OG9582

Just-in-Time Reporting

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ECAD, Inc.

Learning Objectives

- Learn how to control the Export to Excel
- Discover how to Build Expressions
- Learn how to filter report information with power filters
- Learn how to import a Report back into the project

Description

Have you struggled to get information out of your project? Do you spend time formatting your reports before submitting them? In this class you will learn how to clean up your reports so they can be used in Microsoft Excel, or imported back in to AutoCAD P&ID software or AutoCAD Plant 3D software. With the powerful report creator, you have full control over how your project information displays. The report creator also gives you hidden tools that help you build new properties or restrict information based on a few criteria. By learning how to fully utilize the report creator, you'll give your project manager more information to review, while emailing fewer files.

Your AU Experts

David Wolfe *– David provides tech support, training, and implementation at ECAD Inc. He has written the manual De-Mystifying AutoCAD Isometrics, as well as Tailoring AutoCAD P&ID and Plant 3D. David is involved in the online forums and is a member of the Autodesk Expert Elites.*

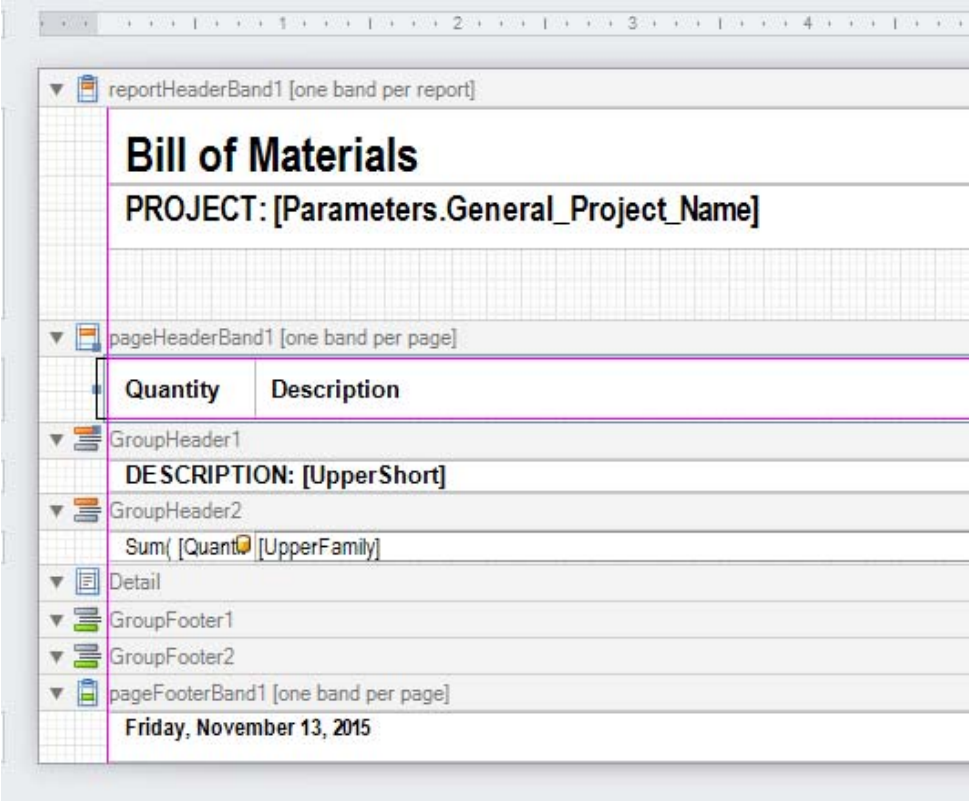
Learn how to control the Export to Excel

Aligned Report Controls

The most import step in getting nice exports to Excel is making sure that all the controls are aligned. In the report creator layout, you have several tools to help align the edges of controls.

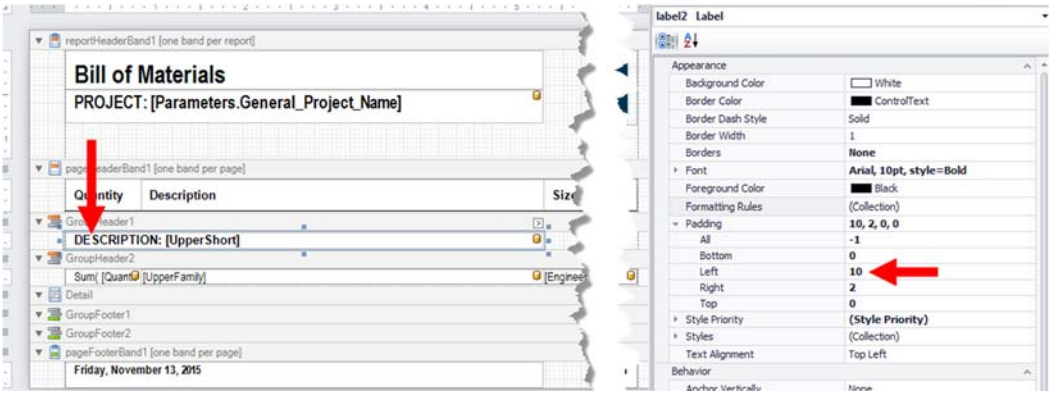
Drag-Snapping

When select the edge of a control, use the drag-snapping guidelines (pink) to make sure that all of the edges in a column or row are aligned to each other.



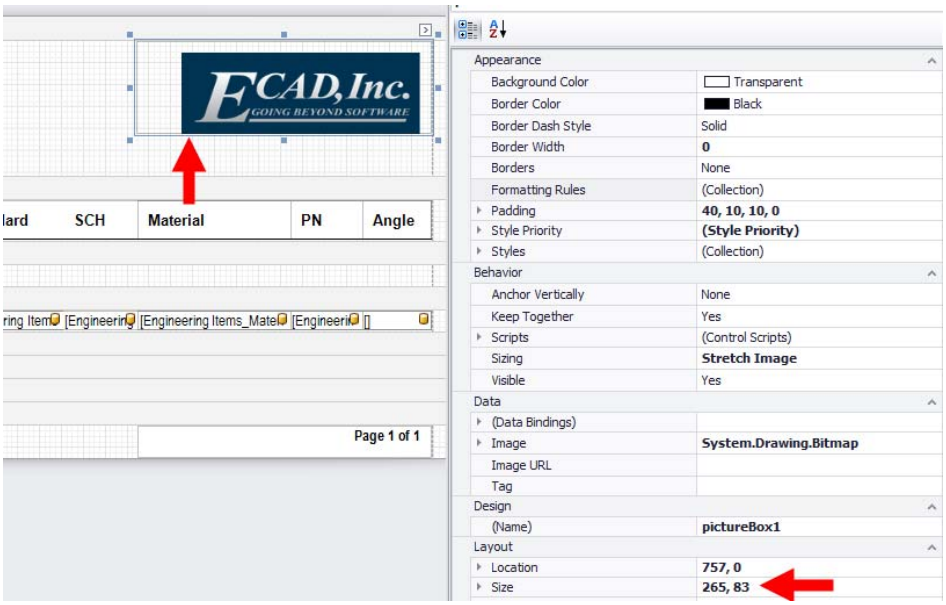
Padding

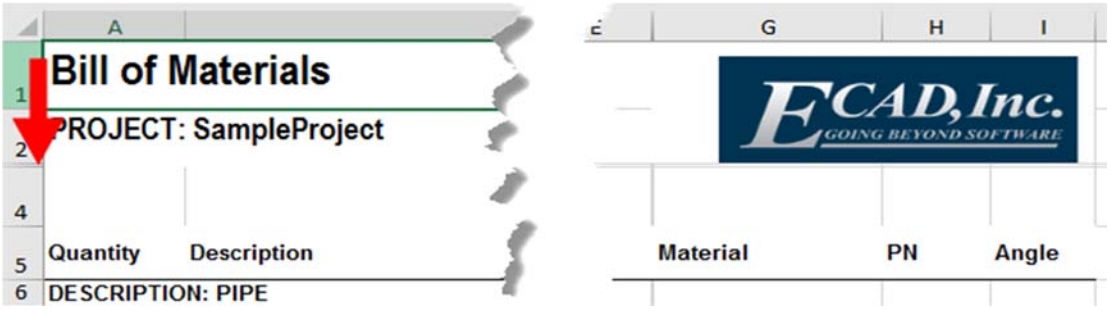
Even though the edges of the controls should be aligned, having the text appear at the edge is not usually desired. Use padding to offset the text to the right or the left.



