

Chapter 1

Introduction to AutoCAD Plant 3D

Learning Objectives

After completing this chapter, you will be able to:

- *Start AutoCAD Plant 3D*
- *Understand the components of the AutoCAD Plant 3D interface*
- *Invoke AutoCAD Plant 3D commands from the keyboard, menus, shortcut menus, Tool Palettes, and Ribbon*
- *Learn about the components of dialog boxes in AutoCAD Plant 3D*

INTRODUCTION

AutoCAD Plant 3D is a purpose-built plant design software. This software is used to design and document process plants. AutoCAD Plant 3D contains various predefined shapes of plant components. These predefined shapes, which are solid models, carry the intelligence of AutoCAD Plant 3D drawings. While installing AutoCAD Plant 3D, the standard specifications and part catalogs related to piping are also installed.

AutoCAD Plant 3D comes along with AutoCAD P&ID which is used to create piping and instrumentation drawings. AutoCAD P&ID contains various piping and instrumentation symbols. These symbols which are mostly the AutoCAD blocks with attributes carry the intelligence of AutoCAD P&ID drawings.

STARTING AutoCAD Plant 3D

When you install AutoCAD Plant 3D 2014, its icon is created and displayed on the desktop. You can launch the application by double-clicking on that icon. You can also start AutoCAD Plant 3D by using the Taskbar. To do so, choose **Start > All Programs > Autodesk > AutoCAD Plant 3D 2014 > AutoCAD Plant 3D 2014-English** from the Taskbar, refer to Figure 1-1; the interface screen of AutoCAD Plant 3D along with the **AutoCAD Plant 3D** window will be displayed, as shown in Figure 1-2

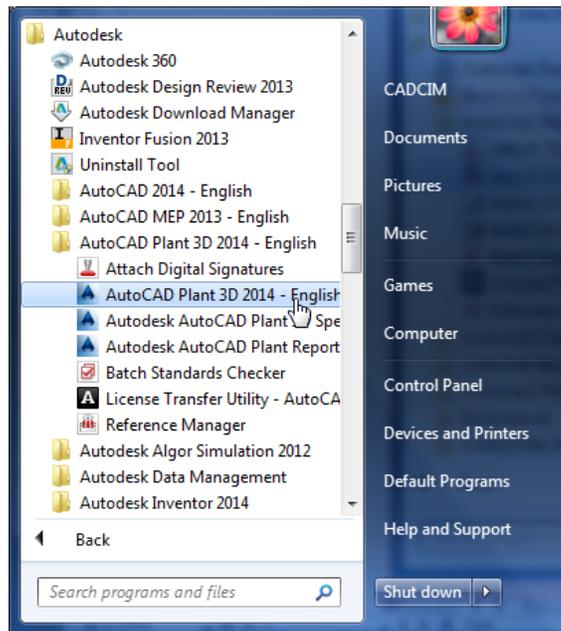


Figure 1-1 Starting AutoCAD Plant 3D 2014 using the Taskbar

In the **AutoCAD Plant 3D** window, various links are available that provide information about the recently opened files, projects, and other resources such as AutoCAD Plant Exchange.

The information available in this window is in the form of text and image. You can close this window by clicking on the **Close** button located on the top right corner.

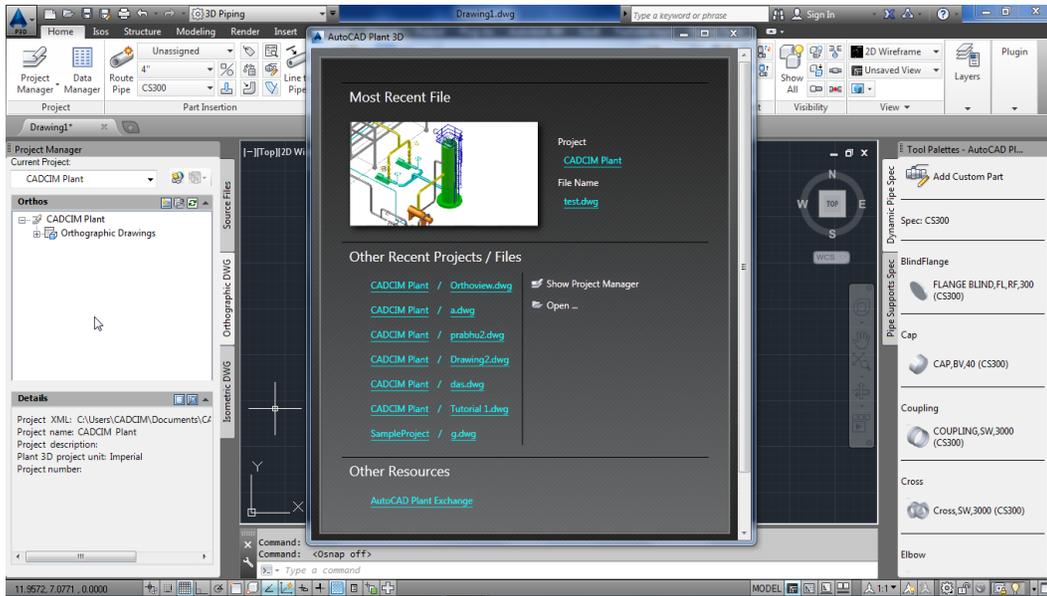


Figure 1-2 The AutoCAD Plant 3D 2014 window

WORKING IN A PROJECT

A piping design project includes the drawing and the other forms of data. These data sources are inter-related to each other. The drawing data includes P&IDs, 3D models, Isometric drawings, and Orthographic drawings. The other data forms include catalogs and specifications for piping, process data, and so on. Figure 1-3 shows a project flow diagram.

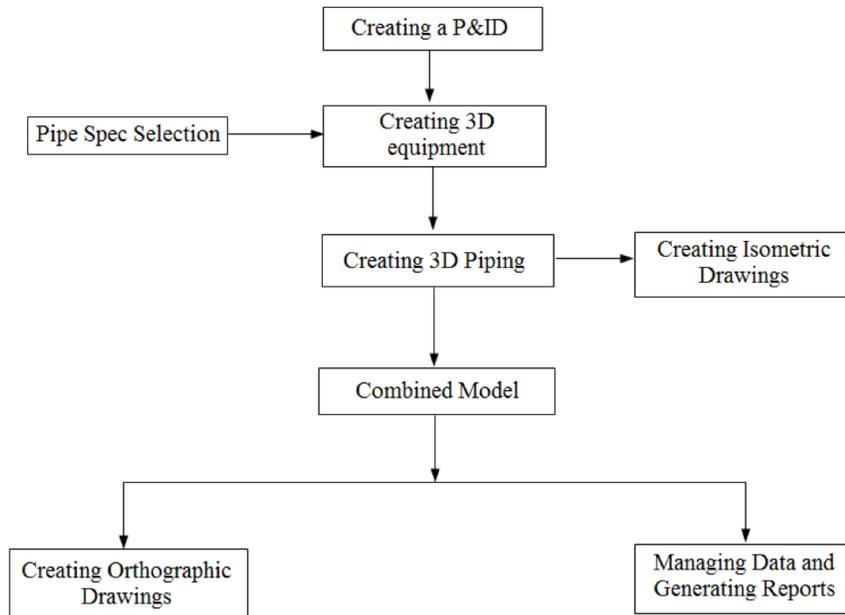


Figure 1-3 A project flow diagram

AutoCAD Plant 3D USER INTERFACE

The AutoCAD Plant 3D interface screen consists of drawing area, command window, menu bar, toolbars, status bar, and so on, refer to Figure 1-4. These components are discussed next.

Drawing Area

The drawing area covers the major portion of the screen. In this area, you can draw the objects and use the commands. To draw the objects, you need to define the coordinate points, which can be done by using the pointing device. The position of the pointing device is represented on the screen by the cursor. The window also has the standard Windows buttons such as close, minimize, and so on, at the top right corner. These buttons have the same functions as for any other standard window.

Command Window

The command window at the bottom of the drawing area has the Command prompt where you can enter the commands. It also displays the subsequent prompt sequences and the messages. You can change the size of the window by placing the cursor on the top edge (double line bar known as the grab bar) and then dragging it. This way you can increase its size to see all the previous commands you have used.

