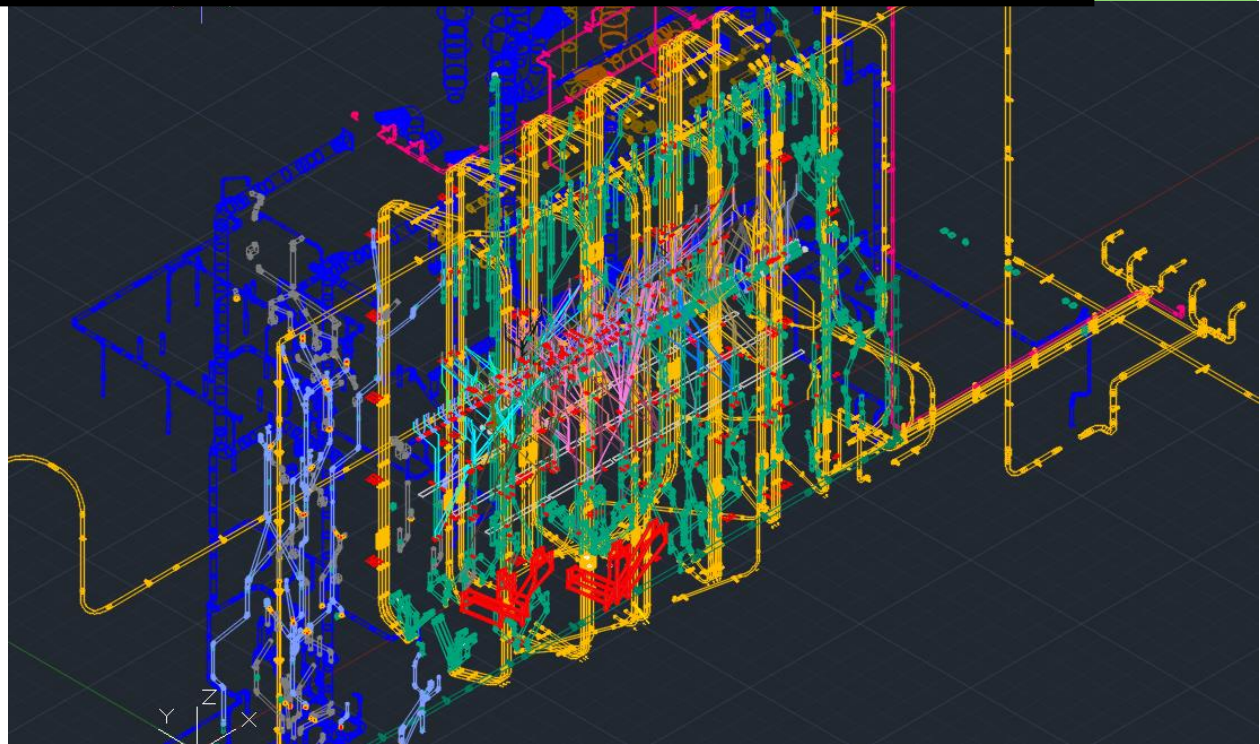


2024

AutoPLANT to XYZ



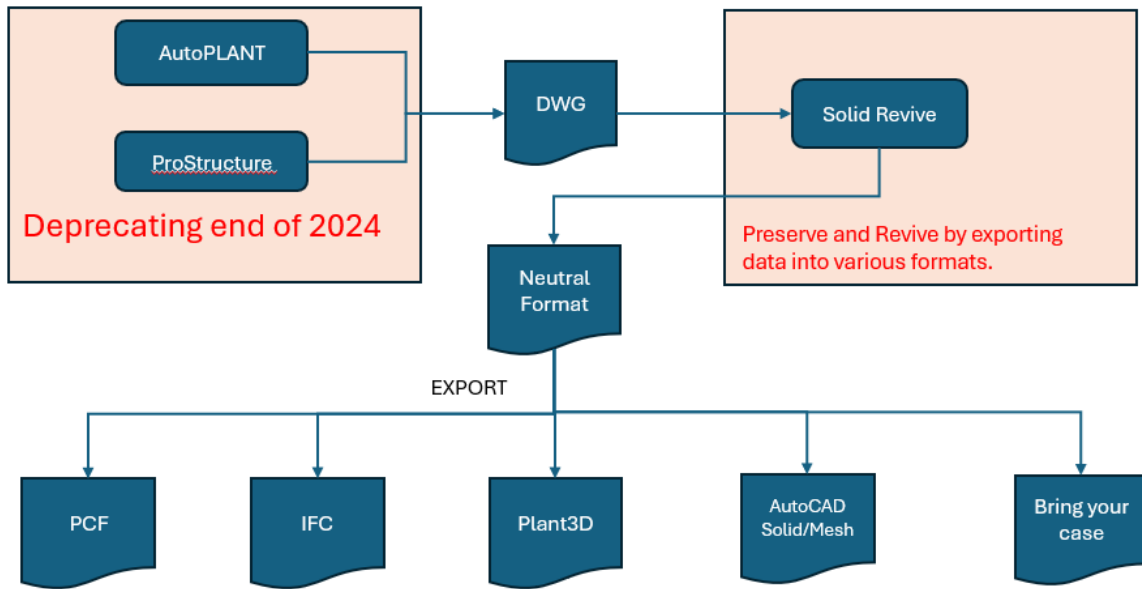
Dr Amber Afroz
InterTwined Nexus
2/14/2024

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SolidRevive - Introduction

SolidRevive offers a cutting-edge solution for revitalizing outdated product components originally designed in AutoCAD. Many legacy products from the late 90s and early 20s were built using AutoCAD Object Enabler technology, which is now on the retirement path. SolidRevive steps in to seamlessly read these outdated formats and convert them into various formats, preserving the integrity of the original designs while ensuring compatibility with modern CAD systems. Not only does it preserve but also give a path to modify the design using different design applications.



Basic Concept of SolidRevive

PCF Format

Once the data is converted to PCF, Plant3D's import option facilitates the conversion of PCF files to Plant3D format. SolidRevive provides conversion of equipment into Plant3D as custom equipment. Converting AutoPLANT specifications to Plant3D format is a prerequisite for utilizing this workflow effectively. User-friendly interfaces and additional options are available to streamline this process, ensuring a smooth transition. For more detailed guidance, refer to the demo AVIs provided. These PCF files can be used to generate ISO's as well.

IFC Format

Multiple IFC-compliant viewers are available for viewing and integrating AutoPLANT models exported to IFC, along with comprehensive engineering data. This includes, but is not limited to:

- Open IFC Viewer
- BIMcollab
- AutoCAD Revit

These viewers enable seamless visualization and integration with other services. The exported IFC models can later be imported into various authoring applications for modification and design reuse purposes. This workflow facilitates interoperability and enhances collaboration across different stages of the project lifecycle.

Plant 3D

Converting to Native Plant3D format supports editing and features exclusive to Plant3D, eliminating the need for additional dependencies. While direct conversion is feasible, using the PCF route is recommended for enhanced connectivity and comprehensive integration of end conditions. The PCF export process already integrates certain features to ensure a smooth transition, facilitating a seamless migration to Plant3D with full functionality and connectivity.

AutoCAD Solid/Mesh

This option is used to export AutoPLANT components into solids and meshes as needed, eliminating the dependency on Object Enablers required to open drawings in AutoCAD

Bring Your Case

If you are worried about preserving the AutoPLANT and PS models and the above workflows are not helping you out, then please discuss your case and we are here to help you out.

SolidRevive Technical Overview

SolidRevive comprises three primary components:

1. Standalone UI:

The purpose of this interface is to execute various commands of the AutoCAD Plugin with customizable settings in batch mode, enhancing efficiency. Detailed discussion on the application follows in the subsequent section. If you wish to utilize the AutoCAD Plugin directly, please contact us.