Manual Sizing

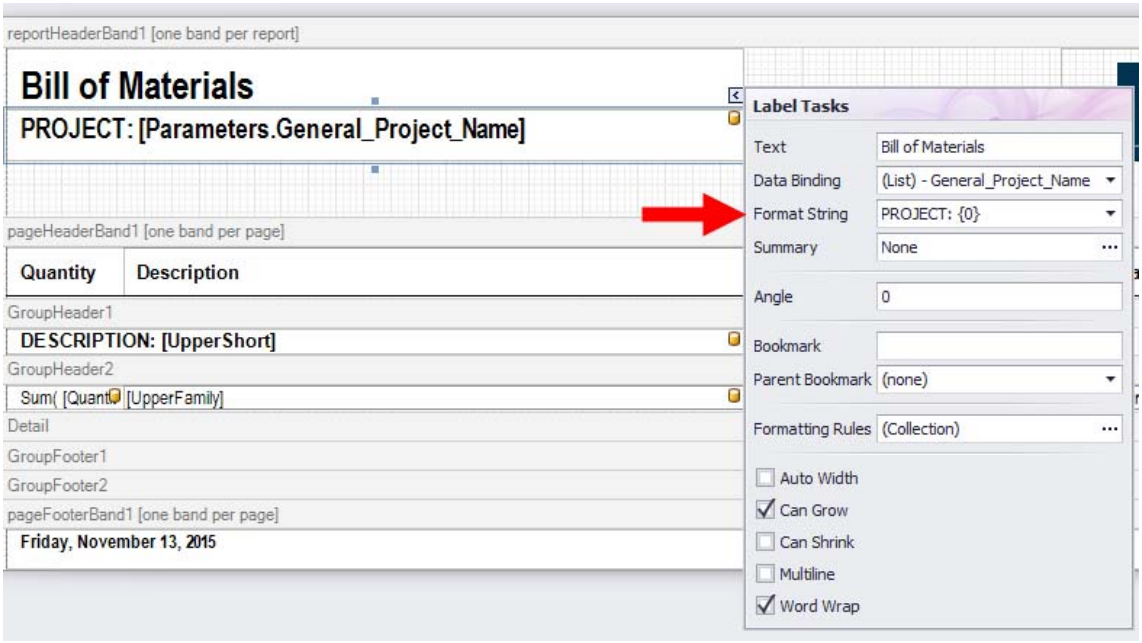
In some cases, snapping to the guidelines still leaves an errant row in the export. Fixes to items like this must be made manually.

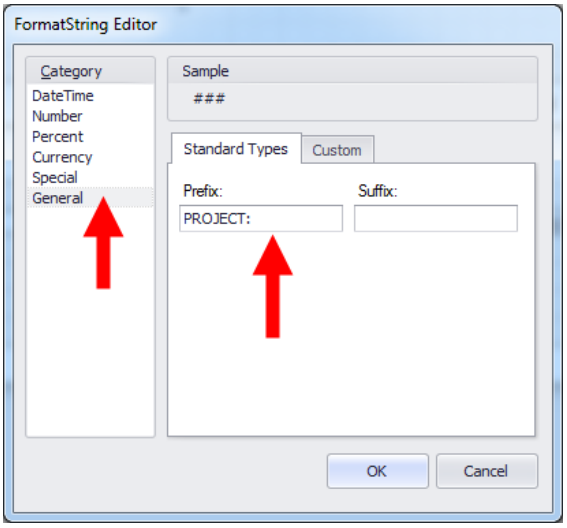




Text Formatting

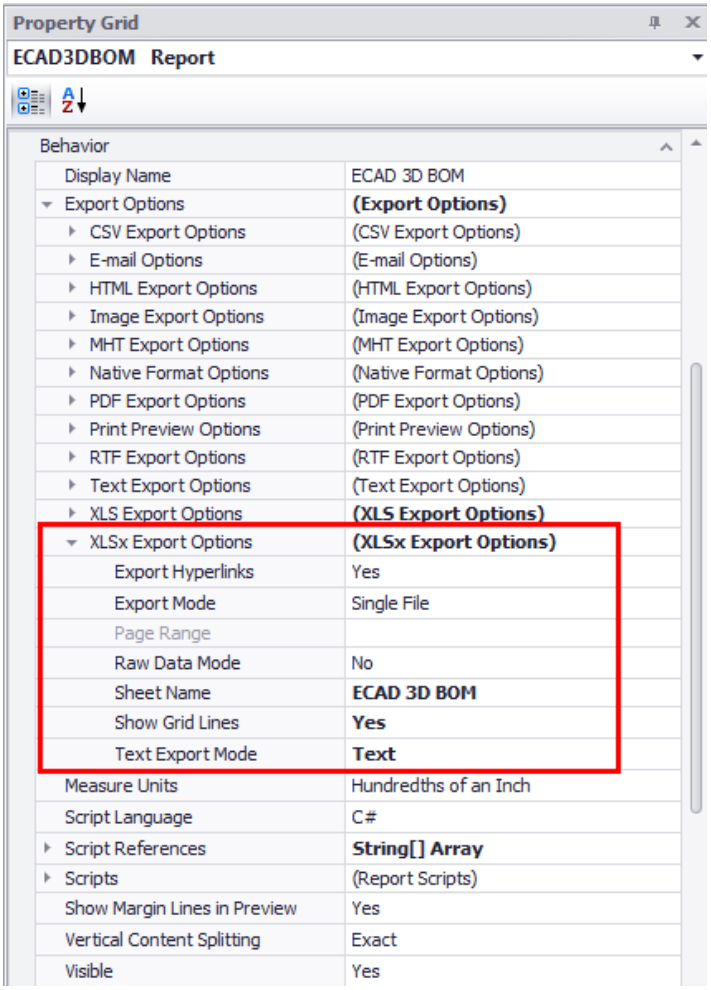
Another tool you can use is text formatting. Text formatting allows you to pre-populate parts of a label with a prefix or suffix. For example, instead of having a label that says Project Name: and a label for the project name property, we can combine them into one control.





General Export Tips

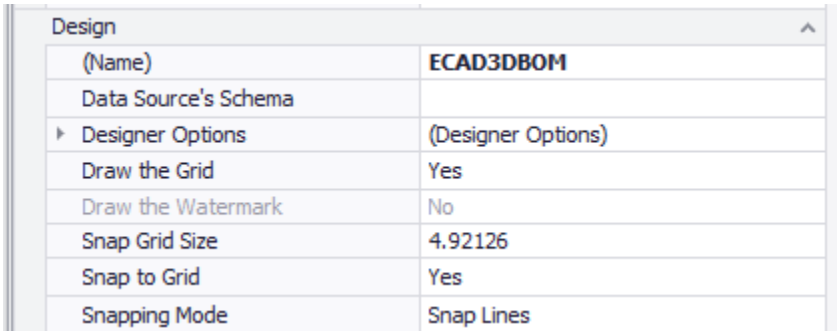
In addition to the formatting, the report creator has a few other options for exporting to Excel. With the Report selected in the Report Explorer window, examine the report properties. You can predefine many of the settings that appear when exporting the report.



With the Excel export in BOM's, you should use the Text option for Text Export Mode if you want to display feet and inches, otherwise, Excel will display the number of inches.

Excel doesn't have a good inch to feet & inch fraction conversion, so the text export is a good as it gets for displaying the value.

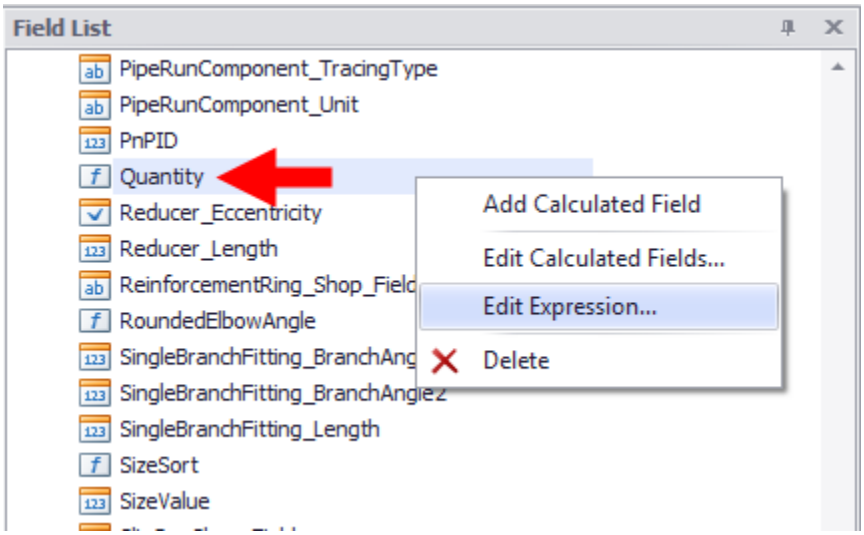
Also, notice that the report name is also defined in the properties under the Design category.



