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Course Name

Optimization of Industrial Control Systems

Sector Name
Instrumentation & Controls

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Optimization of Industrial Control Systems

Course Introduction

In modern industrial environments, optimizing control systems is essential for enhancing efficiency, reducing costs, and improving overall system performance.

This **5-day** training course focuses on advanced techniques and methodologies to optimize process control, automation, and real-time monitoring.

Participants will explore strategies for fine-tuning control loops, integrating AI and machine learning, reducing energy consumption, and improving system reliability. Through case studies and hands-on exercises, attendees will learn how to implement optimization techniques that drive operational excellence.

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Target Audience

- ✓ Control system engineers and automation specialists.
- ✓ Process engineers and plant managers are seeking efficiency improvements.
- ✓ Industrial IT and OT professionals are working on control system integration.
- ✓ Instrumentation and maintenance engineers are optimizing system performance.
- ✓ Operations and reliability managers focused on predictive analytics.
- ✓ Energy and sustainability managers are aiming to reduce consumption.

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Learning Objectives

- ✓ Understand the fundamentals of industrial control system optimization.
- ✓ Identify inefficiencies in control loops and automation processes.
- ✓ Apply advanced tuning techniques to improve process stability.
- ✓ Utilize data analytics, AI, and predictive maintenance for optimization.
- ✓ Enhance real-time monitoring and fault detection mechanisms.
- ✓ Implement energy-efficient strategies for industrial control systems.
- ✓ Improve system reliability, cybersecurity, and compliance.

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Optimization of Industrial Control Systems

Course Outline

✓ 01 Day One

Introduction to Control System Optimization

- ✓ Fundamentals of industrial control systems and automation
- ✓ Key performance indicators (KPIs) for process efficiency
- ✓ Identifying common inefficiencies and challenges

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Course Outline

✓ 02 Day Two

Advanced Process Control and Loop Tuning

- ✓ PID tuning techniques and adaptive control
- ✓ Model predictive control (MPC) for enhanced process stability
- ✓ Optimizing control strategies for dynamic processes

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Course Outline

✓ 03 Day Three

Data Analytics and AI for Control Optimization

- ✓ Utilizing machine learning and AI for predictive optimization
- ✓ Real-time data monitoring and fault detection
- ✓ Case studies on AI-driven control system enhancements

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Course Outline

✓ 04 Day Four

Energy Efficiency and Cybersecurity Considerations

- ✓ Strategies for reducing energy consumption in control systems
- ✓ Cybersecurity risks and best practices in industrial control networks
- ✓ Compliance with ISO and IEC standards for control system security

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Optimization of Industrial Control Systems

Course Outline

✓ 05 Day Five

Practical Applications and Future Trends

- ✓ Implementing digital twins for process optimization
- ✓ Future trends in autonomous and self-optimizing control systems

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
Nov. 1, 2026	Nov. 5, 2026	5 days	4250.00 $	KSA , Riyadh
April 26, 2027	April 30, 2027	5 days	4250.00 $	UAE , Dubai
Jan. 25, 2027	Jan. 29, 2027	5 days	4250.00 $	UAE , Dubai
July 26, 2027	July 30, 2027	5 days	4950.00 $	Spain , Madrid

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