Ten Troubleshooting Topics for Plant3D and P&ID

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PD5471-R   Plant Design Suite provides comprehensive plant design software in an economic package. Plant3D & P&ID can effectively assist in the design and modeling phase of plant projects; however, troubleshooting problems related to Plant Design Suite is a challenging task. In this class, you will learn how to cover all the "sore spots" of Plant3D; learn how to troubleshoot the 10 most common problems such as: Project setup and Configuration, Networking issues, Vault, Inaccessible Project, Custom parts, Equipment, Specs and Catalogs, Editing XML codes, and Migration problems, to name a few. You will also learn how to use Revit data in AutoCAD Plant3D, how to incorporate Autodesk Inventor part & assembly models and bring AutoCAD Structural Detailing (ASD) drawings into AutoCAD Plant3D for a better workflow.

Learning Objectives

At the end of this class, you will be able to:

- Troubleshoot most common problems with Plant3D and P&ID.

- Troubleshoot problems with Project setup and configuration, Networking issues, Vault.

- Learn how to incorporate Inventor, Revit data and ASD drawings into an AutoCAD Plant 3D project.

- Learn how to work with Autodesk Plant Design Suite to enhance project workflow.

About the Speakers:

Hung Nguyen has 22 years of experience in Autodesk Products. He has a strong background in Architectural, Mechanical, Plant design, and Manufacturing fields. His is a Building & Manufacturing & Plant Solutions Technical Consultant. Hung has extensive experience in Manufacturing, Plant, Mechanical Design, Architectural, Structural detailing, and a diverse range of CAD-related software: Revit, Inventor, Plant3D, P&ID, Tekla, and Simulation to name a few. His energetic style has been valuable when consulting, demonstrating, and teaching. As a result, he is CANSEL's most valuable Application Consultant. With his knowledge of programming languages: Auto LISP, VB.net, Visual C++, he has worked with Robot program, automating standard working drawings for many companies in Canada including structural/architectural firms, Plant, oil & gas industrials, Pre-Fab and fabricators.

He is Autodesk Certified Instructor (ACI) and have presented at Revit Technology Conference (RTC) and Architecture Festival.

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Irene Radcliffe has over 25 years of experience in the Oil & Gas industry as both a piping designer and software administrator. She began working with the Autocad Plant 3D in 2010, when she was invited to join a team of content developers who were assisting the Autodesk plant development team during the software's early releases. Irene currently works for Cansel as a Technical Consultant for Autodesk business, providing support, training and implementation for Autodesk products in Alberta's Oil and Gas sector.

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Introduction

This is not a "Tips and Tricks" class, but rather a round table discussion covering the most common problems with AutoCAD Plant 3D and P&ID. During this session, we will also share with you our own troubleshooting techniques and related documents.

During the past few year supporting AutoCAD Plant 3D and P&ID, we have received phone calls and emails requesting assistance to solve problems users may be having with Plant Design Suite. These problems range from Basic, Advance and Enterprise Priority. Our Technical meetings involve the whole CANSEL support team. Shared knowledge throughout the team meetings helps to resolve issues in a timelier manner. The team also discusses existing defects that might have been logged, or workarounds that may already have been developed.

We also reach out to you, asking you to share your experiences with Plant 3D Troubleshooting. Your contribution to this round table discussion is the KEY to the success of this class.   By having more accomplished users share their experiences, and having lesser experienced users ask questions, we hope that everyone will leave this session better equipped to solve issues quickly and effectively.

1. Project Setup and Configuration

Designated person to control editing of project setup
It is recommended that one person (or a designated team) be responsible for project setup and configuration. This ensures that your project is not edited by users who are not authorized to modify project content. This will also help in the troubleshooting process because having a designated administrator(s) makes it easier to implement, log and track any customization or configuration changes.

SQLite should be used only on small projects with a limited number of users. SQL Express and SQL Server are more stable when managing a Plant 3D project database. Vault should be used if there is a need to have multiple users at different office locations. Users must make sure they find the best option for their workflow. They will also need to understand how to maintain a SQL database and have a working knowledge of Vault.

