



# PlantTools

Optimize your workflow  
for AutoCAD Plant 3D

**au:xalia**

## CRAIG WOOD

CRB CONSULTANTS, KANSAS CITY, USA

*„PlantTools help our firm maximize the potential of AutoCAD P&ID/Plant3D. With their data-extension, reporting, and automation capabilities, nearly any new idea or concept can be realized. PlantTools personalized customer support is also second to none.“*

## GERHARD KAIPER

SENIOR PROJECT ENGINEER AND CAD-SYSTEM-ADMINISTRATOR  
VOGELBUSCH BIOCOMMODITIES, AUSTRIA

*„Our corporate claim highlights our ability to translate state-of-the-art technology into profitable plants, laying the groundwork for our clients' commercial success. Due to our high requirements CADSTUDIO developed a new PlantTool especially for our company: PlantSpecDriven! We also use all other PlantTools in a very efficient way. We registered 25 % time-savings in our 3D piping and the error rate dropped to a minimum. We are very satisfied with the PlantTools, life is a lot easier in our daily work.“*

## DINANT WEENK

PROJECT ENGINEER AND CONSULTANT  
WEENK ENGINEERING, THE NETHERLANDS

*„I'm using the PlantTools (mainly the PlantExpressTools and PlantSync) because it is so easy to make selection lists and to get changes into existing projects that have to be changed with a short down time. Just create a selection list and import it into P&ID or Plant3D within seconds. Changes of settings and symbols can be done outside a live project and easy synchronised with the desired projects. The downtime of the projects is just seconds and multiple destination projects are possible. I'm saving a lot of time, and time is money!“*

## 1 Welcome

auxalia GMBH invites you to take a closer look at our **PlantTools**.

**PlantTools** are a set of applications and utilities specifically designed to enhance the workflow and functionality of the Autodesk® Plant Solutions product AutoCAD® Plant 3D. As auxalia GMBH's training and consulting services have enabled us to be close to customers using Autodesk® Plant Solutions, **PlantTools** originated and have been developed from the real life needs of plant customers from a variety of plant industries.

The ability of our **PlantTools** to synchronize, copy and rename projects, manage selection lists, and edit symbol and class properties through csv files give administrators powerful tools to manage the AutoCAD® Plant 3D projects in their organizations.

**PlantTools** offer the ability to easily extend your workflows to users who do not have AutoCAD® Plant 3D installed on their desktops.

**PlantTools** significantly enhance project data management and reporting. Linking project data to external and internal data sources takes workflow and functionality to new levels quickly.

Please watch our Videos on **YouTube**: [Playlist PlantTools EN](#)

Here you can find **30 days trial versions of all our PlantTools**: [PlantTools 30 days trials](#)

In addition to developing high end applications and utilities for Autodesk®'s Plant Solutions, CAD STUDIO ABCOM GMBH's full solution-oriented approach is geared to ensure the successful adoption of AutoCAD® Plant 3D.

CAD STUDIO ABCOM GMBH's experts possess the knowledge and experience to get your organization maximizing the returns on your plant design investment faster than traditional "buy the box and train" approach.

We offer the following services:

- **"Customer Assessment Protocol"** (We help you to realize and document your needs and requirements for the configuration of your Autodesk® Plant Solution Products)
- Basic and Advanced **trainings** AutoCAD® Plant 3D
- **Configuration** AutoCAD® Plant 3D
- **Support**

If you would like additional information or have inquiries on how we can further assist you, please don't hesitate to contact us via e-mail [contact@auxalia.com](mailto:contact@auxalia.com).

We are looking forward to doing business with you!

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## 2 PlantTools Overview



### PlantCenter

**PlantCenter** is a tool that provides a central location for launching AutoCAD® Plant 3D projects as well as **PlantDataManager** and **PlantReporter**. **PlantCenter** also allows users to launch DWG TrueView from the central project interface, which will enable users to view plant project drawings.



### PlantClashDetection

With 3D modeling the need to locate and resolve clashes between objects is essential. Our **PlantClashDetection** Tool enables users to analyze clashes between model and XREF objects from within AutoCAD® Plant3D without the use of Autodesk® Navisworks.



### PlantDataManager

**PlantDataManager** was developed so that customers could have access to plant project data without having AutoCAD® Plant 3D installed on their computers. Users of PlantDataManager can modify plant project data or add non-placed objects and data and link those to external databases to plant project objects or calculate data.



### PlantExpressTools

**PlantExpressTools** are a collection of CAD-related functions as well as project administration features. Since the list gets longer with every version, you will get a full overview at the product's page.



## PlantLink

AutoCAD® Plant 3D provide a flexible and convenient project database out of the box. **PlantLink** significantly extends the use of data with your plant project data by enabling linking to external and internal data sources with flexible and configurable unidirectional and/or bidirectional live links. **PlantLink** can modify AutoCAD®-Properties like layer or color as well. **PlantLink** enables customers to tremendously improve the data flow within their P&ID drawings to further become more productive and reduce errors.



## PlantReporter

The ability to create and manage reports from AutoCAD® Plant 3D is a powerful tool for data intensive workflows. PlantReporter extends and enhances reporting capabilities by both enabling reporting of plant project data without Autodesk® products and by providing additional configurability. You can also create a group of projects and create reports from them. PlantReporter can create reports from other data sources or a group of them giving you the ultimate reporting tool. PlantReporter can also create versions and revisions of reports/lists, which can be compared to see changes in your data.



## PlantSync

For any organization with graphical and data standards, the ability to easily synchronize AutoCAD® Plant 3D project configurations is essential to an efficient design operation. **PlantSync** enables project administrators to maintain standards in a single “template project” and update one or many live projects quickly and easily.



## PlantSpecDriven

**PlantSpecDriven** allows you to assign catalog data from your AutoCAD® Plant 3D specs to your P&ID Symbols. This enables you to create Bill of Materials already from your P&ID drawings. In a second phase you can insert the P&ID symbols with the assigned data into your AutoCAD® Plant 3D drawings. During this process **PlantSpecDriven** checks for inconsistencies between P&ID and 3D. You can also link equipment and nozzles and have them checked for inconsistencies.

### 3 PlantCenter



**PlantCenter** offers a convenient central project launch user interface for your Autodesk® plant and PlantTools applications. Once the current project is selected in **PlantCenter** the selected project will then open by default in AutoCAD® Plant 3D, **PlantReporter** or **PlantDataManager** when launched from the icons in **PlantCenter**.

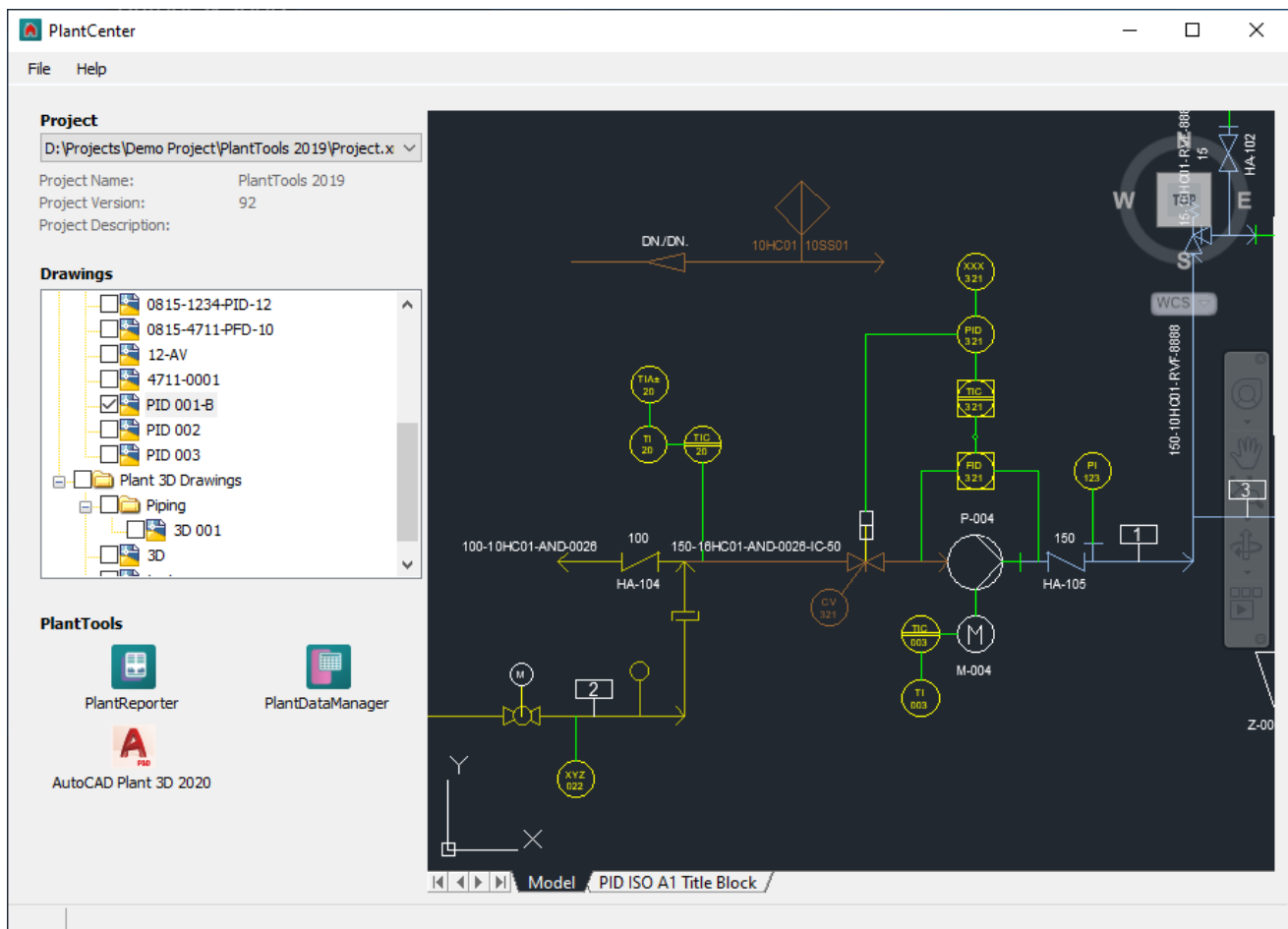
**PlantCenter** also allows users to open AutoCAD® Plant 3D project drawings without having these applications installed on your computer. By installing Autodesk®'s DWG TrueView, free viewer from Autodesk®, **PlantCenter** will open selected project drawings using the free viewer.

**PlantCenter** with Autodesk® DWG TrueView is a very powerful combination that can bring value to your plant design workflows.

**Main Functions:**



central project launch user interface  
 Opens AutoCAD® Plant 3D project drawings without having these applications installed using Autodesk DWG TrueView



## 4 PlantClashDetection



When working with AutoCAD® Plant 3D, users will route piping and create steel structures, equipment, and other physical components. Chances are, if you have a larger facility with multiple disciplines you will be working with XREFs from adjacent plant models and other disciplines. AutoCAD® Plant 3D's Project Manager can effectively manage models but cannot identify clashes between them.

