AutoCAD Plant 3D is specification-driven software for creating 3D models of process plant components. You can route pipe, add equipment and other components, and include support structures.

Within AutoCAD Plant 3D, underlying data is directly exchanged between the 3D model, P&IDs, isometrics, and orthographics to ensure that information is consistent and up-to-date.

### What is AutoCAD Plant 3D?

AutoCAD Plant 3D is a software tool for creating 3D models of process plant components. It allows you to route pipes, add equipment and other components, and include support structures.

### Concepts & Terms

**Project Manager**
- Central hub for all drawings, specs, and data; you always work within a project

**Data Manager**
- Table containing all project or drawing data. You can manipulate this data directly

**Part**
- Piping Component

**Placeholder**
- A component that is temporarily used in the model until the part is added to the spec

**Custom Part**
- A component that is not in a piping spec

**Project.xml**
- The project file

**.dwg**
- A Plant 3D model or P&ID drawing

**.dcf**
- Data cache files; e.g., piping.dcf

**.pspx**
- Spec file (pair)

**.pcat**
- Catalog file

### Navigation

**Get around your model**
- Select a node to see a list of useful commands
- Create and organize folders to your project requirements
- Work with referenced drawings, copy or link them here

### The Drawing Window

**Understand the User Interface**

**Ribbon tabs**
- Commands for major tasks

**Dynamic Tool Palette**
- Specify and create a tool palette

**Spec Viewer**
- Insert a spec and create a tool palette

**View Cube**
- Change display workspace

**Create Ortho**
- Create Orthographic Drawings

**Dynamic Tool Palette**
- Ribbon tab
- Grid tab
- Settings
- Member info
- Select

**Project Manager**
- New drawing

### Getting Started

**A Quick Tutorial**

1. **Open AutoCAD Plant 3D**
2. **Create a project drawing**
- Project Manager > Plant 3D Drawings > New Drawing
- Enter info > OK
3. **Create Structure**
- Ribbon > Structure tab:
  - Grid > Create
  - Settings > member info > Select
  - Member > place and align with grid
  - Repeat for stairs, ladders, etc.
4. **Create Equipment**
- Ribbon > Home tab > Create Equipment
- Select component, specify shape and nozzle info
- Create and place in model
5. **Route Piping**
- Ribbon > Home tab > drop-down lists:
  - Line Number
  - Spec
  - Ribbon > Route Pipe
- Click points in model; press ENTER to finish
6. **Insert a Valve or Fitting**
- Tool Palette or ribbon > Home tab > Spec Viewer
- Select valve > Insert in Model
- Place in model
7. **Create Isometric Drawings**
- Ribbon > Isos tab > Create Iso > Production Iso
- Specify project line numbers, Iso type, and output settings
- Create Iso
8. **Create Orthographic Drawings**
- Ribbon > Home tab > Create Ortho View
- Select ortho drawing > OK
- Select a view, adjust the scale and view extents > OK
- Place view on Ortho drawing

### Want More Information?

**AutoCAD Plant Exchange:** autodesk.com/plantexchange

**autodesk.com/autocadplant3d-discussion**

**Online Help:** autodesk.com/autocadplant3d-help

**Autodesk Consulting:** autodesk.com/consulting
**Routing Pipe**

**A general overview**

**Before Routing Pipe**

These panels contain the pipe-routing tools: Part Insertion, Compass, Elevation & Routing, and Slope.

**Line Numbers**
- Pipelines are organized by line number
- Line numbers are required when generating ISOs
- You can set up a separate layer for each line number, and piping components are automatically placed on these layers

**Select Specs and Sizes Before Routing**

Before routing pipe, you choose its size and spec. The spec controls:
- Connection types (FL, BW, SW, THD, and so on)
- Flange ratings, facings (150# RF, 300#, PN10, and so on)
- Default branch types (tees, stub ins, SOL, WOL, and so on)
- Valve types allowed (Gate, Globe, Check, and so on)

On the ribbon, click Route Pipe to start routing in the model.

**Use the Compass**

If you use the Continuation grip, the compass starts by displaying the elbows available in the current UCS plane. It uses the elbows from the current pipe spec. If you have

45-degree elbows in your spec, the compass displays them. Otherwise, the compass displays tick marks at 90 degrees. If you want to route straight ahead, you can pick a point or enter a distance.

**Quick Tips - Using Snaps While Routing**
- Use object snap when connecting pipe
- Use Node object snap to connect to open nozzle or piping ports
- Use the From object snap to place a valve a precise distance from a fitting

**Quick Tips - Routing Shortcut Keys**
- To remove a selected flanged valve without removing connecting flanges, press CTRL+Del
- To change the routing plane, press and hold CTRL and right-click in the drawing area
- To substitute a bolt set, hold CTRL and select the red circle of a flanged connector
- To orbit the 3D model, press and hold SHIFT+ mouse wheel
- To change the compass plane while routing, press CTRL+ right click

**Routing Pipe**

**A general overview continued**

**Routing Assistant**

When you are finishing a pipe route, it’s often difficult to directly line up the final connection. A routing assistant is available. You can connect to an existing component, and then right-click and choose from multiple possible routes.

**Quick Tips - Pipe & Component Grips**
- Continuation: Starts or continues routing pipe
- Flip: Flips a component in opposite direction
- Substitution: Displays a list of components that can be substituted for the original
- Elevation: Moves pipe up/down to set elevation
- Move/Stretch: Moves a component; stretches an existing pipe
- Rotate: Displays the compass so you can rotate the component
- Add Nozzle: Adds a nozzle on a piece of equipment
- Edit Nozzle: Edits a nozzle on a piece of equipment

**Quick Tips - Routing Right-Click Menus**
- To reconnect piping, use Connect Component to Adjacent from the pipe’s shortcut menu
- When assigning a line number to piping, first use Append to Selection > Connected Parts > All Connected Parts from the pipe’s shortcut menu

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**Edit Data in the Data Manager**

Make changes to your model data

You can enter, view, edit, and report on information for components and lines in a drawing. The Data Manager is ideal for viewing and editing multiple rows of data at one time. You can also export items to Microsoft Excel® and modify data there.

**Modeling Equipment**

**A general overview**

With equipment, you have 3 choices:
- Use pre-defined equipment types, such as pumps
- Build equipment using provided shapes
- Build custom equipment from AutoCAD solids or surfaces

Using the Create Equipment dialog, you can set up your equipment by class (for example: Pump > Centrifugal Pump).

Once equipment has been placed, you can add or change nozzles by clicking any Add Nozzle grip.