There is an AKN document available that helps the user with Managing a complete AutoCAD Plant 3D site over multiple project.

http://knowledge.autodesk.com/article/Managing-a-complete-AutoCAD-Plant-3D-site-over-multiple-projects

http://knowledge.autodesk.com/support/autocad-plant-3d/troubleshooting/caas/sfdcarticles/sfdcarticles/Project-Setup-Checklist-for-AutoCAD-Plant-3D-and-AutoCAD-P-ID.html

Project Template Workflow
There should be initial development of a project template prior to project startup if possible. This will determine any unique tagging, project setup adjustments, title block development, and project file locations

Catalogs and Specs
Time should also be taken to develop Catalogs and Spec. This will include development of custom items that are not available in the default catalogs, incorporation of downloadable content packs found on the Autodesk Apps Exchange website.

Palettes user permissions
Users should also consider making tool palettes read only for projects that require multiple users. This ensures that all users are working with same approved components, and the project administrator has control of all catalog and specs updates for the duration of the project.

http://knowledge.autodesk.com/article/Project-Specific-Tool-Palettes-for-AutoCAD-P-ID-Projects

Backing up of projects
Make sure that backups are being created regularly. Backups should also include file folders that contain catalogs, specs, or any other related Plant 3D files that may have been customized.

2. Networking issues

SQLite, SQL Express, SQL Server, Vault Projects
Most initial SQL issues seem to be related to having either limited or no knowledge of SQL setup with a Plant 3D or P&ID project. There is an AKN document that helps users to understand this process. It is entitled "How to configure Microsoft SQL Server for AutoCAD Plant 3D projects."

http://knowledge.autodesk.com/support/autocad-plant-3d/troubleshooting/caas/sfdcarticles/sfdcarticles/How-to-configure-Microsoft-SQL-Server-for-AutoCAD-Plant-3D-projects.html

Required files to test

Create a SQLite project and include the drawing that shows issue

Do not include specs not used in project

Custom specs and catalogs

How to prepare and send an Autodesk® AutoCAD® Plant 3D or P&ID project to Autodesk technical support.

3. Vault

Autodesk Vault (http://www.autodesk.com/products/autodesk-vault-family/features) is document management software that integrates with many products in the Autodesk portfolio. In 2014, Vault became integrated into the Plant Project Manager. Vault should be used in the following conditions:

- You have multiple sites that need to share data
- Your Plant project structure contains all external references.
- You can use SQL Server or SQL Server Express.

Vault allows you to store the drawing data in a central location, and have satellite offices check in/out drawings on an as-needed basis. Currently, all xrefs must reside within the project structure, as Plant uses its own working directory for vaulted projects.

Limitations in AutoCAD Plant 3D 2014

AutoCAD Plant 3D 2014 projects work with Autodesk Vault Server 2013 and Autodesk Vault Server 2014. Autodesk Vault Client is not required. If you do install Autodesk Vault Client, only Autodesk Vault Client 2013 is supported

If Autodesk Vault Client 2014 is installed, you will see the following message when you create or migrate a project: *The Vault server reported an error: Autodesk.Connectivity.WebServices.Folder cannot be cast...* To work around this problem you can uninstall Autodesk Vault Client 2014.

Creating a new project in Autodesk Vault and configuring it for a multi-site workflows

It is quite common for companies to manage many projects for one site; however, it requires that the design documents are contained within one entire project to enable consistency in documentation. The documents can be managed in such a way that the projects can all be run concurrently, but updating occurs in one location. In turn, this process enables external use of the data, such as in Autodesk® Navisworks® software or database software that is also managed as a single project/site entity. These are the typical steps needed for Managing a complete AutoCAD Plant 3D site over multiple projects:
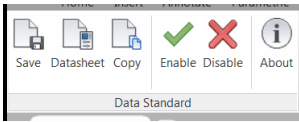
- Setting up an AutoCAD® Plant 3D Project that is based on a complete site, with the intention of running a number of subprojects.

- Linking other AutoCAD Plant 3D projects into the main site project.

- Setting subproject-specific properties so they do not interfere with the main project.