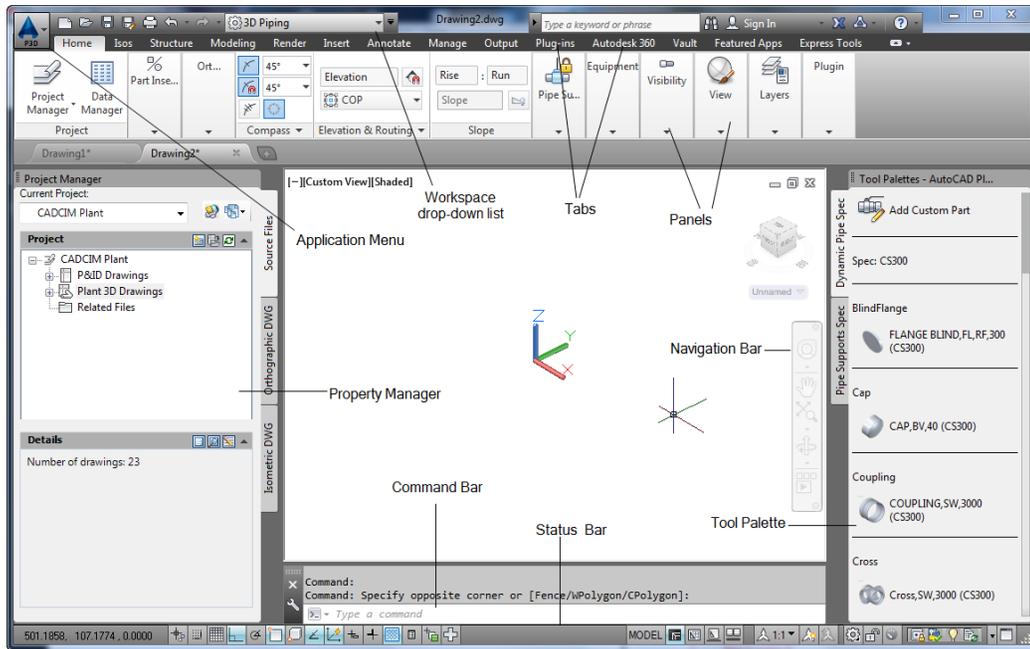


Figure 1-4 Interface screen of AutoCAD Plant 3D

Project Manager

Project Manager is used to access and manage all the drawings of a project. In addition to that, you can configure project settings, and export and import data from the **Project Manager**. Figure 1-5 shows the **Project Manager**. There are three tabs in the **Project Manager**: **Source Files**, **Orthographic DWG**, and **Isometric DWG**. You can create and access the P&ID and Plant 3D drawing files using the **Source Files** tab. The other two tabs can be used to create and access the orthographic and isometric drawings.

The data used in a project is arranged in their respective folders. For example, if you create a project with the name CADCIM, a folder named CADCIM will be created as the project folder. The data related to the project will then be stored in that folder in a systematic manner, as shown in Figure 1-6.

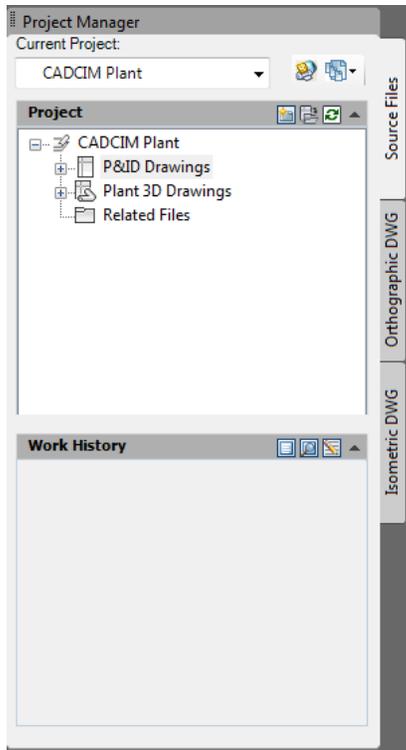


Figure 1-5 The Project Manager

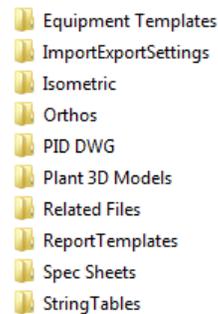


Figure 1-6 Project data arranged in folders

Data Manager

When you create a P&ID or a Plant 3D model, each and every part of the drawing is assigned with some properties. These properties can be accessed through Data Manager. Using the Data Manager, you can view, import, export, and create reports of the project data. Choose the **Data Manager** button from the **Project** panel to display the Data Manager. Figure 1-7 shows a partial view of the Data Manager.

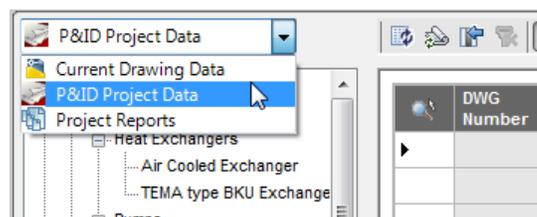


Figure 1-7 Partial view of the Data Manager

Navigation Bar

The Navigation Bar is displayed in the drawing area and contains navigation tools. These tools are grouped together, refer to Figure 1-8, and are discussed next.

SteeringWheels

The SteeringWheels has a set of navigation tools such as Pan, Zoom, Orbit, and Showmotion.

Pan

This tool allows you to view the portion of the drawing that is outside the current display area. To do so, choose this tool, press and hold the left mouse button, and then drag it in drawing area. You can exit this command by pressing ESC.

Zoom

The zoom tools are used to enlarge the view of the drawing on the screen without affecting the actual size of the object.

Orbit

The rotate tools are used to rotate the view in the 3D space.

ShowMotion

This button is used to capture different views in a sequence and animate them when required.

ViewCube

ViewCube is available on the top right corner of the drawing area and is used to switch between the standard and isometric views or roll back to the current view.

In-Canvas Viewport Controls

In-canvas Viewport Controls is available on the top left corner of the drawing screen. It enables you to change the view, the visual style as well as the viewport.

Status Bar

There are two types of Status Bars in AutoCAD Plant 3D, Application Status Bar and Drawing Status Bar. The Status Bar is displayed at the bottom of the screen is called Application Status Bar. It contains some useful information and buttons, refer to Figure 1-9, that make it easy to change the status of some AutoCAD functions. You can toggle between the on and off states of most of these functions by selecting or deselecting them.

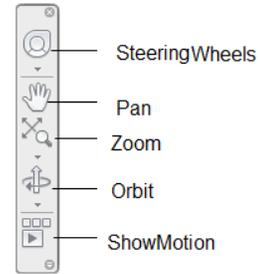


Figure 1-8 The tools in the Navigation Bar

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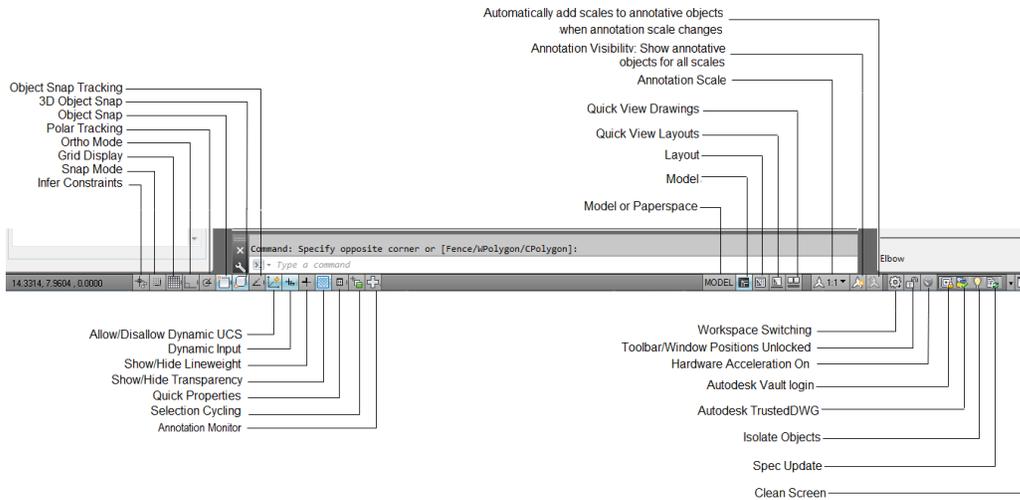


Figure 1-9 The Application Status Bar

Drawing Status Bar

The **Drawing Status Bar** is displayed in between the drawing area and the command window. If it is not displayed, choose the **Application Status Bar Menu** arrow and then choose the **Drawing Status Bar** option from the flyout; the **Drawing Status Bar** will be displayed, as shown in Figure 1-10. Turn on the **Drawing Status Bar**; the **Annotation Scale**, **Annotation Visibility**, and **Automatically Add Scale** buttons will move automatically to the **Drawing Status Bar**. If you turn off the **Drawing Status Bar**, these buttons will move back to the **Application Status Bar**.

