

**Training Title**

**FAMILIARIZATION OF ENGINEERING DRAWINGS AND SYMBOLS**

**Training Duration**

5 days

**Training Venue and Dates**

REF	Familiarization of Engineering Drawings & Symbols	5	03 - 07 June 2024	\$5,500	Dubai, UAE
ME095					

Will be held in any of the 5-star hotels. The exact venue will be informed upon finalizing.

**Training Fees**

\$5,500 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 OVERVIEWS**

**TRAINING INTRODUCTION**

These 5-day training workshop concentrates on teaching participants how a thorough knowledge and understanding of how the plant works will greatly enhance their ability to maintain & enhance the operation of the plant. Using the documentation provided, the workshop will teach delegates how to diagnose problems and suggest solutions on a plant that they have never seen. Too often plant modifications that are instituted fix the symptom instead of the underlying problem, this workshop teaches delegates why it is so important to keep looking at the plant as a whole in order to solve the problem. Delegates will learn how to create documentation using simple standards and specifications as well as custom design a solution for their own plant.

This workshop will create the awareness that a technical person's greatest resource is not his toolbox, but rather his drawing office and plant documentation. As built plant documentation is at best 90% accurate on handover, from this point it degrades rapidly to 50 to 75% accuracy in two years, where after it continues a more gradual decline. This decline can be attributed to a number of factors. This workshop will address these problems and show delegates how to overcome them. Disciplines covered include Process, Electrical, and Instrumentation and numerous practical sessions allow the application of knowledge gained to reinforce the principles.

**TRAINING OBJECTIVES:**

On successful completion of the Practical Industrial Flow Measurement course you will be able to:

This workshop to provide engineers and technicians with the basic theoretical and practical understanding of:

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- Define and use Process Flow diagrams, P&ID's, Instrument lists, Specification forms, Logic diagrams, Location plans, Installation details and Loop diagrams.
- Understand process control devices and the symbols used to define them
- Define and specify vendor criteria for the production of plant documentation to the order of the company.
- Be familiar with the use of specifications to control the design scope of the project
- Understand the purpose of a HAZOP in the development of a plant
- Be in a position to implement and manage plant modifications from conception to completion.
- Be aware of the ISA standard available to assist you in developing and understanding instrument and control documents
- Better understand the scope, responsibility and interaction of each discipline in the completion of a project or plant modification

### WHO SHOULD ATTEND?

- Instrumentation and Control Engineers and Technicians
- Electrical Engineers and Electricians
- Project Engineers
- Telecommunications Engineers and Technicians
- Process Control Engineers
- Consulting Engineers
- Maintenance Engineers and Technicians
- Production Controllers
- Drawing Office Staff

### 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 to 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.

Very useful Course Materials will be given.

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

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### DAILY OUTLINE

The following topics will be covered in 5 days

#### Day 1

#### **INTRODUCTION TO PLANT DESIGN, OPERATIONS & MAINTENANCE DOCUMENTATION**

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- Introduction
- Outline of workshop
- Standards - a history & overview
- Drawing Office / Company standards

#### **BASIC CIRCUITS / COMPONENTS**

- Power supply & protection
- Relays & contacts
- Switches
- Ladder logic
- Fail safe design

#### **Day 2**

#### **PROCESS DIAGRAMS**

- Process Block Diagram
- Process Flow Diagram
- Process Description including scheduling
- Utility Flow Diagram and developing from flow diagrams
- Piping & Instrumentation Diagrams
- P&ID Standards, definition and use
- P&ID Symbols
- P&ID layout, design and construction
- Cooling water plant study
- Hazardous Area considerations

#### **PRACTICAL SESSION**

#### **Day 3**

#### **INSTRUMENTATION DOCUMENTATION**

- Overview of Instrument Schedules, Drawings & Diagrams
- Purpose and target audience of each document
- Defining Loop Masters - Loop Layout
- Reading Instrumentation documentation
- Wire numbering
- Logic Diagrams - definition, use and interpretation
- Instrument specifications

#### **PRACTICAL SESSION**

#### **Day 4**

#### **ELECTRICAL DOCUMENTATION**

- Load lists
- Single line diagrams
- Schematic & Control diagrams

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- Cable Schedules & routing drawings
- Point to Point schedules
- Lighting Layouts
- Installation details
- Electrical Specifications

**PRACTICAL SESSION**

**VENDOR PACKAGES**

- Panel Wiring diagram
- Combined E & I disciplines
- Panel Schematics
- Panel Layout
- Document supply specification
- Maintenance specification

**PRACTICAL SESSION**

**Day 5**

**CHANGE CONTROL**

- Request for change
- HAZOP, RCM Analysis, Configuration management

**PRACTICAL SESSION**

**SUMMARY, OPEN FORUM AND CLOSING**

**NOTE:**

**Pre & Post Tests will be conducted**

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

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