2. AutoCAD Backend Plugin:

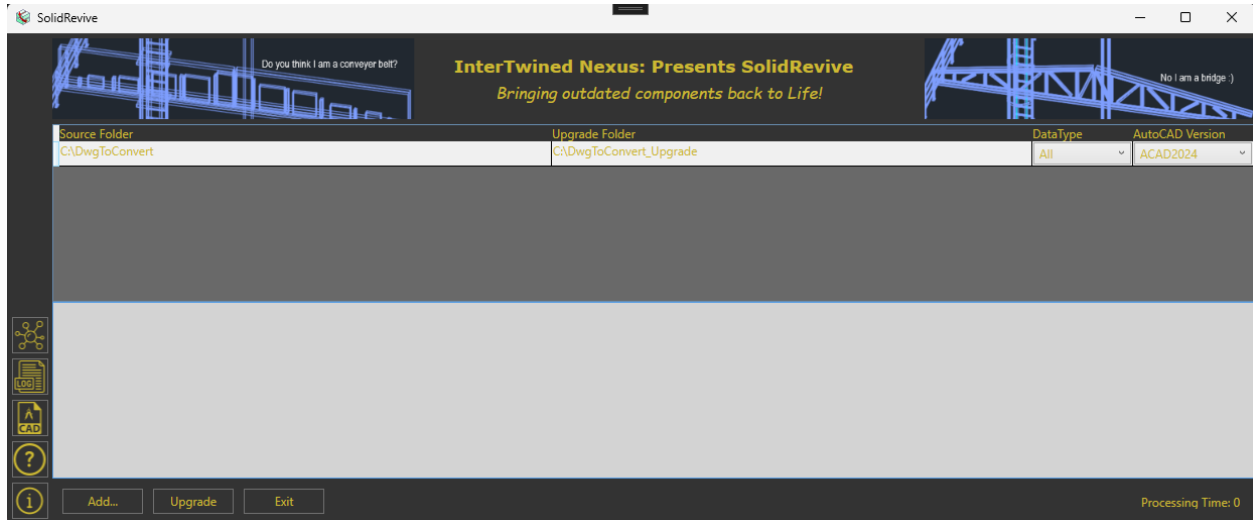
This plugin offers multiple commands for diverse types of conversions. However, users need not directly interact with it; instead, they should utilize the interface described below. A valid AutoCAD license is required to use this application.

3. SolidRevive Palette:

This interface is available inside Plant3D and give various options to convert the model to native Plant3D and to view the properties and mappings.

Standalone UI

Upon installation, launching the application will prompt the following dialog:



Main User Interface

There is left panel to do various one-time settings and then use the main application to run conversions multiple times.

The Main UI of SolidRevive encompasses the following elements:

Files Area:

- Initially empty, this area begins populating as you add drawings. For organization, you can specify the data type (e.g., plant, structural model, or both) of the drawings. Selecting "Structure and Piping" is optimal if you maintain separate DWG files for piping and structures in distinct folders. Choosing "All" attempts to process both conversions on the drawing. Additionally, you can specify the AutoCAD version for the job, allowing flexibility in processing different folders with varied CAD versions. This feature is particularly useful when Object Enabler availability differs across CAD versions.

Results Area:

- This section displays the processing results, indicating success or failure, along with the path to the generated log files.

Add...

- Clicking this button opens the folder browser dialog. Upon selecting a folder, a new row is added to the Files area, displaying the source and target paths, along with default DataType and CAD Version settings. You can manually update the target folder by typing or copy/pasting a folder path. If the specified folder does not exist, it will be created. Similarly, you can customize the DataType and CAD version as needed.

