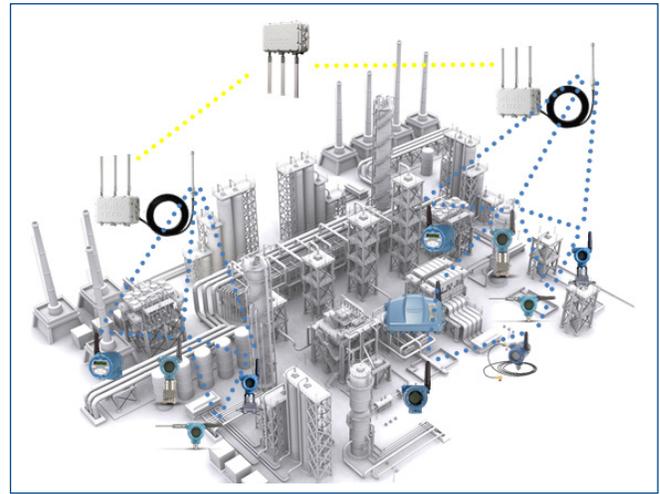


# Wireless Field Data Backhaul

- Scalable
- Reduced cost
- Safer deployment
- Secure and reliable communications
- Full support service



*An Emerson Smart Wireless Field Data Backhaul Solution integrates WirelessHART data from remote areas of your plant.*

## Introduction

Emerson's Wireless Field Data Backhaul solution provides a cost-effective link between remotely located WirelessHART® field instrument networks and your process automation system. With a pervasive WirelessHART network, adding health monitoring solutions for essential assets such as steam traps, pumps, heat exchangers, blowers, compressors, and cooling towers is easier.

The Smart Wireless Gateway 1552WU makes possible a full-featured wireless solution that combines plant and field networks into a seamless architecture enabling pervasive sensing along with mobile worker solutions in a more straightforward and economical manner.

Using IEEE 802.11a/b/g/n standards-based technology, Emerson provides a fully secure, reliable Wi-Fi communication link between each of the meshed Smart Wireless Gateways in your plant and the central control system.

This scalable Wi-Fi™ network can be shared by many Smart Wireless solutions for your plant-wide operations such as remote video monitoring, mobile worker, safety mustering, and location tracking.

Support for a field data backhaul solution installed by Emerson is provided through Emerson's SureService™ organization.

## Benefits

**Scalable:** Emerson can provide a wireless network solution that exactly meets your needs today, while providing flexibility for future wireless mesh infrastructure growth as your needs expand. Emerson's Smart Wireless Plant Solutions can also scale to the types of applications you utilize in your wireless plant. For example, each Smart Wireless Gateway 1552WU is also a Wi-Fi Mesh Access Point that can be used as a "hot spot" for your mobile workers to access live plant data, to wirelessly stream video data, or track personnel with Wi-Fi RFID tags.

**Reduced cost:** When compared to the cost of engineering and trenching a fiber-optic cable to each of the WirelessHART gateways, a wireless backhaul solution can be deployed for less cost when the gateway is separated from the control room by large distances, difficult terrain, or bodies of water.

**Safer deployment:** Trenching a fiber-optic cable in a live process area puts workers in the process area for long periods of time – exposing them to potential hazards and risking disruptions to process operations.

**Secure and reliable communications:** All communications on the wireless plant network are fully secure using AES 128-bit encryption. The integrity of the wireless communication network is continuously monitored and alerts can be sent to administrators if degradation of the wireless signal is detected. Full Wi-Fi defense in depth solutions are available including wireless intrusion prevention. The WirelessHART gateway is Achilles Level 1 certified.

**Full support service:** Emerson SureService program provides full 24/7 support for customers who have purchased and deployed a wireless backhaul solution from Emerson.

## IEC 62591 (WirelessHART) The Industry Standard

### Self-Organizing, Adaptive Mesh Routing

The WirelessHART field instrument sensor network automatically finds the best communication paths.

The self-organizing, self-healing network manages multiple communication paths for any given device. If an obstruction is introduced into the network, data will continue to flow because the device already has other established paths. The network will then add more communication paths as needed for that device.