Discover how to build Expressions

Understanding Parts of an Expression

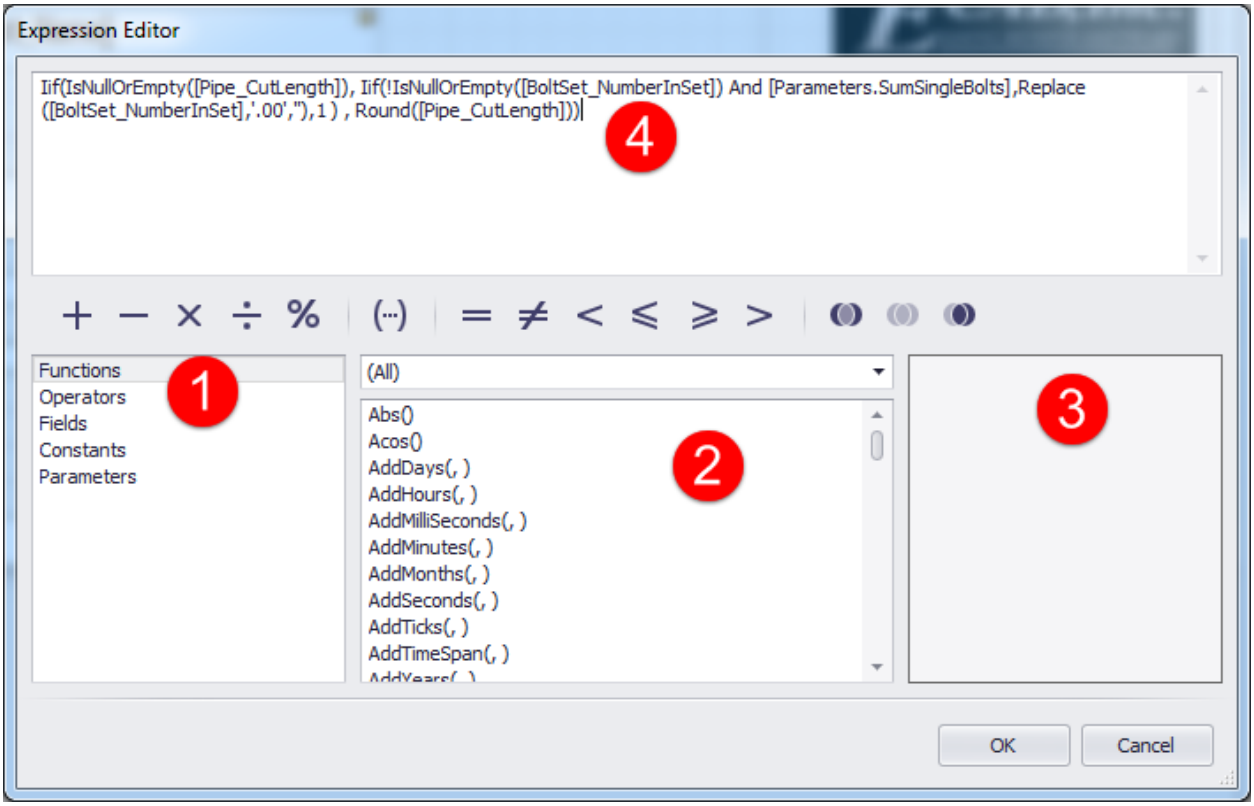
The field list display the properties, or fields, that are available for our use in the report creator. Expressions have an icon with a f (for function).



The 3d parts BOM has a Quantity expression built that is the key to correctly creating a BOM.

Here is the expression that is modified to allow showing a total number of bolts, or a bolt set total.

Iif(IsNullOrEmpty([Pipe_CutLength]), Iif(!IsNullOrEmpty([BoltSet_NumberInSet]) And [Parameters.SumSingleBolts],Replace([BoltSet_NumberInSet],'.00',''),1) , Round([Pipe_CutLength]))



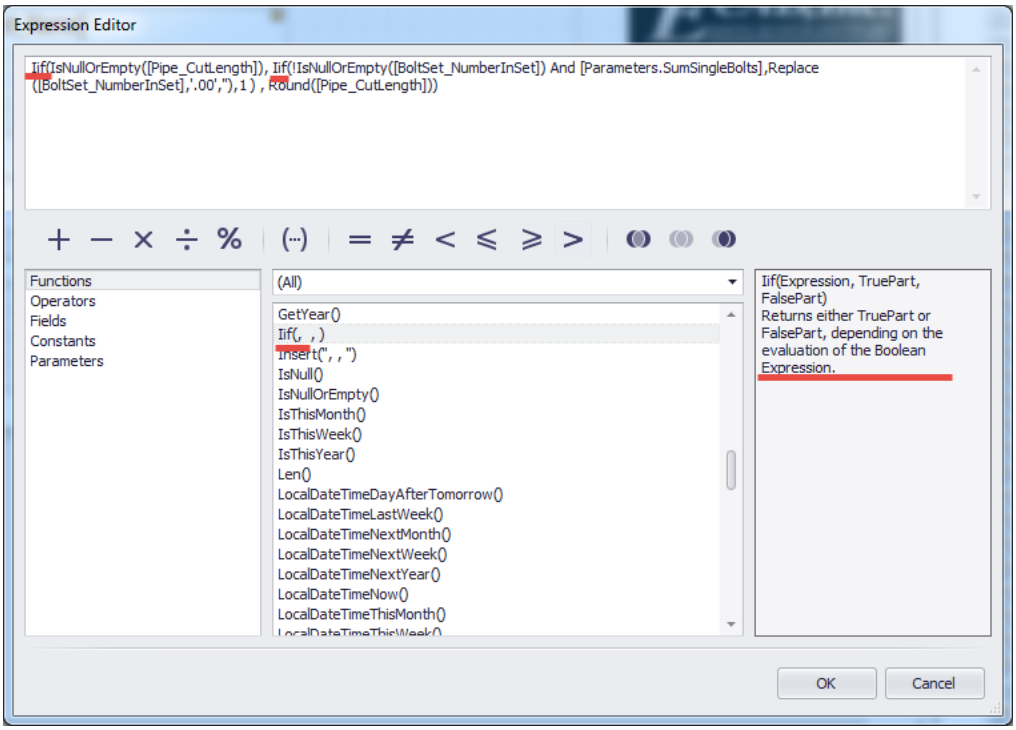
The Expression Editor has four main parts, the expression categories (1), the expression parts (2), a help window (3), and the expression editor (4).

1. Expression Categories – Contains the major features that you can use to manipulate the expression.
    a. Functions - a predefined list of methods that you can pass properties into, and get various results out of
    b. Operators – Generally used for math or combining property values.
    c. Fields – A list of the database values available in the report
    d. Constants – True, False, ? (null/empty)
    e. Parameters – Customizable properties that are populated either by Plant 3d, by prompting the user, or by having a predefined value in the properties grid.
2. Expression Parts – varies with whichever category is selected.
3. When an expression part is selected, a hint will display showing what you can do with the value.
4. This is the actual expression you are building.