- Setting up reports based on the main project and the subprojects.

http://help.autodesk.com.s3.amazonaws.com/sfdcarticles/kA230000000tnGgCAI/AutoCAD%20Plant%203D%20Multiple%20Projects%20.pdf

Vault Data Standard

Vault Data Standard is a data control feature for found within Autodesk Vault Professional and Vault Workgroup that helps you enter data for new or existing files in a standardized format.

Vault Data Standard is a data control feature helping you to ensure design relevant information is captured in a standardized format during the data entry process in Vault Explorer, Inventor and AutoCAD. This allows you to standardize on methods including mandatory properties, file location, templates and more during data creation. Vault Data Standard offers additional configurable Datasheet tabs within Vault Explorer to expose relevant information for each object type. This capability is configurable and customizable to address your specific needs and also define such things as, dynamic pick list, specific complex file naming or additional business logic.

http://knowledge.autodesk.com/support/vault-products/downloads/caas/downloads/content/vault-data-standard-for-autodesk-vault-workgroup-and-vault-professional-2015.html

Companies commonly use standards to drive a process or project. This includes specific folder structures with certain types of files in each folder. Specific properties are required on certain file types and must be filled in completely before the project is complete. Vault Data Standard helps CAD administrators enforce document standards at the time of creation for files and folders.

4. Project cannot be accessed

Specific user cannot open a Plant 3D or P&ID network project.
When users are accessing the AutoCAD Plant 3D or AutoCAD P&ID projects from the network server, some data is cached locally. This is done primarily to improve performance of the application in areas where the data is not expected to change frequently.

It is always recommended to back-up the project and its drawings. The process to restore a backed up project in very straight forward, just copy the backed up project to original location using Windows explorer. There is no extra step required if you are restoring the project on your local machine. If you are restoring the project to a network location in the same folder as the original project was, then after copying the project, it is necessary to clear the Persistent Local Data Cache (PLDC). This is necessary because the local data chance still has data from old/original project that might not be relevant to the restored project. To clear PLDC, you have to run PnPLocalDataCachePurger.exe tool. This tool is installed on your system while installing either AutoCAD Plant 3D or AutoCAD P&ID to the install root folder (default location on Windows will be *C:\Program Files\Autodesk\AutoCAD 2015\PLNT3D*).

Purging the local data cache will not delete, remove or corrupt your projects and the cache will rebuild again as soon as a particular project is opened. You can also consider running this tool when you see low disk space on your C drive. This will purge the local cache, so that you can release disk space usually used by completed projects. After PLDC has been cleaned, opening the project and drawing may take longer than usual as the cache will have to be re-built. Usually it will be the first time project is being used after PLDC purge.

http://knowledge.autodesk.com/article/Specific-user-cannot-open-AutoCAD-Plant-3D-or-AutoCAD-P-ID-network-project

Resetting User Profiles
AutoCAD Plant 3D can produce errors and issues for a specific user. If another user on the same machine does not encounter the same problems, then resetting of the affected Autodesk Plant 3D user profile will typically correct the problems.

http://knowledge.autodesk.com/support/autocad-plant-3d/troubleshooting/caas/sfdcarticles/sfdcarticles/How-to-reset-AutoCAD-Plant-3D-user-profile.html

**Error message stating another user is updating the project.**
Plant 3D message will appear saying **'Project Currently in Use'**. Plant 3D creates lock files similar to the way AutoCAD creates a *.dwl* file when a drawing is being edited. AutoCAD Plant 3D and AutoCAD P&ID will lock the project file with a *project.xml.lock* and will create these four other file locks in the project folder where the *project.xml* file is located:

- o *IsoPart.xml.plck*
- o *OrthoPart.xml.plck*
- o *PipingPart.xml.plck*
- o *PnIdPart.xml.plck*

Close the project, close Plant 3D or P&ID and delete these 5 files. This should allow the project to be opened and edited with no further error messages.

