

COMOS P&ID Professional Training Program

Target Audience

This course is intended for:

- Process Engineers
- Piping Engineers
- Instrumentation Engineers
- Plant Design Engineers
- Mechanical Engineers
- EPC Engineering Professionals
- CAD Administrators and COMOS Administrators
- Engineering Consultants and Project Engineers
- Engineering Designers and Drafting Professionals involved in plant engineering projects

Course Objectives

Upon completion of this course, participants will be able to:

1. Understand the fundamentals of COMOS and intelligent P&ID engineering workflows.
2. Create, modify, and manage P&ID diagrams using COMOS P&ID tools and libraries.
3. Apply industry standards, specifications, and engineering best practices in P&ID development.
4. Manage engineering objects, equipment, piping, instrumentation, and associated data efficiently.
5. Generate engineering reports, templates, and project documentation from COMOS.
6. Integrate COMOS P&ID data with other engineering disciplines and systems.
7. Validate, troubleshoot, and optimize COMOS P&ID projects for improved engineering productivity.

Learning Outcomes

After successfully completing this course, participants will be able to:

- Navigate and configure the COMOS P&ID environment confidently.
- Create intelligent P&ID diagrams using standard symbols and engineering specifications.
- Manage equipment, pipelines, valves, instruments, and process data effectively.

- Develop reusable templates and engineering standards within COMOS.
- Generate and customize reports, datasheets, and engineering documentation.
- Perform data validation, consistency checks, and troubleshooting.
- Collaborate across multidisciplinary engineering teams using COMOS.
- Execute a complete P&ID project from creation through documentation and reporting.

Course Outline

The course comprises **40**-hours of theory and labs and is divided into **12** different Modules. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Table of Contents

Module 1: Introduction to COMOS P&ID and Intelligent Engineering

- Overview of Siemens COMOS Platform
- Digital Plant Engineering Concepts
- Introduction to Intelligent P&ID Systems
- COMOS Architecture and Modules
- Benefits of COMOS P&ID in Plant Design
- P&ID Lifecycle within Engineering Projects
- Understanding Engineering Data Relationships

Module 2: COMOS Environment Setup and User Interface

- COMOS Project Structure
- Database Concepts
- User Roles and Permissions
- COMOS Explorer
- Workspaces and Views
- Object Navigator
- Menu Functions and Toolbars
- Project Configuration Basics

Module 3: P&ID Fundamentals and Engineering Standards

- P&ID Principles and Objectives
- ISA and ISO Standards Overview
- Tagging Philosophy
- Engineering Documentation Standards
- P&ID Symbolology Standards
- Process Flow vs P&ID Drawings
- Design Best Practices

Module 4: Working with COMOS Symbols and Libraries

- Symbol Libraries Overview
- Equipment Symbols
- Instrument Symbols
- Valve and Fitting Symbols
- Line Types and Connectors
- Symbol Attributes
- Custom Symbol Creation
- Symbol Standardization

Module 5: Creating Intelligent P&ID Diagrams

- Creating New P&ID Drawings
- Inserting Equipment Objects
- Creating Pipelines and Connections
- Instrument Placement
- Annotations and Text Management
- Linking Objects
- Drawing Navigation Techniques
- Intelligent Object Relationships

Module 6: Equipment, Piping, and Instrument Data Management

- Equipment Object Management
- Pipeline Management
- Instrument Data Handling
- Valve Specifications
- Attribute Management
- Data Relationships
- Engineering Object Hierarchy
- Data Consistency Methods

Module 7: Specifications and Engineering Rules

- Piping Specifications
- Equipment Specifications
- Instrument Specifications
- Engineering Rule Sets
- Data Validation Rules
- Specification Management

Module 8: Templates, Reusability, and Standardization

- COMOS Template Concepts
- Creating Project Templates
- Standard P&ID Templates
- Reusable Engineering Components
- Template Libraries
- Corporate Standards Implementation
- Template Maintenance

Module 9: Reporting and Documentation

- COMOS Reporting Framework
- Report Types
- Equipment Lists

- Instrument Index Reports
- Line Lists
- Valve Lists
- Report Customization
- Exporting Reports

Module 10: Data Exchange and System Integration

- Importing Engineering Data
- Exporting Project Information
- Integration with Engineering Systems
- Data Synchronization
- Interdisciplinary Collaboration
- Engineering Data Exchange Formats

Module 11: Validation, Quality Control, and Standards Compliance

- P&ID Validation Methods
- Data Integrity Checks
- Consistency Verification
- Rule-Based Validation
- Quality Assurance Procedures
- Industry Compliance Checks

Module 12: Troubleshooting, Project Workshop, and Best Practices

- Common COMOS P&ID Issues
- Database Troubleshooting
- Drawing Troubleshooting
- Performance Optimization
- Security and Access Issues
- Project Maintenance Strategies