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SmartPlant 3D Common Apps v7

User Training Exercises

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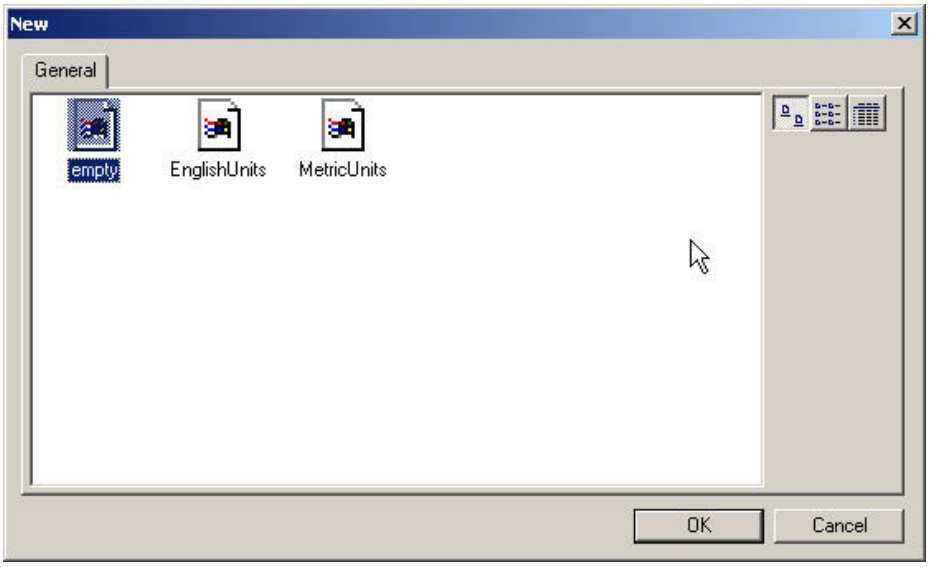
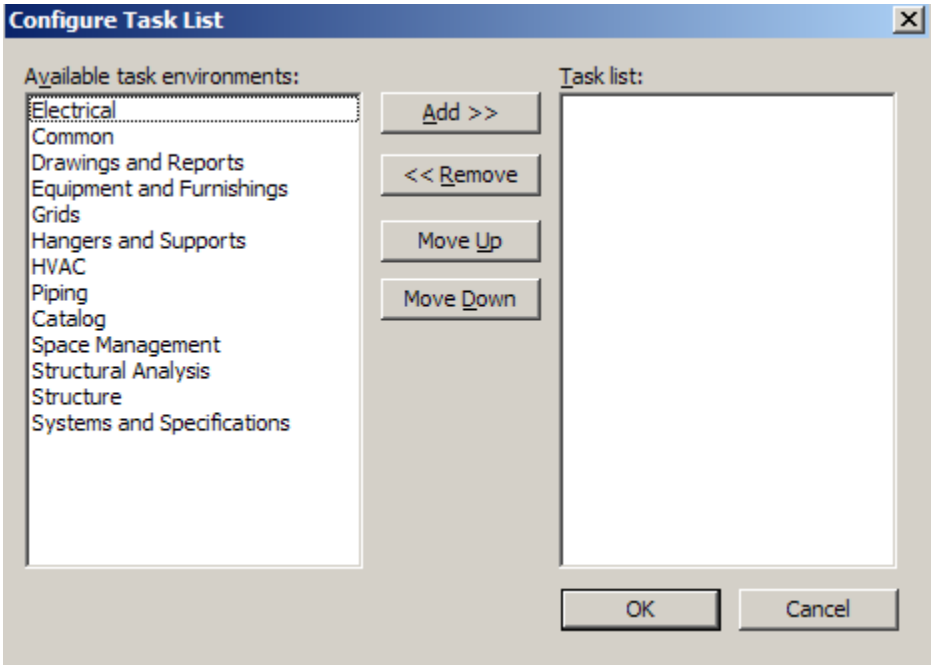
LAB-1: Session Setup

1 Start SmartPlant 3D using Start – Programs – Intergraph SmartPlant 3D – SmartPlant 3D

2 From the New dialog box, select the Empty template and click OK



3 From the Tasks menu, select Configure Task List



4 Select all tasks from the left side and click Add. Then click OK.
Administrators: If creating a discipline specific session file, you may want to select only the tasks needed by the discipline, and Move-Up to top the task most often used by this group

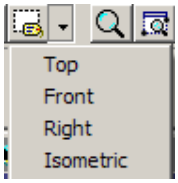
5 Now select Common from the Tasks menu.

6 From the Window menu, select New Window three times such that four windows are open.

7 From the Window menu select Tile Horizontally.

8 Activate GraphicView1 by clicking in its title bar.

9 From the named views pulldown on the Common toolbar, select Front.



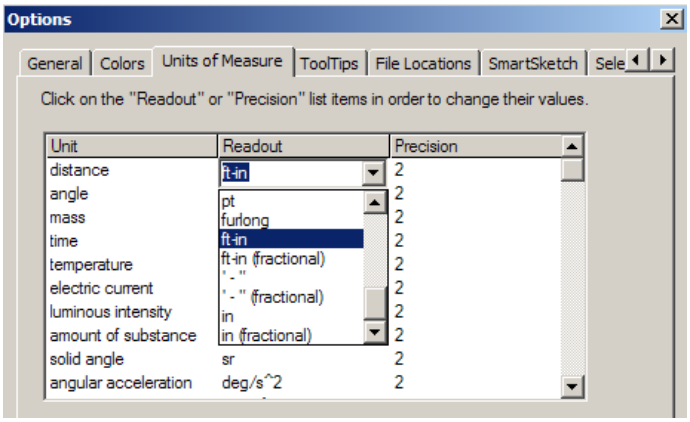
10 Similarly set GraphicView2 to Top, GraphicView3 to Right and GraphicView4 to Isometric.

11 Select Tools , Options to bring up the Options dialog box.

12 On the General tab set the number of undo actions to 6, set Dwell time for QuickPick to 3

13 On the Colors tab set the Background color as desired

14 On the units of measure tab, select ft-in for distance and set Precision = 3



15 Make sure Temperature units are “F”, Force per area is “psig” and Slope is “in/ft”

16 On the SmartSketch tab, set the Dwell time for stack = 1 Seconds
Note: For route tasks, 1sec or a larger value is OK, for structural design 0.1 is best

17 OK to save settings

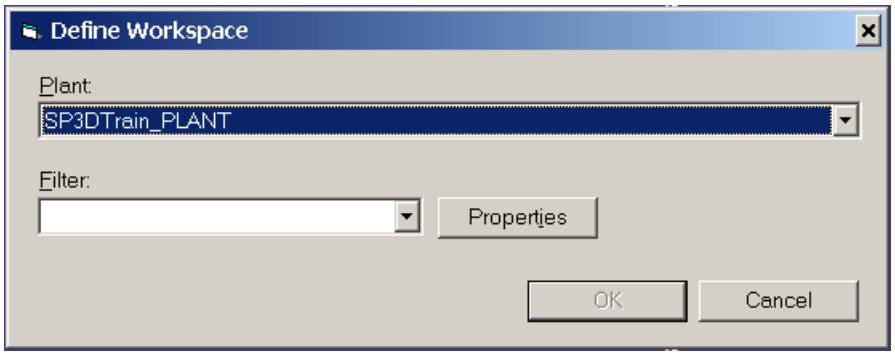
18 Select File > Save-as and save the session file on your desktop by any name
Note: Session files can be corrupted from time to time, it’s a good practice to keep a backup copy of your healthy session file with your latest preferred settings in a separate location

For SP3D Administrators:
This session file can be saved as a session template. To save this as template in the local machine, Select File menu, Save As and save this session template in \ProductDir\3D\CommonApp\SessionTemplates\Shaw (create this last forlder)

To save this as a template in a server, the location for the Session file can be changed using the Tools->Option dialog box. Open this dialog and select the File Locations Tab. Select Workspace Templates>Modify. You can change the “Folder” location to a UNC path and store all the session templates there. All user machines would need to have this last step performed on them to point them to the server.