5. Migration

The key thing to remember about migration is to back up the project prior to migration. Test the migration first to see if the migration is successful. If the migration produces unexpected results then the user may need to create a new project in the new release and just copy the drawings over to the new project.
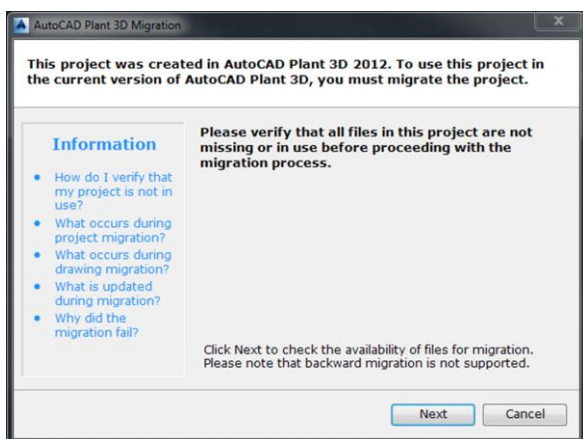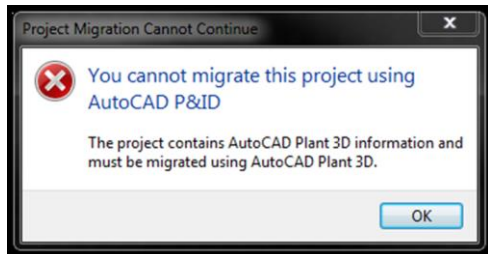
Projects

- Projects – backup prior to migration, consider recreating template of project and then bring over drawings rather than migration if jump is across large gap in Plant product versions

P&ID projects

- P&ID projects created in Plant 3D cannot be migrated to an updated new version of **stand-alone** P&ID.

Migration to 2015

- Projects must be migrated.
- Policy for Extensions is no migration needed
  - o If changes are needed they are made transparently
  - o With success of extensions, revisit migration strategy
- If on Ext 2, essentially no changes except internal version number increment
  - o Ext 2 added config file/settings for BOM on Ortho automatically
  - o Min Pipe Length was added automatically if needed
- Project Version number bumped
- Pipe Specs and Catalogs
  - o Not required to be migrated
  - o 2015 works with 2014 Specs and Catalogs.

6. Editing XML codes

Editing tools

Here are the free tools:

- Notepad++ notepad-plus-plus.org
- SQLite Database Browser: http://sqlitebrowser.sourceforge.net/ (Simple GUI)
- SQLite Expert Personal: http://www.sqliteexpert.com/ (Personal version is free and it is by far the most user friendly one)
- SQLite Manager: https://addons.mozilla.org/en-US/firefox/addon/sqlite-manager/ (Add-ons inside Mozilla! Works if you do not have administrator access to install SQLite Expert)

Tracking XML editing

Adding notes with your XML editing allows both the user and product support to see where editing might have been done. This will be useful in troubleshooting of issues that may be related to XML editing.

<? Start?>

<? End?>

```
<?Hung  Nguyen make changes here?>
<ProjectPartDirectories>
    <ProjectPartDirectory name="SpecSheets" directoryName="C:\Pla
        relativeDirectoryName="Spec Sheets" uncDirectoryName=""/>
    <ProjectPartDirectory name="Ortho" directoryName="C:\Plant De:
        uncDirectoryName=""/>
    <ProjectPartDirectory name="Related Files" directoryName="C:\Pl
        relativeDirectoryName="Related Files" uncDirectoryName=""/>
</ProjectPartDirectories>
</Project>
<?End  ?>
```

Which XML files are editable

Common XML files that are editing within a Plant 3D project.

- Project.xml
- IsoConfig.xml

http://knowledge.autodesk.com/article/De-mystifying-AutoCAD-Plant-3D-isometrics-a-configuration-reference

Back up XML files

Always back up XML files before editing it.

