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Course Name

Industrial Automation & Systems Integration

Sector Name

Instrumentation & Controls

Document Type

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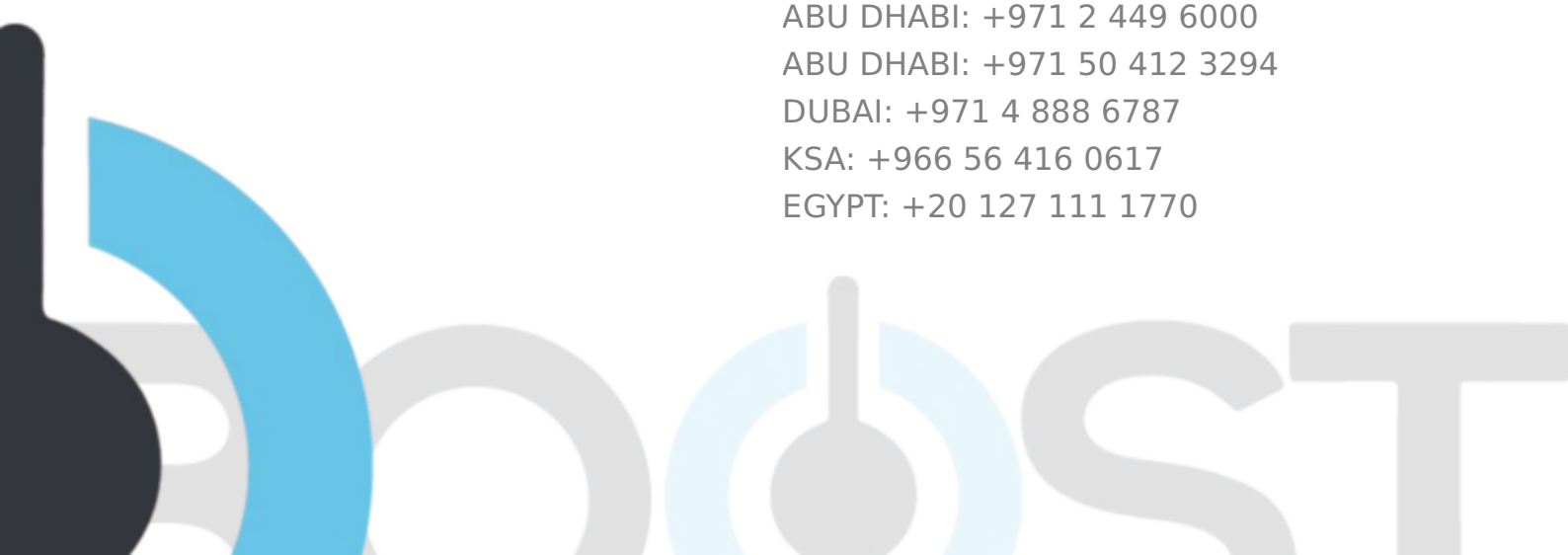
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Industrial Automation & Systems Integration

Course Introduction

Industrial automation rarely depends on a single controller, device, or software platform. Modern facilities combine field instruments, PLCs, distributed controllers, drives, communication networks, SCADA and HMI platforms, safety systems, and higher-level operational systems. Even when individual components perform correctly, poor integration between them can create communication gaps, inconsistent data, delayed responses, difficult troubleshooting, and unreliable plant operation.

Boost Consulting & Training offers this course to develop a practical understanding of how industrial automation components are connected and coordinated as one integrated environment. Participants explore automation architectures, system interfaces, industrial communication, data exchange, controller and supervisory-system integration, equipment interfaces, testing, and troubleshooting integration. Practical activities focus on tracing information and commands across system boundaries and identifying where integration problems originate.

The **main concept of this course** is to connect separate automation technologies into a coordinated industrial system in which data, commands, equipment, and control functions work together reliably.