Upgrade

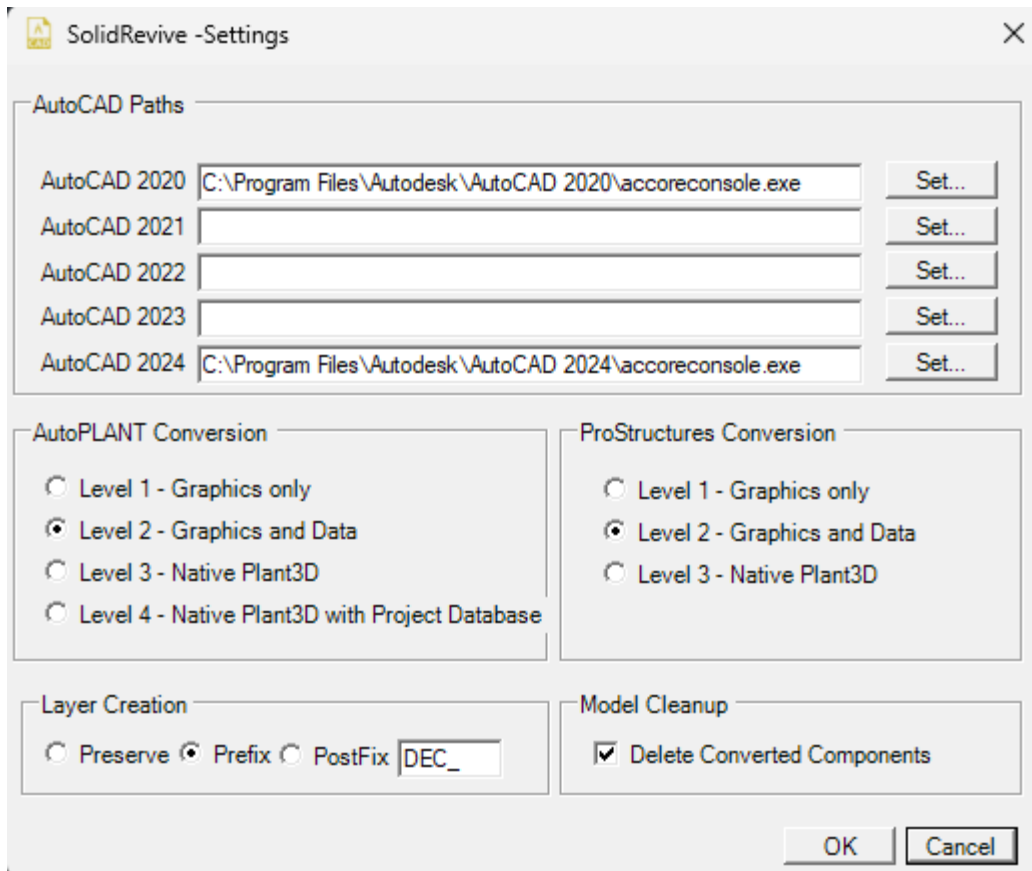
- Initiates the processing of all files listed in the Files Area. Conversion results will be displayed in the Results Area as they become available. Clicking the "Upgrade" button resets the processing timer, and the elapsed time is updated as each drawing is processed. Upon completion of the job, you'll have an overview of the processing duration.

Left Panel Options

There are multiple buttons in the left panel and let's discuss them what they do

Settings

Clicking the Settings button will open this dialog.



AutoCAD Paths: This section allows you to set the path for the installed AutoCAD version(s) on your machine. You only need to specify the paths for the versions you have installed or intend to use. Even if multiple CAD versions are installed, you can set paths for each, and the main interface will provide a dropdown option to select the version for each folder.

AutoPLANT Conversion: Various levels of AutoPLANT conversion are supported, offering flexibility based on your requirements:

- **Level 1:** Converts AutoPLANT graphics to native CAD solids.
- **Level 2:** Converts AutoPLANT graphics to native CAD solids and includes data, viewable in the Property dialog.
- **Level 3:** Converts AutoPLANT data to native Plant3D components, enabling modification in Plant3D and utilization of Plant3D tools like DataManager and publishing. Pre-steps such as mappings and spec conversion are required. If spec or mapping is unavailable, conversion proceeds with solid graphics and data.

Note: It is possible to avoid going to Level 3 in the first go and one can do the conversion into two levels. First move the data to level 2 and later optionally upgrade the data to Plant3D format that we will discuss in SolidRevive Palette section.

- **Level 4:** Allows linking newly created Plant3D components with tags, a feature currently in development.

ProStructure Conversion: For ProStructure, conversion options aim to mirror those available for AutoPLANT but are simpler and more straightforward.

Layer Creation: During component creation, there's an option to either place new components on the same layer or create a new layer with a prefix or postfix. Storing data on a new layer offers the advantage of troubleshooting conversions by toggling the layer visibility to identify any unconverted elements.

Properties Mappings

Selecting Mappings in the left panel will pop up this dialog. There are a few mappings available out of the box and further can be defined over here. Left hand side is showing the properties of AutoPLANT and the right-hand side shows the properties of Plant3D. Bottom portion is showing the mapping between source and target.