LAB-2: Workspace Setup

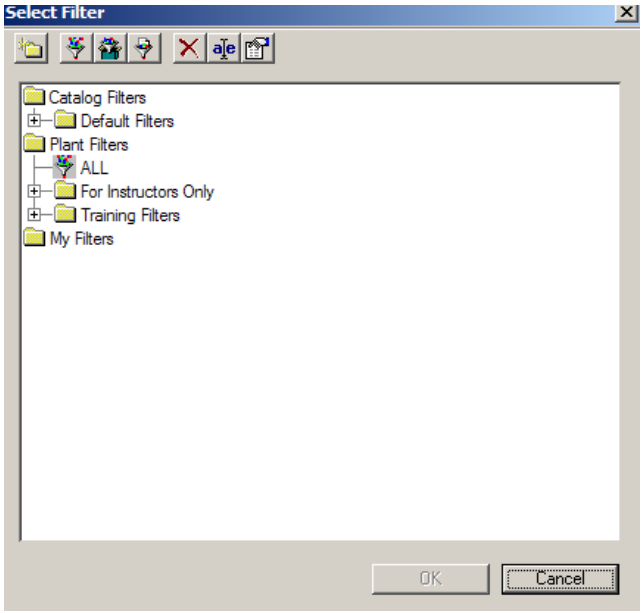
1 Select File > Define Workspace (Ctl+W)



2 Select the available training plant

3 Under filters, select more to open the Select Filter dialog

4 Expand the Plant Filters folder, Select “All” filter and Ok on the form

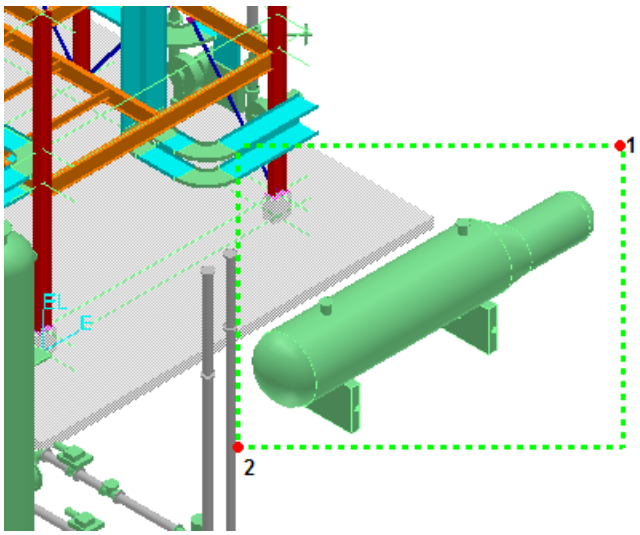


5 Ok on the define Workspace Form and Fit all views (Shift-A + )

LAB-3: View Manipulations

1 Select the Zoom tool from the menu 

2 On the Iso view, window to any piece of equipment as in the example shown, by single clicking at pt-1 and then pt-2 to create a fence window to zoom about



3 Use Alt-F5 to recall the previous view

4 While still in Zoom tool mode, press and hold the mouse wheel, then drag the mouse. This will result in window panning

5 Repeat the previous step, this time holding the Shift key down. This results in dynamic panning

6 While still in Zoom tool mode, click in the middle of a view, hold the mouse button down and drag it up and down on the screen. Moving down will zoom the view out; moving up will zoom in

7 Fit all and then select the Rotate View command 

8 Click and hold down on a structural column, once it's highlighted, move the mouse slowly left and right while still holding the mouse button down. The view will rotate about the axis selected on the structural member

9 Test rotating about other linear elements using the procedure above (piping, grid line, cable tray, concrete edge)

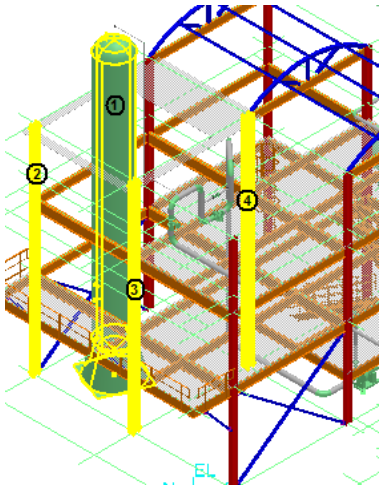
10 Test rotating about a random point by selecting a point in space then dragging the mouse

11 Switch to Equipment task (Tasks > Eqp & Furnishings)

12 Set a view to Iso and Fit All

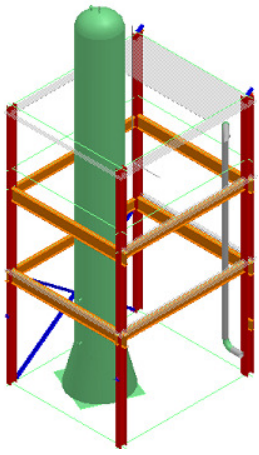
13 Select the Clip by Object command 

14 Select the equipment item and nearby columns like in the example below:



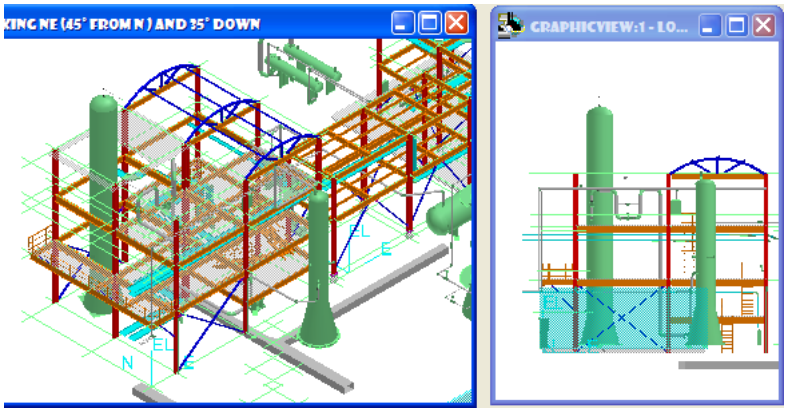
15 Accept 

16 Review the clipped view's content



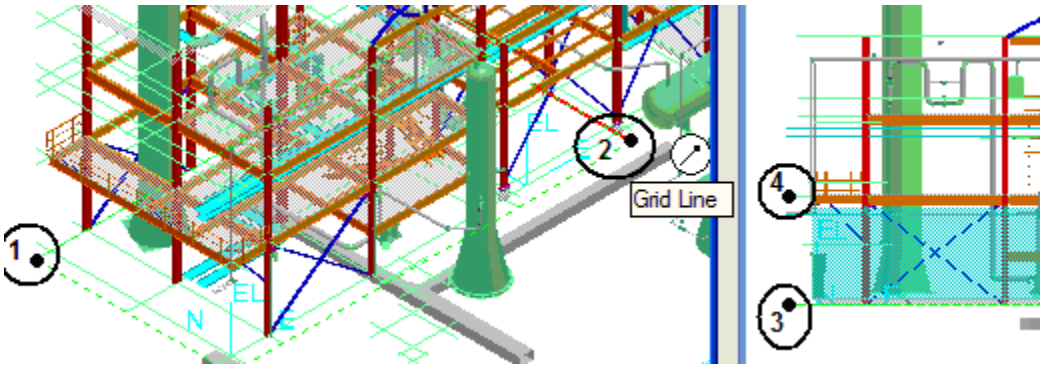
17 Use Clear View Clipping command  to remove the volume clipping

18 Setup an iso and elevation views of the plant similar to this:



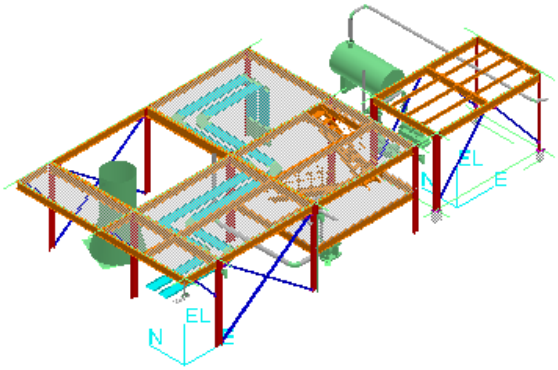
19 Select Clip by Volume command 

20 Click the end of the grid lines as shown below in the sequence indicated (1-4):



21 If an incorrect point is selected, you can backtrack using the smartstep options in the ribbon bar menu: 

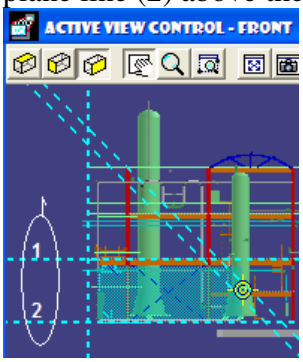
22 Select the iso view when prompted for a view, then click Finish. The view should resemble the following:



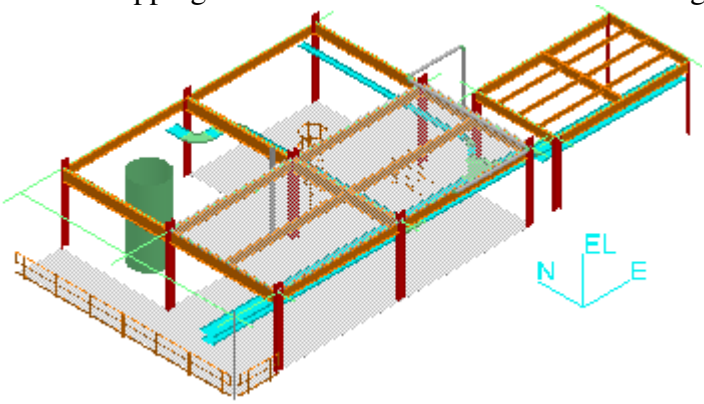
23 Select the Active View Control command 

24 Select an elevation orientation  from the active view control

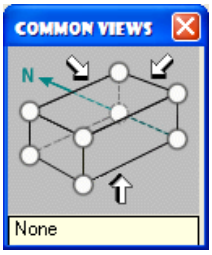
25 Drag the top plane line (1) up above the second level beams and the grade level plane line (2) above the first level beams