Configuration management of the wireless field network is achieved either through version 10 or later of DeltaV system and AMS Intelligent Device Manager, or through the AMS Wireless SnapOn and the Gateway's web server interface when integrated with older control systems.

### Third-party Process Automation Integration

Emerson can work with you to create a control strategy and provide an integrated solution between the Smart Wireless Gateways and a third-party control system with several choices of protocol connectivity to the 1552WU including OPC, Modbus® TCP, and EtherNet/IP.



*1552WU with 5 GHz Wi-Fi omni antennas and remote mounted WirelessHART omni antenna.*

### Smart Wireless Gateway 1552WU

Emerson offers a full portfolio of Smart Wireless instrumentation solutions enabled by the self-organizing WirelessHART network. The Smart Wireless Gateway 1552WU manages the wireless field instrument network communications and security. The Gateway's enclosure is rated Class 1 Div 2 and ATEX Zone 2. The 1552WU is also a fully functioning Wi-Fi Mesh Access Point integrated into a larger controller-based plant wireless solution.

**Redundancy:** The 1552WU can be paired with a second co-located 1552WU to provide a fully redundant solution for critical applications that require it. Redundancy is only available for non-DeltaV host control systems. See below for DeltaV's redundant WirelessHART solution.

## DeltaV Integration

### Gateway integration with DeltaV v9 and earlier

Emerson can integrate the Smart Wireless Gateway through the wireless plant network to DeltaV version 9 and earlier in one of two ways:

- Modbus TCP – Mynah™ Virtual I/O Module
- OPC™ Server connection to the gateway

### Gateway integration with DeltaV v10 and later

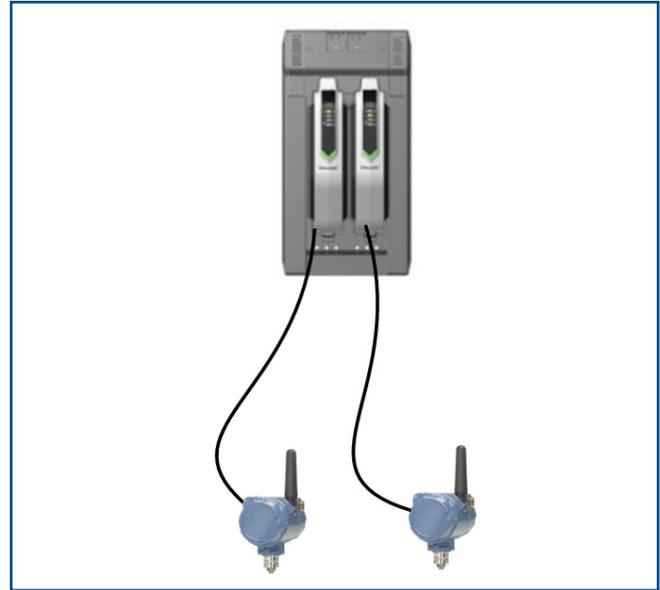
Beginning with DeltaV version 10 and later, the Smart Wireless Gateway is a native DeltaV node. The Gateway is autosensed and commissioned on the area control network just as a controller is today. Additionally, all the Smart Wireless devices joined to the gateway's network are autosensed by DeltaV, allowing for easy drag and drop assignment of the devices to your control strategy.

Emerson extends the DeltaV control network through the wireless plant network to natively join the Smart Wireless devices to the DeltaV control system.

### S-series integration with DeltaV v11 and later

Starting with DeltaV version 11, the DeltaV S-series Wireless I/O Card (WIOC) and Field Link are available as a fully redundant WirelessHART solution with native integration with all DeltaV applications e.g. diagnostics. The WIOC is autosensed and commissioned on the area control network just as a controller is today. Additionally, all the Smart Wireless devices joined to the WIOC's network are autosensed by DeltaV, allowing for easy drag and drop assignment of the devices to your control strategy.

WIOCs are connected via Ethernet cables to Wi-Fi mesh Access Points to wirelessly bring their communications back to the DeltaV control network.