The dialog box is titled "Property Mapping". It contains a "Select Component Type:" dropdown menu with "Piping" selected. Below the dropdown are two columns of property names. The left column lists AutoPLANT properties, and the right column lists Plant3D properties. At the bottom, there is a table with "Source" and "Target" columns, showing pre-defined mappings. Buttons for "Add", "Save", and "Cancel" are also visible.

Source	Target
AT_PROJCOMP.LINENUMBER	LineNumber
AT_PROJCOMP.AREA	Area
AT_PROJCOMP.SERVICE	Service
AT_PROJCOMP.UNIT	Unit
AT_EXTDATA.SPEC	Spec
AT_EXTDATA.MATERIAL	Material
AT_EXTDATA.TAGNUMBER	TagNumber

To add a new mapping, you can select the AutoPLANT source property on the left-hand side and Plant3D property on the right-hand side and then press the Add button.

Pressing the Add button will show the mapping in the bottom panel. Pressing save will persist the mapping into a setting file over here

`%AppData%\Roaming\SolidRevive\Settings\APP3DMappings.json`

Properties as coming the top portion are coming from PropertyLists.json that is in the same folder
`%AppData%\Roaming\SolidRevive\PropertyLists.json`

Advance users can manipulate these values directly into these JSON files as well. Like if you have custom properties in AutoPLANT and later you defined them in Plant3D system as well then you can add those properties directly into the PropertyLists.json

AutoCAD Backend Plugin

This component has no UI and does the heavy lifting of converting the graphics behind the scenes. It takes input from various mapping files and gets used by both the NET Plugin and the Palette as discussed in the next section. If palette and the automation interface is not enough for the workflow you want to achieve like some automation with ProjectWise or so on, then you can contact the support and we will be more than happy to answer your questions and assist you.

SolidRevive CAD Control

SolidRevive Palette will appear within the Plant3D session and has two tabs.

Interrogate and Convert – I&C:

This tab allows to interrogate the AutoPLANT actual properties with the one those are mapped to Plant3D components and line number. It will help to see what properties need to be mapped. The other option this dialog is providing is the conversion of AutoPlant 3D to Plant3D components. Here is the UI of the I&C tab and further explanation.

Mapped Properties

Key	Value
LineNumber	NG242
Area	CGC1
Service	NG
Unit	1
Spec	C6A
Material	
TagNumber	


LineNumber Properties

Key	Value
InsulationThickness	0
InsulationType	AA
Service	NG
Tag	NG242
Number	NG242

All Properties

Key	Value
AT_GRP.MT	MS
AT_GRP.GN	AT_HDRWD5CR_4IQ
AT_COMP.MDL	Base
AT_COMP.CLS	AT_PIPE
AT_COMP.SPC	C6A
AT_COMP.STB	PIPE
AT_COMP.SID	D2076CB8DF6E35848A707622028895CAA57FBD11

There are a few buttons on the top left and here is the explanation in the order.

Item	Tool Tip	Description
	Select Component	<p>Selecting this option will ask to select a component and if it is component converted by solid revive then it will populate the data grids below.</p> <p>All Properties: This grid shows all the AutoPLANT component data that is persisted in the original drawing and is carried over.</p> <p>Mapped properties are showing the Plant 3D properties name that is the result of the mapping.</p> <p>LineNumber shows the Plant3D mapped properties of the given component.</p>



Set Preferences

This option is not available until a component is selected. Once the component is selected then this option will set the current spec and size into the preference dialog.



Replace Component

This option is not available until a component is selected. Once the component is selected then this option will replace the AutoPLANT solid to Plant3D native component.