26 The new clipping volume should resemble the following view



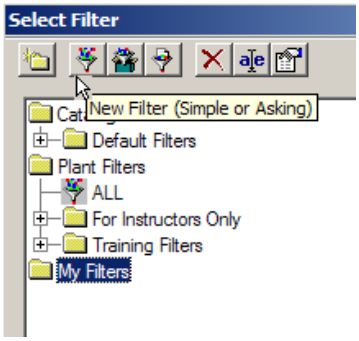
27 Use Common Views  to review the volume from different orientations



28 Use Clear View Clipping command  to remove the volume clipping

29 Select File, Define Workspace or CTRL W, select more…

30 Select My Filters folder, Select the Simple Filter Icon to open The New Filter Properties dialog box.



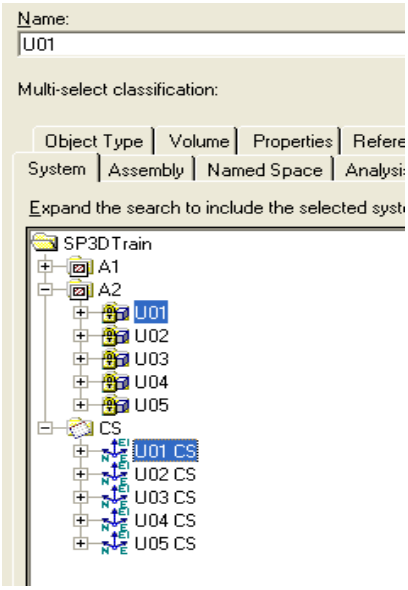
31 Name the filter “U01”

32 Select A2 , **U01** on the System Tree to select objects

33 Expand Coordinate Systems by clicking on the + sign.
Note: Do **NOT** click the name ‘Coordinate System’

34 Press and hold the Ctrl key on the keyboard and select U01 CS.

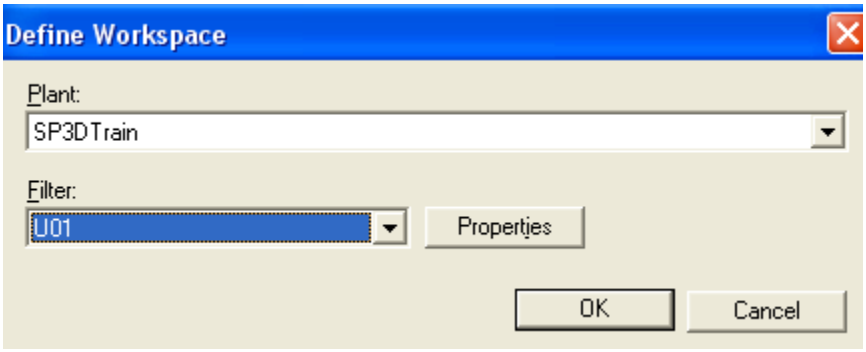
35 Click OK to accept the new filter definition containing U01 and U01 CS



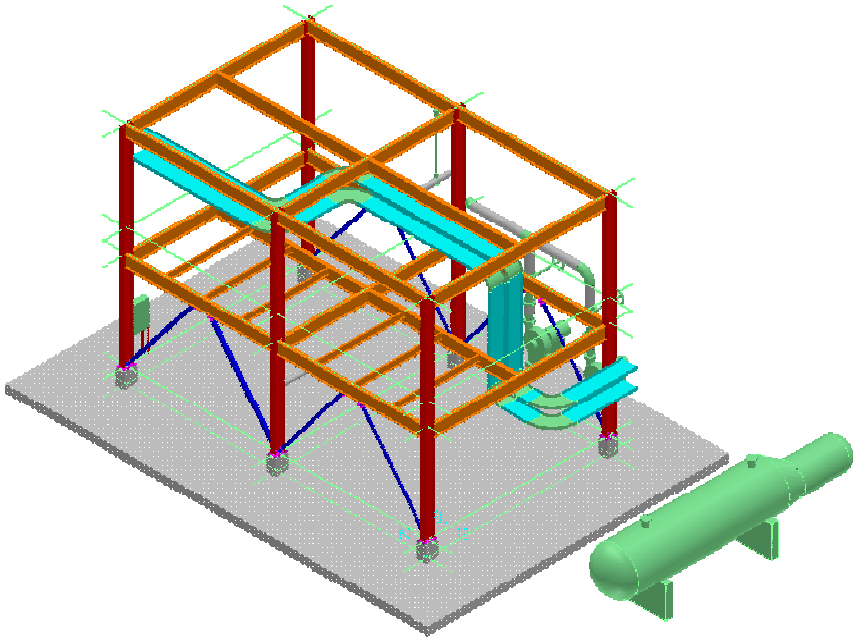
36 Select the filter "**U01**"

37 Click OK to accept the selected filter

38 Click OK to bring all U01 objects into the workspace.



39 Your View should now resemble the following graphic.



40 Select Define Workspace or CTRL W, select more…

41 Select My Filters folder, Select the Simple Filter Icon to open The New Filter Properties dialog box.

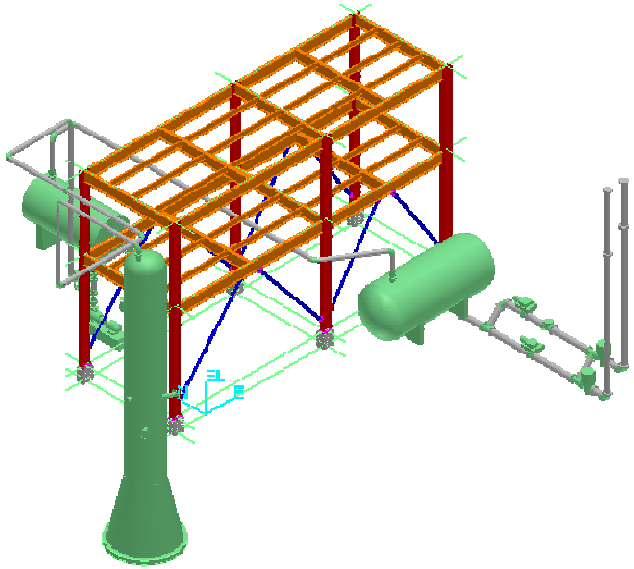
42 Name the filter “U02”. Select **U02** on the System Tree to select objects

43 Expand Coordinate Systems by clicking on the + sign.
Note: Do **NOT** click the name ‘Coordinate System’

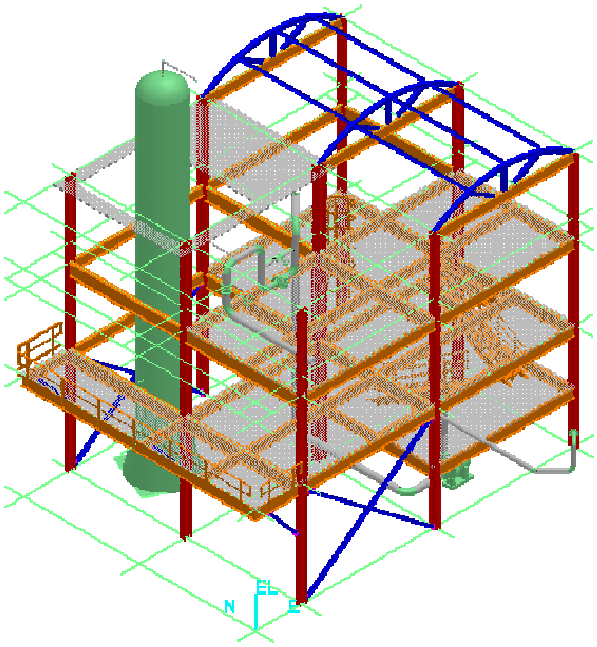
44 Press and hold the Ctrl key on the keyboard and select U02 CS. Click OK to accept the filter definition.