Many Autodesk® plant customers use only AutoCAD® Plant 3D and are not interested in buying and learning a new software to perform clash detection. Coordinating the clashes between discipline xrefs in your plant model can now be done within AutoCAD® Plant 3D with **PlantClashDetection**.

**PlantClashDetection** can detect clashes between practically any AutoCAD® and AutoCAD® Plant 3D object. Not only are AutoCAD® Plant 3D objects recognized and processed for clashes, but AutoCAD® solids, blocks and xrefs are recognized and processed by **PlantClashDetection** as well.

**PlantClashDetection** has an easy, intuitive user interface, from which users can check, analyze, detect, and resolve clashes without having to leave AutoCAD® Plant 3D.

Our customers value **PlantClashDetection** for its ability to locate and resolve model clashes, which cannot be done with AutoCAD® Plant 3D alone.

### Main Functions:



Analyze, detect, and resolve clashes without having to leave AutoCAD® Plant 3D

The screenshot displays the PlantClashDetection application window. The 'Options' section includes:

- Ignore clashes between structural objects (Deviation: 10.0)
- Ignore clashes within pipeline group
- Consider insulation

The 'Clashes' section shows a table of detected clashes:

Object1	Layer1	Object2	Layer2	Intersection point	Count
Vessel, 743, T...	0	StructureMe...	02-structur...	5532.73, 9203.2...	
Vessel, 743, T...	0	StructureMe...	02-structur...	5462.75, 10600...	
Vessel, 743, T...	0	StructureMe...	02-structur...	7366.31, 10600...	
Vessel, 743, T...	0	StructureMe...	02-structur...	7366.31, 9200.9...	
Vessel, 739, T...	0	Pipe, 1667	0	12238.6, 9891...	
Vessel, 739, T...	0	StructureMe...	02-structur...	9559.2, 9200.95...	
Vessel, 739, T...	0	StructureMe...	02-structur...	9559.2, 10600.9...	
Vessel, 739, T...	0	StructureMe...	02-structur...	11462.75, 9200...	
Vessel, 739, T...	0	StructureMe...	02-structur...	11462.75, 10600...	
Pipe, 1667	0	Elbow, 1236	0	12552.55, 9931...	
Pipe, 1667	0	Pipe, 1281	0	12601.51, 9978...	
Pipe, 1667	0	Vessel, 629,...	0	12734.79, 9896...	
Vessel, 629, T...	0	Pipe, 1772	0	13379.93, 1056...	
Solid	04-External Equi...	Solid	04-Extern...	14296, 5000, 10	



## 5 PlantDataManager



**PlantDataManager** is a stand-alone application that enables access to and control of plant project data from standard desktop and laptop computers that do not have AutoCAD® plant products installed.

**PlantDataManager** was developed for project team members who use plant project data in their daily workflows. With AutoCAD® Plant 3D, project teams can only access and modify project data through the Autodesk® applications which typically require workstation grade machines to run on.

With **PlantDataManager**, project engineers, process engineers, instrumentation engineers, and designers can access plant project data in an intuitive tabular user interface. **PlantDataManager** allows multiple users to edit project data even while the drawings containing the data are open in production.

You can export and import your project data from and to **PlantDataManager** as well to be more flexible when editing data.

Until now users of and AutoCAD® Plant 3D could only capture data for objects placed in drawings or into a model. A key new feature of **PlantDataManager** is the capacity to create **non-placed objects**, or NPOs.

NPOs enable project teams to create and manage plant projects components from the **PlantDataManager** interface that are typically not represented by graphics or 3D components.

Also, because NPOs can be converted into P&ID objects, project teams can pre-populate project components into the plant project database even before creating P&ID graphics.

Extending the functionality of AutoCAD® Plant 3D further, **PlantDataManager** also allows users to define and create relationships between plant project objects.








With **PlantDataManager** you can create calculations which will be executed for your object data (e.g. calculate Flow Rate).

You can link external (catalog) databases as well as internal databases (improving data flow in P&ID) to your project's objects within **PlantDataManager** to push data integration ahead.

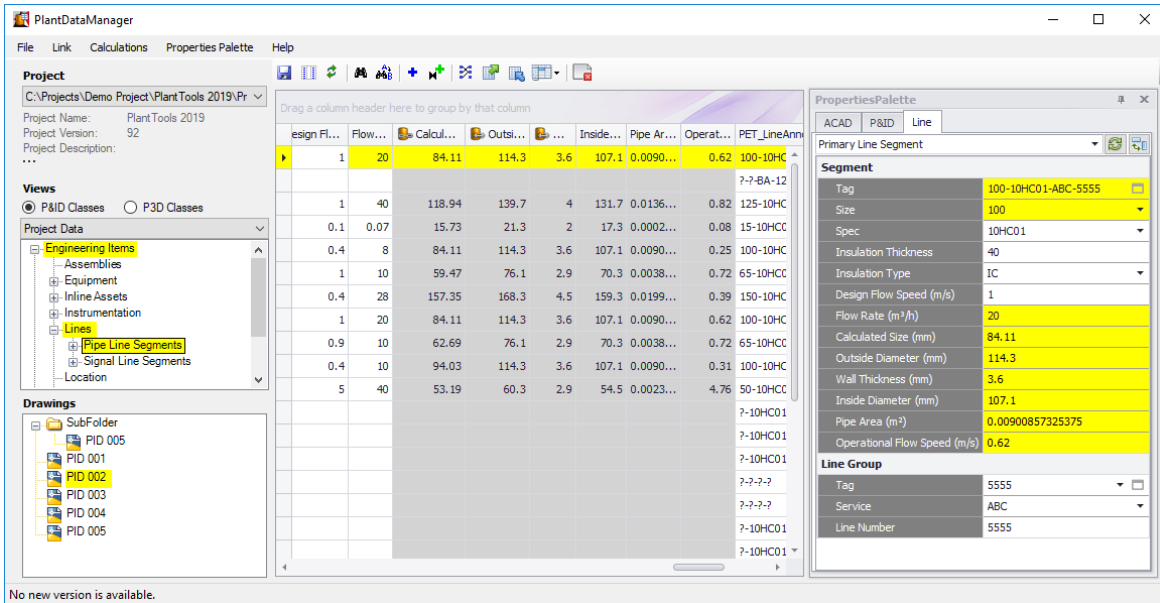
**PlantDataManager** significantly extends the native data handling capabilities of AutoCAD® Plant 3D, providing increased flexibility and functionality of your plant design workflows.

**PlantDataManager** uses the configuration of the properties palette of **PlantExpressTools** to better structure the AutoCAD® Plant 3D properties.

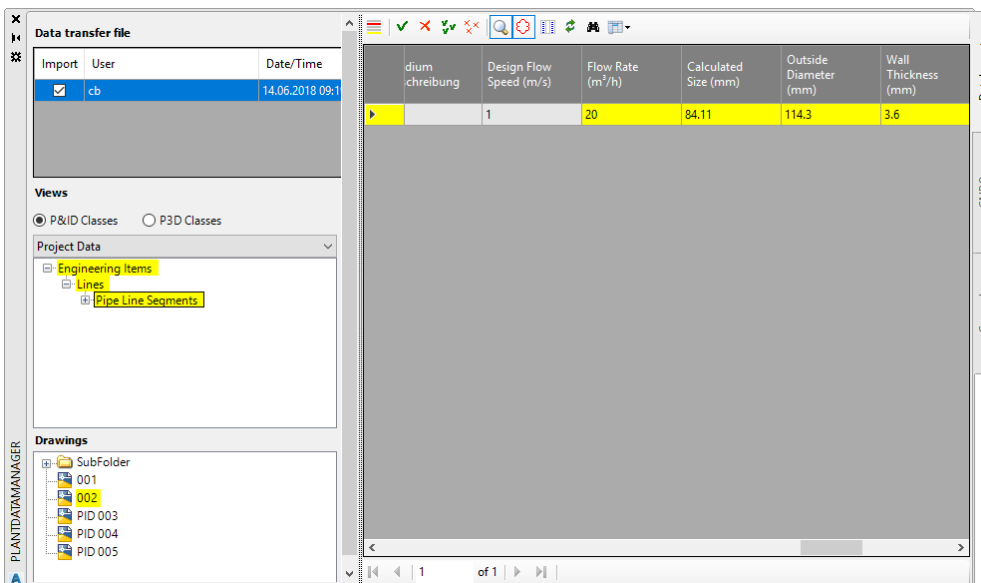
### Main Functions:

-  Edit project data without CAD by multiple users while drawings are open and in production
-  Create and insert non-placed-objects „NPOs“
-  Link external databases to your project's objects
-  Ex-/Import of Excel Sheets
-  Calculate properties using other object properties
-  Improve dataflow in your P&IDs
-  Multi-User editing

In this picture, you see the main user interface of PlantDataManager with changes marked in yellow. Based on Flow Rate and Flow Quantity, the size of the line will be calculated, and the next larger size will be selected, and the operational Flow Speed is finally calculated.



Here you see the same changes before they get accepted by the CAD user through PlantDataManager-Plugin.



## 6 PlantExpressTools

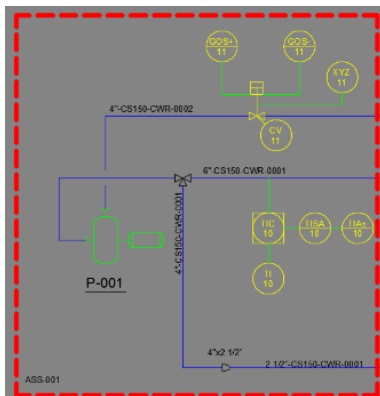


**PlantExpressTools** is a must-have set of utilities to assist Autodesk® plant project administrators in common tasks not easily accomplished in AutoCAD® Plant 3D.

**PlantExpressTools** is needed for each AutoCAD® and AutoCAD® Plant 3D license because it is running constantly in the background.





















### 6.1 Assemblies

Assemblies allow you to create a logical group your P&ID Symbols and Lines are related to. Assemblies can have a Tag, Annotations, Properties. Assemblies within Assemblies is also possible. Assemblies can be distributed over multiple drawings. Parallel Assemblies can be defined for different purposes.