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Industrial Automation & Systems Integration

Target Audience

- ✓ Instrumentation and control engineers
- ✓ Automation and control system engineers
- ✓ PLC, SCADA, and system integration specialists
- ✓ Engineers responsible for industrial automation projects and system support

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Learning Objectives

- ✓ Explain the architecture and layers of integrated industrial automation systems.
- ✓ Map the relationships between field devices, controllers, PLCs, drives, and supervisory systems.
- ✓ Identify interface and communication requirements between automation components.
- ✓ Interpret industrial data exchange across different control-system layers.
- ✓ Integrate PLC, SCADA, HMI, and field-device information effectively.
- ✓ Plan and execute structured testing of automation-system interfaces.
- ✓ Diagnose communication, configuration, data, and interface-related integration problems.
- ✓ Evaluate integrated automation performance and identify opportunities for system improvement.

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Industrial Automation & Systems Integration

Course Outline

✓ DAY 01

Mapping the Industrial Automation Environment

Understanding Automation System Architecture

- ✓ Examine the roles of field instrumentation, controllers, PLCs, drives, supervisory systems, and operational platforms.
- ✓ Distinguish device, control, supervisory, and higher-level information layers.
- ✓ Trace commands and process information across the automation architecture.

Defining System Integration Requirements

- ✓ Identify which devices and systems need to exchange data, commands, status, and diagnostic information.
- ✓ Define interfaces according to operational and control requirements.
- ✓ Build an Automation Architecture Map for a multi-system industrial application.

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Course Outline

✓ DAY 02

Connecting Industrial Devices and Controllers

Integrating Field Equipment

- ✓ Connect measurement instruments, actuators, drives, and intelligent devices with control systems.
- ✓ Interpret device data, status information, commands, and diagnostic information.
- ✓ Recognize configuration mismatches that prevent effective device integration.

Coordinating Controllers and Equipment

- ✓ Examine data exchange between PLCs, controllers, drives, and packaged equipment.
- ✓ Manage operating commands, permissive, interlocks, status feedback, and equipment modes across interfaces.
- ✓ Complete an Equipment Integration Challenge involving multiple automation components.

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Course Outline

✓ DAY 03

Managing Communication and Data Exchange

Understanding Industrial Communication

- ✓ Examine communication concepts affecting industrial automation interfaces.
- ✓ Understand addressing, data structures, update rates, communication paths, and device relationships.
- ✓ Recognize how communication design influences control and monitoring performance.

Maintaining Reliable Data Flow

- ✓ Identify missing, delayed, duplicated, incorrectly scaled, and inconsistent data.
- ✓ Trace information across devices, controllers, communication paths, and supervisory systems.
- ✓ Conduct a Data Flow Investigation to locate an integration failure within an automation architecture.

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Course Outline

✓ DAY 04

Integrating Control with SCADA and HMI

Connecting Control and Supervisory Functions

- ✓ Map PLC and controller information into SCADA and HMI environments.
- ✓ Coordinate tags, equipment states, alarms, commands, and operating modes.
- ✓ Maintain consistent information across control and operator-interface layers.

Managing Cross-System Interaction

- ✓ Examine how changes in one automation component can affect connected systems.
- ✓ Recognize command conflicts, inconsistent states, timing issues, and interface dependencies.
- ✓ Complete a Cross-System Integration Scenario involving PLC, field equipment, and supervisory control.

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Course Outline

✓ DAY 05

Testing and Troubleshooting Integrated Automation

Verifying System Integration

- ✓ Develop interface checks for signals, commands, feedback, communication, and equipment responses.
- ✓ Test normal, abnormal, communication-loss, and recovery scenarios.
- ✓ Document integration findings and unresolved interface issues before operational acceptance.

Solving Integration Problems

- ✓ Isolate faults across devices, controller, network, configuration, and supervisory-system boundaries.
- ✓ Distinguish individual equipment faults from genuine system-integration problems.
- ✓ Complete an Industrial Automation Integration Simulation from architecture review and interface testing through fault isolation, corrective action, and final system verification.

Industrial Automation & Systems Integration

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
Nov. 2, 2026	Nov. 6, 2026	5 days	4950.00 \$	England , London
June 6, 2027	June 10, 2027	5 days	4250.00 \$	Bahrain , Manama
Sept. 5, 2027	Sept. 9, 2027	5 days	4250.00 \$	KSA , Riyadh
Jan. 18, 2027	Jan. 22, 2027	5 days	4250.00 \$	UAE , Dubai

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