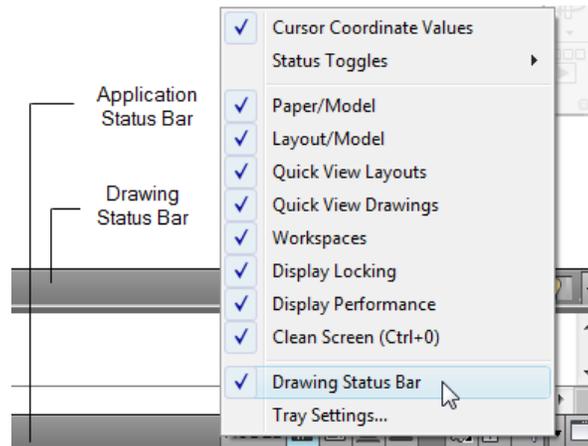


Figure 1-10 The Drawing Status Bar

Tray Settings

Choose the **Tray Settings** option from the flyout displayed on clicking the arrow in the **Application Status Bar**; the **Tray Settings** dialog box will be displayed, as shown in Figure 1-11. You can control the display of icons and notifications in the tray at the right end of the status bar by selecting appropriate options.

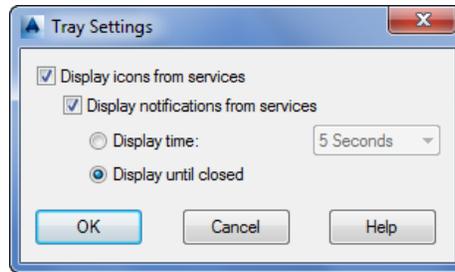


Figure 1-11 The Tray Settings dialog box

Clean Screen

The **Clean Screen** button is at the lower right corner of the screen. This button, when chosen, displays an expanded view of the drawing area by hiding all the toolbars except the command window, Status Bar, and menu bar. The expanded view of the drawing area can also be displayed by choosing **View > Clean Screen** from the menu bar or by using the CTRL+0 keys. You can choose the **Clean Screen** button again to restore the previous display state.

Status Toggles

You can hide the display of some of the buttons in the Status Bar. To do so, right-click on the **Application Status Bar**; a shortcut menu will be displayed. Move the cursor on the **Status Toggles** option in the shortcut menu; a cascading menu will be displayed. In this menu, clear the check mark next to the names of the buttons you need to hide.

Plot/Publish Details Report Available



This icon is displayed when some plotting or publishing activity is performed in the background. When you click on this icon, the **Plot and Publish Details** dialog box, which provides the details about the plotting and publishing activities, will be displayed.

You can copy this report to the clipboard by choosing the **Copy to Clipboard** button from the dialog box.

Manage Xrefs



The **Manage Xrefs** icon is displayed whenever an external reference drawing is attached to the selected drawing. This icon displays a message and an alert whenever the Xreffed drawing needs to be reloaded. To find detailed information regarding the status of each Xref in the drawing and the relation between various Xrefs, click on the **Manage Xrefs** icon; the **External References Palette** will be displayed.

Properties Palette

The **Properties** palette is used to set the current properties and to change the general properties of the selected objects. The **Properties** palette is displayed on right-clicking on an object and then choosing the **Properties** option from the shortcut menu. Right-clicking in the **Properties** palette displays a shortcut menu from where you can choose **Allow Docking** or **Hide** to dock or hide the palette. When you double-click on an object, the **Properties** palette will display the properties of the selected object.

In AutoCAD Plant 3D, the **Properties** palette displays an additional section for the properties specific to the selected object, refer to Figure 1-12. For example, if you select a Plant 3D object, the Plant 3D section will be displayed in the **Properties** palette with the 3D properties of the object. The list of properties displayed varies depending on the object selected. For example, if you select a pipe support, the dimensions of the selected geometry will be displayed in the **Part Geometry** section, refer to Figure 1-13. In this section, you can edit the geometry of the selected pipe support. Similarly, if you select a valve from a Plant 3D model, properties of the valve will be displayed. You can change the valve actuator using the **Properties** palette.

Plant 3D	
Class	Tank
Tag	
Tag	TK-106
General	
Short Description	
Long Description (Size)	Tank
Long Description (Fa...)	
Compatible Standard	
Manufacturer	
Item Code	
Design Std	
Design Pressure Factor	
Weight	
Weight Unit	
Flange Thickness	1.12
Content Iso Symbol D...	
Status	New
Number	106
Area	
Nozzles	
Tag	N-1
Size	8"x10"
Pressure Class	150
Short Description	Nozzle, flanged

Figure 1-12 The additional section displayed for a Plant 3D object

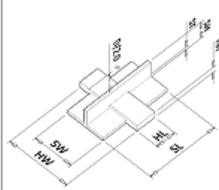
Part Properties	
Part Data	
Material	
Material Code	
Pressure Class	
Part Geometry	
Preview	
	
Dimensions	
D	10 15/16"
SL	1'-4 15/16"
SW	9 3/8"
ST	3/4"
SH	6 9/16"
HL	4 11/16"
HW	1'-3 1/16"
HH	0"
Length	

Figure 1-13 The dimensions of the selected geometry displayed in the Properties palette

DIFFERENT WORKSPACES IN AutoCAD Plant 3D

A workspace is defined as a customized arrangement of **Ribbon**, toolbars, menus, and window palettes in the AutoCAD environment. In AutoCAD Plant 3D, there are different workspaces to create a P&ID and Plant 3D model. These workspaces are given next.

3D Piping

P&ID PIP

P&ID ISO

P&ID ISA

P&ID DIN

P&ID JIS-ISO

You will notice that there are different workspaces for creating a P&ID. These workspaces are based on different standards. When you invoke a P&ID workspace of a particular standard, the tool palette will display the symbols related to that standard.

You can select any of the predefined workspaces from the **Workspace** drop-down list available in the title bar located next to the **Quick Access Toolbar**, see Figure 1-14. You can also set the workspace from the flyout that will be displayed on choosing the **Workspace Switching** button in the Status Bar, refer to Figure 1-15.

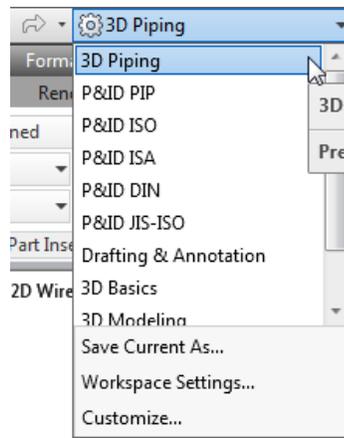


Figure 1-14 The predefined workspaces

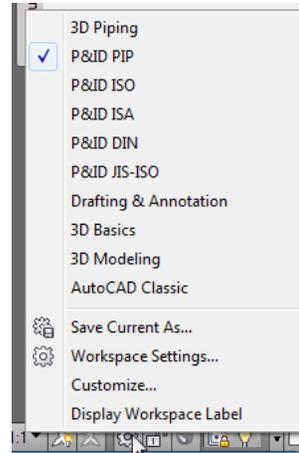


Figure 1-15 The flyout displayed on choosing the **Workspace Switching** button

GRIPS

Grips provide a convenient and quick means of editing objects. Grips are displayed on the key points of an object when the object is selected. There are different grips available in AutoCAD Plant 3D. The usage of these grips is explained in the following table.

Grip Symbol	Grip Name	Usage
	Continuation grip	It is used to start or continue routing a pipe.
	Substitution grip	It is used to substitute a component.
	Add Nozzle grip	You can add a nozzle to an equipment using this grip.
	Elevation grip	You can change the elevation of a pipe using this grip.