*Wireless I/O Card connected to Field Links.*

### Wireless I/O Card & Field Link

The S-Series Wireless I/O Card (WIOC) and 781 Field Link offer a fully redundant WirelessHART solution natively integrated with all DeltaV and AMS applications. The WIOC is Class 1 Div 2 (ATEX Zone 2) and the Field Link is Class 1 Div 1 (ATEX Zone 1) for those applications that require hazardous rated installations.

The WIOC houses the WirelessHART network manager, security manager, and DeltaV communications while the Field Link houses the IEC 62591 WirelessHART radio that communicates with any vendor's WirelessHART instrumentation. The WIOC and Field Link are connected with up to 200 meters of serial cable.

## Wireless Engineering Services

Wireless engineering services are critical to the success of a wireless plant network deployment. Emerson offers a comprehensive services portfolio to help you design and deploy a Wireless Field Data Backhaul solution.

### Radio Frequency (RF) Front End Engineering and Design (FEED)

A site assessment is not needed for the WirelessHART field instrumentation network, but one may be required for the Wi-Fi network communications equipment being installed to link the Gateways and/or WIOCs to the host control system.

For the Wi-Fi RF FEED, Emerson engineers visit your plant site to determine access point locations, temporarily install Mesh Access Points, measure the signal strength and coverage area of the installation, and collect other on-site information.

### Network Design and Planning

Based on the RF FEED results and your control system requirements, Emerson engineers design the overall wireless mesh architecture including the detailed network infrastructure, network monitoring tools, and integrated security.

## Physical Network Installation Management

Engineers work with you to install the wireless mesh network equipment based on the detailed network design.

## System Commissioning

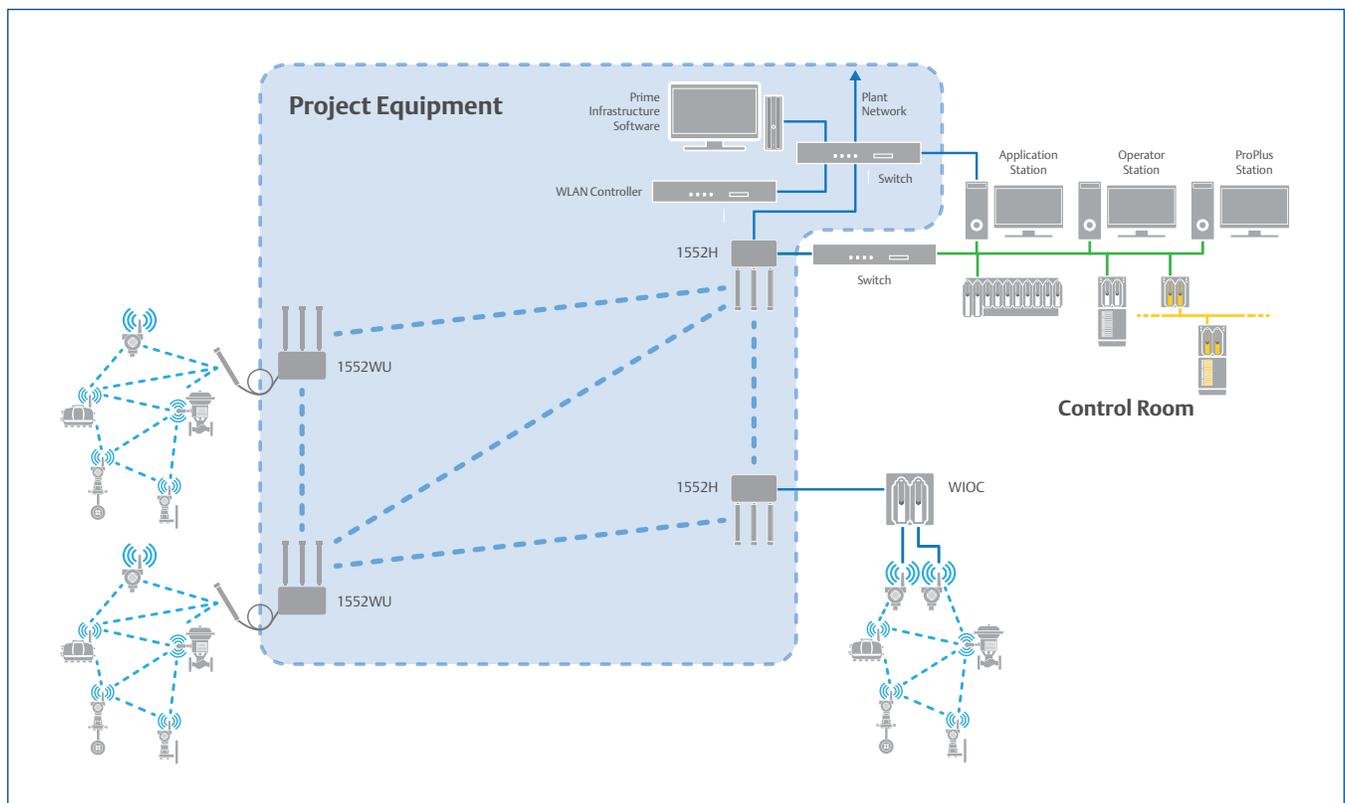
The Wi-Fi mesh network is brought online and commissioned on site. Complete site acceptance testing is performed with your engineers.