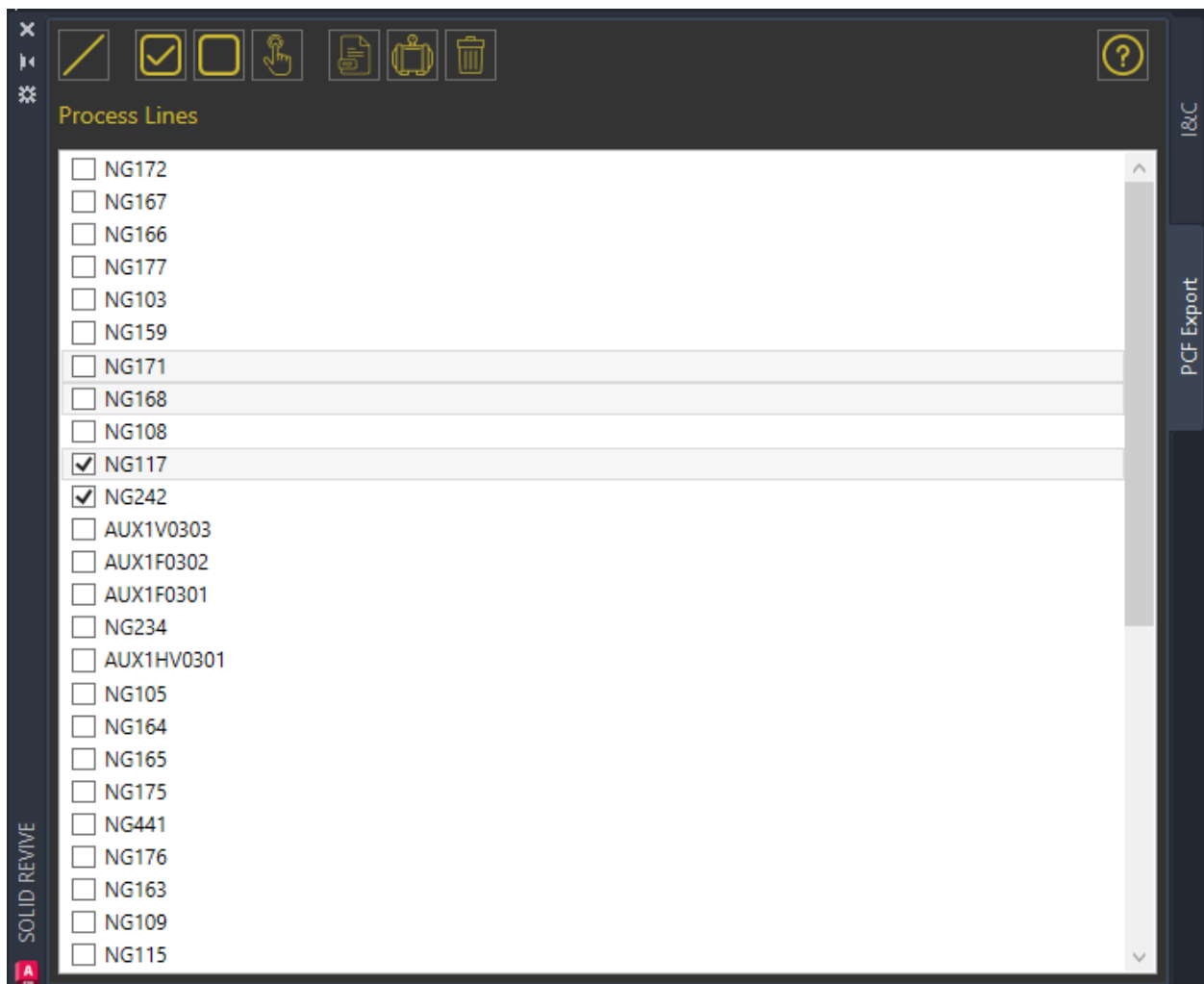










Replace Assembly

Selecting this option will allow users to select multiple components and convert all of them into Plant3D components in one go.

PCF Export

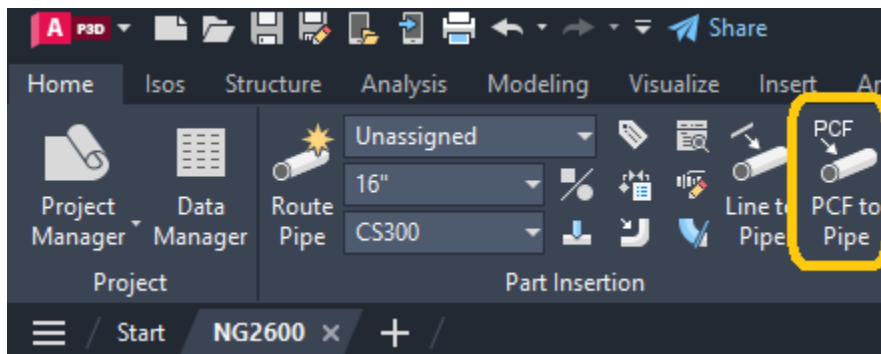
This tab allows to export piping components as PCF and then later AutoCAD option “PCF to Pipe” can be used to import the line back in Plant3D format. Here is the UI of the I&C tab and further explanation.