	Edit nozzle grip	It is used to modify a nozzle.
	Rotate Part grip	It is used to rotate a valve or fitting.
	Flip grip	It is used to flip a valve or a fitting.
	Connection grip	It is displayed when a schematic line is connected to a component or an equipment.
	Move SLine Parallel grip	It is displayed at the midpoint of a schematic line. You can move the schematic line using this grip.
	Continue/Shorten SLine grip	You can increase or decrease the length of a schematic line using this grip.
	Flip grip (in P&ID)	It is used to change the direction of the schematic line.
	Gap grip	It is displayed when a gap is added on the schematic line. You can increase or decrease the gap using this grip.

INVOKING COMMANDS IN AutoCAD Plant 3D

When you are in the drawing area, you need to invoke AutoCAD Plant 3D commands to perform required operations. For example, to draw a line, first you need to invoke the **LINE** command and then define the start point and the endpoint of the line. Similarly, if you want to erase objects, you must invoke the **ERASE** command and then select the objects for erasing. In AutoCAD Plant 3D, you can invoke the commands using different methods which are discussed next.

Invoking Commands Using Command Prompt

You can invoke any AutoCAD Plant 3D command using the keyboard by typing the command name at the Command prompt and then pressing the ENTER key. As you type the first letter of command, AutoCAD Plant 3D displays all available commands starting with the letter typed. You can also use the **Dynamic Input** button to directly enter the command in the **Pointer Input** box. The **Pointer Input** box is a small box displayed on the right of the cursor, as shown in Figure 1-16. However, if the cursor is currently placed on any toolbar or menu bar, or if the **Dynamic Input** is turned off, the command will be entered through the Command prompt. The following example shows how to invoke the **LINE** command using the keyboard:

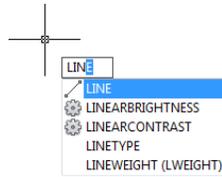


Figure 1-16 The Pointer Input box displayed when the Dynamic Input is on

Command: **LINE** or **L** (L is command alias)

Invoking Commands Using Ribbon

In AutoCAD Plant 3D, you can also invoke a tool from the **Ribbon**. In the Ribbon, the tools for creating pipes, equipment, supports, and the other Plant 3D components are available in different panels instead of being spread out in the entire drawing area in different toolbars and menus, see Figure 1-17.

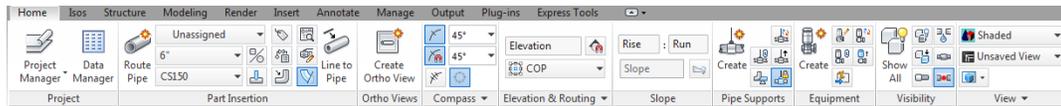


Figure 1-17 The Ribbon for the 3D Piping workspace

In AutoCAD Plant 3D, there are different tabs and ribbons for performing different tasks such as creating a P&ID, Isometric drawings, orthographic drawing, and so on. These are discussed next.

Home tab of the P&ID workspace

The **Home** tab of the P&ID workspaces contains tools that are used to create a P&ID. This tab is available in P&ID workspaces, refer to Figure 1-18.

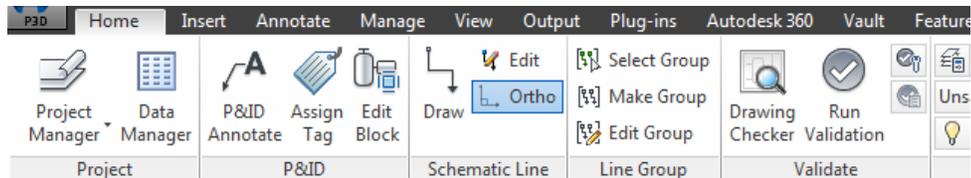


Figure 1-18 The Home tab of the P&ID workspace

Home tab of the 3D Piping workspace

This is one of the most important tabs provided in the 3D Piping workspace. This tab provides all tools that are used to create 3D piping, equipment, and pipe supports. The **Home** tab of the 3D Piping workspace is shown in Figure 1-19.

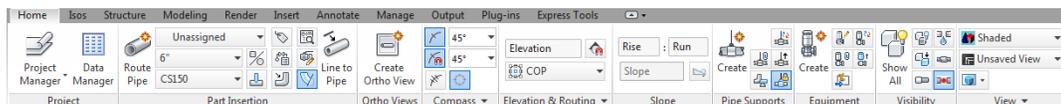


Figure 1-19 The Home tab of the 3D Piping workspace

Isos Tab

The tools in the **Isos** tab are used to generate isometric drawings. The **Isos** tab is shown in Figure 1-20.

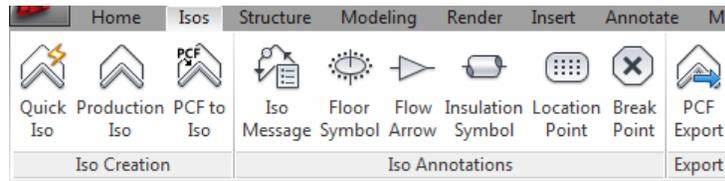


Figure 1-20 The Isos tab

Structure Tab

The tools in the **Structure** tab are used to create and modify structures. The **Structure** tab is shown in Figure 1-21.

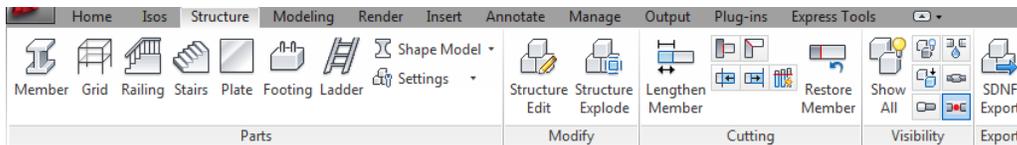


Figure 1-21 The Structure tab

Ortho Editor Tab

The tools in the **Ortho Editor** tab are used to create orthographic views. The **Ortho Editor** tab is shown in Figure 1-22.

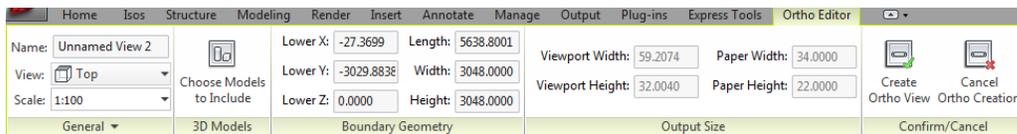


Figure 1-22 The Ortho Editor tab

Ortho View Tab

The tools in the **Ortho View** tab are used to annotate and dimension the view. Also, you can create adjacent views and locate the view components in a 3D Model. The **Ortho View** tab is shown in Figure 1-23.

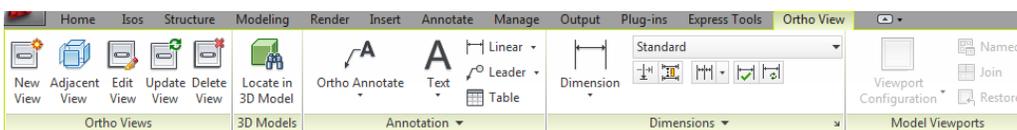


Figure 1-23 The Ortho View tab

Tool Palettes

AutoCAD Plant 3D has provided different Tool Palettes as an easy and convenient way of placing symbols and 3D parts in the current drawing. The Tool Palettes display items based on

the workspace in which you are currently working. The Tool Palettes in different workspaces are discussed next.

Tool Palettes in P&ID workspace

The P&ID Tool Palettes contain various tabs such as **Lines**, **Equipment**, **Valves** and so on, refer to Figure 1-24. The symbols in each tab are grouped into different areas. You can create more custom symbols and add to the Tool Palettes. You can change the Tool Palette by choosing the **Properties** button and then selecting the required tool palette from the flyout displayed.

