via laptops, tablets and smart phones.



Industrial control system network example

Meeting industrial control network challenges

Industrial environments can vary widely and may include indoor as well as outdoor locations. Some areas are subjected to extreme weather such as wide temperature variations as well as high humidity, snow, wind, rain, and salt fog. Networks may be in areas where hazardous materials are present or be mounted in areas which experience vibration. Wired connections may be unavailable because of installation challenges or because they don't offer the flexibility required to process reconfigurations. On the other hand, wireless engineering may be challenging because the network may need to work in areas where radio signals encounter metal and other structures can absorb or reflect RF energy.

A private wireless IP broadband mesh network from Tropos delivers a reliable and secure communications foundation needed to support the wide range of environments encountered in industrial process control applications. To help ensure 24 x 7 operation, networks can be flexibly configured to achieve desired level of redundancy. For operations that require the ability to easily relocate network nodes from time-to-time, Tropos routers are easily relocated with minimal service disruption enabling part or all of the network coverage area to change over time as business needs dictate. Suitable for installation with little access to wired network connections, only about 10% of Tropos mesh routers require a wired backhaul connection.

Tropos wireless mesh networks support virtual LAN (VLAN) and quality of service (QoS) capabilities, ensuring that latency sensitive protocols such as Redundant Network Routing Protocol (RNRP) get top priority on the network.

Reliable and secure

Tropos wireless mesh networks employ a controller-free architecture with no single points of failure. Tropos Mesh OS, the network operating system embedded in each Tropos mesh routers, features distributed intelligence that leverages multiple RF paths, channels and bands to maximize network throughput and availability while minimizing latency. Both indoor and outdoor hardware is rugged and suitable for industrial use.

Tropos mesh networks employ a multi-layer, defense-in-depth security architecture based on the same standards-based tools that businesses, financial institutions and government agencies use to secure transactions on the internet.

Learn more

To learn more about Tropos mesh networks for industrial control applications, visit abb.tropos.com or email tropos.info@nam.abb.com.

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