Understanding The Quantity Expression

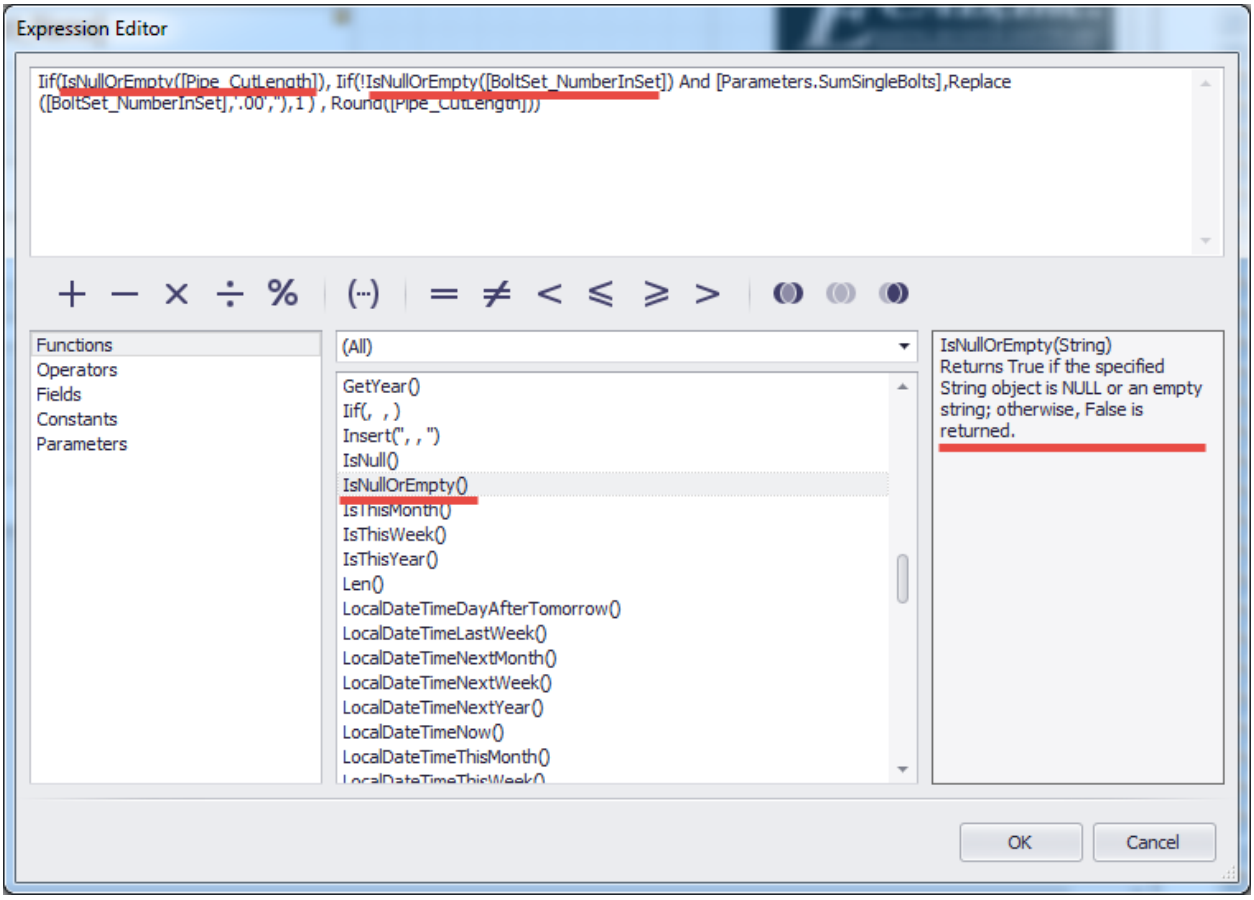
To understand an expression, you have to break it down piece by piece. First, look at the Iif statement. By examining the IiF, you can see that we have two (2) checks. The first check has to do with the Pipe Cut Length, if that check is true, then the second check is on the Number in the Boltset. If the first check fails, a modified Pipe Cutlength value is returned.

If the second check succeeds, the number in set property is used, but if it fails, only the value 1 is returned.

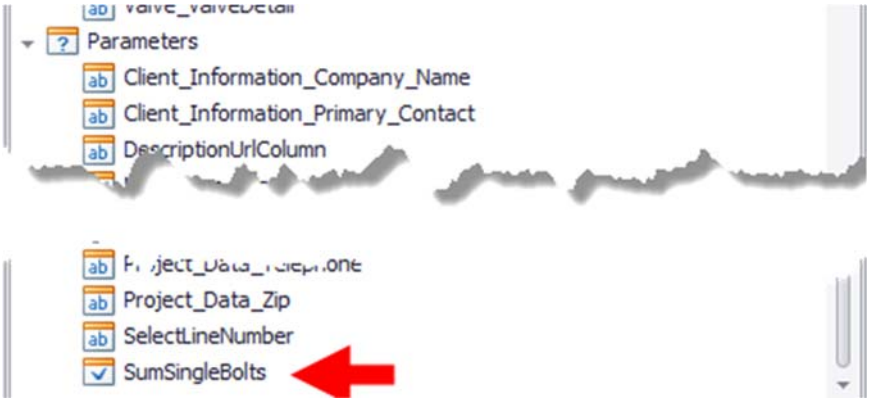


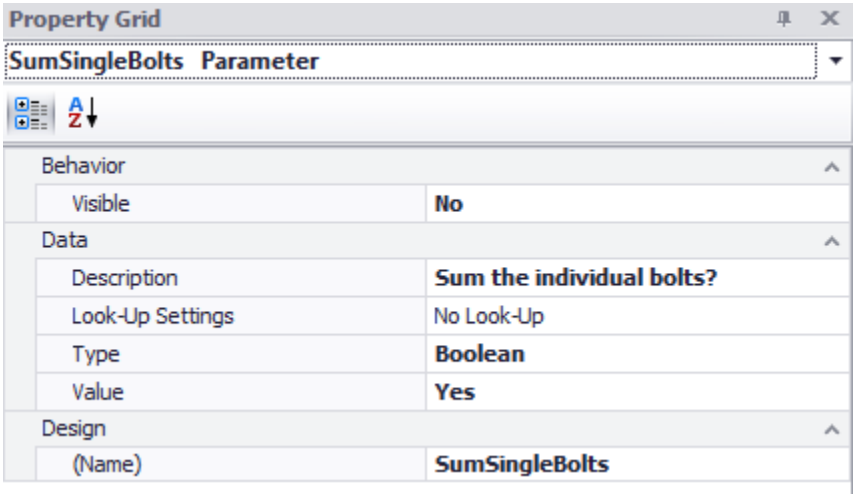
By taking a look at the next function, you can learn a little more about the overall expression. In the first check, IsNullorEmpty is used on the PipeCutLength. The pipe cut length will be blank (null or empty) whenever a non-pipe item is being counted. This first check then allows you to test whether you are working with a pipe or a non-pipe object.

The second test is for the NumberInSet property on the BoltSet class. Again, the numberinset property is only not blank for Boltsets.