Tool Palettes in Plant 3D workspace

In the 3D Piping workspace, the Tool Palettes contain tabs such as **Dynamic Pipe Spec**, and **Pipe Supports Spec**, refer to Figure 1-25. The **Dynamic Pipe Spec** tab contains the piping components from the selected specification. You can add more components to the **Dynamic Pipe Spec** tab by invoking the **Spec Viewer**. You will learn more about the **Spec Viewer** in later chapters. In addition, you can add a custom part to the Tool Palette. Also, you can change the components displayed in this tab by selecting a different specification. The **Pipe Supports Spec** tab contains pipe supports. You can dynamically select a support and place it in the 3D model.

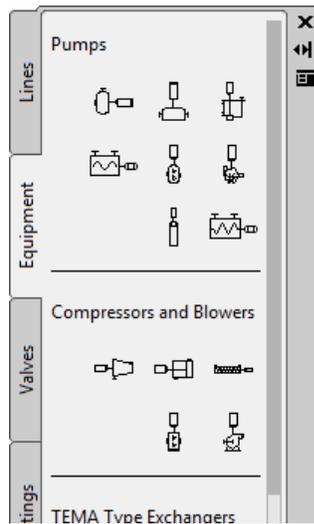


Figure 1-24 Tool Palettes in P&ID workspace

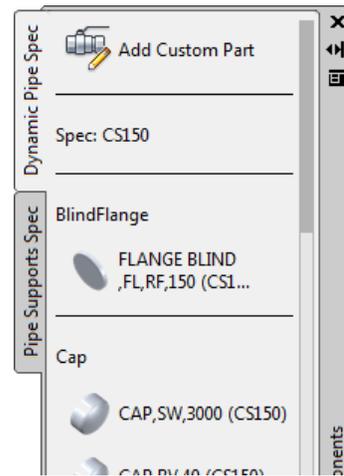


Figure 1-25 Tool Palettes in 3D Piping workspace

Application Menu

The **Application Menu** is available at the top left corner of the AutoCAD Plant 3D window. It contains some of the tools that are available in the **Standard** toolbar. Click on the down arrow on the **Application Menu** to display the tools, as shown in Figure 1-26. You can search a command using the search field on the top of the **Application Menu**. To search a tool, enter the complete or partial name of the command in the search field; the possible tool list will be displayed. If you click on a tool from the list, the corresponding command will get activated.

By default, the **Recent Document** button is chosen in the **Application Menu**. Therefore, the recently opened drawings will be listed. If you have opened multiple drawing files, choose the **Open Documents** button; the documents that are opened will be listed in the **Application Menu**. To set the preferences of the file, choose the **Options** button available at the bottom right of the **Application Menu**. To exit AutoCAD Plant 3D, choose the **Exit Autodesk AutoCAD Plant 3D 2014** button next to the **Options** button.

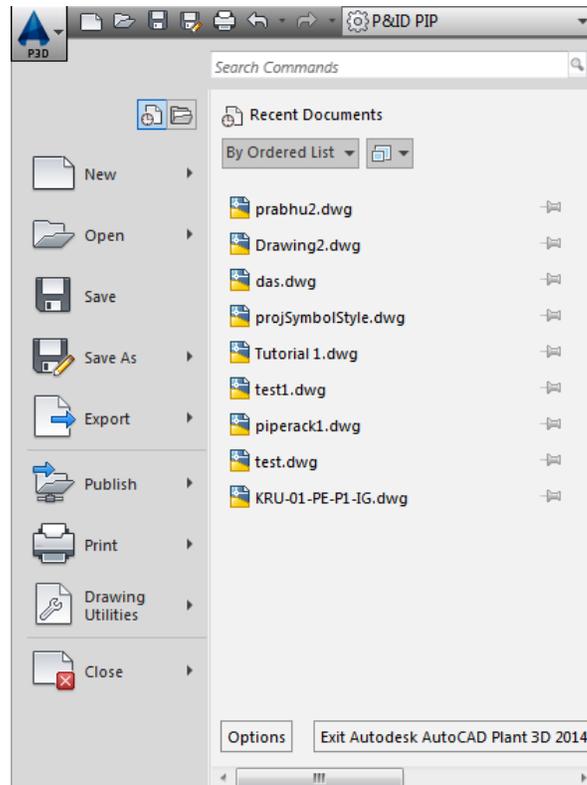


Figure 1-26 The Application Menu

Menu Bar

You can also invoke commands from the menu bar. Menu bar is not displayed by default in AutoCAD Plant 3D. To display the menu bar, click on the down arrow in the **Quick Access Toolbar**; a flyout will be displayed. Choose the **Show Menu Bar** option from it; the menu bar will be displayed. As you move the cursor over the menu bar, different titles get highlighted. You can click on the desired item to display a menu. You can invoke a command by left-clicking on it in the menu. Some of the menu items display an arrow on the right side, which indicates that they have a cascading menu. The cascading menu provides various options to execute the same AutoCAD Plant 3D command.

Shortcut Menu

AutoCAD Plant 3D provides shortcut menus to invoke the recently used tools easily. These

shortcut menus are context-specific, which means that the tools available in them are dependent on the place/object for which they are displayed. A shortcut menu is invoked by right-clicking in the drawing area. It generally contains an option to select the previously invoked tool again, apart from the common tools for Windows, refer to Figure 1-27.

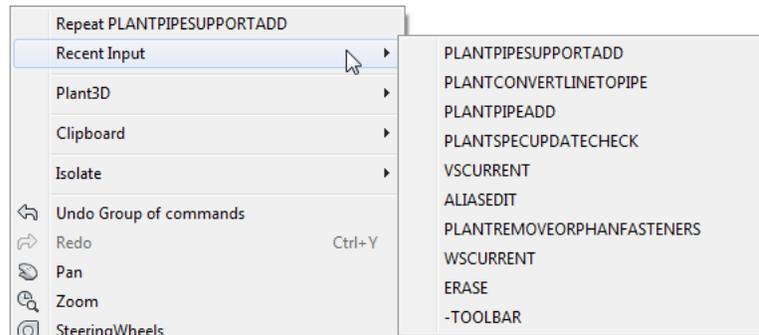


Figure 1-27 Partial view of the shortcut menu with the recently used commands

If you right-click in the drawing area while a command is active, a shortcut menu is displayed, containing the options corresponding to that particular command. Figure 1-28 shows the shortcut menu when the **Route Pipe** tool is active.

You can also right-click on the command window to display the shortcut menu. This menu displays the six recently used commands and some of the Windows options such as **Copy** and **Paste**, refer to Figure 1-29. The commands and their prompt entries are displayed in the **History** window (previous command lines not visible) and can be selected, copied, and pasted in the command line using the shortcut menu. As you press the up arrow key, the previously entered commands are displayed in the command window. Once the desired command is displayed at the Command prompt, you can execute it by simply pressing the ENTER key. You can also copy and edit any previously invoked command by locating it in the **History** window and then selecting the lines. After selecting the desired command lines from the **History** window, right-click to display a shortcut menu. Choose **Copy** from the menu and then paste the selected lines at the end of the command line.

You can right-click on the coordinate display area of the Application Status Bar to display the shortcut menu. This menu contains the options to modify the display of coordinates, as shown in Figure 1-30. You can also right-click on any of the toolbars to display the shortcut menu from where you can choose any toolbar to be displayed.

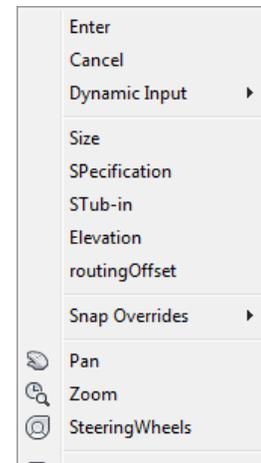


Figure 1-28 Shortcut menu with the Route Pipe tool active

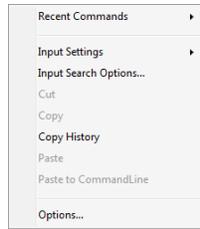


Figure 1-29 Command line window shortcut menu



Figure 1-30 The Application Status Bar shortcut menu

AutoCAD Plant 3D DIALOG BOXES

On invoking certain commands in AutoCAD Plant 3D, the related dialog box is displayed. When you choose an item in the menu bar with the ellipses [...], it displays a dialog box. For example, when **Options** in the **Tools** menu is chosen, the **Options** dialog box is displayed. A dialog box contains a number of components like the dialog label, radio buttons, text or edit boxes, check boxes, slider bars, image boxes, and command buttons. Some of the components in a dialog box are shown in Figure 1-31.

