Advanced Process Control & Automation

23 – 27 May 2027
Online



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Introduction

In today's highly competitive and technology-driven industries, Advanced Process Control & Automation plays a vital role in maximizing operational efficiency, improving product quality, and reducing costs. This course is designed to provide participants with a deep understanding of process automation strategies, advanced control methodologies, and their applications across multiple sectors such as oil and gas, banking and finance, telecommunications, government, human resources, project management, and beyond.

The program addresses the needs of executives, team leaders, and professionals across all organizational levels who want to master the integration of automation and control systems. Participants will gain practical insights into real-world applications, explore case studies, and apply innovative solutions that contribute directly to organizational productivity and sustainability. By the end of this course, participants will be equipped with the knowledge and tools needed to drive technological transformation and strategic decision-making within their institutions.

Course Objectives

By completing this course on Advanced Process Control & Automation, participants will be able to:

- Understand the fundamentals of advanced process control systems and automation.
- Apply cutting-edge automation tools to enhance efficiency and reduce operational risks.
- Analyze industrial case studies to evaluate best practices in process control.
- Develop strategies for integrating automation into existing organizational workflows.
- Improve decision-making by leveraging real-time data and automated monitoring systems.
- Strengthen knowledge of safety, compliance, and risk management in automation.
- Implement solutions that balance productivity, cost efficiency, and sustainability.
- Design frameworks for continuous process improvement and innovation.



Course Outlines

Day 1: Fundamentals of Advanced Process Control

- Introduction to process control concepts.
- Evolution of automation technologies in industry.
- Key components of process control systems.
- Benefits and challenges of automation adoption.
- Case studies of successful control systems implementation.
- Exercises on identifying control loops and system variables.

Day 2: Control Strategies and Methodologies

- Classical vs. advanced control strategies.
- Model Predictive Control MPC principles.
- Adaptive and robust control methods.
- Real-time monitoring and data acquisition.
- System identification and modeling.
- Practical exercises on designing control strategies.

Day 3: Automation Tools and Technologies

- Distributed Control Systems DCS and Programmable Logic Controllers PLC.
- Supervisory Control and Data Acquisition SCADA.
- Industrial Internet of Things IIoT applications.
- Human-machine interface HMI design and implementation.
- Advanced software platforms for process optimization.
- Workshop on integrating multiple automation tools.

Day 4: Safety, Compliance, and Risk Management

- Process safety systems in automated environments.
- Cybersecurity challenges in automation networks.
- Risk assessment methodologies.
- Ensuring compliance with global safety standards.
- Incident prevention and mitigation strategies.
- Simulation of safety management scenarios.



Day 5: Optimization and Future of Automation

- Advanced optimization algorithms for industry.
- Artificial Intelligence and Machine Learning in automation.
- Sustainable automation and energy efficiency.
- Roadmap to digital transformation using automation.
- Measuring ROI from advanced process control systems.
- Final project presentations and evaluations.

Why Attend this Course: Wins & Losses!

- Gain a comprehensive understanding of Advanced Process Control & Automation techniques.
- Enhance productivity and cost efficiency through innovative solutions.
- Strengthen decision-making with data-driven insights.
- Acquire practical experience through hands-on exercises and case studies.
- Improve compliance with international standards and safety regulations.
- Increase competitiveness by adopting cutting-edge automation strategies.
- Build cross-industry applicable skills highly valued in today's job market.
- Network with peers and industry experts for knowledge exchange.

Conclusion

The Advanced Process Control & Automation course offers participants a strategic pathway to mastering the future of industrial efficiency and technological transformation. By covering fundamentals, methodologies, technologies, safety, and optimization, the program ensures a holistic approach that bridges theory with practical applications.

Participants will leave with actionable knowledge, tools, and strategies to improve processes, strengthen safety, and drive innovation within their organizations. This program is not just about learning automation systems but about empowering professionals to lead change and secure long-term success in today's fast-paced business environment.