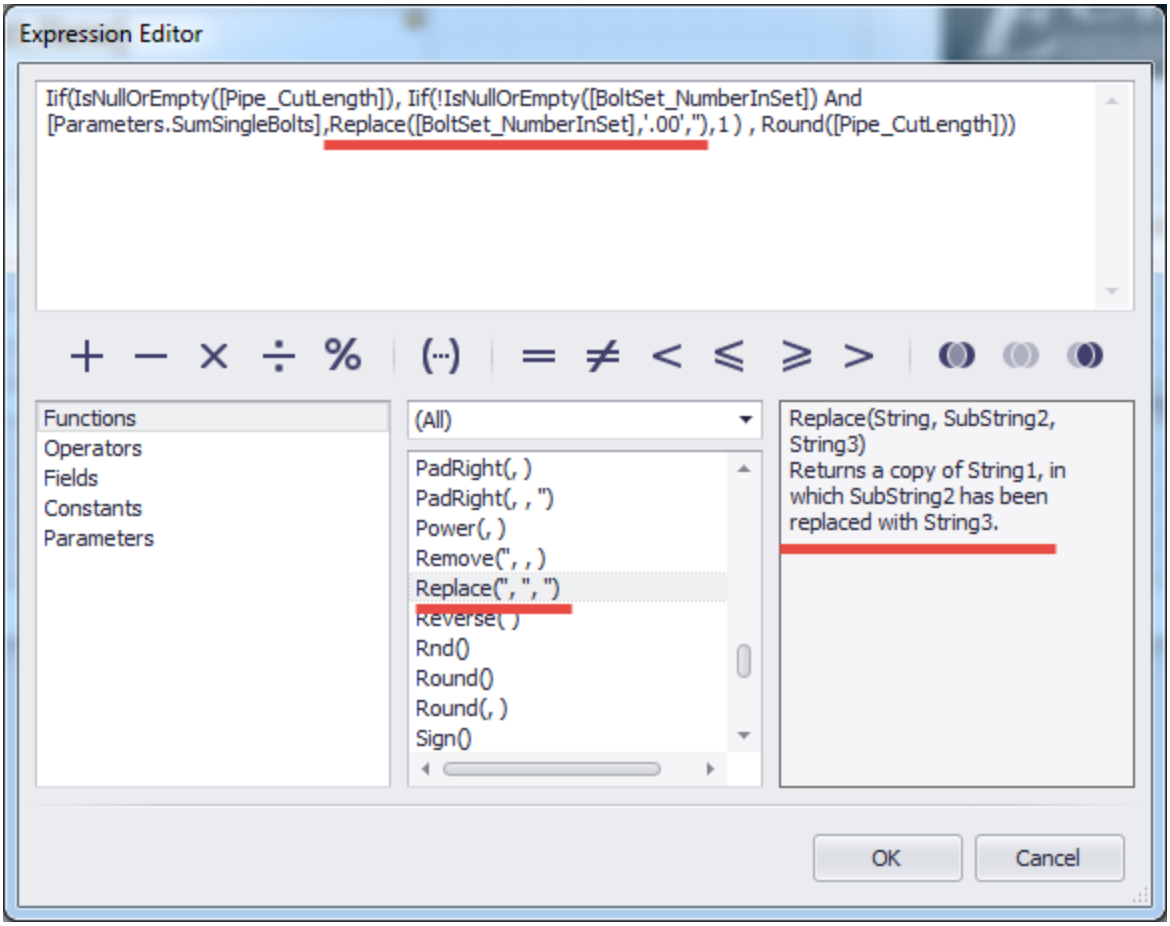


The second check has an additional phrase though, (And [Parameters.SumSingleBolts]. The and ties our check to a parameter value. The effect of this phrase is that you can determine how you want the bolts counted by toggling a parameter, rather than having to create a new expression.

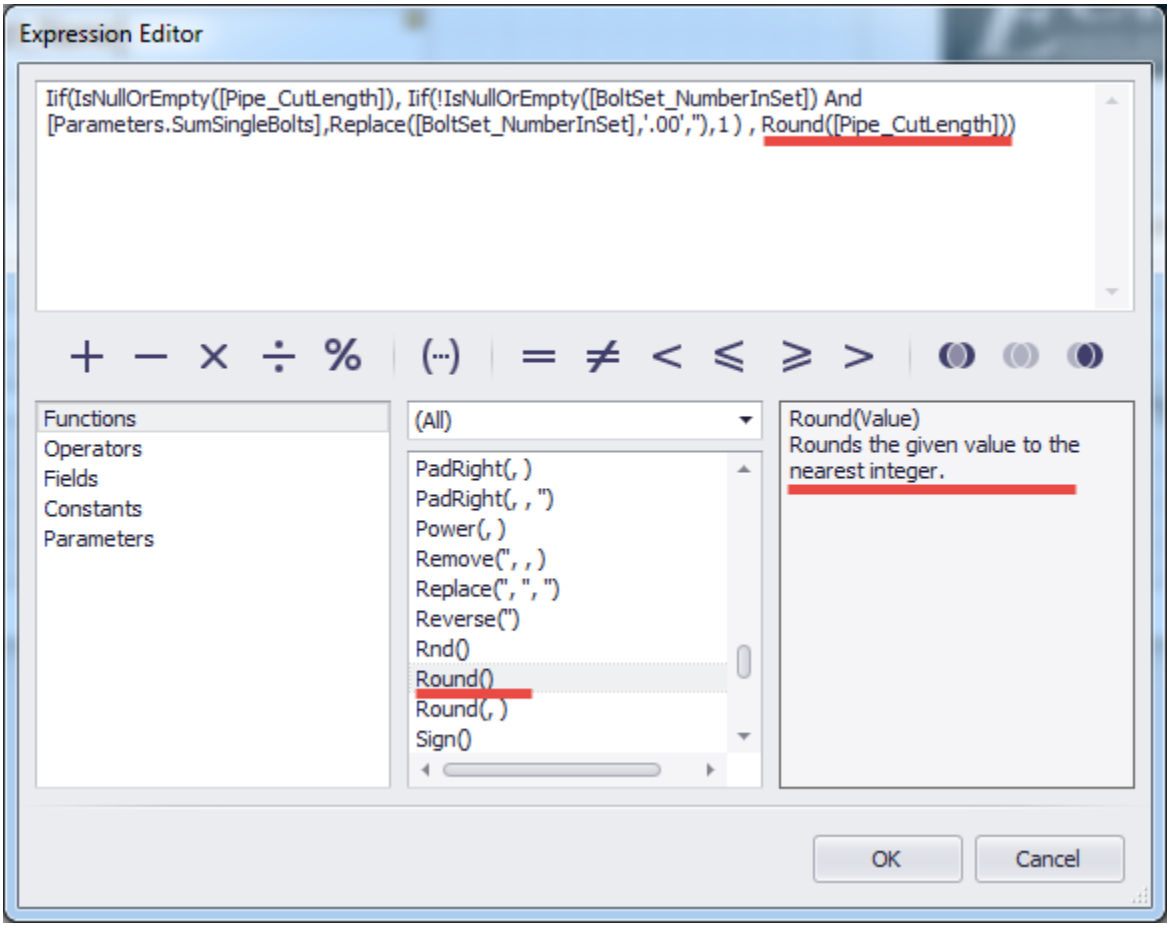




The Replace and Round functions are basically for cleanup. One oddity of the bolt sets is that summing them produces a double like 4.00. In order to clean up that value, the replace value read the Number in Set property, finds .00, and then blanks it out. Notice that when using string values (text) in the expression editor, ***you must use single quotes*** with the functions.



The last function is the Round, which makes sure that you don't have fractions of an inch being totaled.

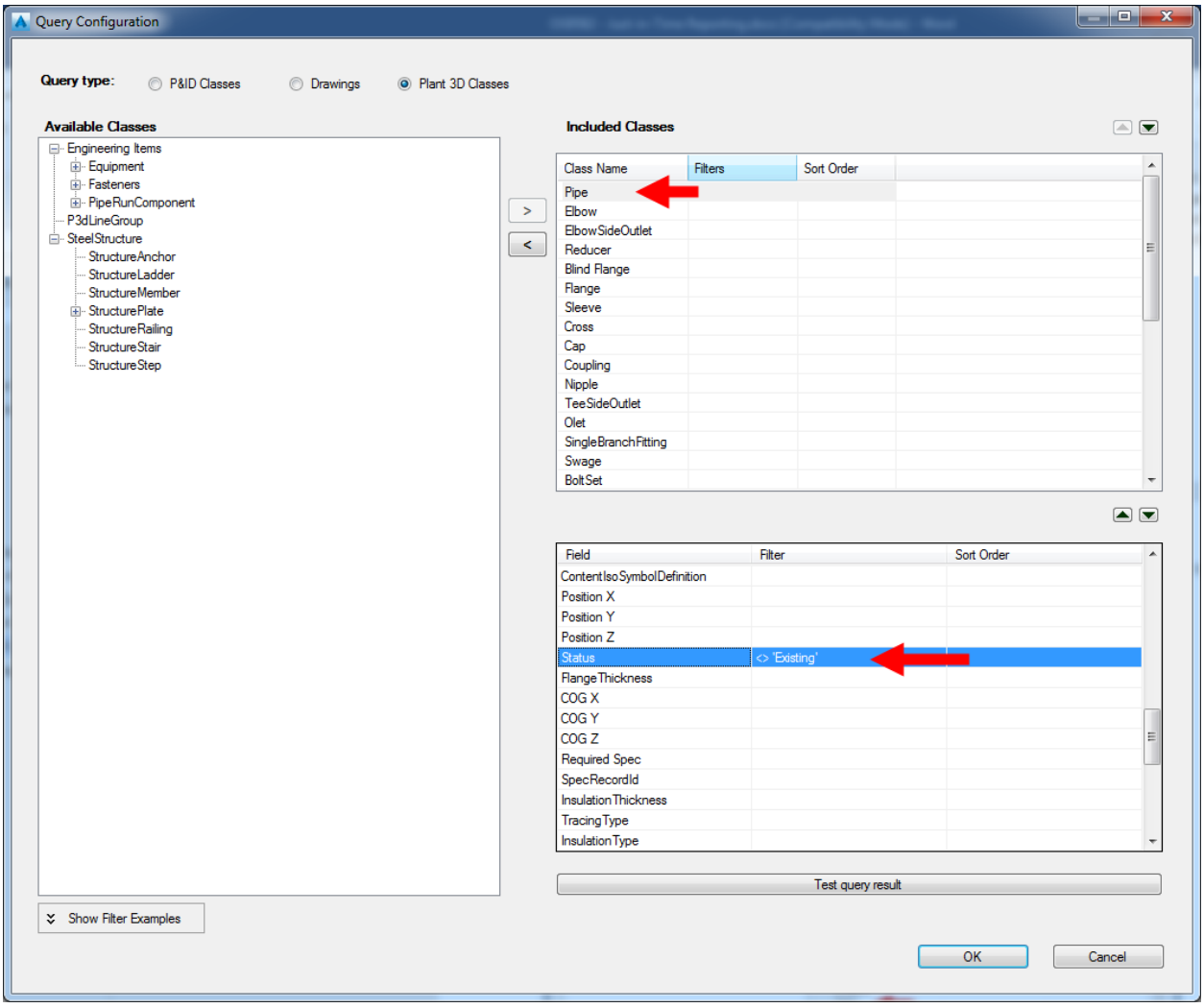


Learn how to filter report information with power filters

You can filter the data that gets put into the report in two ways, the query, or in the report properties.