45 Select the filter “**U02**”. Click OK to accept the selected filter.

46 Select OK to bring all U02 objects into the workspace

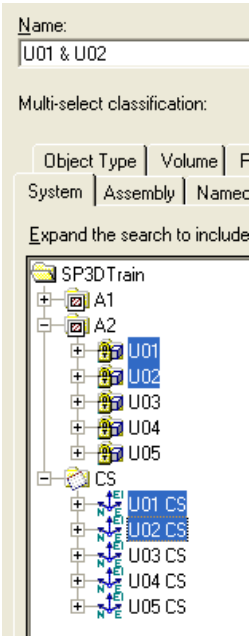


47 Create a new Simple Filter named U03, to include U03 and U03 CS.

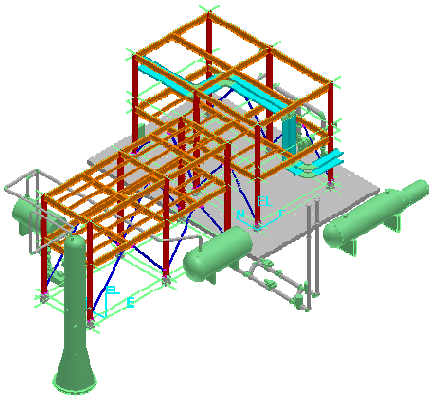


48 Create a new Simple Filter named U04, to include U04 and U04 CS

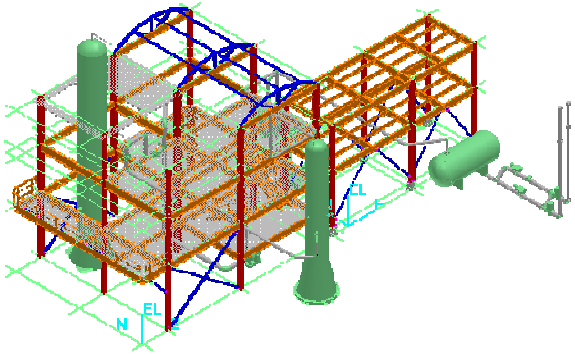
49 Create a new Simple Filter named U01 & U02, to include U01, U02, U01 CS and U02 CS



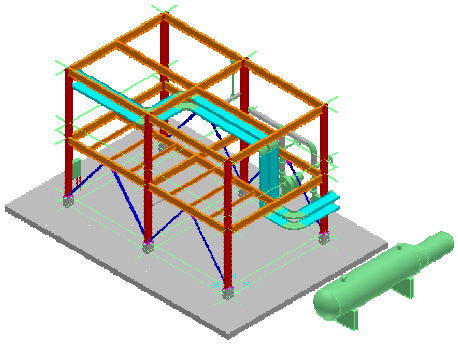
50 Your view should resemble this



51 Create a new Simple filter U02 & U03, to include U02, U03, U02 CS and U03 CS



52 Select Define Workspace and select U01 to Display all objects in U01



LAB-5: Filter Management – Object type

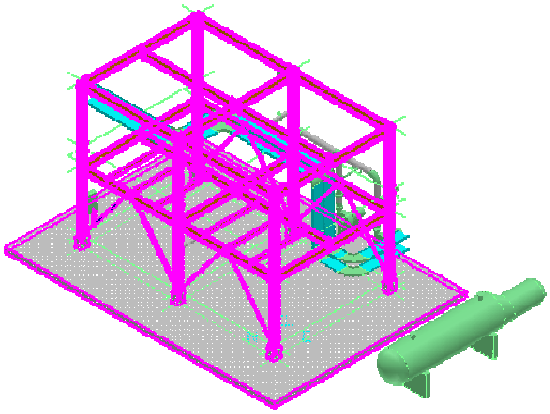
1 Display U01 if not already displayed

2 Select Tools > Select by Filter command to open the Select Filter dialog box.

3 Under Catalog filters, expand Default Filters, SP3D Object Filters, Object Types and select Structure (select structure filter not the folder)

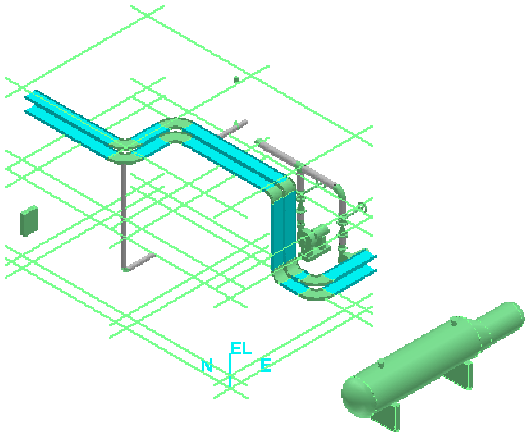
4 Click OK to select all Structural objects in Displayed filter

5 Your View should now resemble the following graphic:



6 Select Tools > Hide

7 Your view should resemble this:



8 Select tools > Show all

9 Select Tools > Select by Filter command to open the Select Filter dialog box.

10 Under Catalog filters, expand Default Filters, SP3D Object Filters, Object Types and select Cableway (select Cableway filter not the folder)

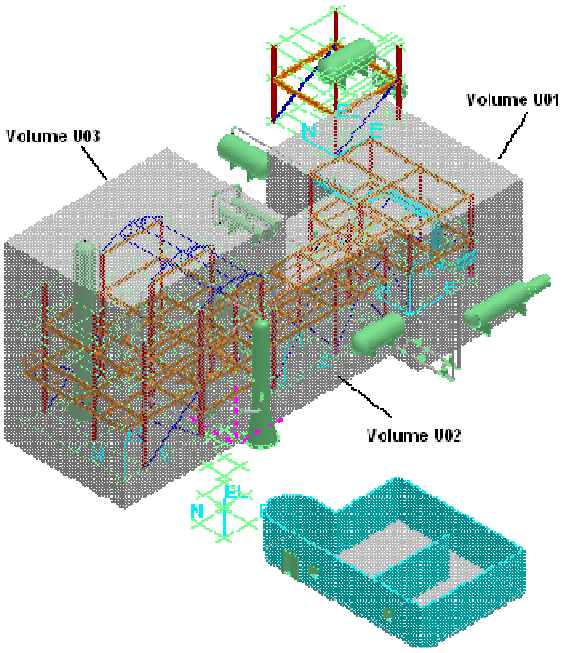
11 Click OK to select all Cableway objects in Displayed filter

12 Select Format > Style, Under Surface Tab select Green Color and select Apply Button

13 System will change all Electrical Cableway objects to green

14 To change the Cableway back to the original color, select cableway objects using same filter, select Format > Style and Select Apply Style by Rule and Apply

LAB-6: Filter Management – Volume Filter



1 Select define WorkSpace and select more

2 Select the My Filters folder

3 Select the Simple Filter Icon to open The New Filter Properties dialog box

4 Name the filter “Volume U01”

5 Select Plant name on Systems Tab

6 Open Named Space Tab

7 Select Volume U01

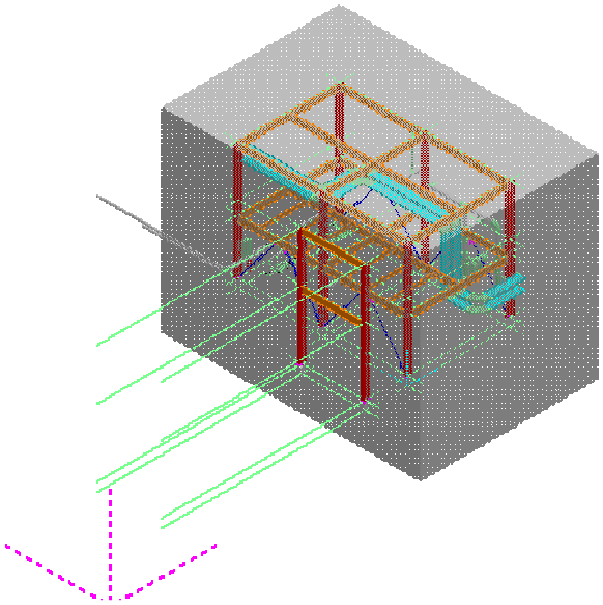
8 Open the Volume Tab, and select Volume U01

9 Click OK

10 Select Volume U01 and OK

11 Ok on the define Workspace Form

12 Your view should resemble this (Vol box may be solid)



13 System displays Volume U01, and all objects which are fully or partially inside the volume

14 To display objects only within the volume, set the Locate Filter to All, select the volume and use the Clip by Objects command .

15 Select the Volume(box) and do tools hide.

16 Select Tools>Show All to displays all objects again. Go to View>Clear Clipping to remove the clipped volume.

17 To see through the volume walls, select Volume 01

18 Select Format > Style

19 In the Surface tab select Translucent White and Apply, then Close

LAB-7: Filter Management – Equipment Properties

Defining a Filter based on Properties – Equipment Approval Status (Asking Filter)

1 Define Workspace to show U01

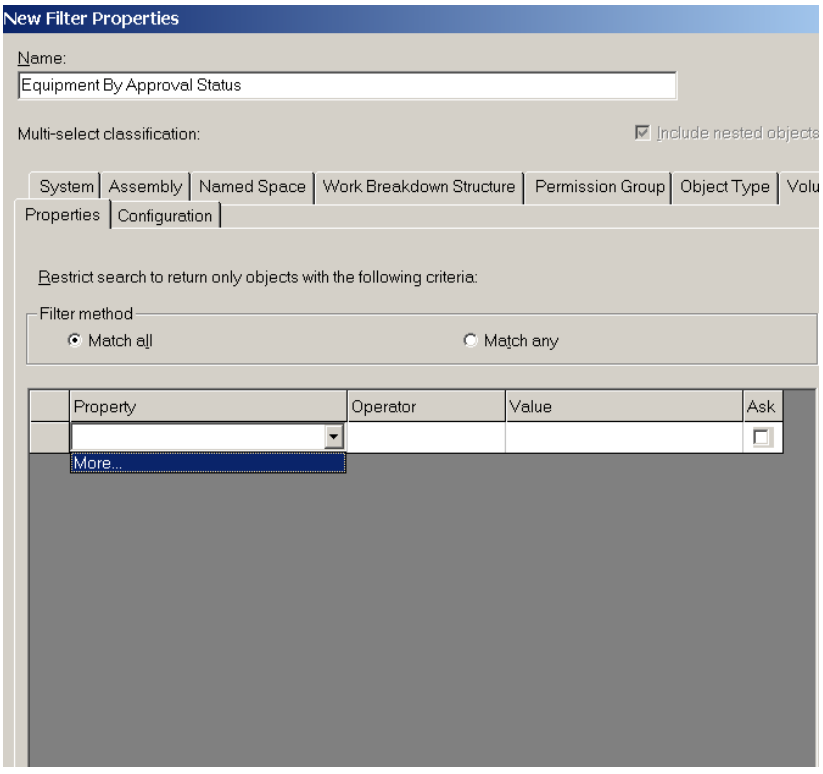
2 Go to Tools, Select by Filter command to open the Select Filter dialog box