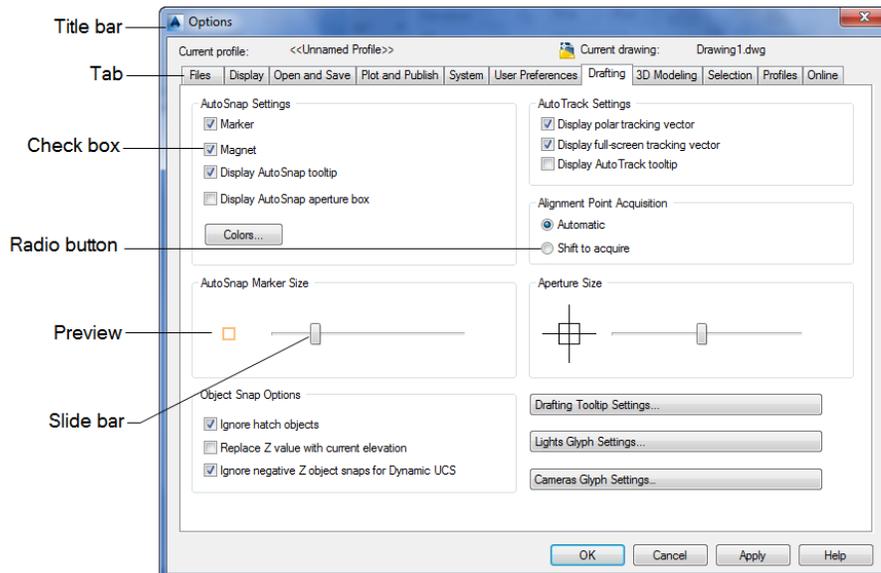


Figure 1-31 Components of a dialog box

The title bar displays the name of the dialog box. The tabs specify the various sections that contain various groups of related options under them. The check boxes are toggle options for making the particular option available or unavailable. When you click on an option and a list of options is displayed, then it is termed as drop-down list. You can select options using the radio buttons. Note that only one button can be selected at a time. The image displays the preview image of the item selected. The text box is an area where you can enter a text such as a file name. It is also called an edit box, because you can make any change to the text entered. In some dialog boxes, you will find the [...] button, which displays another related

dialog box. There are certain buttons such as **OK**, **Cancel**, and **Help** that are also displayed at the bottom of the dialog box. The button with a dark border is the default button.

CREATING BACKUP FILES

If the drawing file already exists and you use **Save** or **Save As** tools to update the current drawing, AutoCAD Plant 3D creates a backup file. AutoCAD Plant 3D takes the previous copy of the drawing and changes it from a file type *.dwg* to *.bak*, and the updated drawing is saved as a drawing file with the *.dwg* extension. For example, if the name of the drawing is *myproj.dwg*, AutoCAD Plant 3D will change it to *myproj.bak* and save the current drawing as *myproj.dwg*.

Changing Automatic Timed Saved and Backup Files into AutoCAD Format

Sometimes, you may need to change the automatic timed saved and backup files into AutoCAD format. To change the backup file into an AutoCAD format, open the folder in which you have saved the backup or the automatic timed saved drawing using **Computer** or **Windows Explorer**. Choose **Organize > Folder and Search Options** from the menu bar to invoke the **Folder Options** dialog box. Choose the **View** tab and under the **Advanced settings** area, clear the **Hide extensions for known file types** text box, if selected. Exit the dialog box. Rename the automatically saved drawing or the backup file with a different name and also change the extension of the drawing from *.sv\$* or *.bak* to *.dwg*. After you rename the drawing, you will notice that the icon of the automatically saved drawing or the backup file is replaced by the AutoCAD icon. This indicates that the automatically saved drawing or the backup file is changed to an AutoCAD Plant 3D drawing.

Using the Drawing Recovery Manager to Recover Files

The files that are saved automatically can also be retrieved by using the **Drawing Recovery Manager**. You can open the **Drawing Recovery Manager** again by choosing **Drawing Utilities > Open the Drawing Recovery Manager** from the **Application Menu** or by entering **DRAWINGRECOVERY** at the Command prompt.

If the automatic save operation is performed in a drawing and the system crashes accidentally, the next time when you run AutoCAD Plant 3D, the **Drawing Recovery** message box will be displayed, as shown in Figure 1-32. The message box informs you that the program unexpectedly crashed and you can open the most relevant among the backup files created by AutoCAD Plant 3D. Choose the **Close** button from the **Drawing Recovery** message box; the **Drawing Recovery Manager** is displayed on the left of the drawing area, as shown in Figure 1-33.

The **Backup Files** rollout lists the original files, the backup files, and the automatically saved files. Select a file; its preview will be displayed in the **Preview** rollout. Also, the information corresponding to the selected file will be displayed in the **Details** rollout. To open a backup file, double-click on its name in the **Backup Files** rollout. Alternatively, right-click on the file name and then choose **Open** from the shortcut menu. It is recommended that you save the backup file at the desired location before you start working on it.

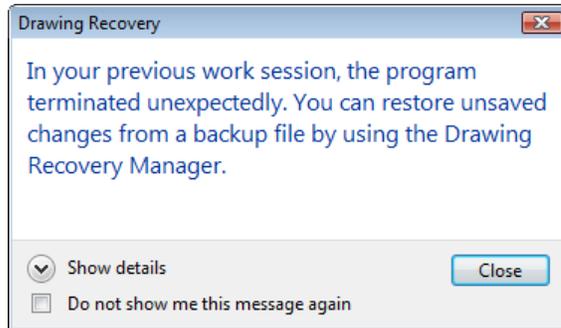


Figure 1-32 The Drawing Recovery message box

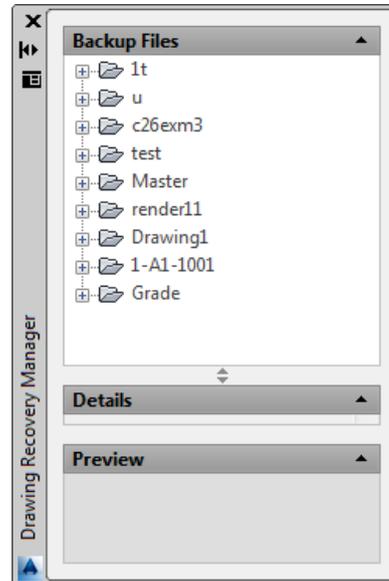


Figure 1-33 The Drawing Recovery Manager

CLOSING A DRAWING

You can use the **CLOSE** command to close the current drawing file without actually quitting AutoCAD Plant 3D. If you choose **Close > Current Drawing** from the **Application Menu** or enter **CLOSE** at the Command prompt, the current drawing file will be closed. If multiple drawing files are opened, choose **Close > All Drawings** from the **Application Menu**. If you have not saved the drawing after making the last changes to it and you invoke the **CLOSE** command, AutoCAD Plant 3D displays a dialog box that allows you to save the drawing before closing. This box gives you an option to discard the current drawing or the changes made to it. It also gives you an option to cancel the command. After closing the drawing, you are still in AutoCAD Plant 3D from where you can open a new or an already saved drawing file. You can also use the close button (**X**) of the drawing area to close the drawing.



Note

You can close a drawing even if a command is active.

OPENING A PROJECT DRAWING

You can open an existing drawing file that has been saved previously in a project. The drawings are located under the P&ID drawings and Plant 3D drawings nodes in the **Project Manager**. To open a drawing, expand the respective drawings node and right-click to display the shortcut menu. Next, choose the **Open** option from the shortcut menu, refer to Figure 1-34; the drawing will be opened. Alternatively, double-click on the drawing in the **Project Manager** to open it.