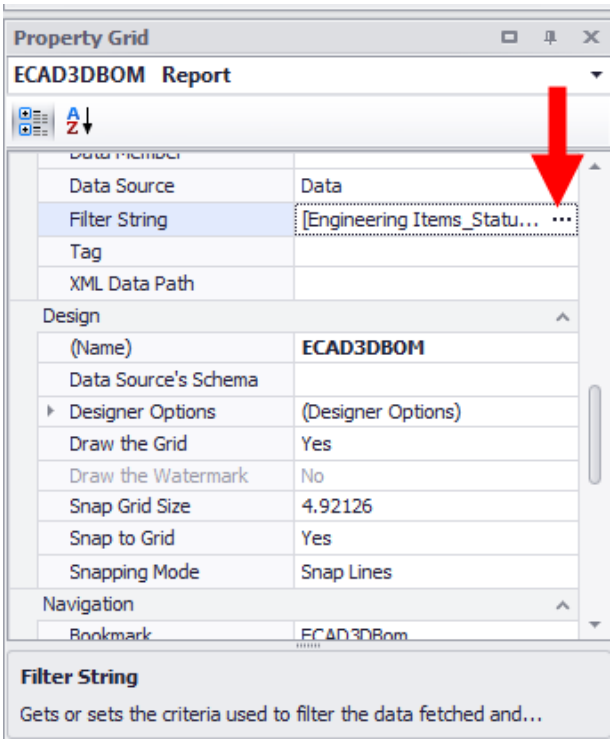
Filtering the Query of a report

In the query, each class that you include has rows from the model (potentially). In order to get all of those values for the report, Plant looks at the first class, gets all the values, then looks at the next class and gets all of those values. The classes may or may not have the same column headings. This type of result is called a union, because you mash all the results together. Unions work well for many scenarios, but they aren't the most flexible. For example, to filter out items that have their status set to existing, you have to add the filter to each class.

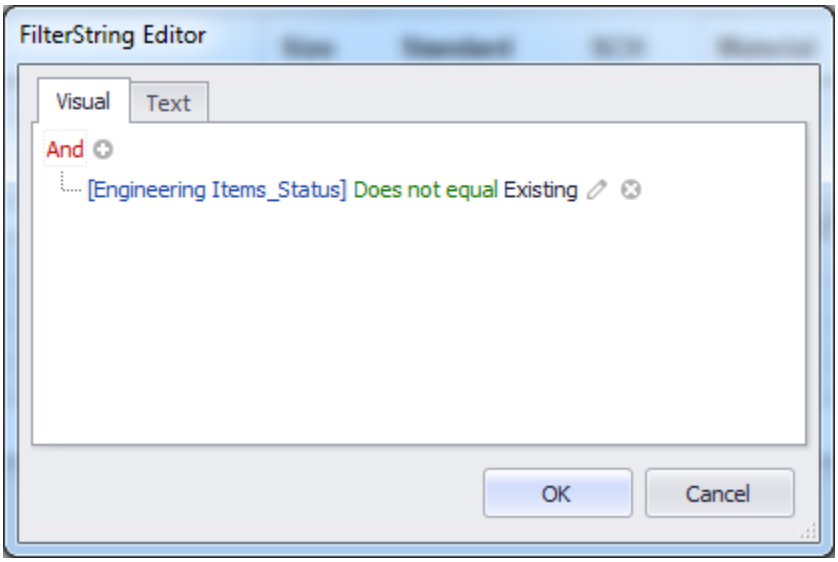


Filtering through the Report Properties

Thankfully, the report creator has an easier method built in. In the report explorer, select the report and then examine the properties. You will want to find the Filter String property in the Data category.



Clicking the … brings up the filter string editor. The Filter string editor is fairly readable, saying that you will include any result that does not have a status that equals Existing. In one line, you can handle what would have taken many lines using the other method.



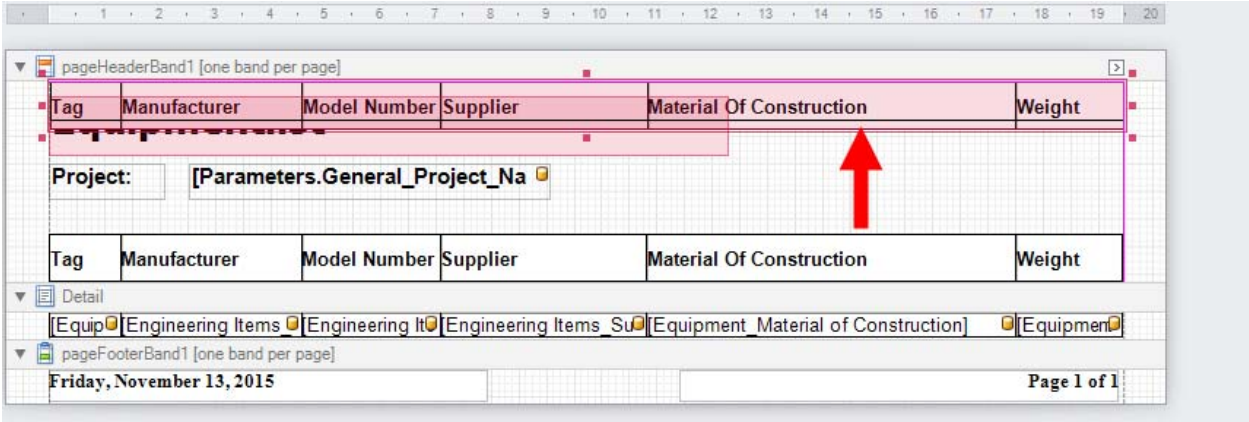
To see more help on this editor, visit: http://www.autodesk.com/plnt3d-helpfiles-enu/report_designer.pdf#page=25

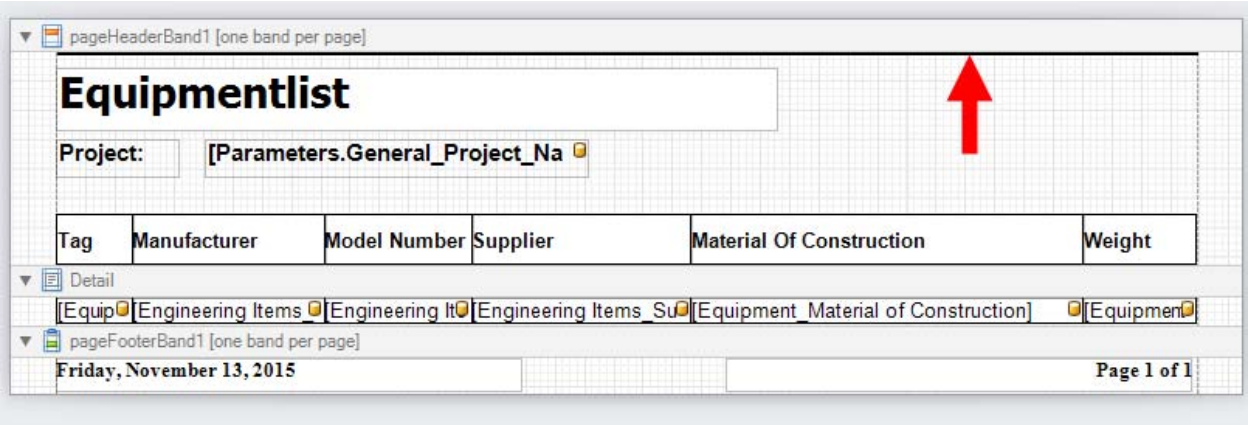
Learn how to Import a report back into the Project

While a BOM is not a suitable report to bring back into a project, many reports that are frequently used would be like an Equipment list, or a valve list.

