Wireless Plant: Complete Coverage

Wireless communications are becoming an important part of a company's infrastructure both outside and inside a plant environment. The wireless infrastructure can be used for both network and process data communication, however coexistence must be considered early in the design of plant-wide wireless systems. We are unique in being able to provide a mesh network infrastructure complete with I/O, gateways and IS equipment capabilities.

INTRODUCTION

Today's facilities require internal wireless infrastructure to fulfil several different roles, anywhere from process monitoring and control to real time personnel tracking. Reliability and full access/coverage of all parts of the operation have long been requirements for process control. The combination of MTL PoEx™ (Intrinsically Safe Power over Ethernet) and wireless technologies makes this possible from a single source supplier.

Wireless infrastructure can also be used to provide communication, process status or maintenance procedures to mobile workers'. This enables personnel to access real-time process data or instructions for any task they may be performing in the field thereby increasing worker efficiency.

MTL 946X range of Intrisically Safe Ethernet modules

SYSTEM DESCRIPTION

A wireless infrastructure is typically complimentary to a facility's wired infrastructure. Once in place however it can make it economically beneficial to bring a variety of variables into the control room to provide additional knowledge about the process and associated equipment. The result is higher reliability and throughput.

The 9469-ET is unique in that it is not only an IEEE 802.11 wireless base station, it can also be deployed as a wireless repeater. Additionally, this device can be powered using a conventional I.S. power source or via the Cat 5E Ethernet data cable by using a remote I.S. power supply.

Subsequently the 9469-ET can be mounted anywhere in a facility to provide complete coverage with minimal infrastructure investment.

For serial devices, the 9461-ET is able to convert an I.S. serial signal to Ethernet enabling the device to be integrated into the wider Ethernet network.

The 9466-ET serves the dual purpose of distributing the power over Ethernet and consolidating the 9469-ET and 9461-ET connections. The 9468-ET galvanic isolator then connects the intrinsically safe network to other networks in the facility.

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Powering Business Worldwide

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Typical wireless mesh network and backbone infrastructure
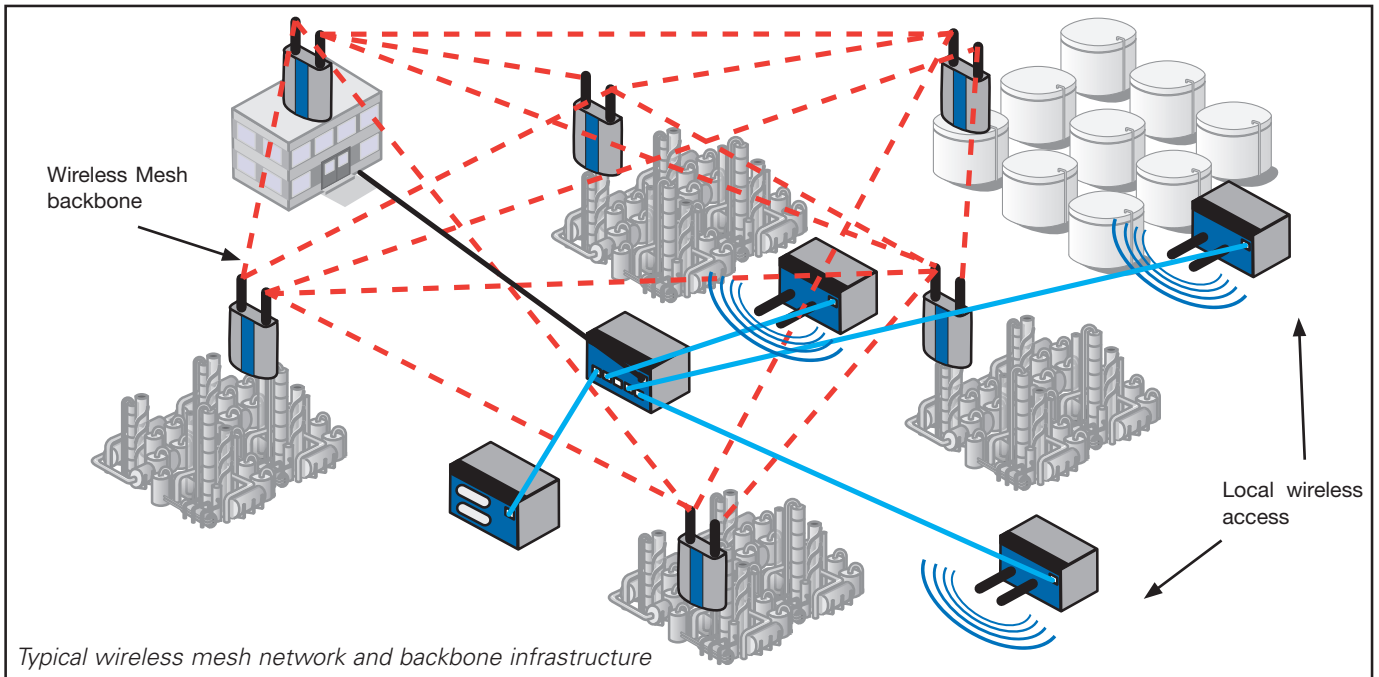
SYSTEM DIAGRAM

As seen in the above diagram, a combination of wireless access points, data acquisition and data backhaul products are required to effectively gather data from a facility.

The MTL range of wireless products are fully configurable as both relay and access points enabling connections through critical areas and allowing access to the network by field staff.

For serial devices, the 9461-ET is capable of passing the signal through or from a hazardous area, even if the signal source is located in a hazardous area. The serial data is converted to Ethernet for simple integration to a data server.

A number of 9469-ET and 9461-ET stations can be connected to the 9466-ET where the combined signals from one or more units are then transmitted to the central control room.

The MTL wireless products can be used in Zone 2, Zone 1, Class 1 Div 2 and Class 1 Div 1 hazardous areas as well as safe areas, and have the ability to transfer serial, I/O and Ethernet data whilst providing a robust and secure mesh backhaul infrastructure.

OVERALL BENEFITS

Combining the capabilities of the MTL suite of IS Ethernet and wireless offerings makes it possible to have a complete wireless network infrastructure solution from a single supplier in all areas of the plant regardless of area classification.

The MTL solution offers;

- Complete connection availability throughout a facility.
- Multiple network expansion options.

- More accurate estimates during design phase (due to mobility of wireless).
- Increased workforce efficiency.
- Improved access to data.
- Increased possibilities for network access and diagnostics.
- Wireless signals can pass through areas where cable is either difficult or impossible to install.

ECONOMIC BENEFITS

- Additional data pertaining to the condition of equipment or process provides more efficient control and operation.
- Reduced cost in installation and upgrade of network topologies.
- More cost effective access to data (e.g. moving or rotating equipment).
- Mobile network and data access to field staff increases efficiency of site visits.
- Remotely incorporating different devices into a common network backbone structure reduces project design cost and marshalling.
- Redundant links can become much simpler to setup, increasing reliability for minimal cost.

WLN-2000 range of client/ Ethernet AP/serial devices

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