

**Training Title**

**FUNDAMENTALS OF PROCESS CONTROL**

**Training Duration**

5 days

**Training Venue & Dates**

Ref No: IC011	Fundamentals of Process Control	5	22-26 November 2021	\$6,500	London, UK
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In any of the 5 star hotels. The exact venue will be informed later.

**Training Fees**

- 6,500 US\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch.

**Training Certificate**

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

**TRAINING DESCRIPTION:**

This course should adequately pre-prepare a prospective technician or serve as an introduction for a prospective engineer wishing to get a solid basic understanding of instrumentation and process control.

Basic Control Concepts, the basic concepts encountered in automatic process control. Some of the basic terminology is also presented

Fundamental Process Control focuses on the fundamental nature of process control, which includes an extensive discussion on control methodologies

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Instrumentation and process control involve a wide range of technologies and sciences, and they are used in an unprecedented number of applications. Examples range from the control of heating, cooling, and hot water systems in homes and offices to chemical and automotive instrumentation and process control.

This course is designed to cover all aspects of industrial instrumentation, such as sensing a wide range of variables, the transmission and recording of the sensed signal, controllers for signal evaluation, and the control of the manufacturing process for a quality and uniform product.

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### TRAINING OBJECTIVES:

After completion that course, you will be able to :

- Understand the theory of process control
- Know almost all industrial process applications, control of process variables
- Act safe and efficient operation of the process.
- Be familiar with the most common variables controlled are pressure, level, temperature, and flow.
- 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 the participant's 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:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions, and motivate everybody find the right answers. 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.

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Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

## COURSE DAILY 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

- Chapter Objectives
- 2.1 Introduction
- 2.2 Resistance
- 2.3 Capacitance
- 2.4 Inductance
- Summary

### 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 [www.definettraining.com](http://www.definettraining.com)
- 4.2 Basic Terms
- 4.3 Control Modes
- 4.4 Implementation of Control Loops
- 4.5 Digital Controllers

### Chapter 5. Pressure

- 5.1 Introduction
- 5.2 Basic Terms
- 5.3 Pressure Measurement
- 5.4 Pressure Formulas

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- 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
- 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

### NOTE:

Pre & Post Tests will be conducted

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**Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.**

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