Icon	Tool Tip	Description
	Load Process Lines	Load all process lines used in the current Model in the list box
	Select All	Select all Process lines
	DeSelect All	Deselect all Process Lines
	Select by Component	Selecting component will get selected in list box
	PCF Export	Export selected lines to PXF format
	Convert Equipment's	Convert all equipment and nozzles in the model to Plant 3D
	Delete Process Lines	Delete all components on the selected process lines
	Help	Display Help

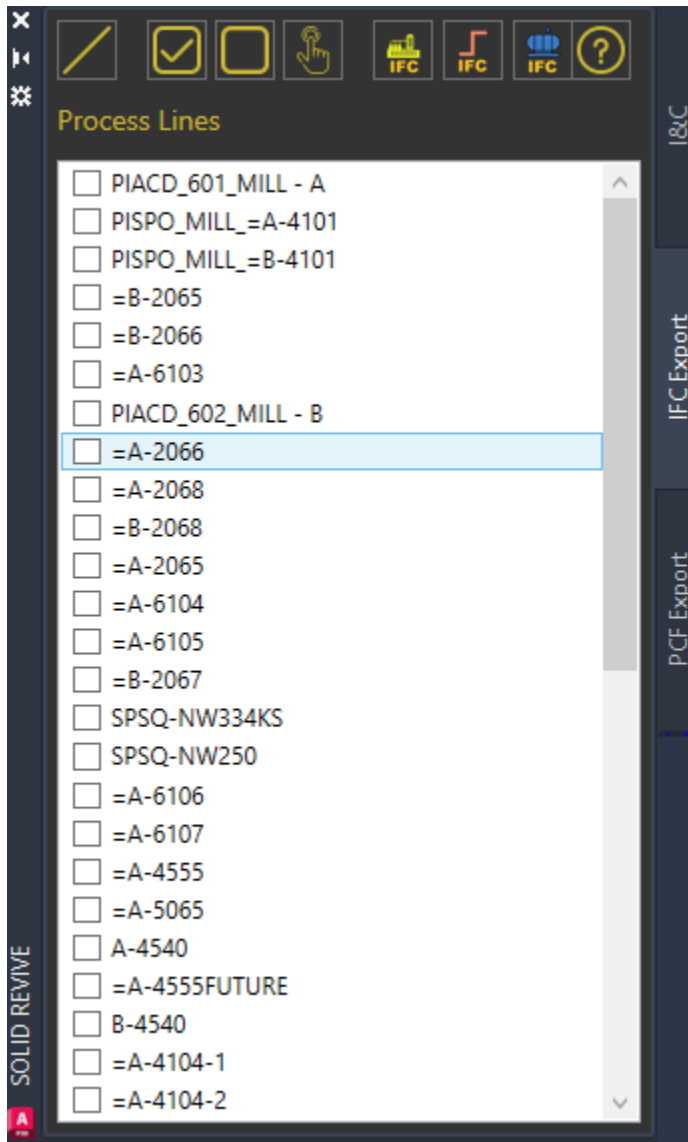
Conversion WorkFlow






Open a converted model as discussed in the first section of the help in the neutral format. Load all lines and export to PCF. Then use the delete line option to delete all piping components. Use the convert equipment that will convert all the equipment and nozzles in the model. Now you can import all the PCF files as exported in the first step using the AutoCAD option “PCF to Pipe” as shown below. So, your whole models are converted into the Plant3D format. One can convert selected lines and import into other models so there are variety of option for design reuse.



IFC Export

This tab allows to export AutoPLANT components to IFC format in multiple ways.



Icon	Tool Tip	Description
	Load Process Lines	Load all process lines used in the current Model in the list box
	Select All	Select all Process lines
	DeSelect All	Deselect all Process Lines
	Select by Component	Selecting component will get selected in list box
	Export Model to IFC	Export whole model to IFC format



Export Line(s) to IFC

Export selected lines to IFC file(s)



Export All Equipment's to IFC

Export all equipments to IFC Format



Help

Display Help