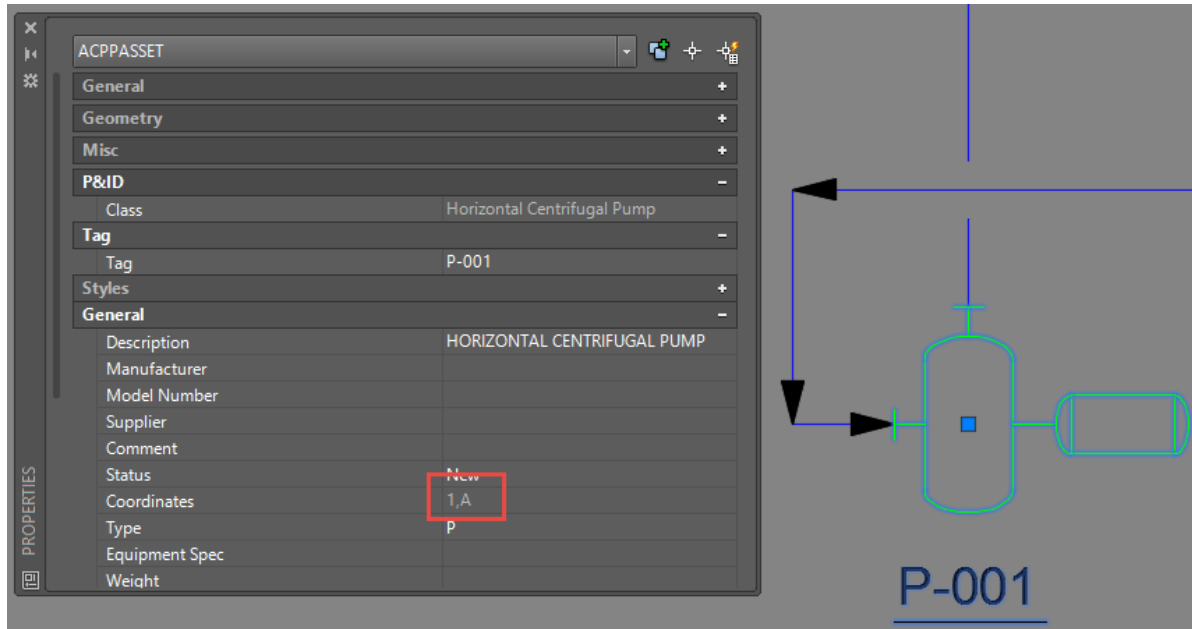
[Link to Short Video](#)

#### Main Functions:

-  Assemblies
-  Coordinates
-  Copy/Rename project
-  Ex-/Import of Project Setup
-  Update Line Annotation
-  DWG Export
-  Create Lists
-  Tag/Acquisition Update
-  Calculated Properties
-  Symbols Palette
-  From/To
-  Extended Assign Tag
-  Update Selection Lists
-  Check Nozzle Size
-  Properties Palette
-  Plant Project Manager
-  Bolt Calculation
-  PlantProjectCreate
-  Rule-based Block Insert
-  Change Log

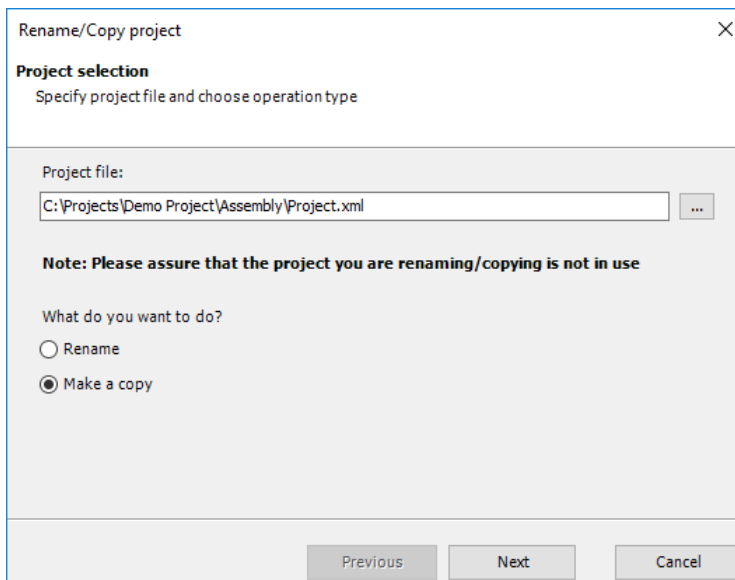
## 6.2 Coordinates

Calculates X-, Y- (-Z-)values of a grid (you can define) in your drawing.



[Link to Short Video](#)

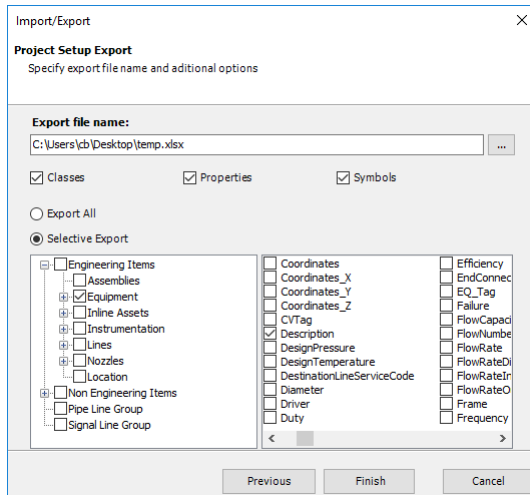
## 6.3 Copy/Rename project



Projects can be renamed or copied with or without DWGs. Copying a project includes all files in your project not just files which are directly related to AutoCAD® Plant 3D.

[Link to Short Video](#)

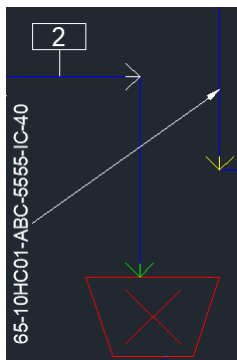
### 6.4 Ex-/Import of Project Setup



The Ex-/Importing function allows the ex-/import of Selection Lists. Furthermore, Classes, Symbols and Properties can be ex- and imported to change your project setup quickly and extensively. This speeds-up your project setup.

[Link to Short Video](#)

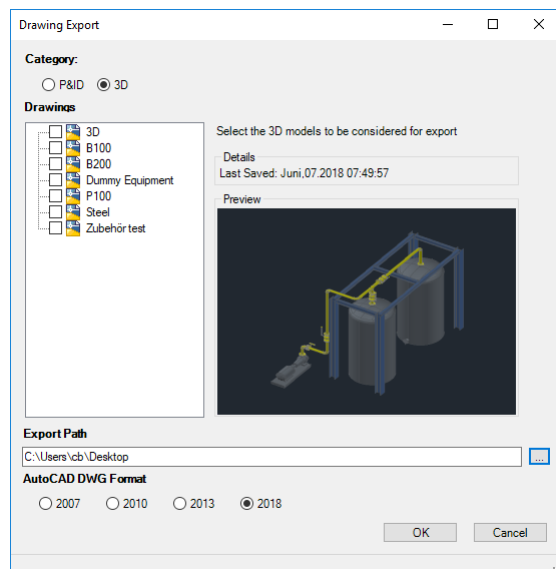
### 6.5 Update Line Annotation



Checks and updates the annotation of your line segments in P&ID, in case line annotations are not linked to their line segments anymore.

[Link to Short Video](#)

### 6.6 DWG Export



Exports P&ID and 3D drawing as standard AutoCAD® DWGs with standard AutoCAD® objects. This function will also purge the drawing and considers XREFs.

[Link to Short Video](#)

### 6.7 Create Lists

Tag	K-001	K-050
Description	DISHED HEADS VESSEL	STORAGE TANK
Class Name	Dished Heads Vessel	Dished Heads Vessel
Technical Data 1	.	20 m³
Technical Data 2	.	2000 mm
Technical Data 3	.	1000 mm
Technical Data 4	.	
Technical Data 5	.	
Technical Data 6	.	
Operating Pressure	.	10
Operating Temperature	.	60
Material	.	1.4571
Model Number	.	123456
Manufacturer	.	Ebner

Generates lists in your P&ID drawing. For example, creating equipment lists in your drawing.

[Link to Short Video](#)

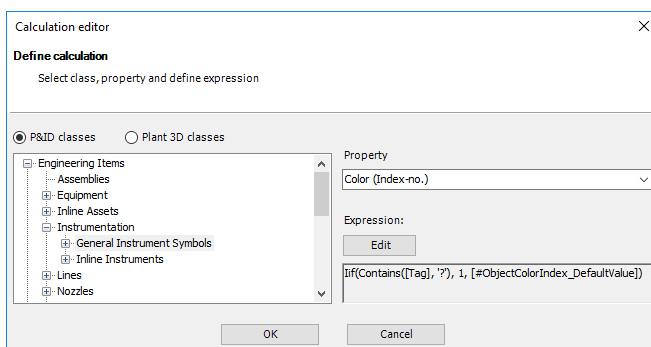
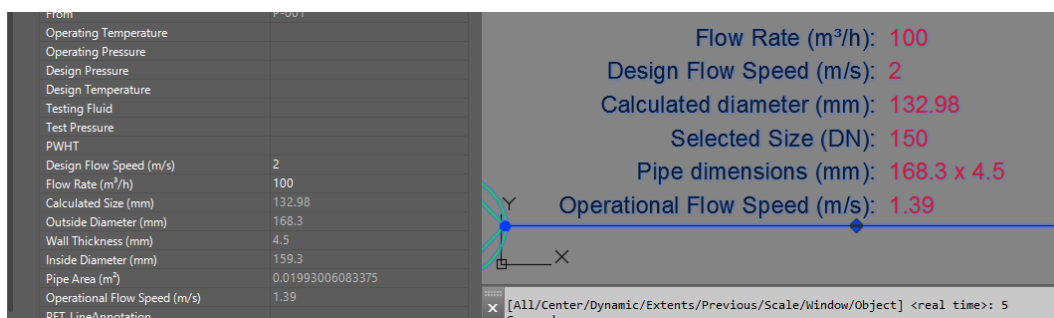
### 6.8 Tag/Acquisition Update

Checks and updates your Tags and Acquisitions in case of changes in project setup.

[Link to Short Video](#)

### 6.9 Calculated Properties

Calculations doesn't mean complex mathematical formula. It can also mean concatenating properties to a new property. It can be compared to Microsoft® Excel® formula. For example, calculate pipe size depending on flow rate and speed. You can also calculate AutoCAD® properties like layer, color, or HyperLink URLs.

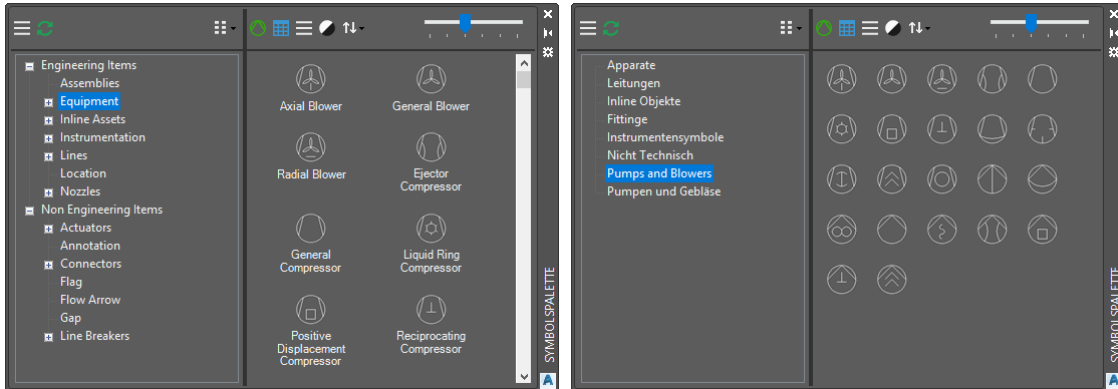


Here the color of an instrument is "calculated".

[Link to Short Video](#)

### 6.10 Symbols Palette

Provides a new experience to insert your symbols and lines by showing only the Symbols/Lines you have in your current project.