3 Select the My Filters folder. Select the Simple Filter Icon to open The New Filter Properties dialog box.

4 Name the new filter “Equipment by Approval Status”

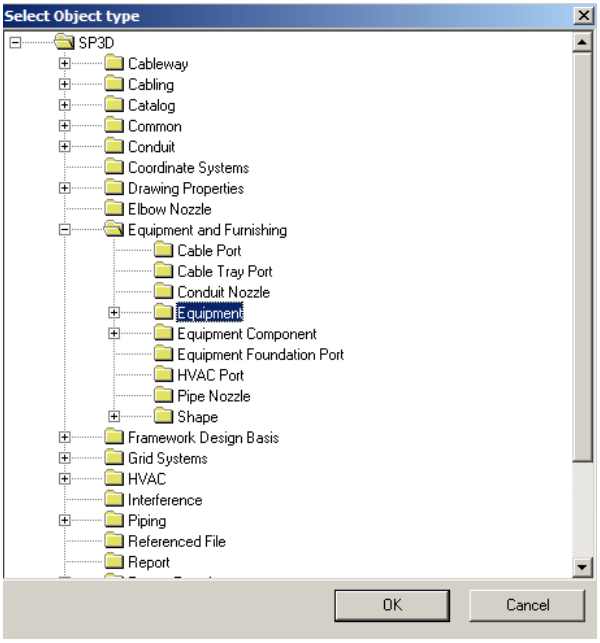
5 Switch to the Properties tab and click in the Property field.

6 From the pulldown control, select More…



7 This brings up the Select Properties dialog. In the Object type used as basis for property identification, select More…

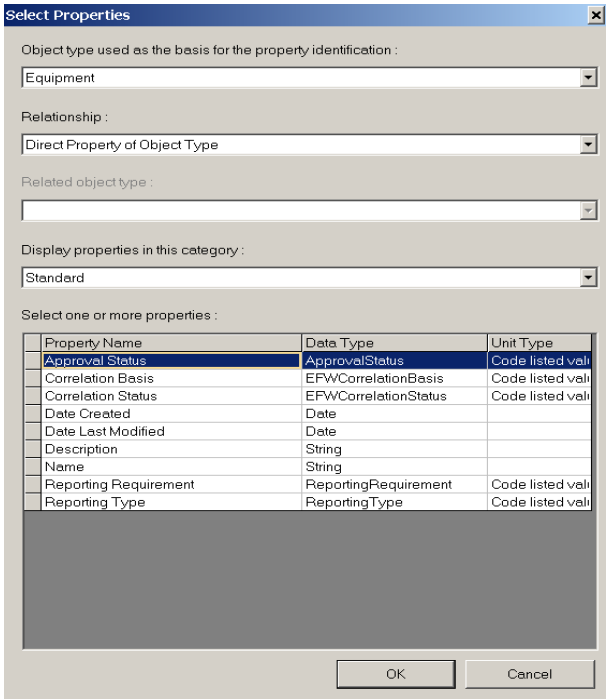
8 Expand the Tree, and select Equipment under Equipment and Furnishing



9 Ok on the form

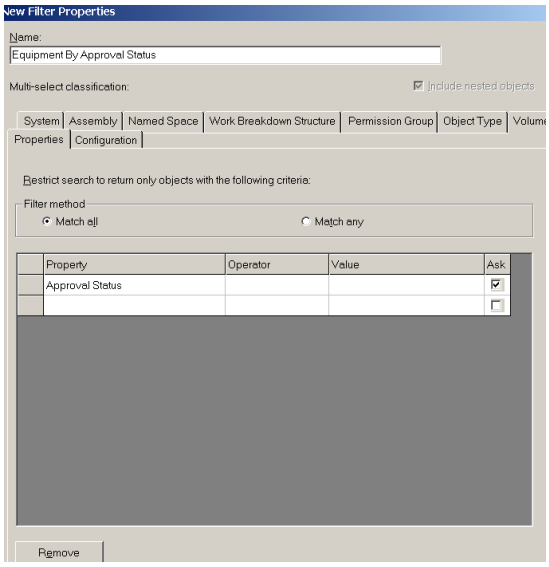
10 Under Relationship, Select Direct Property of the Object

11 Under Display Property in this Category, Select Standard



12 Select Approval Status under properties and Ok on the form

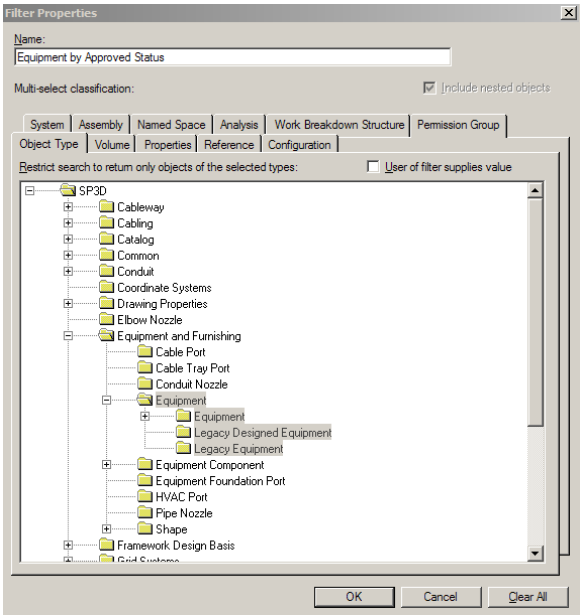
13 Check the box under Ask, this will cause a prompt to appear requesting the Operator and Value interactively from the user



