Autodesk AutoCAD Plant 3D For Designer

Target Audience

This course is designed for designers, drafters, and engineers who are involved in the creation and modification of plant designs. It is ideal for professionals working in industries such as chemical, oil and gas, power generation, and manufacturing who need to use AutoCAD Plant 3D to design and manage complex plant systems.

Course Objective

The objective of this course is to provide participants with the essential skills to effectively use AutoCAD Plant 3D for designing and documenting plant systems. It will cover the creation of 3D plant models, piping systems, equipment layouts, and the management of projects using AutoCAD Plant 3D tools.

Course Outcome

- Understand the fundamentals of AutoCAD Plant 3D and its interface.
- Create and modify 3D models of plant systems, including piping, equipment, and structural elements.
- Develop detailed design documentation, including isometrics and BOMs (Bills of Materials).
- Manage plant design projects efficiently using project setup and data management tools within AutoCAD Plant 3D.

Course Outline: The course comprises **40-hours** of theory and labs and is divided into **10** different chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Chapter 1. Introduction to AutoCAD Plant 3D

Introduction to AutoCAD Plant 3D 2024

Starting AutoCAD Plant 3D

- Start Tab

Working on a Project

AutoCAD Plant 3D User Interface

- Drawing Area
- Command Window
- PROJECT MANAGER
- DATA MANAGER
- Navigation Bar
- ViewCube
- In-canvas Viewport Controls
- Status Bar
- PROPERTIES Palette

Different Workspaces in AutoCAD Plant 3D

Grips

Invoking Commands in AutoCAD Plant 3D

- Invoking Commands Using Command Prompt
- Invoking Commands Using Ribbon
- TOOL PALETTES
- Application Menu
- Menu Bar
- Shortcut Menu

AutoCAD Plant 3D Dialog Boxes

Creating Backup Files

- Converting Auto-saved and Backup Files into AutoCAD Format
- Using the Drawing Recovery Manager to Recover Files

Closing a Drawing

Opening a Project Drawing

Opening a Drawing that is not in the Project

- Opening an Existing Drawing Using the Select File Dialog Box

Quitting AutoCAD Plant 3D

AutoCAD Plant 3D Help

Autodesk App Store

Chapter 2. Creating Projects and P&IDs

Introduction

PROJECT MANAGER

Creating a New Project in AutoCAD Plant 3D

- Creating a New Drawing
- Grouping Project Files

Designing a P&ID

- Adding Equipment to a P&ID
- Adding Pipe Lines
- Assigning Tags to a Line
- Assigning Custom Service Category to a Line
- Creating and Adding Custom Pipe Line Segments to
- TOOL PALETTES
- Adding Custom Tags to Pipe Line Segments
- Adding Valves
- Adding Instruments and Instrumentation Lines
- Adding Fittings
- Adding the Off Page Connectors
- Connecting the Off Page Connectors

Validating the Drawing

- Checking for Errors

Editing the Drawing

- Moving an Equipment
- Moving a Valve
- Moving a Line
- Editing a Line
- Grouping Lines
- Editing a P&ID Symbol
- Substituting Components
- Converting AutoCAD Components into P&ID Symbols
- Adding Intelligence to the Custom P&ID Symbols

Chapter 3. Creating Structures

Introduction

Creating a Grid

- Editing Grids

Setting the Representation of the Structural Member

Adding Members

Creating Stairs

- Editing Stairs

Creating Railings

Creating Ladders

- Ladder Tab
- Cage Tab

Creating a Plate/Grate

Creating Footings

Editing the Structural Members

- Changing the Length of a Member
- Restoring the Member to its Original Length
- Cutting Member at Intersections
- Creating Miter Joints
- Trimming/Extending a member
- Exploding a Structure

Visibility Options

- Hiding and Displaying Components

Exchanging Data with other Applications

Chapter 4. Creating Equipment

Introduction

Creating Equipment

Placing Equipment in a Drawing

- Adding a Vessel
- Adding a Heat Exchanger
- Adding a Pump
- Adding a Heater

Creating a Customized Equipment

Modifying Equipment
Converting Solid Models into Equipment
Converting Inventor Models into Equipment
Attaching Objects to an Equipment
Detaching Objects from an Equipment
Adding Nozzles to a Customized Equipment
Adding Nozzles to a Converted Equipment
Modifying Nozzles

Chapter 5. Editing Specifications and Catalogs

Introduction
Getting Started with AutoCAD Plant 3D Spec Editor
Working with Spec Files

- Creating a New Spec File from an Existing Spec
- Adding Parts to the Spec Sheet
- Editing the Parts Added to a Spec
- Setting the Part Use Priority
- Adding Notes to a Group
- Editing the Long Description Styles
- Assigning a Long Description Style to Multiple Specs
- Assigning Operators (Actuators) to Valves