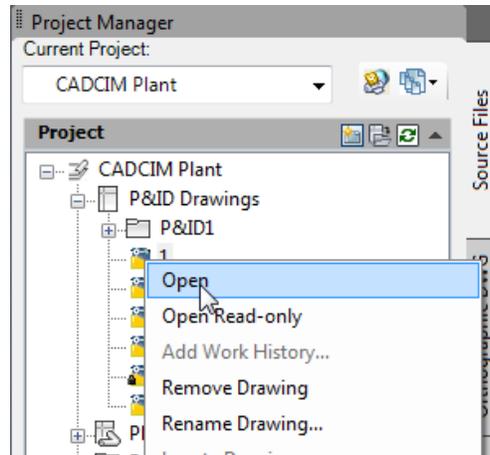


Figure 1-34 Opening a drawing from the *Project Manager*

To view a drawing without altering it, you must select the **Open Read-Only** option from shortcut menu. In other words, opening read only protects the drawing file from changes. AutoCAD Plant 3D does not prevent you from editing the drawing. But if you try to save the opened drawing with the original file name, AutoCAD Plant 3D warns you that the drawing file is write-protected. However, you can save the edited drawing to a file with a different file name using the **SAVEAS** command. This way you can preserve your drawing.

OPENING A DRAWING THAT IS NOT IN THE PROJECT

Application Menu: Open > Drawing

Quick Access Toolbar: Open

Menu Bar: File > Open

Command: OPEN

You can open a drawing file that does not exist in the currently opened project using the **Select File** dialog box. The method of invoking drawing using **Select File** dialog box is discussed next.

Opening an Existing Drawing Using the Select File Dialog Box



If you are already in the drawing editor and you want to open a drawing file, choose the **Open** tool from the **Quick Access Toolbar**; the **Select File** dialog box will be displayed. Alternatively, invoke the **OPEN** command to display the **Select File** dialog box by using the Command prompt, as shown in Figure 1-35. You can select the drawing to be opened using this dialog box. This dialog box is similar to the standard dialog boxes. You can choose the file that you want to open, from the folder in which it is stored. You can access the required folder using the **Look in** drop-down list. You can then select the name of the drawing from the list box or you can enter the name of the drawing file you want to open in the **File name** edit box. After selecting the drawing file, you can select the **Open** button to open the file.

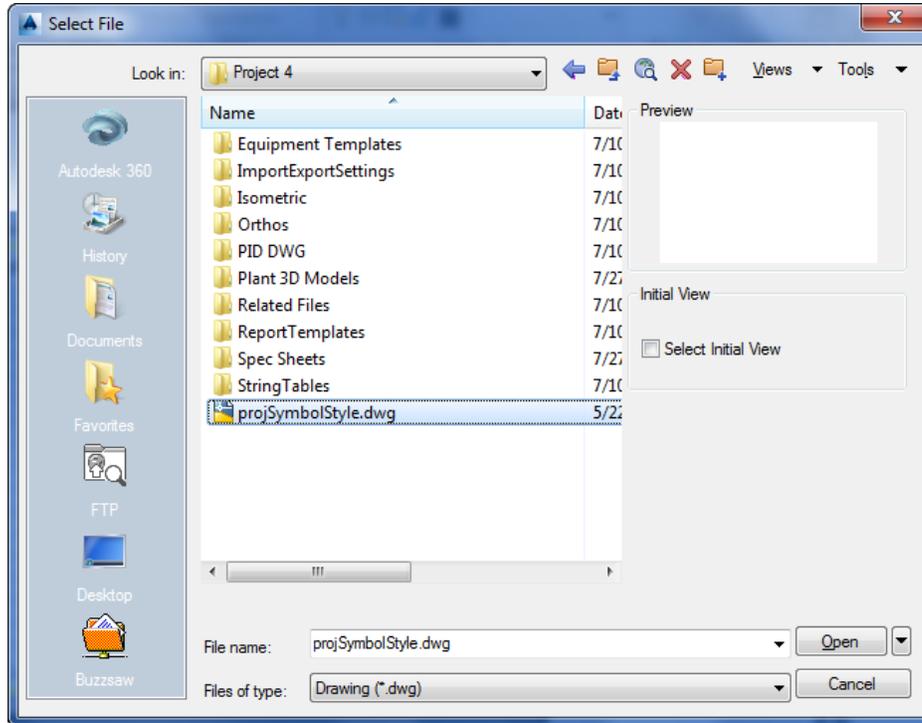


Figure 1-35 The Select File dialog box

When you select a file name, the preview of the selected drawing file will be displayed in the **Preview** box. If you are not sure about the file name of a particular drawing but know the contents, you can still select the file names and look for the that drawing in the **Preview** box. You can also change the file type by selecting it in the **Files of type** drop-down list. Apart from the *dwg* files, you can open the *dwt* (template) files or the *dxf* files. You have all the standard icons in the **Places** list that can be used to open drawing files from different locations. The **Open** button has a drop-down list, as shown in Figure 1-36. You can choose any of the methods given in this list for opening the file.

Note that you cannot make any changes to the drawing file that is not in the current project. If you do so, the **Alert** message box will be displayed, as shown in Figure 1-37. This message box warns you that the object can only be inserted into a project drawing, and if want to add this drawing to the current project. Choose the **Yes** button; the message box will be closed and the drawing will be added to the currently opened project.

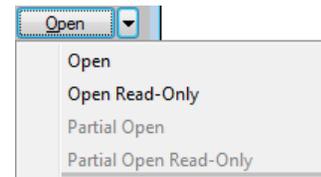


Figure 1-36 The Open drop-down list

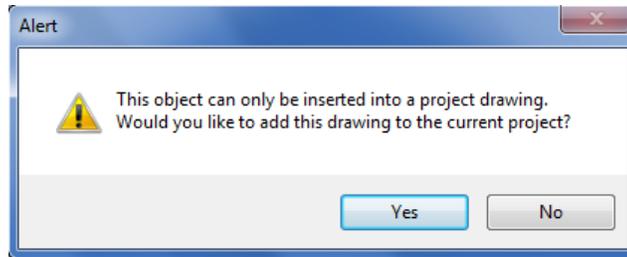


Figure 1-37 The Alert message box

Alternatively, to add files to the current project, right-click on the **P&ID Drawings** or **Plant 3D Drawings** node and choose the **Copy Drawing to Project** option from the shortcut menu displayed, refer to Figure 1-38; the **Select Drawings to Copy to Project** dialog box will be displayed. Browse to the file location and double-click on the drawing file to be added to the project; the drawing file will be added to the current project and the **Project Data Merged** message box will be displayed, as shown in Figure 1-39. Choose **OK** to close the message box.

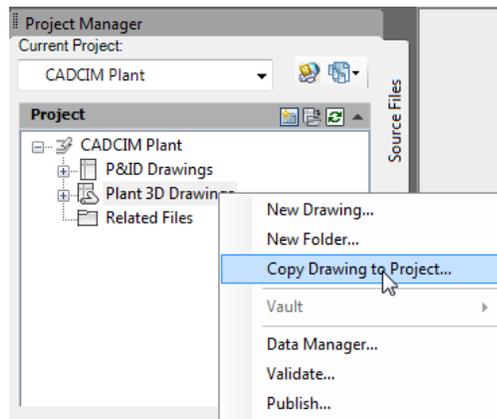


Figure 1-38 Copying a drawing to project

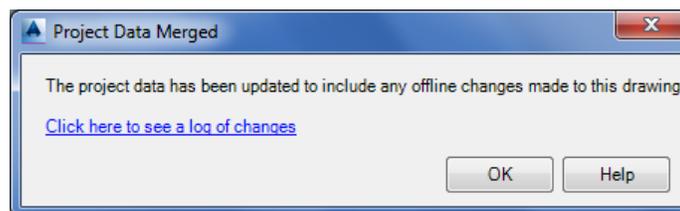


Figure 1-39 The Project Data Merged message box

QUITTING AutoCAD Plant 3D

You can exit the AutoCAD Plant 3D program by using the **EXIT** or **QUIT** command. Even if you have an active command, you can choose **Exit Autodesk AutoCAD Plant 3D 2014** from

the **Application Menu** to close the AutoCAD Plant 3D program. In case the drawing has not been saved, it allows you to first save the work through a dialog box. Note that if you choose **No** in this dialog box, all the changes made in the current list till the last save will be lost. You can also use the **Close** button (**X**) of the main AutoCAD Plant 3D window (present in the title bar) to end the AutoCAD Plant 3D session.

AutoCAD Plant 3D HELP

Titlebar: ? > Help

Shortcut Key: F1

Command: HELP or ?



You can get the on-line help and documentation about the working of AutoCAD Plant 3D 2014 commands from the **Help** menu in the title bar, see Figure 1-40. You can also access the **Help** menu by pressing the F1 function key. Some important options in the **Help** menu are discussed next.