[Link to Short Video](#)

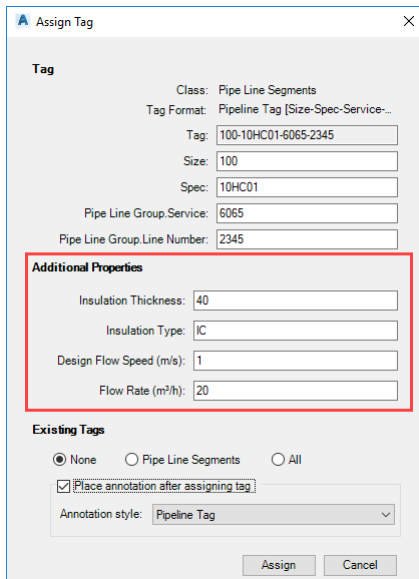
### 6.11 From/To

Creates additional From/To data for your Line Segments and Line Groups.

	Description	Comment	PnPID	Tag	Status	PET_From	PET_To
	PIPE LINE GROUP		573	1010	New	P-001-N-1/P-002-N-1	W-001-N-1

[Link to Short Video](#)

### 6.12 Extended Assign Tag



In addition to the properties which make the Tag you can add more arbitrary properties which you may want to fill out while assigning the Tag.

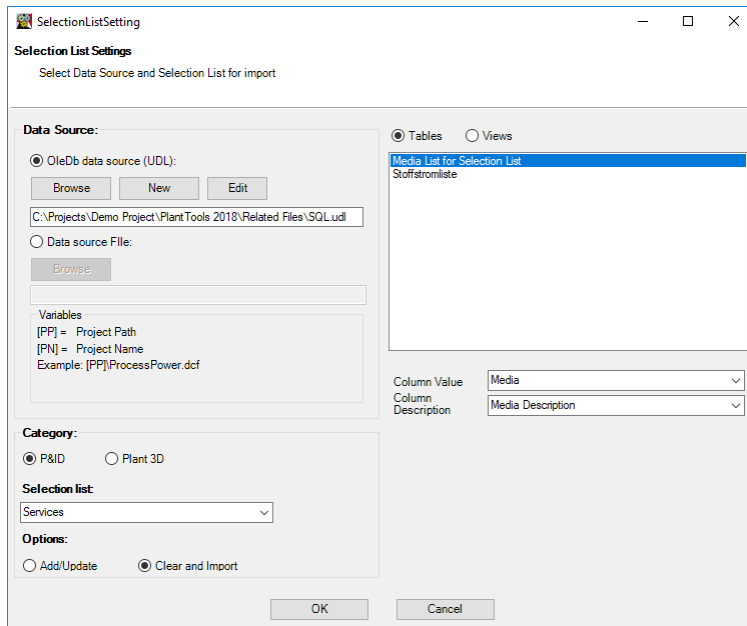
Furthermore, you can view all Tags of all classes in case you want to use a Tag which is already in use.

[Link to Short Video](#)

### 6.13 Update Selection Lists

Already with Ex-/Import function you can easily update your selection lists. With the function Update Selection Lists the lists will be automatically updated by clicking a button or when saving the drawing.

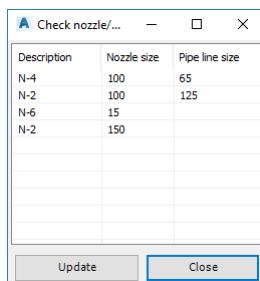
The following dialog shows which possibilities you have to define the source and target of the selection lists. You can import from databases like Microsoft® SQL Server® or Microsoft® Access®, but also from Microsoft® Excel®, SQLite and CSV files.



[Link to Short Video](#)

### 6.14 Check Nozzle Size

If the size of a nozzle is not acquired from the line, but is selected by the user, this function checks by a click on a button any differences between the sizes of the line and the nozzle. From the dialog you can zoom onto the nozzle.



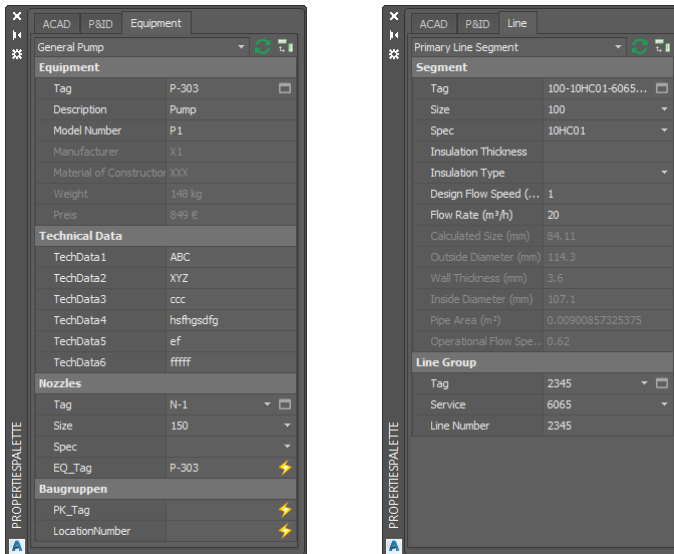
[Link to Short Video](#)



### 6.15 Properties Palette

With the properties palette you can define your own tabs and for each tab you can define your own groups. For each group can then define the properties you want in the order you want.

Furthermore, the properties of the classes which have a relationship can also be used. The following two pictures you see on the left, that the nozzle properties are also shown. With the Nozzle-Tag you can switch between the multiple nozzles of an equipment. On the right you see that the Pipe Line Group properties are available too.

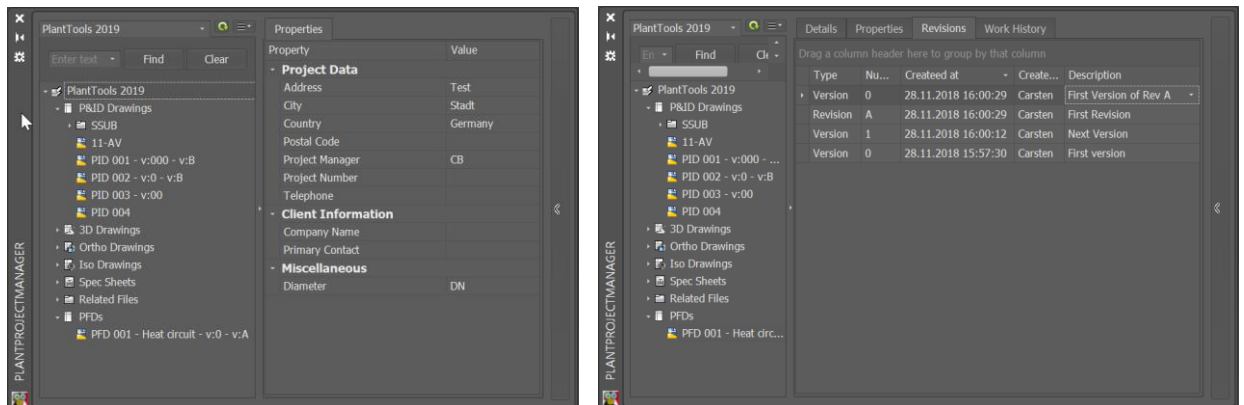


[Link to Short Video](#)

### 6.16 Project Manager

With the Project Manager you can define your own drawing categories, for example “PFDs”. The project and drawing properties can be edited within Project Manager. Editing project properties doesn’t require to kick out everyone else in the project. You can also define how the text for your documents should look like and what the file name format should be.

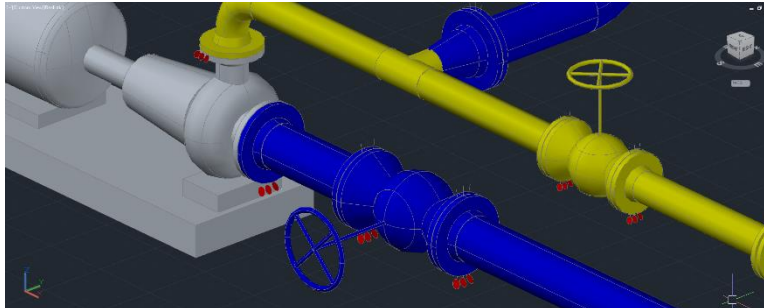
You can also create versions and revisions of your drawing and get an overview of the drawing’s histories.



[Link to Short Video](#)

### 6.17 Bolt Calculation

The Bolt Calculation replaces the BoltSets of AutoCAD Plant 3D completely and comes with its own expandable bolt catalog. PlantExpressTools support BoltSets as well as the use of single bolt parts. Bolts can be used in isos and bill of materials.



Here you see the use of single bolt parts (bolts, washers, nuts).

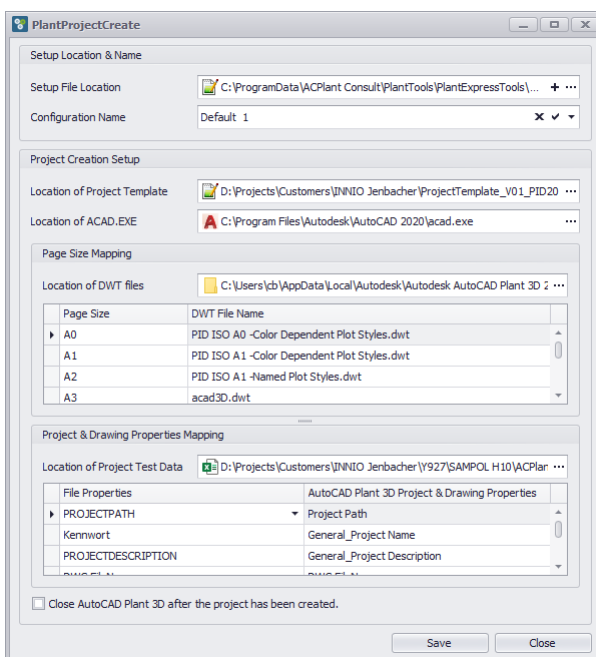
Type: Hexagon head bolt				
8	Pcs.	Hexagon head bolt M16x130, DIN EN ISO 4014	M16x130	DIN EN ISO 4014
16	Pcs.	Hexagon head bolt M16x35, DIN EN ISO 4014	M16x35	DIN EN ISO 4014
44	Pcs.	Hexagon head bolt M16x70, DIN EN ISO 4014	M16x70	DIN EN ISO 4014
12	Pcs.	Hexagon head bolt M16x80, DIN EN ISO 4014	M16x80	DIN EN ISO 4014
8	Pcs.	Hexagon head bolt M16x90, DIN EN ISO 4014	M16x90	DIN EN ISO 4014
16	Pcs.	Hexagon head bolt M20x140, DIN EN ISO 4014	M20x140	DIN EN ISO 4014
40	Pcs.	Hexagon head bolt M20x75, DIN EN ISO 4014	M20x75	DIN EN ISO 4014
Type: Hexagon nuts				
72	Pcs.	Hexagon nuts M16, DIN EN ISO 4032	M16	DIN EN ISO 4032
56	Pcs.	Hexagon nuts M20, DIN EN ISO 4032	M20	DIN EN ISO 4032
Type: Plain washers, chamfered				
160	Pcs.	Plain washers, chamfered M16, DIN EN ISO 7090	M16	DIN EN ISO 7090
112	Pcs.	Plain washers, chamfered M20, DIN EN ISO 7090	M20	DIN EN ISO 7090

This picture shows the bill of material created by PlantReporter.