Working with the Catalog Editor
Creating a New Catalog from an Existing Catalog
Adding a New Part to a Catalog

- Creating a New Component Using Parametric Graphics
- Creating a New Component Using Block Based Graphics

Modifying the Branch Table

- Creating Branch Table Legends
- Assigning Legends to a Branch Table

Chapter 6. Routing Pipes

Introduction
Selecting a Spec
Working with the Spec Viewer
Routing a Pipe

- Routing a Pipe with a New Line Number
- Setting the Route Line

- Routing a Pipe from a Line
- Routing a Pipe using a P&ID
- Routing a Pipe from an Equipment
- Working with the Compass
- Connecting two Open Ports of Pipes
- Changing the Pipe Size while Routing
- Changing the Orientation Plane while Routing a Pipe
- Creating a Cutback Elbow
- Creating a Roll Elbow
- Creating Bends
- Changing the Elevation while Routing a Pipe
- Routing Pipe at an Offset
- Routing a Pipe at a Slope

Creating Branches

- Creating a Tee Branch
- Creating an O-let Branch
- Creating a Stub-In Branch
- Creating a Stub-In Branch at an Offset from the Center of the Header Pipe
- Creating a Branch from an Elbow
- Creating a Stub-In Branch at a Precise Location
- Adding a Reinforced Pad to a Stub-In Branch

Creating a Weld Connection

Creating Autodesk Connection Point

- Editing an Autodesk Connection Point
- Routing a Pipe from an Autodesk Connection Point

Chapter 7. Adding Valves, Fittings, and Pipe Supports

Introduction

Adding Valves and Fittings

- Adding Valves and Fittings to a Pipe using the Spec Sheet
- Adding Valves and Fittings Using a P&ID
- Placing Valves and Fittings while Routing a Pipe
- Placing Custom Parts
- Mapping a P&ID Object to a Plant 3D Object

Adding Pipe Supports

- Adding a Dummy Leg
- Adding a Hanger and Connecting it to a Structural Member
- Modifying the Pipe Supports

- Copying and Moving a Pipe Support
- Connecting Two Pipe Supports
- Converting Solids into Pipe Supports
- Attaching Objects to a Pipe Support
- Detaching Objects from a Support

Insulating a Pipe
Modifying the Pipe Components Using Grips

- Substituting a Pipe Component
- Rotating a Pipe Component
- Flipping a Pipe Component
- Flipping a Component Inline with the Pipe
- Changing the Elevation of the Pipe
- Changing the Valve Operator

Validating a 3D Model

Chapter 8. Creating Isometric Drawings

Introduction
Isometric Drawing Types
Creating a Quick Isometric Drawing
Creating a Production Isometric Drawing

- Viewing Isometric Results

Placing Iso Messages and Annotations
Exporting a Pipe Component File

- Creating an Iso from a Pipe Component File

Locking a Line Number
Configuring Isometric Drawing Settings

- Configuring Iso Style Settings
- Configuring Annotation Settings
- Configuring Dimensional Settings
- Configuring Themes
- Configuring Sloped and Offset Piping Settings
- Setting the Title Block and Display Properties

Chapter 9. Creating Orthographic Drawings

Introduction

Creating Orthographic Drawings

- Generating the First View
- Creating the Adjacent View
- Adding Annotations to the Drawing
- Adding Dimensions to the Drawing
- Locating a Component in the 3D Model
- Editing a Drawing View
- Updating a View
- Adding Gaps to Pipes
- Generating Bill of Material
- Displaying Pipes as Single Lines
- Creating BOM Annotation

Chapter 10. Managing Data and Creating Reports

Introduction

DATA MANAGER

Viewing data in the DATA MANAGER

Modifying the Display of Data

- Displaying the Data by Object Type and Area

Zooming to Plant Objects

- Locating an Object in the Drawing Area
- Scrolling through the Data in the DATA MANAGER

Editing Data in the DATA MANAGER

Placing Annotations in a P&ID Using the DATA MANAGER

Filtering the Information in the Data Table

- Viewing only the Selected Record in the Data Table
- Viewing all the records in the Data Table except the Selected One
- Viewing the Data of the Objects Selected in the Drawing Area

Exporting Data from the DATA MANAGER

Importing Data to the DATA MANAGER

- Accepting or Rejecting Changes in the Imported Data

Viewing Reports in the DATA MANAGER

- Exporting the Project Reports

- Importing the Project Reports

Working with the Report Creator 10-10
Generating Reports using the AutoCAD Plant Report Creator