

Training Title

FUNDAMENTALS OF PROCESS CONTROL TRAINING

Training Duration

5 days

Training Venue and Dates

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| REF# IC011 | Fundamentals of Process Control Training | 5 | 22-26 September 2025 | \$5,500 | Dubai, UAE |
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In any of the 4 or 5 star hotels. The exact venue will be intimated once finalized.

Training Fees

\$5,500 per participant including Very useful Materials/ Handouts, Tea/Coffee, Breakfast, Snacks, Refreshments, Lunch.

Training Certificate

Define Management Consultants & Training Certificate of course completion will be issued to all attendees.

INTRODUCTION

This training provides a comprehensive overview of process control principles, aimed at improving the operation, efficiency, and safety of industrial processes. Key topics include:

- **Process Control Basics:** Understanding open-loop and closed-loop systems, feedback, and feedforward control.
- **Control Systems:** Focus on PID control, tuning, and stability.
- **Instrumentation:** Measurement devices, sensors, actuators, and controllers.
- **Control Strategies:** Advanced techniques like cascade control and Model Predictive Control.
- **System Implementation:** Use of DCS, PLCs, and SCADA.
- **Safety:** Ensuring safe and reliable control system operations.

TRAINING OBJECTIVES

- **Upon successful completion of this course, the delegates will be able to:**
- **Explain the theory of process control**
- **Identify all industrial process applications, control of process variables**
- **Act safe and efficiently operate the process.**
- **Recognize the most common variables controlled are pressure, level, temperature, and flow.**

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- Define many different methods used to control these processes, this monitoring and control is generically called process control. Level, pressure, temperature, and flow are all controlled in a similar fashion.
- Discuss the difference between direct- and reverse-acting controllers.
- Define common terms and symbols used in process control.
- Describe the function of self-regulated and non-self-regulated processes."
- Introduction to industrial instrumentation
- Refresh knowledge of basic electricity, electronics and physics

Sensors and their use in the measurement of a wide variety of physical variables – such as level, pressure, flow, temperature, humidity, and mechanical measurements—are discussed in The use of regulators and actuators for controlling pressure, flow, and the control of the input variables to a process are discussed in Documentation as applied to instrumentation and control is introduced, together with standard symbols recommended by the Instrument Society of America (ISA) for use in instrumentation control diagrams.

WHO SHOULD ATTEND

This course is tailored for:

- Electrical Operators, Technicians and Engineers.
- Chemical Operators, technicians and Engineers
- Managers, engineers, and technicians working in the field of instrumentation and process control.

It is anticipated that the prospective participant will have a basic understanding of mathematics, electricity, and physics.

TRAINING METHODOLOGY

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions

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COURSE OUTLINE

Chapter 1. Introduction and Review

- 1.1 Introduction
- 1.2 Process Control
- 1.3 Definitions of the Elements in a Control Loop
- 1.4 Process Facility Considerations
- 1.5 Units and Standards
- 1.6 Instrument Parameters

Chapter 2. Basic Electrical Components

- 2.1 Introduction
- 2.2 Resistance
- 2.3 Capacitance
- 2.4 Inductance

Chapter 3. Documentation and Symbols

- 3.1 Introduction
- 3.2 System Documentation
- 3.3 Pipe and Identification Diagrams
- 3.4 Functional Symbols
- 3.5 P and ID Drawings

Chapter 4. Process Control

- 4.1 Introduction
- 4.2 Basic Terms
- 4.3 Control Modes
- 4.4 Implementation of Control Loops
- 4.5 Digital Controllers

Chapter 5. Pressure

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- 5.1 Introduction**
- 5.2 Basic Terms**
- 5.3 Pressure Measurement**
- 5.4 Pressure Formulas**
- 5.5 Measuring Instruments**
- 5.6 Application Considerations**

Chapter 6. Level

- 6.1 Introduction**
- 6.2 Level Formulas**
- 6.3 Level Sensing Devices**
- 6.4 Application Considerations**

Chapter 7. Flow

- 7.1 Introduction**
- 7.2 Basic Terms**
- 7.3 Flow Formulas**
- 7.4 Flow Measurement Instruments**
- 7.5 Application Considerations**

Chapter 8. Temperature and Heat

- 8.1 Introduction**
- 8.2 Basic Terms**
- 8.3 Temperature and Heat Formulas**
- 8.4 Temperature Measuring Devices**
- 8.5 Application Considerations**

Chapter 9. Humidity, Density, Viscosity, and pH

- 9.1 Introduction**
- 9.2 Humidity**

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9.3 Density and Specific Gravity

9.4 Viscosity

9.5 pH Measurements

Chapter 10. Actuators and Control

10.1 Introduction

10.2 Pressure Controllers

10.3 Flow Control Actuators

10.4 Power Control

10.5 Motors

10.6 Application Considerations



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