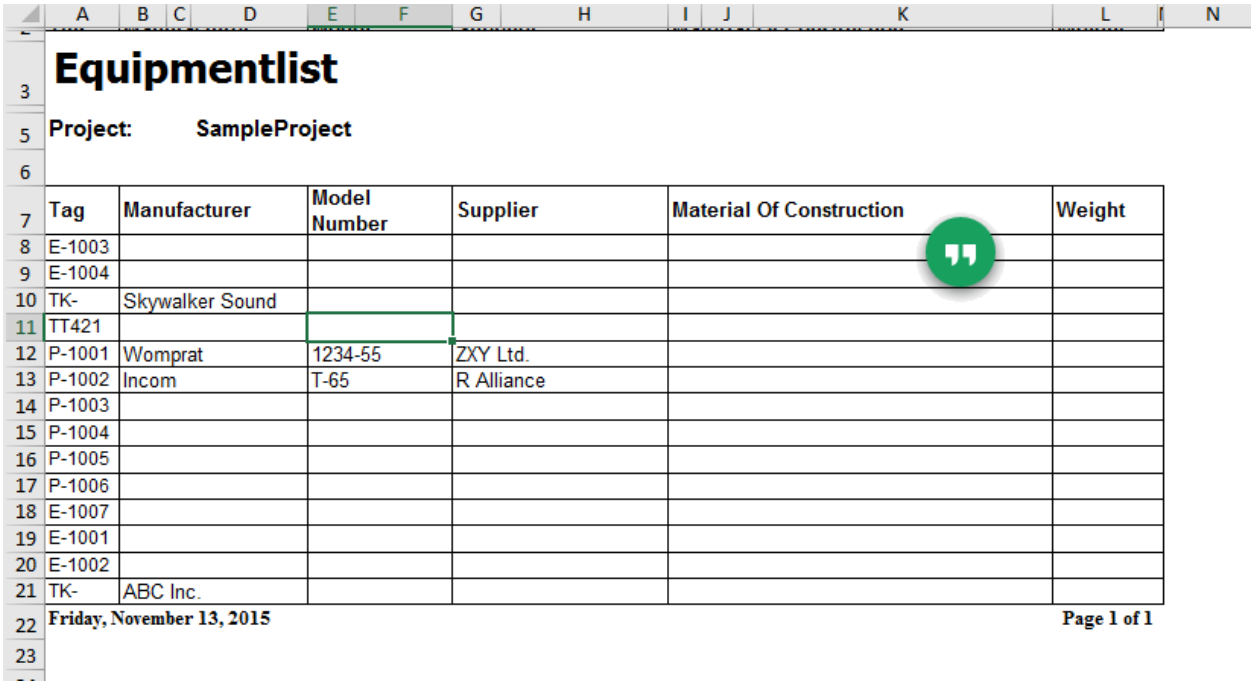
The main criterion is that during the data import, Plant 3d expects the header row to be the first row in the import.

A simple way around this is to put a tiny header row with the matching column names at the top of the report.





While not pretty, it does the job.



Equipmentlist

Project: **SampleProject**

Tag	Manufacturer	Model Number	Supplier	Material Of Construction	Weight
E-1003					
E-1004					
TK-	Skywalker Sound				
TT421					
P-1001	Womprat	1234-55	ZXY Ltd.		
P-1002	Incom	T-65	R Alliance		
P-1003					
P-1004					
P-1005					
P-1006					
E-1007					
E-1001					
E-1002					
TK-	ABC Inc.				

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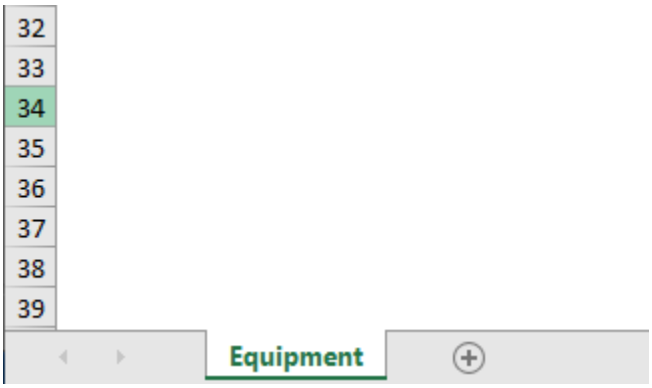
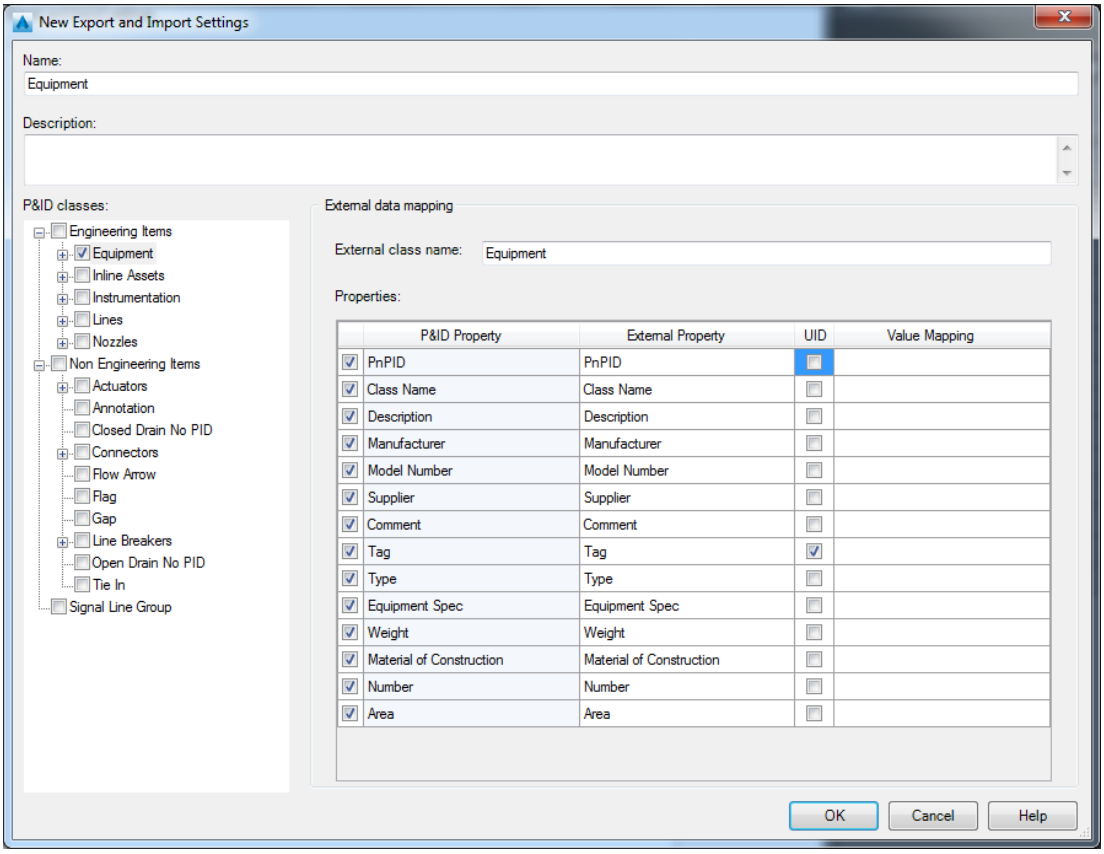
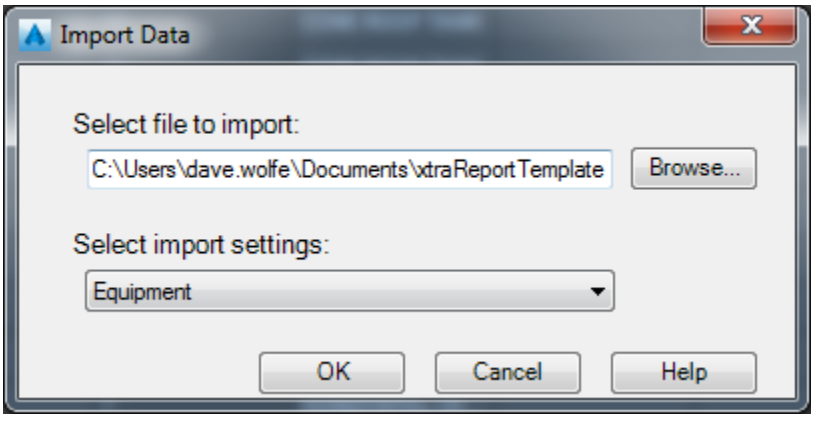
You also will have to make sure the Sheet name matches the class name of the import class.