[Link to Short Video](#)

### 6.18 PlantProjectCreate

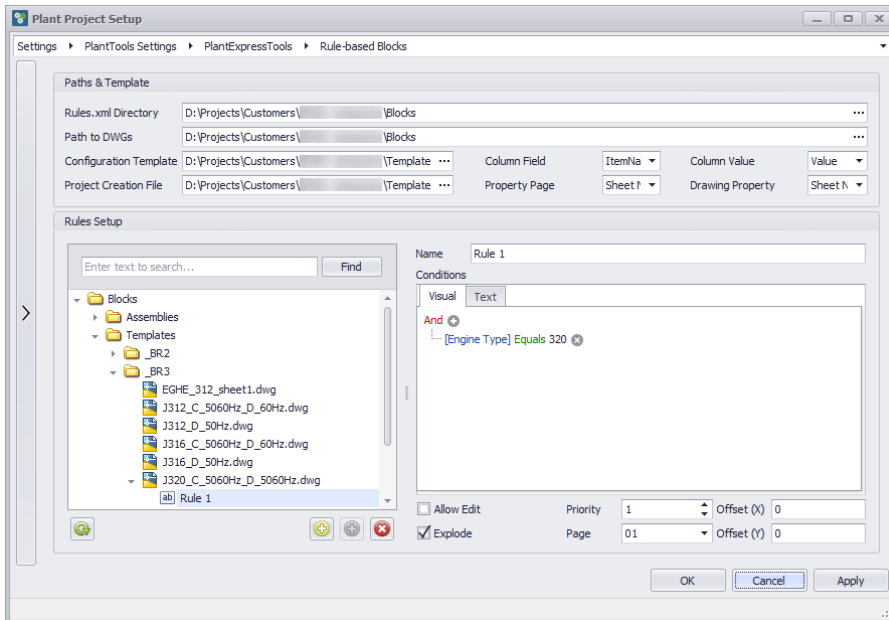
With PlantProjectCreate you can let your project and drawings create from within other applications. It can also set your project and drawing properties. This is most useful for companies which want to streamline the project creation.



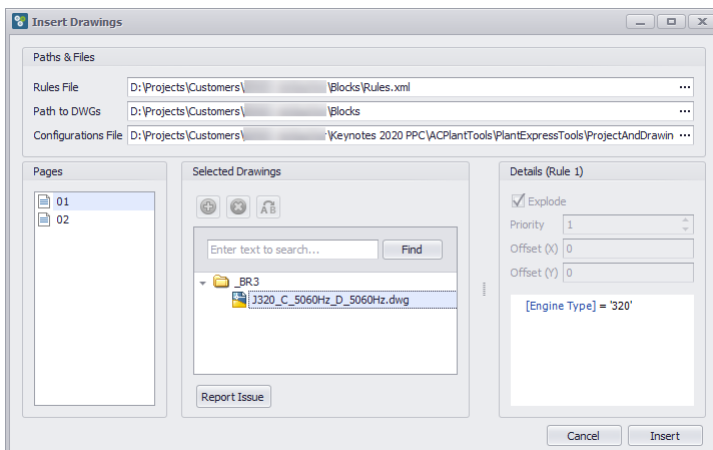
[Link to Short Video](#)

### 6.19 Rule-based Block Insert

With the rule-based block/assembly insert pre-defined blocks/assemblies can automatically be inserted based on user-definable rules. This is interesting if drawings are put together from standard assemblies which only leaves smaller changes.



When the rules are executed, the user gets a preview of the blocks/assemblies which will be inserted.

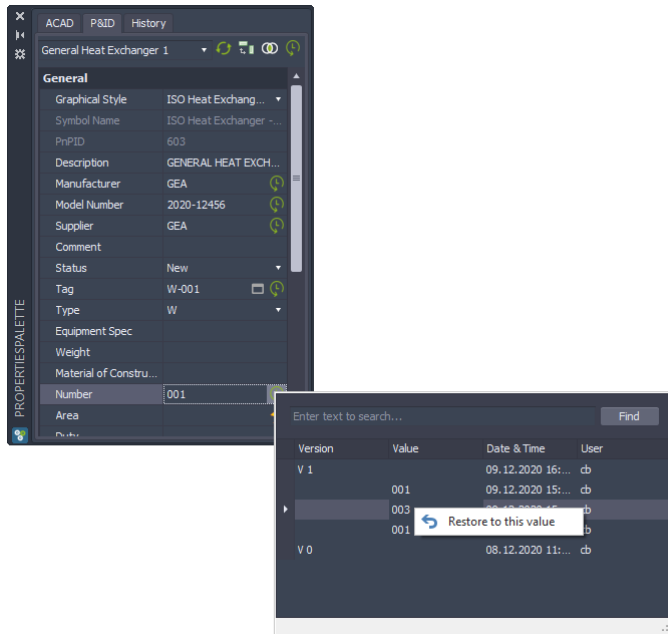


[Link to Short Video](#)

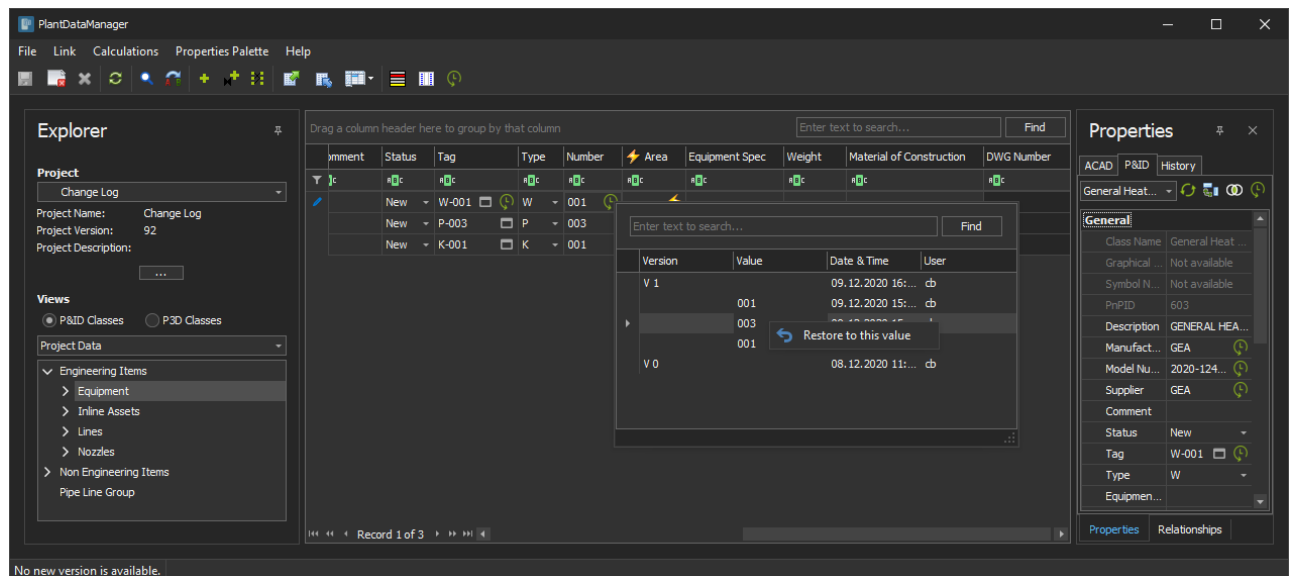
## 6.20 Change Log

The Change Log function logs any change made to the properties of your P&ID objects (symbols and lines).

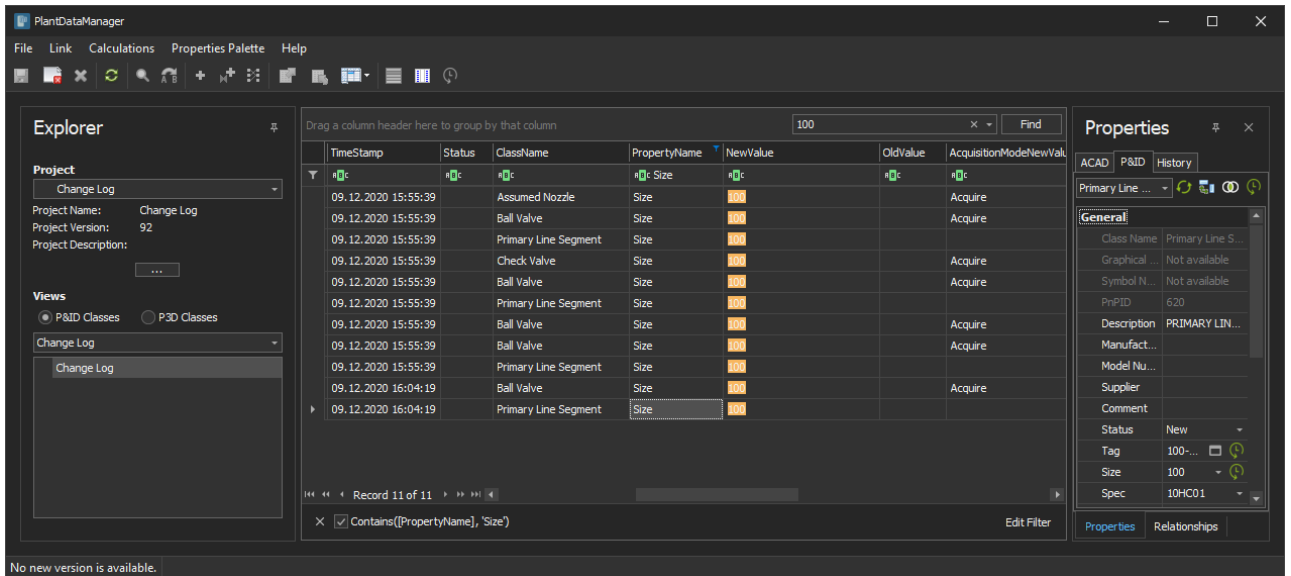
The history of changes can be viewed in the PlantExpressTools Properties Palette where you can expand the details to get the complete history of a property of an object. Versions and Revisions of the drawing will be included chronologically in those details. You can conveniently restore to previous values also.



The history of changes can also be viewed in PlantDataManager. Here you have the history icons also in the data grid.



There is also a new view in PlantDataManager which shows you the complete history of all changes of all objects. Here you can search and filter for old values and check what is the current state of the selected object from the project.