14 Switch to Object Type Tab

15 Expand Equipment and Furnishing

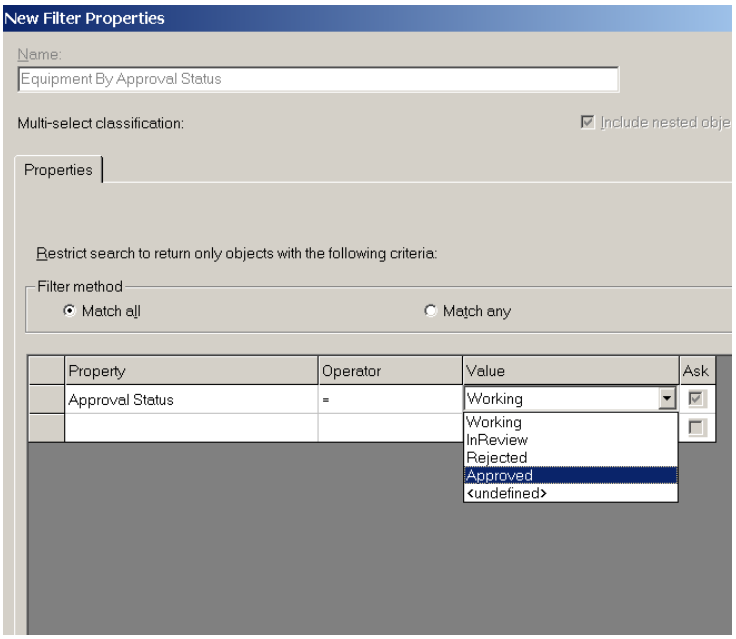
16 Select Equipment as Object Type



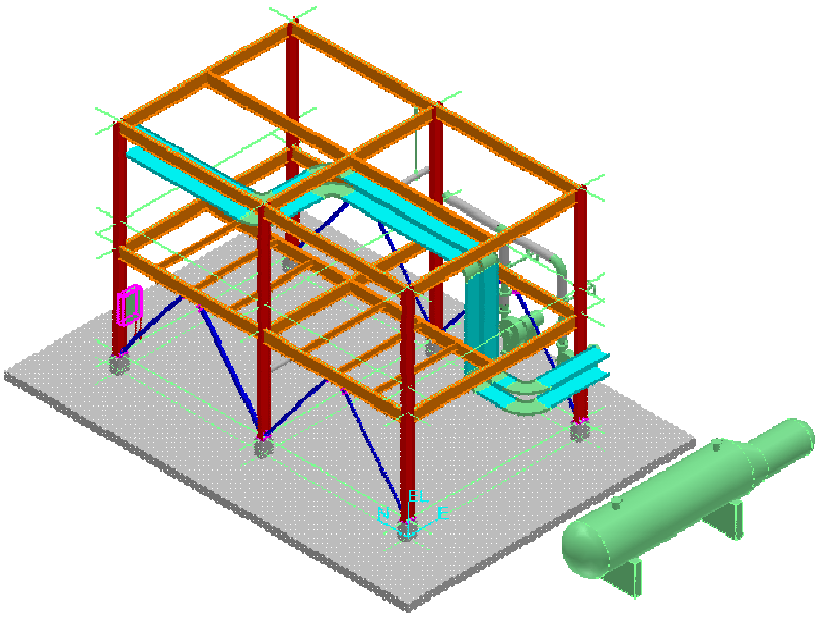
17 OK on the form

18 Select the Equipment by Approval Status filter and OK on the select filter form

19 Select Approved under the Value (pulldown menu)

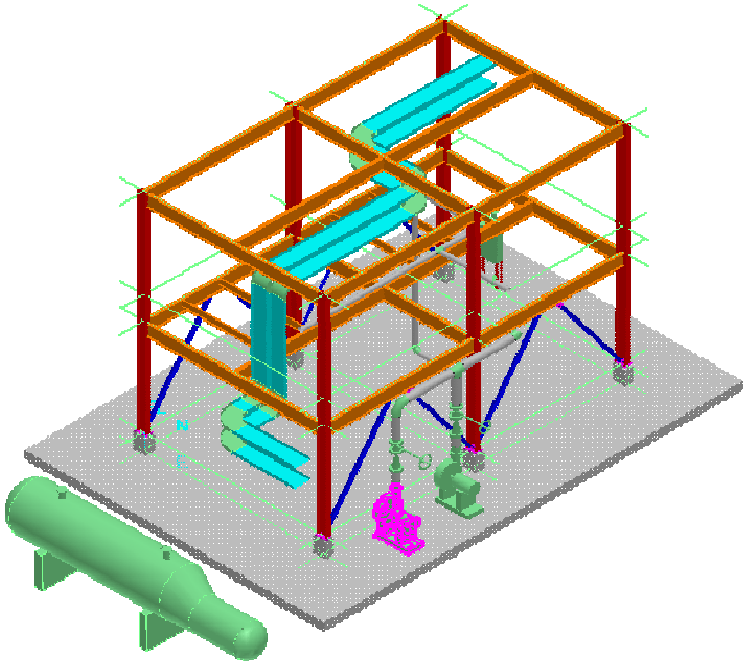


20 Ok on the form. System will highlight all Approved Equipment in your Workspace



21 Select Tools, Select by Filter and select Equipment by Approval Status filter.

22 Select In Review for Value and Ok on the form. System will highlight all Equipment with Status of in review.



LAB-8: Filter Management – Piping Properties

Defining a Filter based on Properties – Piping Run NPD

1 Define Workspace to show U01

2 Switch Task to Piping

3 Select Tools, Select by Filter command to open the Select Filter dialog box.

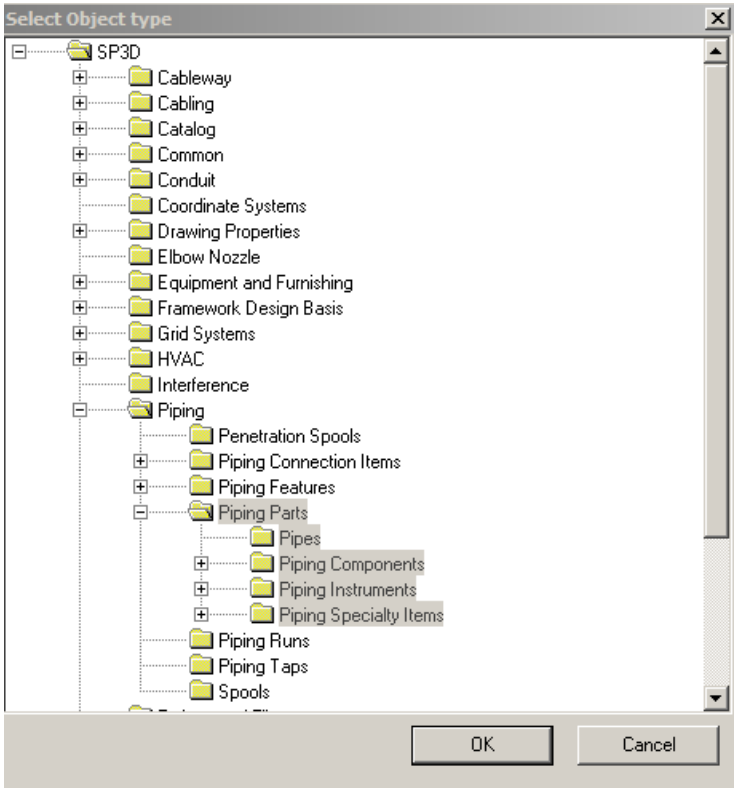
4 Select the My Filters folder. Select the Simple Filter Icon to open The New Filter Properties dialog box.

5 Name the filter “Piping Run by NPD”

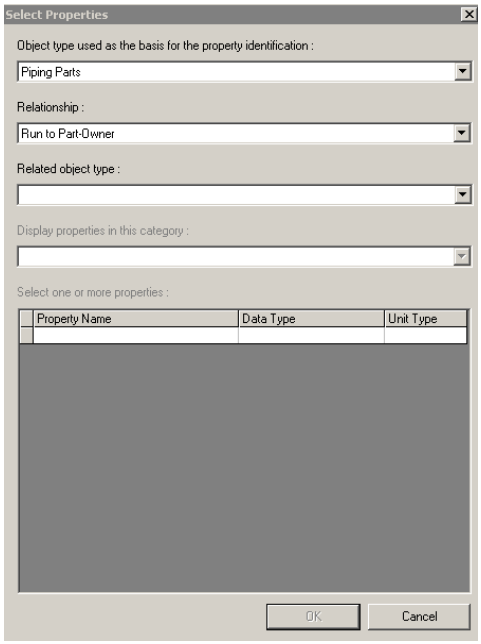
6 Switch to the Properties tab and click in the Property field

7 From the pulldown control, select More… / Object Type > More…

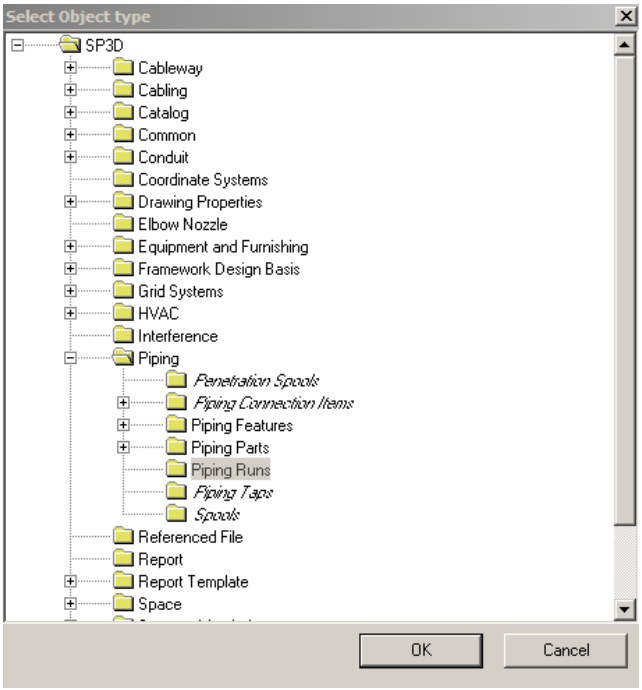
8 Expand the Select Object Type tree and Select Piping Parts and click OK.



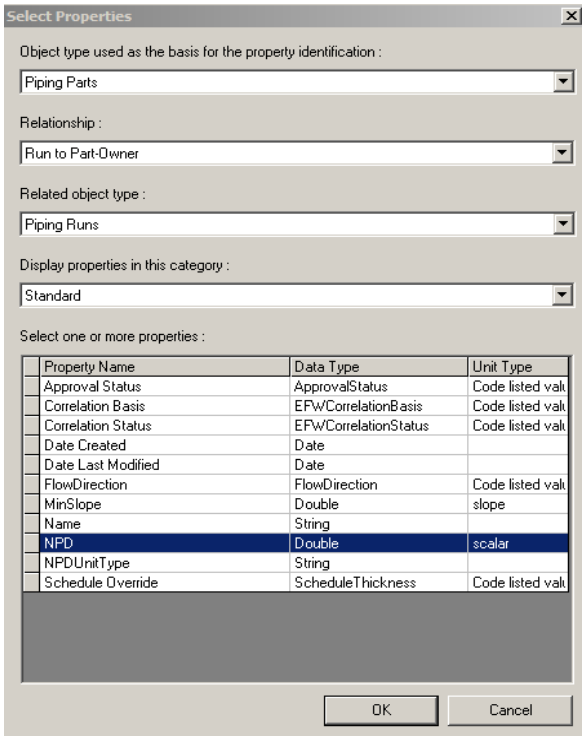
9 In the Relationship pulldown control, select Run to Part-Owner



10 In the Related object Type, select More… to bring up the Select Object Type dialog box. Expand the Select Object Type tree and Select Piping Runs and click OK.



