

Industrial Wireless Networking for Instrumentation and Control Training Course

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Overview

Industrial Wireless Networking for Instrumentation and Control Training Course is a one-week intermediate programme for instrumentation, automation, OT network, maintenance, and project personnel who need an Industrial Wireless Deployment Pack. Participants connect radio fundamentals, industrial Wi-Fi, wireless sensors, gateways, coexistence, secure control-system integration, commissioning, monitoring, and troubleshooting with traceable lifecycle decisions. The course does not authorize safety-critical control changes, spectrum decisions, or vendor configuration outside approved procedures. Agile Leaders Training Center delivers this industrial wireless lifecycle course.

Who Should Attend

- Instrumentation and control engineers planning wireless connectivity
- Automation and OT network personnel supporting plant communications
- Maintenance and reliability staff responsible for wireless devices
- Project engineers coordinating sensors, gateways, access points, and vendors
- Technical assurance staff reviewing availability, security, and lifecycle evidence

Participants should understand basic instrumentation and IP-network terminology. The course focuses on application review and evidence rather than licensed radio work or safety-system authorization.

Departments and Industries

The course supports process plants, utilities, manufacturing, energy, water, mining, and industrial facilities.

- Instrumentation, control, and automation
- OT networking and industrial cybersecurity
- Maintenance, reliability, and asset integrity
- Projects, engineering, and commissioning
- Operations and technical assurance

Learning Objectives

By the end of this course, participants will be able to:

- Distinguish industrial wireless applications, architectures, and operating limits
- Assess radio coverage, interference, coexistence, and availability evidence
- Compare industrial Wi-Fi, wireless sensors, gateways, and integration paths
- Review segmentation, authentication, encryption, and monitoring boundaries
- Plan commissioning, performance verification, maintenance, and troubleshooting
- Build a documented Industrial Wireless Deployment Pack

Course Agenda

Day 1: Industrial Wireless Applications and Architecture

- Instrumentation Use-Case and Criticality Register
- Industrial Wi-Fi, Sensor Network, and Gateway Architecture Map
- Field, Control, OT, and Business Network Boundary Diagram
- Latency, Availability, Reliability, and Data-Rate Requirement Matrix
- Responsibility, Competence, and Change-Control Checklist

Day 2: Radio Survey and Coexistence Planning

- Frequency, Channel, Bandwidth, Power, and Antenna Fundamentals
- Path Loss, Obstruction, Reflection, Multipath, and Coverage Review
- Site-Survey Measurement and Coverage Evidence Worksheet
- Interference Source and Wireless Coexistence Register
- Channel, Location, Redundancy, and Capacity Planning Exercise

Day 3: Secure Integration with Instrumentation and Control

- Wireless Sensor, Access Point, Gateway, and Controller Interface Map
- Device Identity, Authentication, Encryption, and Key-Lifecycle Review
- OT Zone, Conduit, Segmentation, and Access Boundary Diagram
- Protocol Translation, Data Ownership, and Time-Synchronization Checklist
- Remote Management, Logging, Monitoring, and Escalation Matrix

Day 4: Installation, Commissioning, and Performance Verification

- Equipment Location, Environment, Power, Earthing, and Enclosure Checklist
- Configuration Baseline, Naming, Addressing, and Inventory Register
- Connectivity, Coverage, Roaming, Latency, and Packet-Loss Test Plan
- Alarm, Failure, Recovery, and Degraded-Mode Verification
- Handover Evidence, Acceptance Record, and Operations Readiness Review

Day 5: Monitoring, Troubleshooting, and Lifecycle Governance

- Signal, Noise, Utilization, Availability, and Battery Health Dashboard
- Coverage Gap, Interference, Congestion, and Device-Failure Fault Tree
- Firmware, Credential, Spare, Backup, and Obsolescence Lifecycle Register
- Incident, Change, Maintenance, and Performance Review Workflow
- Capstone Exercise: Industrial Wireless Deployment Pack

Practical Exercises

Guided exercises turn application requirements and field evidence into controlled wireless decisions.

- Build an instrumentation wireless use-case register
- Review a site survey and coexistence record
- Map gateways and secure OT integration boundaries
- Prepare commissioning and performance-verification evidence
- Diagnose a wireless fault and write a lifecycle recommendation

FAQs

Is this a general enterprise Wi-Fi course?

No. It focuses on industrial instrumentation, control-system boundaries, reliability, coexistence, commissioning, and lifecycle evidence.

Does the course cover wireless sensors and gateways?

Yes. Participants review their roles, interfaces, data paths, commissioning evidence, and maintenance implications.

Does the course teach safety-critical wireless control?

No. It explains application criticality and escalation boundaries without authorizing safety functions or unapproved control changes.

What practical work is included?

Exercises cover use-case definition, survey evidence, coexistence, secure integration, commissioning, monitoring, and fault analysis.

What will participants take back to work?

An Industrial Wireless Deployment Pack containing requirements, architecture, coexistence, security, commissioning, performance, and lifecycle records.

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Conclusion

Participants return able to review industrial wireless applications, question evidence, coordinate commissioning, and support reliable lifecycle decisions across instrumentation, control, OT networking, maintenance, and projects.

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