## Training

Emerson will work with you to specify a training curriculum that meets your specific needs.

## Support

Emerson delivers SureService wireless lifecycle services through our engineering centers and global service organizations. Emerson's wireless lifecycle services are designed to help you maintain system uptime, apply wireless technology for better business results, and preserve your intellectual and capital investment.



Example of a Wireless Field Data Backhaul solution architecture.

## Wireless Equipment

### Smart Wireless Field Instruments

Emerson offers a plethora of Smart Wireless field instruments including: temperature, pressure, vibration, pH meters, valve positioners, level, flow, discrete, and THUM adapter.

### Smart Wireless Gateway 1552WU and 1552H Mesh Access Point (MAP)

The Gateways and MAPs deployed in your plant are Class I, Div 2 or ATEX Zone 2 certified equipment. The 1552WU wirelessly connects the WirelessHART sensor network back to the plant wired network. The 1552WU's client IEEE 802.11n radio can also be enabled to give your field personnel "hot spot" Wi-Fi access to your plant or office network applications. Additional 1552H MAPs can be deployed for additional wireless coverage to enable tablets, laptops, or cameras access to the wireless network anywhere in the entire physical plant if desired.

### Switch

The managed switch is the device which connects the wireless network with the wired network. The Wireless LAN Controller and Cisco Prime Infrastructure Software are also connected through the managed switch.

### Wireless LAN (WLAN) Controller

The Wireless LAN Controller is the device that is responsible for network-wide Wi-Fi functions such as security policies, intrusion prevention, RF management, Quality of Service (QoS), and mobility.

### Cisco® Prime Infrastructure

The optional Prime Infrastructure software allows network managers to design, control, and monitor enterprise Wi-Fi networks from a single location, simplifying operations. It oversees a series of WLAN controllers. This software provides network management including diagnostics and troubleshooting tools to keep the Wi-Fi network running smooth.

## System Compatibility

WirelessHART integration is supported for all DeltaV versions 5 and later and with most third-party process automation systems.

## Certifications

Emerson can deploy Class 1 Div 2 or ATEX Zone 2 certified MAPs as a standard solution, or we can provide Class 1 Div 1, ATEX Zone 1 MAPs as an engineered project solution if required.

## Additional Wireless Plant Solutions

- **Mobile Workforce:** Depending on your needs, Emerson can provide Wi-Fi access throughout your process plant or just in specific locations to connect field personnel with Wi-Fi enabled tablets or laptops to plant or office network applications.
- **Video:** Easily add video cameras in remote areas of your plant to monitor the process or site for emissions, safety, and security.

## Ordering Information

For inquiries and ordering information, please contact your local Emerson sales office. Prior to order acceptance, Emerson will issue a written proposal for your review and approval to ensure that scope, deliverables, timing, and budget meet your needs and expectations.

For more information, please visit our website at <http://www.emerson.com/wireless>.

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