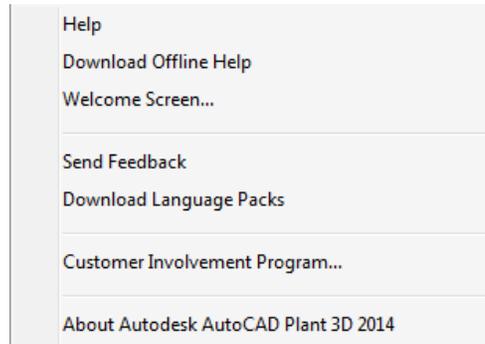


Figure 1-40 The Help menu

Figure 1-41 shows the **Autodesk AutoCAD Plant 3D 2014 - Help** window after choosing the **Help** button from the **Infocenter** bar.

Customer Involvement Program

This option is used to share the system configuration information and uses of Autodesk products with Autodesk. The collected information is used by Autodesk for the improvement of Autodesk software.

About AutoCAD Plant 3D 2014

This option gives you information about the Release, Serial number, Licensed to, and also the legal description about AutoCAD Plant 3D.

AUTODESK EXCHANGE Apps

Autodesk Exchange Apps helps you download various applications for AutoCAD, get connected to the AutoCAD network, share information and designs, and so on. On choosing the **AutoCAD**

Exchange Apps button from the title bar, the **AUTODESK EXCHANGE Apps** window will be opened in Internet Explorer window, as shown in Figure 1-42.

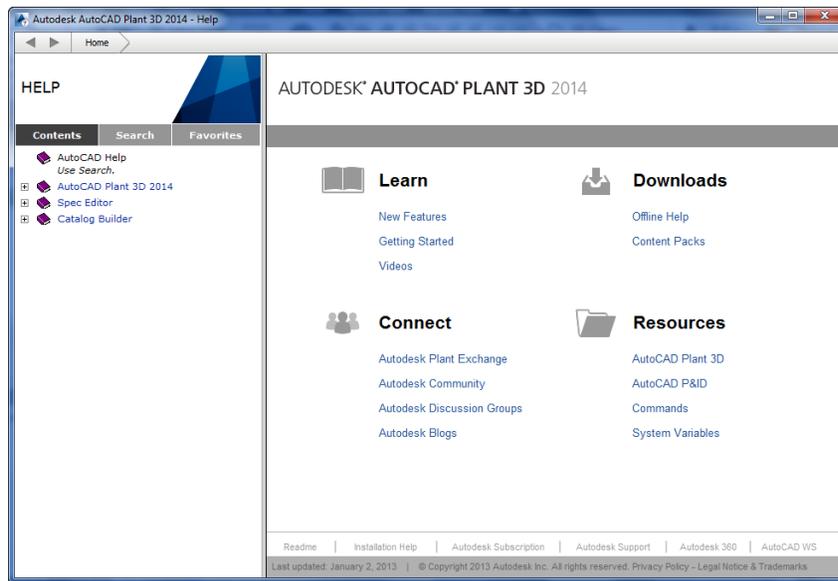


Figure 1-41 The Autodesk AutoCAD Plant 3D 2014 Help window

You can download various Autodesk apps such as Screenshot, DWF PDF Batch Publish, and so on from this page. Some of them are free of cost. You can also publish your own Autodesk products for other users of Autodesk.

Also, you can download applications for software other than AutoCAD such as Autodesk Alias, Revit, Simulation, and so on. You can also search for the applications by entering the name of the app in the **Search Exchange Apps** search box.

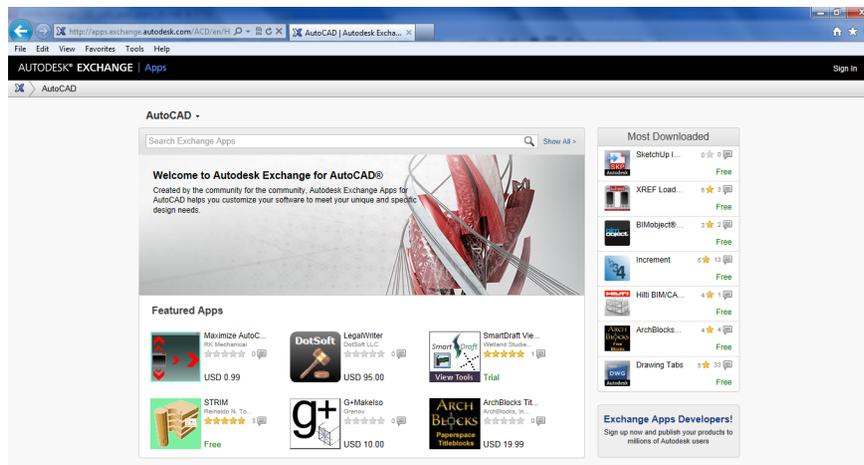


Figure 1-42 The AUTODESK EXCHANGE Apps window

ADDITIONAL HELP RESOURCES

1. You can get help for a command while working by pressing the F1 key. On doing so, the help html containing information about the command is displayed. You can exit the dialog box and continue with the command.
2. You can get help about a dialog box by choosing the **Help** button in that dialog box.
3. Autodesk has provided several resources that you can use to get assistance with your AutoCAD Plant 3D questions. The following is a list of some of the resources:
 - a. Autodesk website <http://www.autodesk.com>
 - b. AutoCAD Plant 3D Technical Assistance website
http://autocad.autodesk.com/?nd=plant_home
4. You can also get help by contacting the author, Sham Tickoo, at stickoo@purduecal.edu and tickoo525@gmail.com.
5. You can download AutoCAD Plant 3D drawings, programs, and special topics by registering yourself at the faculty website by visiting: <http://cadcim.com/Registration.aspx>

Self-Evaluation Test

Answer the following questions and then compare them to those given at the end of this chapter:

1. You can press F3 key to invoke the **AutoCAD** text window. This window displays the previous commands and prompts. (T/F)
2. If you do not have an internet connection, you cannot access the Help files. (T/F)
3. You can close a drawing in AutoCAD Plant 3D 2014 even if a command is active. (T/F)
4. If the current drawing is unnamed and you save the drawing for the first time, you will be prompted to specify the file name in the **Save Drawing As** dialog box. (T/F)
5. The items in the _____ tab in the Tool Palette contain the piping components from the selected specification.
6. The _____ grip is used to modify a nozzle.
7. If you want to work on a drawing without altering the original drawing, you must select the _____ option.
8. The _____ is used to start or continue routing a pipe.

9. The _____ palette displays an additional section for the properties specific to the selected item.
10. You can use the _____ command to close the current drawing file without actually quitting AutoCAD Plant 3D.

Review Questions

Answer the following questions:

1. The shortcut menu invoked by right-clicking in the command window displays the most recently used commands and some of the window options such as **Copy**, **Paste**, and so on. (T/F)
2. The P&ID workspaces are based on different standards. (T/F)
3. The Tool Palettes display items based on the workspace currently in use. (T/F)
4. You cannot make any changes to the drawing file which is not in the current project. (T/F)
5. The file name that you enter to save a drawing in the **Save Drawing As** dialog box can be 255 characters long, but cannot contain spaces and punctuation marks. (T/F)
6. Which of the following combination of keys should be pressed to turn on or off the display of the **Tool Palettes** window?
 - (a) CTRL+3
 - (b) CTRL+0
 - (c) CTRL+5
 - (d) CTRL+2
7. Which of the following commands is used to exit the AutoCAD Plant 3D program?
 - (a) **QUIT**
 - (b) **END**
 - (c) **CLOSE**
 - (d) None of these
8. When you choose **Save** from the **File** menu or choose the **Save** tool in the **Quick Access Toolbar**, which of the following commands is invoked?
 - (a) **SAVE**
 - (b) **LSAVE**
 - (c) **QSAVE**
 - (d) **SAVEAS**
9. By default, the angles are positive if measured in the _____ direction.

Answers to Self-Evaluation Test

1. T, 2. F, 3. F, 4. T, 5. Dynamic Pipe Spec, 6. Edit Nozzle, 7. Open Read Only, 8. Continuation grip, 9. Properties, 10. CLOSE