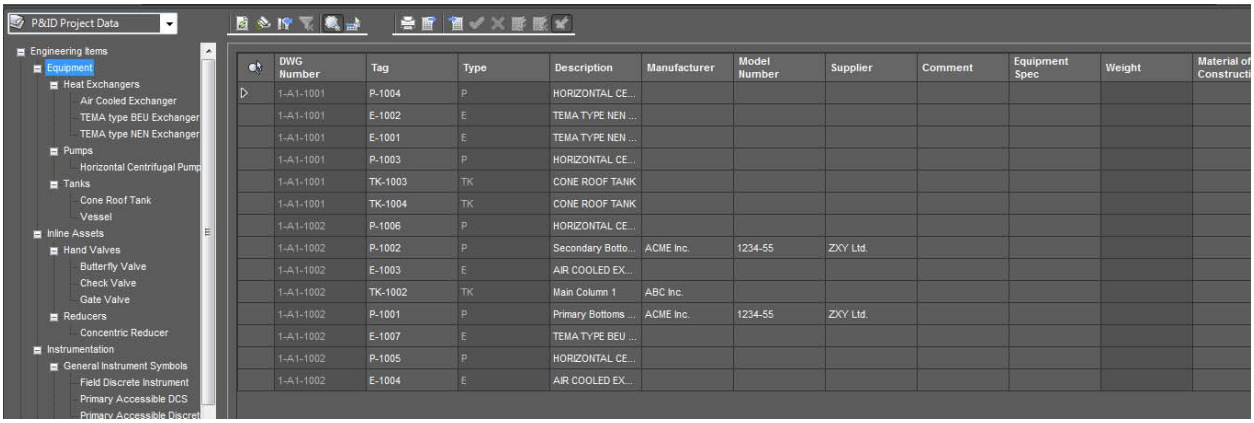


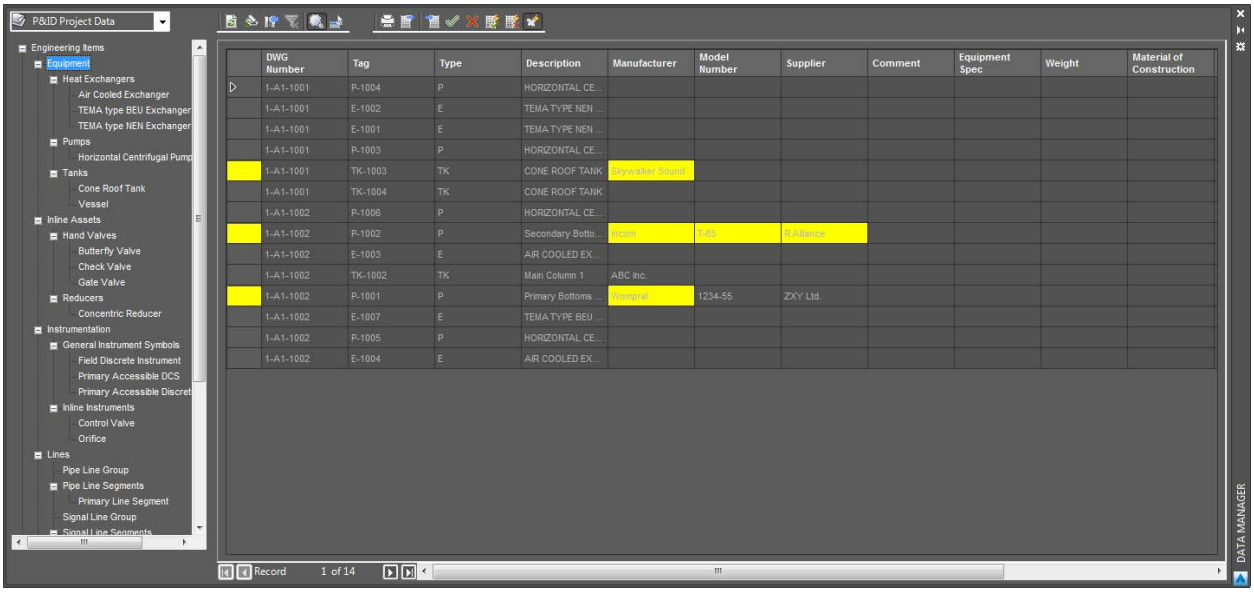
If you do not include the PnPID column, you will need to create an Export/Import mapping in your project setup.



Select the import settings when you import the Excel spreadsheet.




P&ID Project Data
Engineering Items
Equipment
Heat Exchangers
Air Cooled Exchanger
TEMA type BEU Exchanger
TEMA type NEN Exchanger
Pumps
Horizontal Centrifugal Pump
Tanks
Cone Roof Tank
Vessel
Inline Assets
Hand Valves
Butterfly Valve
Check Valve
Gate Valve
Reducers
Concentric Reducer
Instrumentation
General Instrument Symbols
Field Discrete Instrument
Primary Accessible DCS
DWG Number | Tag | Type | Description | Manufacturer | Model Number | Supplier | Comment | Equipment Spec | Weight | Material of Construction
1-A1-1001 | P-1004 | P | HORIZONTAL CE...
1-A1-1001 | E-1002 | E | TEMA TYPE NEN ...
1-A1-1001 | E-1001 | E | TEMA TYPE NEN ...
1-A1-1001 | P-1003 | P | HORIZONTAL CE...
1-A1-1001 | TK-1003 | TK | CONE ROOF TANK
1-A1-1001 | TK-1004 | TK | CONE ROOF TANK
1-A1-1002 | P-1006 | P | HORIZONTAL CE...
1-A1-1002 | P-1002 | P | Secondary Botto... | ACME Inc. | 1234-55 | ZXY Ltd.
1-A1-1002 | E-1003 | E | AIR COOLED EX...
1-A1-1002 | TK-1002 | TK | Main Column 1 | ABC Inc.
1-A1-1002 | P-1001 | P | Primary Bottoms ... | ACME Inc. | 1234-55 | ZXY Ltd.
1-A1-1002 | E-1007 | E | TEMA TYPE BEU ...
1-A1-1002 | P-1005 | P | HORIZONTAL CE...
1-A1-1002 | E-1004 | E | AIR COOLED EX...


P&ID Project Data
Engineering Items
Equipment
Heat Exchangers
Air Cooled Exchanger
TEMA type BEU Exchanger
TEMA type NEN Exchanger
Pumps
Horizontal Centrifugal Pump
Tanks
Cone Roof Tank
Vessel
Inline Assets
Hand Valves
Butterfly Valve
Check Valve
Gate Valve
Reducers
Concentric Reducer
Instrumentation
General Instrument Symbols
Field Discrete Instrument
Primary Accessible DCS
Inline Instruments
Control Valve
Orifice
Lines
Pipe Line Group
Pipe Line Segments
Primary Line Segment
Signal Line Group
DWG Number | Tag | Type | Description | Manufacturer | Model Number | Supplier | Comment | Equipment Spec | Weight | Material of Construction
1-A1-1001 | P-1004 | P | HORIZONTAL CE...
1-A1-1001 | E-1002 | E | TEMA TYPE NEN ...
1-A1-1001 | E-1001 | E | TEMA TYPE NEN ...
1-A1-1001 | P-1003 | P | HORIZONTAL CE...
1-A1-1001 | TK-1003 | TK | CONE ROOF TANK | Skywalker Sound
1-A1-1001 | TK-1004 | TK | CONE ROOF TANK
1-A1-1002 | P-1006 | P | HORIZONTAL CE...
1-A1-1002 | P-1002 | P | Secondary Botto... | Incom | 1-55 | R Alliance
1-A1-1002 | E-1003 | E | AIR COOLED EX...
1-A1-1002 | TK-1002 | TK | Main Column 1 | ABC Inc.
1-A1-1002 | P-1001 | P | Primary Bottoms ... | Wemprat | 1234-55 | ZXY Ltd.
1-A1-1002 | E-1007 | E | TEMA TYPE BEU ...
1-A1-1002 | P-1005 | P | HORIZONTAL CE...
1-A1-1002 | E-1004 | E | AIR COOLED EX...
Record 1 of 14
DATA MANAGER