7. User's custom parts, equipment, specs and catalogs

New users will have the expectation to be up and running quickly with the program. Many mistakes can be avoided with prior training and going through courseware material before starting a new project.
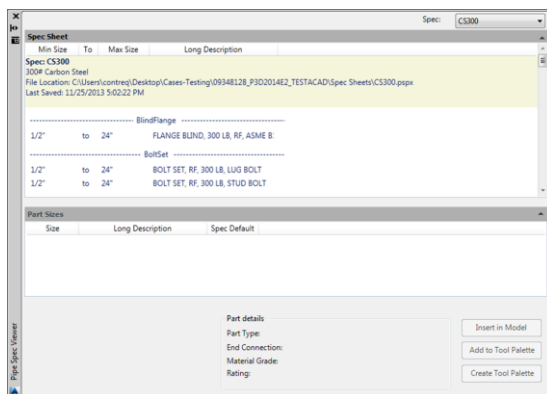
Training

Pushing training before starting a project. Users must have a basic background understanding of Plant 3D drawing structure. This will allow them to follow the correct workflow so they do not run into issues while their projects are being developed.

There are many reference resources available to get users up to speed quickly. Training is always recommended first, if possible. Having training guides is the other alternative. Online research is another resource with Plant 3D and P&ID forums and the Autodesk Knowledge Network. There are also many 3rd party web resources that list Plant 3D and P&ID workaround and additional customization reference material.

Content Packs
http://apps.exchange.autodesk.com/PLNT3D/en/Home/Index

Migrating external spec to AutoCAD Plant 3D
http://knowledge.autodesk.com/article/Migrating-External-Specs-to-AutoCAD-Plant-3D

8. Defects or Wish list items – Window Update – Network Protocol

Sometimes a user will think because something does not work as expected, that it is a defect in the program. However, we still have to be able to repeat the issue to verify if it is indeed a defect. Once a defect is identified we will try to find a workaround to the issue.

Users are one of the main sources of product improvement. Autodesk want to hear how this would make Plant 3D and P&ID better. If you would like to express to Autodesk developers why a feature is important, you can use the following feedback link:

http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=1109794

9. Third party programs

Autodesk Exchange Apps

Files found on the apps exchange are not all supplied to Autodesk. THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF

MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Workflow comparisons
CADWorx – AutoCAD Plant 3D can convert CADWorx specs or catalogs for use in AutoCAD Plant 3D. If conversion fails, you can check the log file for possible reasons. If the log file says "*Cannot convert file. Open file in latest CADWorx spec generator. Then retry conversion,*" your spec lacks class information required for conversion. Upgrading your spec by opening it in the latest version of CADWorx spec generator supplies the missing information. You can then migrate the spec to Plant 3D.

AutoPlant – AutoCAD Plant 3D can convert AutoPlant specs or catalogs so that they can be used in AutoCAD Plant 3D. If conversion fails, you can check the log file for possible reasons. If the log file says "*Cannot convert file. Open file in latest AutoPLANT spec generator. Then retry conversion,*" your spec lacks class information required for conversion. Upgrading your spec by opening it in the latest version of AutoPLANT spec generator supplies the missing information. You can then migrate the spec to Plant 3D.

10. Suite workflows (Navisworks, Revit, Inventor, ASD, Advance Steel)

Object Enablers
Autodesk offers free downloadable enablers that you can use to access, display, and manipulate object data in applications different from their native environment. This provides essential data accessibility for design teams who create or receive files using Autodesk software. For more information on functionality, installation, and performance, see the Help file included with the enabler.

http://knowledge.autodesk.com/support/autocad-plant-3d/downloads/caas/downloads/content/autodesk-autocad-plant-3d-2014-object-enablers.html

How to use Revit data in AutoCAD Plant 3D
The best way to import Autodesk® Revit® data into AutoCAD® Plant 3D is to use the ACIS-format (*.sat). Afterwards some elements are surfaces and no 3D solids. These elements have to be converted to 3D solids via the command SURFSCULPT.

For performance reason or for a better workflow, it is recommended to optimize the data in Autodesk Revit before for very complex models. You will work here with section planes and live sections. Therefore you have to adopt the export setting of Revit. In

Revit there are two possibilities to export a DWG: Polymesh or ACIS solid. Do the following:

- o *Revit*: Select 'ACIS Solid' because you are not able to create live sections with Polymesh
- o *Plant 3D*: Copy this created drawing into the project
- o *Plant 3D*: Open the drawing
- o *Plant 3D*: Switch to workspace '3D Modeling'
- o *Plant 3D*: In the ribbon group 'Section' you already see the command 'Section Plane'.
- o *Plant 3D*: If you click the arrow of this group you will see the whole ribbon group and you will see the command 'Live Section'. Both commands are described in the help.
  The created live section can be adopted by grips. So you can easily see what you want to see. You are able to add easily for example an equipment which is located inside of a building.