11 In the property grid select NPD option and click OK.

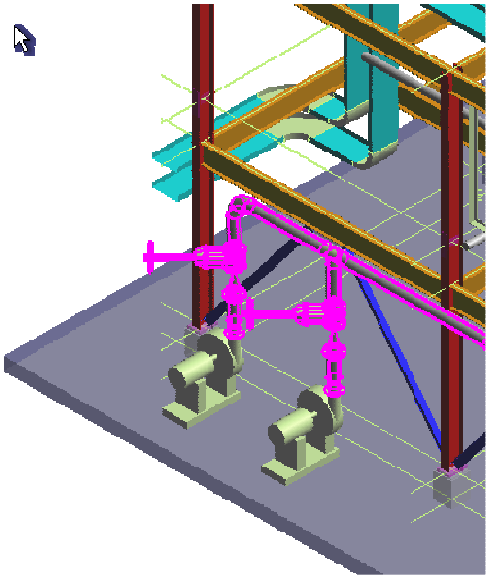


12 Select equal operator in the operator field

13 Key-in “10” in the value field, no units

14 Click OK to create the filter. OK to accept it.

15 Your View should now resemble the following graphic:



LAB-9: Filter Management – Structural Properties

Defining a Filter based on Properties – Structural Section Names

1 Define Workspace to show U01

2 Select Tools > Select by Filter command to open the Select Filter dialog box

3 Select the My Filters folder. Select the Simple Filter Icon to open The New Filter Properties dialog box.

4 Name the filter “Members by Section Name”

5 Switch to the Properties tab and click in the Property field

6 From the pulldown control, select More… / Object Type.. More…

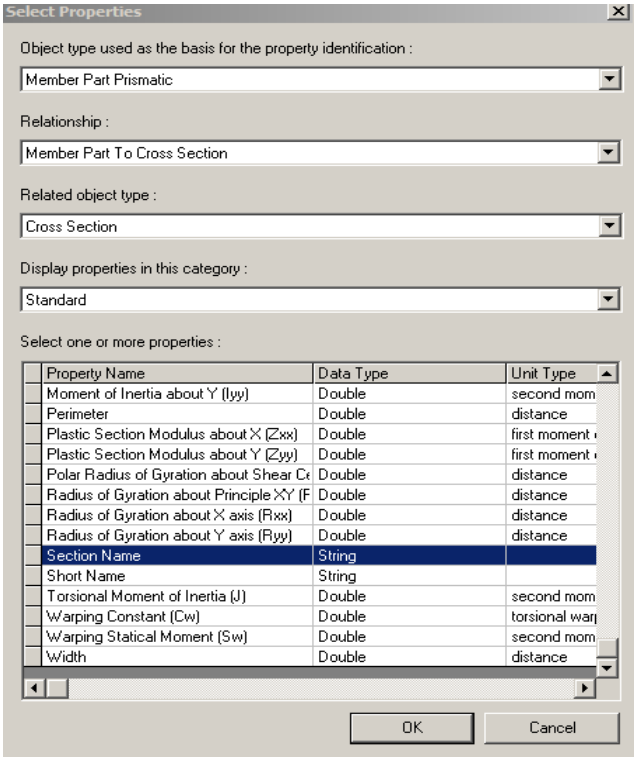
7 Select Structure – Members, Member Part Prismatic and OK

