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Process Control & Instrumentation

COURSE OVERVIEW

This course offers a foundational understanding of how chemical processes are monitored and automatically regulated. It introduces core feedback-control principles, key instrumentation functions, and methods for maintaining critical variables such as temperature, pressure, level, and flow. The training connects process design to stable plant operation, highlighting how control systems support safety, product quality, and efficiency. Participants will learn to interpret control diagrams, build basic dynamic models, and design and tune control loops equipping them with essential skills for ensuring stable and efficient chemical processes.

WHO SHOULD ATTEND?

This course is ideal for Process Engineers, Chemical Engineers, Control and Instrumentation Engineers, Operations and Production Engineers, and Plant Technicians involved in process stability and optimisation. It is also valuable for Automation Specialists, Maintenance Engineers, and early-career professionals seeking practical skills in process control, instrumentation, and dynamic plant behaviour.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Interpret Process and Instrumentation Diagrams (P&IDs) and understand the role of key components.
- Develop dynamic mathematical models (transfer functions) for simple chemical processes.
- Tune proportional-integral-derivative (PID) controllers for stable loop performance.
- Analyze the dynamic response and stability of feedback control systems.
- Design basic single-loop and multi-loop control strategies (e.g., cascade, feedforward).
- Evaluate control system performance and recommend improvements to address issues like oscillation or slow response.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- The fundamental principles of process dynamics and how to model chemical processes using transfer functions.
- How to interpret P&IDs and select appropriate instrumentation for different process variables.
- Proven methods for tuning PID controllers to achieve optimal loop performance.
- Advanced control strategies including cascade, feedforward, and ratio control systems.
- Techniques for analyzing control system stability and response characteristics.
- How to evaluate control system performance and implement corrective improvements.
- The integration of safety considerations and alarm management in control system design.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.
1. A GTC end-of-course certificate
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded