



ENGINEERING DESIGN CODES AND STANDARDS AND DATA SHEETS REVIEW OF STATIC/ROTATING EQUIPMENT AND INSTRUMENT



COURSE OVERVIEW

This comprehensive 5-day training course provides a deep understanding of engineering design codes, standards, and data sheet review for static and rotating equipment and instrumentation in the oil and gas and process industries. Participants will explore the role of international standards (such as ASME, API, IEC, ISA) in equipment design, selection, and documentation, with a focus on safe, reliable, and efficient plant operation.

DATES, VENUES AND FEES



02 – 06 November 2025 – Doha

(5 Days)

Fees

US\$ 4500

Note: Fee is per participant.

Groups from the same company can enjoy a **discounted** price.

WHO SHOULD ATTEND?

This course is appropriate for a wide range of professionals but not limited to:

- Project and Design Engineers
- Process Engineers
- Production Supervisors
- Instrument Engineers and Supervisors
- Mechanical Engineers and Supervisors
- Utility Engineers and Supervisors
- Maintenance Engineers and Supervisors

CONTACT US NOW

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ACCREDITATION



This training course is certified by CPD.

The CPD Certification Service is the leading independent CPD accreditation institution operating across industry sectors to complement the Continuing Professional Development policies of professional institutes and academic bodies. The CPD Certification Service provides support, advice, and recognised independent CPD accreditation compatible with global CPD principles. CPD is the term used to describe the learning activities professionals engage in to develop and enhance their abilities and keep skills and knowledge up to date. CPD Units are only awarded to programmes after each programme is scrutinised to ensure integrity and quality according to CPD standards and benchmarks.

COURSE CERTIFICATE

MSTC certificate will be issued to all attendees completing a minimum of 80% of the total tuition hours of the course.

CPD internationally recognized certificate will be issued for all participants who will meet the course requirements. CPD certificates will be issued within a month of the successful completion of the course.

TRAINING METHODOLOGY

- Expert instructor lecture, input using numerous visual aids
- Supportive comprehensive course manual enabling practical application and reinforcement
- Participant discussion and involvement regarding their specific projects and challenges
- Real-world case studies and best practices

LEARNING OBJECTIVES

By the end of this course, participants will have sufficient knowledge on:

- Provide an overview of project phases and the applicable codes, standards, and practices that guide detailed engineering
- Understand how process intent is translated into engineering documents, with a focus on P&IDs, Safety Integrity Levels (SIL), and related documentation
- Gain a deep understanding of process rotating equipment selection, data sheets, control requirements, and protection schemes
- Understand the function and design of static process equipment and how instrumentation is used for control and monitoring
- Review calculation, selection, and specification of instruments, orifice sizing, and valves based on process requirements

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COURSE OUTLINE

DAY 1

Project Engineering and Relevant Codes & Standards

- Pre test
- Introduction to Project Lifecycle (FEED, EPC, Commissioning)
- Role of Detailed Engineering in Project Execution
- International Codes and Standards:
 - ASME, API, ANSI, IEC, ISO, ISA, NACE
 - Project-Specific Standards and Client Specifications
- Engineering Deliverables and Document Control
- Introduction to Data Sheets and Typical Engineering Documents
- Case study

DAY 2

P&IDs, SIL, and Detailed Engineering Document Development

- Process Flow Diagrams (PFDs) vs Piping and Instrumentation Diagrams (P&IDs)
- Key Symbols and Notation in P&IDs
- Instrument Index, IO List, Cause & Effect Matrices
- Safety Instrumented Systems (SIS) and SIL (IEC 61511/ISA 84)
- SIL Determination and Verification
- Control Narrative and Functional Design Specification (FDS)
- Case study

DAY 3

Rotating Equipment – Function, Design, Control and Safeguarding

- Overview of Rotating Equipment Types (Pumps, Compressors, Turbines)
- Key Design Parameters and API Standards (e.g., API 610, API 617)
- Equipment Data Sheets: Mechanical and Process Fields
- Start-up/Shutdown Logic, Instrumentation, and Control Loops
- Common Protection Strategies (Vibration, Seal System, Lube Oil)
- Reciprocating Equipment vs Centrifugal – design differences
- Case study

DAY 4

Static Equipment – Design Parameters, Control & Process Vessels

- Introduction to Static Equipment: Vessels, Heat Exchangers, Tanks
- Applicable Design Codes (ASME Sec VIII, TEMA, API 650)
- Design Parameters: Pressure, Temperature, MAWP, MDMT, Corrosion Allowance
- Typical Instrumentation on Static Equipment (Level, Pressure, Temp)
- Pressure Relief Devices and Overpressure Protection
- Control Philosophies for Process Vessels and Heat Exchangers
- Case study

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COURSE OUTLINE

DAY 5

Instrumentation Sizing, Installation & Control Valves Review

- Orifice Plate Calculations and Installation Guidelines (ISO 5167)
- Instrument Impulse Line Requirements
- Control Valve Sizing and Characteristics (Equal %, Linear)
- Actuator and Positioner Specifications
- Process Isolating Valves: Types, Selection Criteria, Leakage Class
- Data Sheet Review and Instrument Installation Best Practices
- Open Q&A session
- Post test
- Certificates Ceremony

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