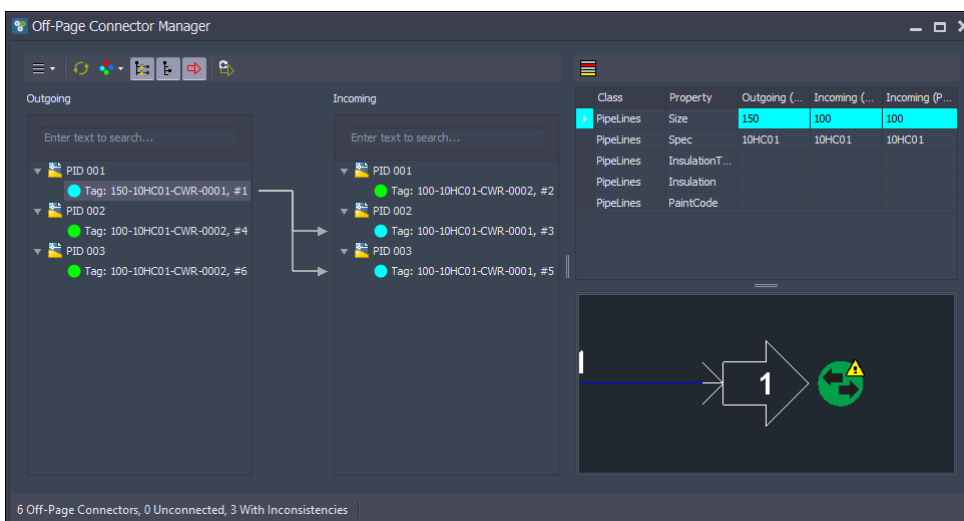


[Link to Short Video](#)

## 6.21 Off-Page Connector Manager

The Off-Page Connector Manager is a completely new way of managing and connecting Off-Page Connectors in a project. Here is a list of the highlights:

- Complete overview of all Off-Page Connectors in the project
- Multi-Connections between Off-Page Connectors
- Automatically carry over ALL Line and Off-Page Connector properties
- Indicating and filtering by connection state
- Filtering and searching in tree of the Off-Page Connectors
- Connecting by Drag & Drop



[Link to Short Video](#)

## 7 PlantLink



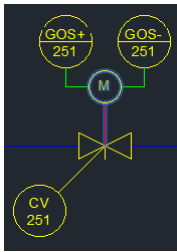
**PlantLink** extends the capabilities of your project by allowing to link various databases in uni- or bidirectional way.

Since AutoCAD® Plant 3D is using a database itself, **PlantLink** can create a dataflow within P&ID which isn't possible otherwise.





Among the supported databases you find Microsoft® Access®, Microsoft® SQL Server®, SQLite and Oracle® Database. The use of Microsoft® Excel® is limited.

As another possibility **PlantLink** can control AutoCAD® properties like layer, color or HyperURL.

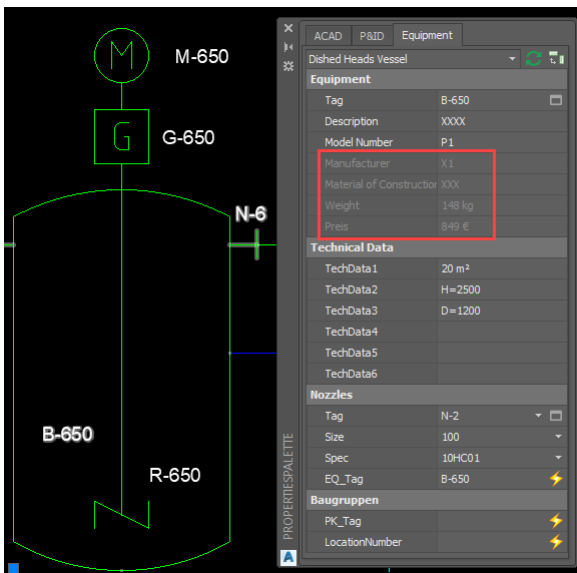
The following picture shows how the Loop Number flows from the control valve to the actuator and to the limit switches. This automation avoids errors during data entry because the number will be typed in only once.



### Main Functions:

-  Uni- or bidirectional linking to one of multiple external/internal databases
-  Modify AutoCAD® properties
-  Improving data flow in your P&IDs
-  Map drawing properties

The next example shows that the number 650 flows from the tank to the stirrer, the gear and the motor. In the properties palette the properties which come from an external data source are shown by a surrounding red box.



**PlantLink** is needed for each AutoCAD® Plant 3D license, because it is running constantly in the background.

The screenshot displays the Plant Link application window with the following components:

- Project:** C:\Projects\PlantLink Examples 2017\Project.xml
- Link Configurations:** A list of configurations including 'Advanced Condition' (Active), 'CAD-Q Valves' (Disabled), and 'ControlValves ACAD Properties' (Disabled).
- Link Configuration Wizard - Linked fields selection:** A dialog box for selecting fields to define the data link. It shows a table with columns for 'External table column', 'Condition', and 'Class property'. The selected row is:
 

External table column	Condition	Class property
ModelNo	= Equals	Model Number
- Link Configuration Wizard - Mapped fields selection:** A dialog box for selecting fields to be mapped. It shows a table with columns for 'External table column', 'Class property', 'Write back', 'Clear value', and 'Sync mode'. The selected rows are:
 

External table column	Class property	Write back	Clear value	Sync mode
Manufacturer	Manufacturer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	On drawing...
Price	Preis	<input type="checkbox"/>	<input checked="" type="checkbox"/>	On drawing...
Weight	Weight	<input type="checkbox"/>	<input checked="" type="checkbox"/>	On drawing...
- Link Configuration Wizard - Mapped fields selection (Detailed):** A dialog box for selecting fields to be mapped. It shows a table with columns for 'External table column', 'AutoCAD Object property', and 'Sync mode'. The selected row is:
 

External table column	AutoCAD Object property	Sync mode
DWGTILE	Hyperlink URL	On drawing save

 Below the table, there is a 'Synchronization interval' set to 60 sec and options for handling unsuccessful mappings and multiple records.

## 8 PlantReporter



**PlantReporter** is a tool for the creation of formatted reports, data/spec sheets, and data exports from AutoCAD® Plant 3D. Reports can be created for a group of multiple projects too.

**PlantReporter** is simple and intuitive to configure and provides output at the push of a button for any project team member.

Because **PlantReporter** is stand-alone from the Autodesk® plant applications, any user with just **PlantReporter** can access up-to-the-second project data output from a standard-grade computer.

**PlantReporter** allows you to create versions and revisions of reports and compare them afterwards. All versions/revisions of a report/list you ever created are available at all time. You can compare any version/revision against each other to track and manage changes in your project's life cycle.

**PlantReporter** also takes plant component relationships into consideration, allowing users to create reports that not only show a component's property information, but also show that component's relationship with other components (i.e., what pipeline is a valve on, or where does a process line begin or end). Reports created with **PlantReporter** can contain fields that add lengths, quantity of parts, or fields that contain calculated values.

Of course, **PlantReporter** can incorporate the so called Not-Placed-Objects (NPOs) into your report which can be created through **PlantDataManager** and **PlantSpecDriven**.







If you combine **PlantReporter** with the functionalities of **PlantLink** and **PlantDataManager**, you will have a potent and complete engineering solution. Information from your project P&ID or 3D model combined with the information from external databases allows you to create and generate accurate reports at any given moment in a project.

**PlantReporter** is easy to use and allows you to present and share your project data in any way you need.

**PlantReporter** can also be used to create reports of other data sources (i.e. SQLite, Microsoft® SQL Server®, Microsoft® Access®, Oracle® Database).

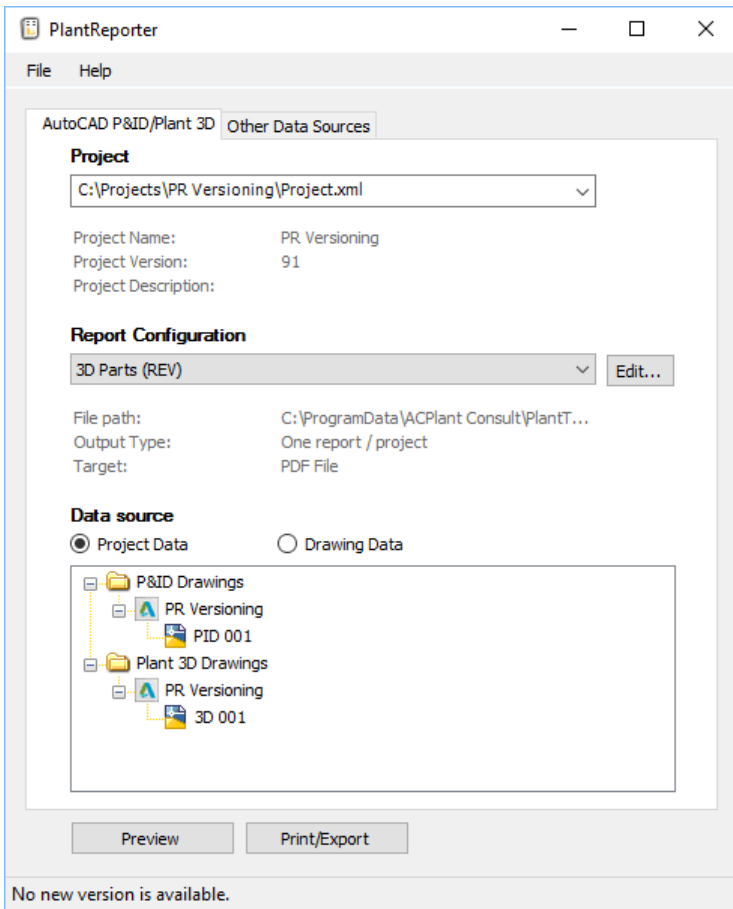
Therefore, **PlantReporter** is a very powerful reporting tool for all your data.

### Main Functions:

-  Creating formatted reports, data/spec sheets and data exports
-  Works without Autodesk Plant Solutions Products
-  Versions/Revisions and Comparison
-  Use relationships
-  Reports of a group of projects
-  Using other data sources



The main user interface where you select the project or project groups. Creating lists from “Other Data Sources” is also possible.



A standard Bill of Material from 3D.

Quantity		Unit	Description	ND	Standard	Material	PN	Angle
<b>Type: Pipe, Seamless</b>								
0.347	m	PIPE, SEAMLESS, 4" ND, PE, ASME B36.10	4"	ASME B36.10				
<b>Type: ELL 90 LR</b>								
3	Pcs.	ELL 90 LR, 4" ND, BW, ASME B16.9	4"	ASME B16.9				
<b>Type: FLANGE WN</b>								
2	Pcs.	FLANGE WN, 4" ND, 300 LB, RF, ASME B16.5	4"	ASME B16.5			300	
<b>Type: Gasket, SWG</b>								
2	Pcs.	GASKET, SWG, 4" ND, 1/8" THK, 300 LB, RF, ASME B16.20	4"	ASME B16.20			300	
<b>Type: Ball Valve</b>								
1	Pcs.	BALL VALVE, LONG PATTERN, 4" ND, 300 LB, RF, ASME B16.10, 12" LG	4"	ASME B16.10			300	
<b>Type: Hex Nut</b>								
32	Pcs.	Hex Nut 3/4", ASME B18.2.2	3/4"	ASME B18.2.2				
<b>Type: Stud Bolt</b>								

The dialog when creating versions/revisions or comparisons.