How to incorporate ASD drawings into Plant 3D project
One recommendation on using ASD drawings in Plant 3D projects:

- o Develop steel drawing(s) in ASD.
- o In the Plant 3D project, in Project Manager, create a folder under "Plant 3D Drawings" called "ASD" or "ASD-Steel" or something similar.
- o Highlight that folder, right-click and "Copy Drawing to Project" selecting the ASD drawings. (Note that this creates a copy of the drawings into the project directory, leaving the original ASD drawings in their original location).
- o Use these drawings as external references only –referenced into other project drawings. Don't edit these ASD drawings in Plant.
- o In other model drawings in the project, add the ASD drawings as external references. Orthographic for example should work fine.
- o If changes or updates to the ASD drawings are made (in ASD):
- o Close the Plant 3D project
- o Using Windows Explorer simply overwrite the drawings in the Plant 3D project with copies of the updated ASD drawings of the same name.
- o Back in the Plant 3D project, reload Xreferences as needed.
- o Update affected Orthographic as needed.

How to incorporate Advance Steel into Plant 3D project
A typical work flow for working with Advance Steel and Plant 3D will involve:

- o Create conceptual steel inside Plant3D.
- o Export using SDNF.
- o Import into Advance Steel via SDNF.
- o Edit/Create/Modify do as you wish with the new model in Advance Steel.

o Save model with Proxy Objects
o Back in Plant3D, remove the Plant3D Steel model and replace it with the new Advance Steel model.

Another workflow will be:

o Use Advance Steel to start and model structure part of the Plan project.
o XREF AS models in to Plant 3D.

How to use Inventor content in Plant 3D
http://knowledge.autodesk.com/article/How-to-include-AutoCAD-Inventor-content-for-AutoCAD-Plant-3D

How to use other file formats with Plant 3D
Other file formats that can be imported to Plant 3D projects:

Format	Description
*.3ds	3D Studio
*.sat	ACIS
*.ipt, *.iam	Autodesk Inventor
*.model; *.session; *.exp; *.dlv3	CATIA V4
*.CATPart; *.CATProduct	CATIA V5
*.dgn	MicroStation
*.fbx	FBX (Filmbox)
*.iges; *.igs	IGES
*.ij	JT
*.x_b	Parasolid Binary file
*.x_t	Parasolid Text file
.prt; *.asm*	Pro/ENGINEER
*.g	Pro/ENGINEER Granite
*.neu	Pro/ENGINEER Neutral
*.3dm	Rhino
*.wmf	Metafile
*.ste; *.stp; *.step	STEP

Additional resources

Plant 3D and P&ID video content
- [Autodesk YouTube Channel](#) – Video tutorials and other useful product and industry videos
- [AutoCAD Plant 3D Videos](#) – Getting started videos

Plant 3D and P&ID Links
- [Autodesk Knowledge Network](#) - AutoCAD Plant 3D
- [Autodesk Plant Exchange on Facebook](#) – Autodesk Plant 3D related news, tips & tricks and other useful information.
- [Autodesk Plant Exchange on Twitter](#) – Autodesk Plant 3D related news, tips & tricks and other useful information.

Plant 3D and P&ID Links
- [Autodesk Community](#) – Find answers, share expertise, and connect with your peers (formerly Autodesk Discussion Groups).
- [Autodesk Exchange Apps for Plant 3D](#) - AutoCAD Plant 3D content packs and applications.
- [Autodesk University](#) – Search through past Plant 3D AU classes for various Plant 3D related information.
- [AutoCAD Plant 3D](#) – Quick reference guide.
- [Autodesk Plant Design 2014 Curriculum](#) - curriculum is intended to cover the introductory knowledge needed to begin a successful career in process piping design using the AutoCAD 2014 Plant software.