Versioning/Revising

Create new Version

Previous Version:

Next Version:

Create new Revision

Previous Revision:

Next Revision:

Compare Versions/Revisions

**Select Versions/Revisions:**

Previous Version/Revision:  Newer Version/Revision:

**Datasets:**

Show all datasets  Show only changes  Show only deleted  Show only added

**Fields:**

Only Fields used in report layout  All Fields used in report query

**Values:**

Show old and new Values

Line Break  Delimiter:

Prefix new Value:  Suffix new Value:

Prefix old Value:  Suffix old Value:

Show only new Values

Show only old Values

**Coloring:**

Use colors to indicate differences in the report

The result of a comparison between two versions/revisions in P&ID

**Equipmentlist**

**Project: PlantTools 2019**

**Comparison: Ver: 10 vs. Ver: 12**

**au:xalia**

Tag	Manufacturer	Model Number	Supplier	Description	Weight
Old: P-999 New: P-002	Old: X2 New: APV	Old: P2 New: P3	Hugo	Old: Pump New: Pump Centr.	Old: 140 kg New: 130 kg
Old: M-303 New: M-005	Old: New: X2	Old: New: P2	Hugo	Old: New: Electrical Mot.	Old: New: 155 kg
Old: B-650 New: B-655	X1	P1	kjhkh	Tank	Old: 148 kg New: 111 kg
M-650	Old: X1 New: X2	Old: P1 New: P2	1	Old: Siemens Motor New: Motor	Old: 148 kg New: 155 kg
P-002	X2	P2		Pump	140 kg
W-003	X2	P2		Exchanger	140 kg
P-003	KSB	P5		CENTRIFUGAL PUMP	250 kg
F-100	X2	P2		Gas Filter	155 kg

**Differences between auxalia PlantReporter and AutoCAD® Plant Report Creator**

Description	auxalia Plant-Reporter	AutoCAD® Plant Report Creator
<p><b>Installation of Autodesk PID/Plant3D not necessary</b> PlantReporter can be installed on any machine without any Autodesk Software</p>	😊	☹️
<p><b>Use of relationships between classes</b> For example: A valve list can automatically use data from pipe lines</p>	😊	☹️
<p><b>Creation of Reports, Lists, Data sheets over multiple AutoCAD® Plant 3D projects</b> Creation of groups of project which then can be used to create project-independent lists</p>	😊	☹️
<p><b>Creation of Reports, Lists, Data sheets from arbitrary databases and groups of arbitrary databases</b> By linking to arbitrary databases (i.e. Microsoft® Access®, Oracle®, Microsoft® SQL Server®) reports can be created from those databases</p>	😊	☹️
<p><b>Creation of versions and revisions of Reports, Lists, Data sheets incl. creation of comparisons (Change Management)</b> From each report an unlimited amount of versions and revisions can be created, which then can be compared against each other to see changes in data or quantities</p>	😊	☹️
<p><b>Integration of Not-Placed Objects from PlantDataManager and PlantSpecDriven</b> PlantDataManager and PlantSpecDriven can create P&amp;ID Data which are not stored in the P&amp;ID database</p>	😊	☹️

## 9 PlantSync



Because plant customers have varied requirements for their design solutions, Autodesk® developed highly configurable environments for AutoCAD® Plant 3D. Most companies will create a default configuration, or reference project, to conform to specific internal and/or external standards.

**PlantSync** enables your organization to easily synchronize configurations between your AutoCAD® Plant 3D projects.

Once your project administrators have spent the time to develop reference project(s) for your organization, managing even minor changes to base reference projects can be difficult. Using only AutoCAD® Plant 3D administrators need to open and modify not only a base reference project, to incorporate any change or updates, administrators would need to open and modify any active project(s) using the same standard.

If the administrator did not make the exact same modifications, or synchronization, to every project based on the standard, sharing files between the projects would become problematic because, in effect, they would not be using the same standards and settings.

There would also be problems in re-using completed drawings and models from AutoCAD® Plant 3D projects where updates to the standards did not happen.

**PlantSync** makes the job of managing configuration modifications and updates fast and simple through an intuitive user interface.




**PlantSync** enables project administrators to synchronize projects easily by first analyzing the differences between projects. The project administrator then has the option to synchronize individual differences or all differences in a project.

**PlantSync** can synchronize one project to a source project or multiple projects to a source project.

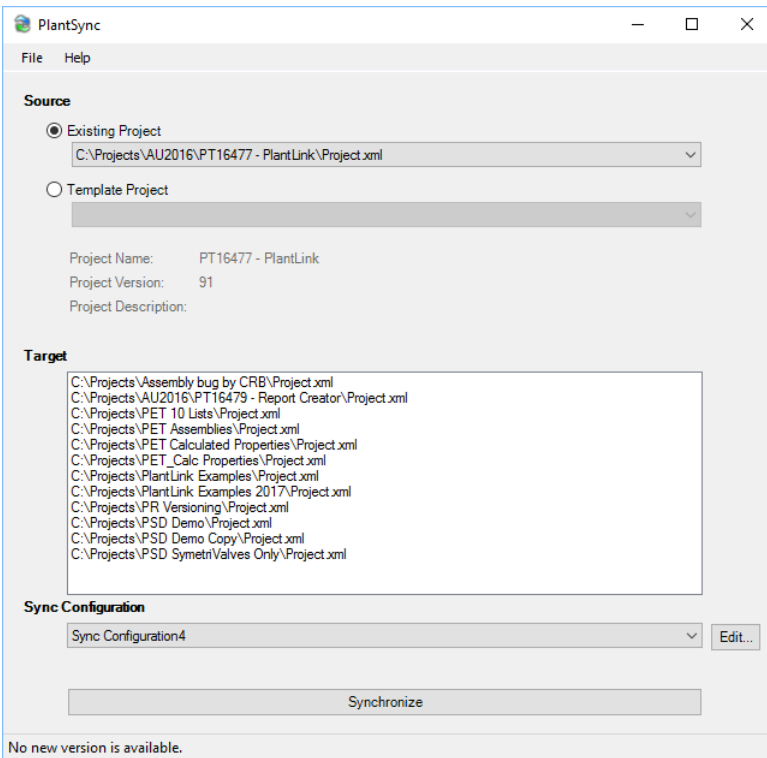
**PlantSync** helps companies to maintain high quality, consistent project configurations and saves project administrators considerable investments in time.

**PlantSync** is a must for any busy plant design organization.

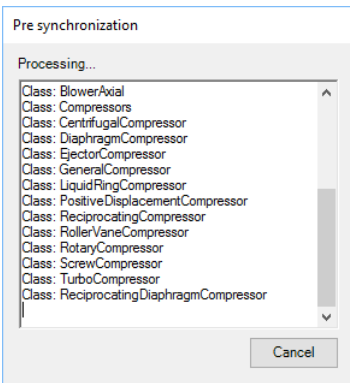
### Main Functions:

-  Synchronize projects
-  Synchronize configurations between your AutoCAD® Plant 3D projects
-  Synchronize PlantTools settings

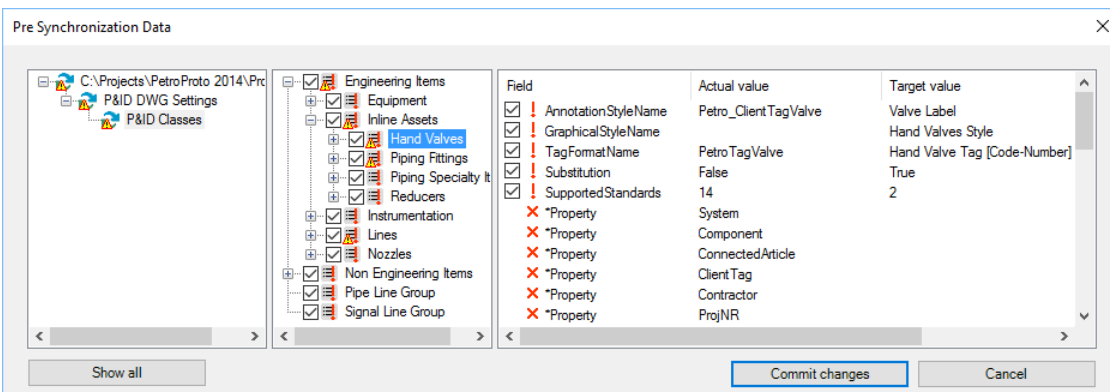
The main user interface with the selected source project and multiple target projects.



Next the Pre-Synchronization is performed to check for differences.



Finally, you see the differences where you still can choose what you want to have synchronized.



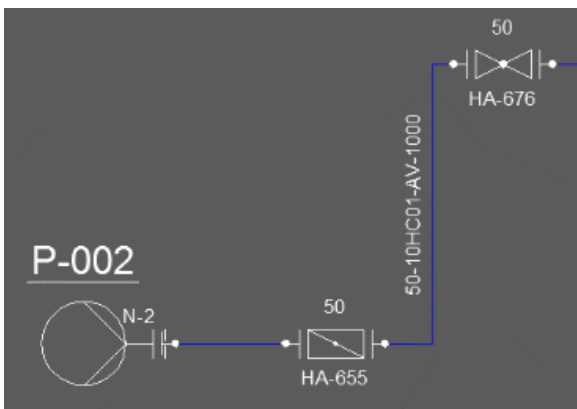
## 10 PlantSpecDriven









**PlantSpecDriven** lifts the workflow from P&ID to 3D to a new level unknown to AutoCAD® Plant 3D users. It not only speeds up the transition from P&ID to 3D but checks for inconsistencies along the way keeping you informed about the status of your project.

### 10.1 How does it work in P&ID

In your P&ID drawing you draw your lines and assign spec and size to it. If you now insert a P&ID symbol, **PlantSpecDriven** will search for suitable catalog data in the given spec, size and other filter criteria. If only one suitable catalog data is found, the catalog data will be assigned automatically. If multiple possible candidates are found the user has to select one catalog datasets.



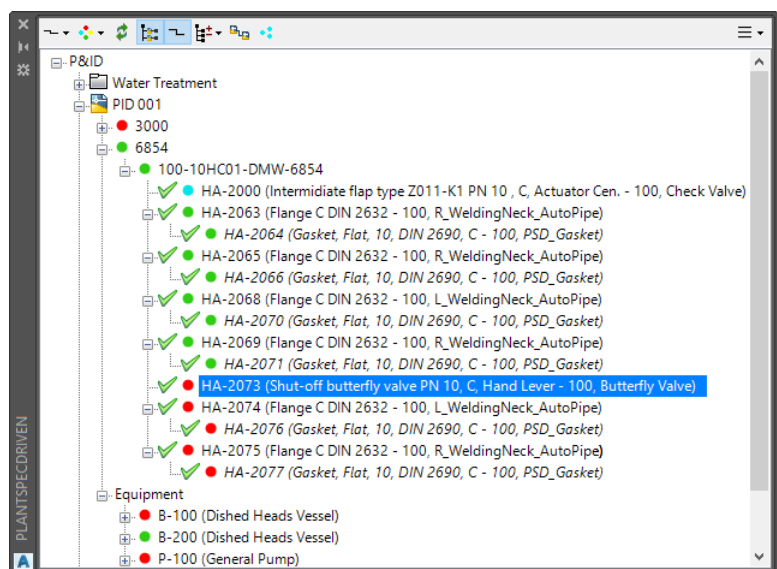
#### Main Functions:

-  Highly customizable
-  Suits different workflows
-  Maps any catalog data to P&ID symbols
-  Validates P&ID against 3D
-  Creates Bill of Materials from P&ID drawings
-  Updates P&ID Symbols

Optional flanges can be inserted automatically as P&ID symbols with catalog data, but it doesn't stop here.

As another option, **PlantSpecDriven** can also add so called Not-Placed-Objects or NPOs to the P&ID Symbols. This function allows adding gaskets, collars, bolts among others. These objects are of course not visible in the P&ID drawing, but will be stored in the database, further complementing the Bill of Material.

Changes to spec and/or size will check and update the assigned catalog data where necessary. Part of this process is a feature called AttributeFlow. This feature propagates spec and size to connected lines factoring in various criteria when to stop the AttributeFlow.



All that leads to the possibility to create Bill of Materials from you P&ID symbols incl. attached Fastener-like objects and their catalog data.

BOM from PID through PlantSpecDriven			au:xalia		
Qty	Size	Description	Standard	Material	Weight
<b>ShortDescription: Ball cock</b>					
1	100	Ball cock w. flange ND 100-PN 10, C, L=372.0			
<b>ShortDescription: Gasket, Flat</b>					
301	100	Gasket, Flat, 100 ND, 10, DIN 2690, C, It 200	DIN 2690	It 200	
11	150	Gasket, Flat, 150 ND, 10, DIN 2690, C, It 200	DIN 2690	It 200	
<b>ShortDescription: Intermediate flap</b>					
100	100	Intermediate flap type Z011-K1 ND 100-PN 10, C, L=52.0 , Actuator Cen., H=288.5, W=203.0			
<b>ShortDescription: Shut-off ball cock</b>					
100	100	Shut-off ball cock ND 100-PN 10, C, L=350.0, Hand Lever, H=232.0, W=450.0		GS-C25	

Some customers go even so far as to insert P&ID symbols like couplings, nipples, and tees in their drawings to create a Bill of Material which is used for the procurement process of the project.

Since you can also use **PlantSpecDriven** for P&ID only as well this gives you a pretty accurate estimation of you project costs.

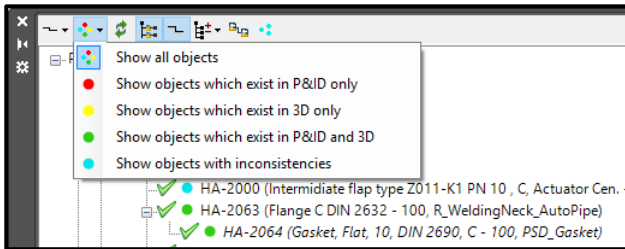
Of course, you can define which properties data from your spec you want to see in your P&ID symbols.

Assigning catalog data to a P&ID Symbol can also change the symbol if needed.

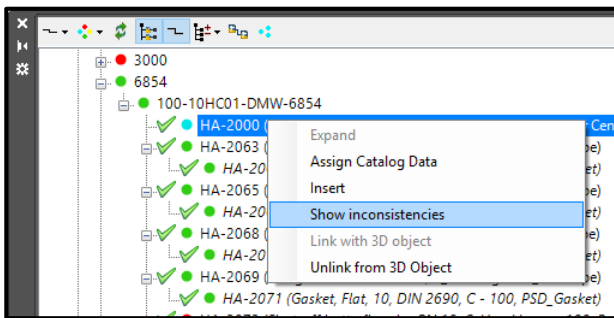
## 10.2 How does it work in 3D

From the **PlantSpecDriven** tree shown above you route your lines and insert the P&ID symbols in 3D. Simply right-click on a line or a symbol and use Insert. The tree shows a colored circle in-front of the text informing you about the status of an object.

You can use the status also to filter the tree:



Inconsistencies can be shown just for one object, but also for the whole project. In addition, you can filter the tree for any inconsistencies.



Besides checks, like Tag or Catalog data between P&ID and 3D you can define your own checks of what you would like to have checked between P&ID and 3D.

You can define what an inconsistency is and what not an inconsistency is. In addition to that you can also define what type of “repair” function only is allowed for resolving an inconsistency.

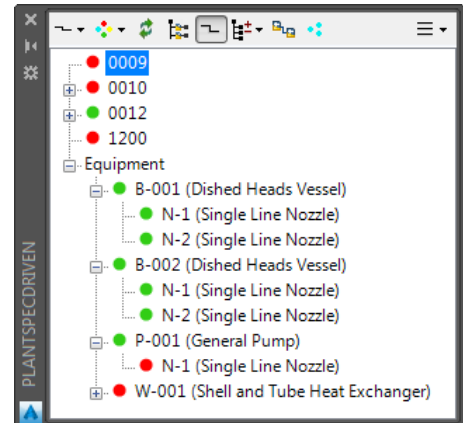
For example, if the Tag in P&ID and 3D differs, you probably want to be able to copy the Tag from P&ID to your 3D drawing or vice versa. But if your workflow is rigorously from P&ID to 3D you may allow copying from P&ID to 3D only.

Line Tag	PID Tag	3D Tag	PID Class	3D Class	PID Property	3D Property	PID Value	3D Value	Inconsistency Reason
100-10HC01-DMW-6854	HA-2000	HA-2100	CheckValve	Valve	Number	Number	2000	2100	Property values differ
100-10HC01-DMW-6854	HA-2000	HA-2100	CheckValve	Valve	Tag	Tag	H	H	Tags differ



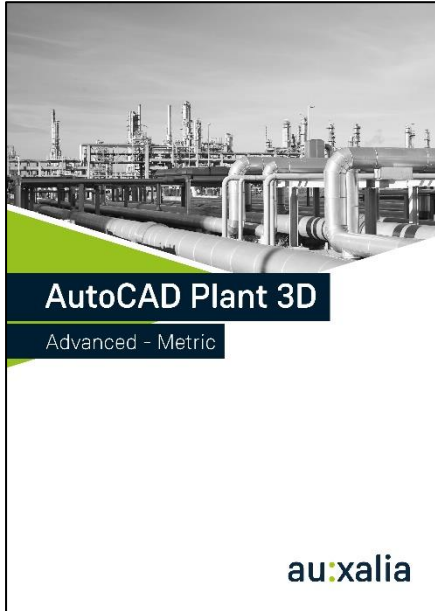
**PlantSpecDriven** also lets you link your P&ID equipment and nozzles with their 3D counterparts. After linking you can track any inconsistencies between P&ID and 3D. Equipment and nozzles appear in a separate node in the tree.

**PlantSpecDriven** is needed for each AutoCAD® P&ID and AutoCAD® Plant 3D license, because it is running constantly in the background.



## Useful Books for AutoCAD P&ID and AutoCAD Plant 3D:

### AutoCAD Plant 3D Advanced Book in English:



AutoCAD Plant 3D – Advanced is the manual for users who have sufficient experience in working with AutoCAD Plant 3D and want to boost their productivity and be even more successful in setting up and configuring own projects in AutoCAD Plant 3D.

It's also a perfect guideline for trainers and contains exercises, tips and tricks to get a deeper knowledge of the configuration of AutoCAD Plant 3D.

Table of contents:

- Project- and Drawing Properties
- Layer and Color Settings
- Joint settings and End-Connections
- AutoCAD P&ID Object Mapping
- Setting Tag Formats
- Orthographic Annotations
- Setting up ISO Styles
- Catalog and Spec Editor
- The Report Creator
- Tips & Tricks

Our AutoCAD Plant 3D Book Advanced is unique worldwide and recommended by Autodesk.

It has 347 pages, will be delivered in printed form, and perfect to boost your productivity and your know-how concerning configuring own projects in AutoCAD Plant 3D. With this book you get a deeper knowledge of the configuration of AutoCAD Plant 3D !

### Database Explained for AutoCAD P&ID and Plant 3D

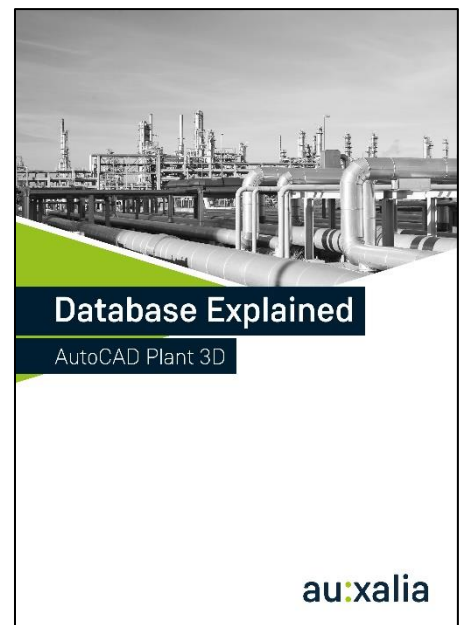
The Book was written to have a deeper understanding of the databases and their structure, tables, and views to improve the way in which you can handle your drawing data.

AutoCAD P&ID and AutoCAD Plant 3D creates a lot of data during your drawing and design work.

Usually what you see in the properties palette or Data Manager is just the tip of the iceberg of the data available.

Stored in the databases are also relationships between your drawing objects, which you can use to propagate data between your objects. We show several examples to get you started and give you an idea of what you can accomplish.

This book explains in detail what the various tables are for, but more important—it shows you practical examples rather than theoretical possibilities of what you can do with the data and has 244 pages.



For more information please contact: [susanne.nell@auxalia.com](mailto:susanne.nell@auxalia.com)

## JESPER DAVIDSON

PROJECT ENGINEER,  
WEISS WORLD CLASS GREEN ENERGY SOLUTIONS

*„I'm a new user of PlantTools for AutoCAD P&ID. I'm using PlantExpressTools mainly because of the assembly feature when tagging components. Great feature and I'm amazed why Autodesk didn't include this feature. Good job auxalia!”*

## PAUL PETERS

CAD MANAGER/SENIOR MECHANICAL DESIGNER  
UNITEL TECHNOLOGIES, USA

*„In our work flow process, the PlantTools provides a bridge of the P&ID data to the Engineers. We've customized the P&ID program to include additional data for our reports, including line lists, valve lists, equipment and Instrumentation lists, etc.*

*With the use of the PlantDataManager, the Engineer has the ability to fill in all the necessary data values and the CAD tech imports the information (data) back into the P&IDs using the Import tool of the Add-on in Autodesk P&ID. This process saves us time and money and assures the final lists that are generated are accurate and correct.”*

## HERMANN SEMLITSCH

ENERGY GROUP CAD ADMINISTRATOR,  
OVIVO AQUA AUSTRIA GMBH

*„We love Plantlink because of it's unlimited possibilities to link to external and internal data sources. We highly missed this option in our daily work till we detected PlantLink. CADSTUDIO provides an awesome support and constantly implements new functionality into the PlantTools. auxalia also responds quickly and flexibly to client requests.”*

## ULLA FREDERIKSON

TECHNICAL DESIGNER - 3D/CADCOORDINATOR  
KRÜGER, A VEOLIA WATER SOLUTIONS & TECHNOLOGIES COMPANY,  
DENMARK

*„PlantDatamanager has the huge advantage that multiple users can update data at the same time without being forced to learn AutoCAD. PlantReporter exports data to lists just as we need them and a million times better than standard AutoCAD P&ID.”*



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