8 Under Relationship, Select Member part to Cross Section

9 Under Related object type, select Catalog , Cross Section and OK

10 Under Display Property in this Category, Select Standard

11 Scroll down and select Section name



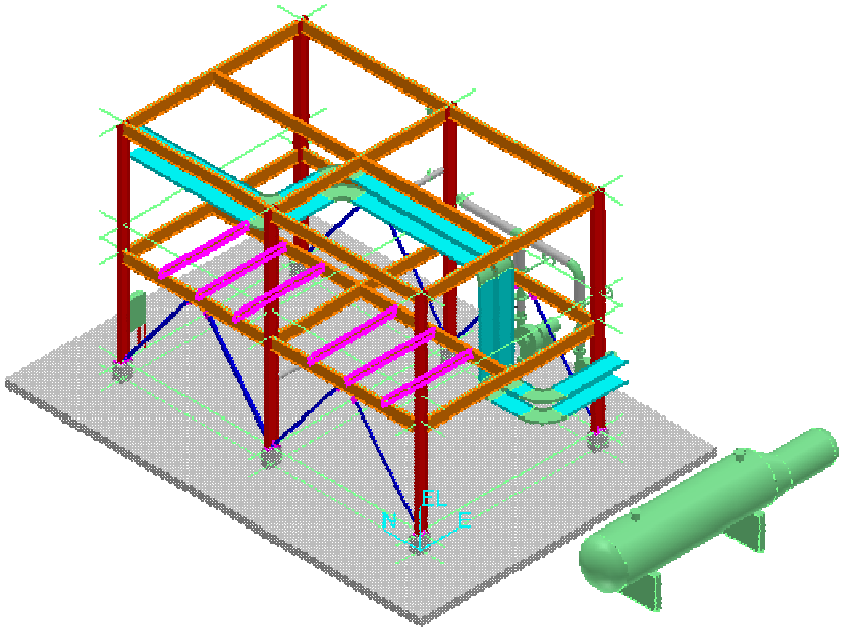
12 Ok on the form

13 Select = for operator

14 Type C10X15.3 for section name and OK on the form

15 Select Members by Section Name filter and select OK

16 System Highlights all C10X15.3 in the Workspace



LAB-10: Filter Management – Cableway Properties

Defining a Filter based on Properties – Cableway Vendor Name

1 Define Workspace to show U01

2 Select Tools, Select by Filter command to open the Select Filter dialog box

3 Select the My Filters folder. Select the Simple Filter Icon to open The New Filter Properties dialog box.

4 Name the filter “Tray by Vendor”

5 Switch to the Properties tab and click in the Property field

6 From the pulldown control, select More… / Object Type.. More…

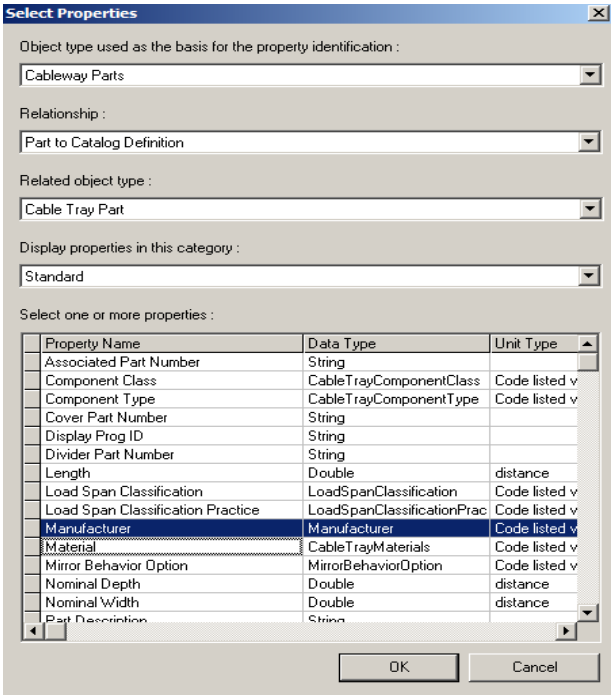
7 Select Cableway, Cableway Parts

8 Under Relationship, Select Part to Catalog Definition

9 Under Related object type, Expand Catalog, Catalog Parts and select CableTray Part

10 Under Display Property in this Category, Select Standard

11 Scroll down and select Manufacturer and OK

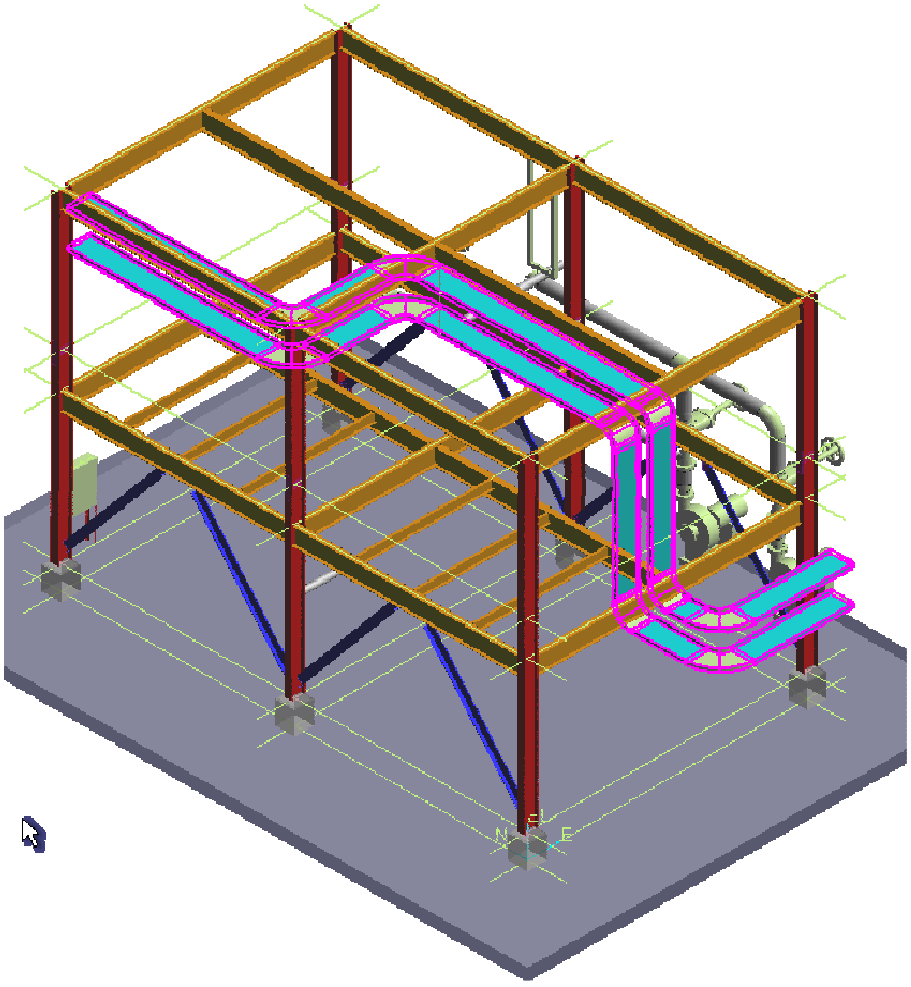


12 Select = for operator

13 Select Cooper B-Line for vendor from the Code list and OK on the form

14 Select Tray by Vendor filter and select OK

15 System Highlights all Cooper B-Line Trays



LAB-11: Filter Management – WBS Properties and Assignment

Defining a Compound Filter based on System and WBS combined

1 Define Workspace to show All

2 Return to Define Workspace and select Filter, More…

3 Select Plant Filters folder then New Filter

4 Name the filter WBS-Proj1

5 Select Work Break Down Structure tab

6 Select Project1 and OK

7 Select filter WBS-Proj1 in Define Workspace and OK

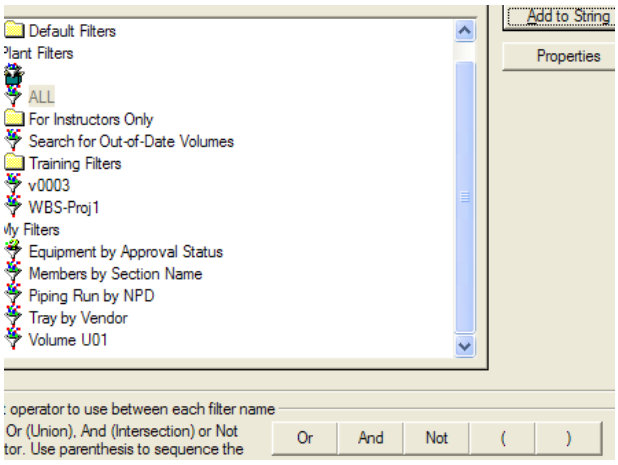
8 All items are removed from the workspace as there are no components that have been claimed into this WBS yet. In the future any item claimed into this WBS project will be selected by this filter.
Note: There will be times when a WBS project needs to be selected together with a plant hierarchy. You will need to define workspace filters that will display graphic items that belong in both, WBS and System hierarchy at the same time. For this purpose a **Compound Filter** will be necessary

9 Return to Define Workspace and select More…

10 Select Plant Filters folder then New Compound Filter 

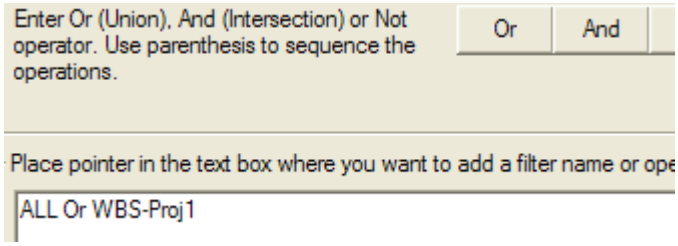
11 Name the new filter ALL-and-WBS

12 Select filter ALL, then Add to String button



13 Select the “OR” operator from the form

14 Select WBS-Proj1 then Add to String button. The following operation results:



15 Select OK

16 Select filter ALL-and-WBS and OK to update the Workspace

Making WBS assignments

17 In the Workspace Explorer window, select the WBS tab. All items (contracts etc.) pertaining to this WBS are available for assignments

18 Set the Locate Filter to All

19 In WBS tab, right click Contract3 under Project1

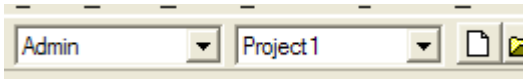
20 Select Create WBS Item

21 Enter the following values and OK:

Property	Value
WBS Type	Sub-Contract
WBS Purpose	Reference
Exclusive	False
WBS Assignment	System
WBS Parent	Contract3
Name	Coat and paint co.
Name Rule	User Defined
Correlation Status	Not correlated
Correlation Basis	No correlation is required

22 Hold the CTL key down and select one equipment item, one structural column and one piping feature

23 Set the active WBS project to “Project 1” as shown

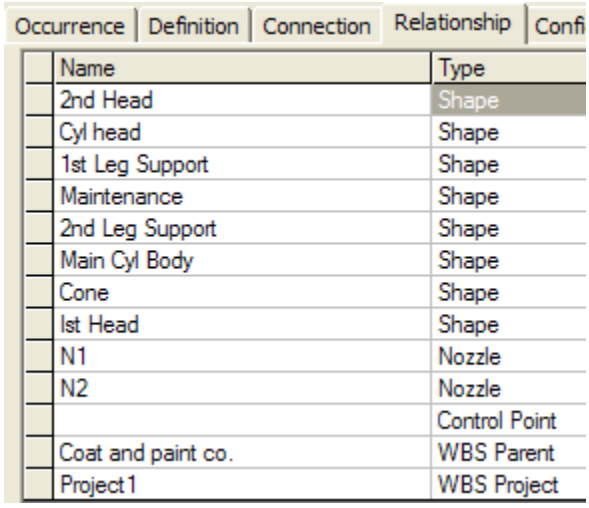


24 Selct Project > Claim. Close when done

25 While graphic items are still selected, select Project > Assign to WBS. Expand the tree to select “Coat and paint co.”

26 OK the form. Select Yes if a warning form appears

27 Verify that the assignment was successful. Right click on each item processed and select Properties. Review the Relationship tab which should include entries for WBS Parent and Project



Name	Type
2nd Head	Shape
Cyl head	Shape
1st Leg Support	Shape
Maintenance	Shape
2nd Leg Support	Shape
Main Cyl Body	Shape
Cone	Shape
Ist Head	Shape
N1	Nozzle
N2	Nozzle
	Control Point
Coat and paint co.	WBS Parent
Project 1	WBS Project

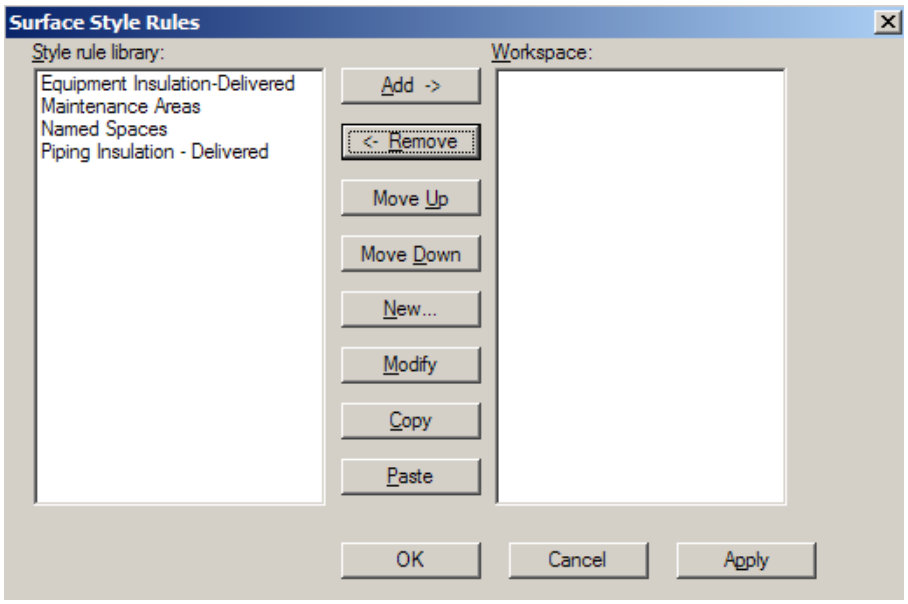
In this case, items to be coated or painted by the same subcontractor were grouped, regardless of discipline or membership in other hierarchies. One item can belong to multiple WBS Parent groups. So that a piping component can belong to a painting contract group, at the same time it belongs to an isometric drawing sheet number WBS group. Only limitation is that these groups belong in the same WBS Project.

LAB-12: Creating Surface Style Rule

1 Set your workspace to show U01

2 Select Format , Surface Style Rules

3 Click New to define a new surface style rule.



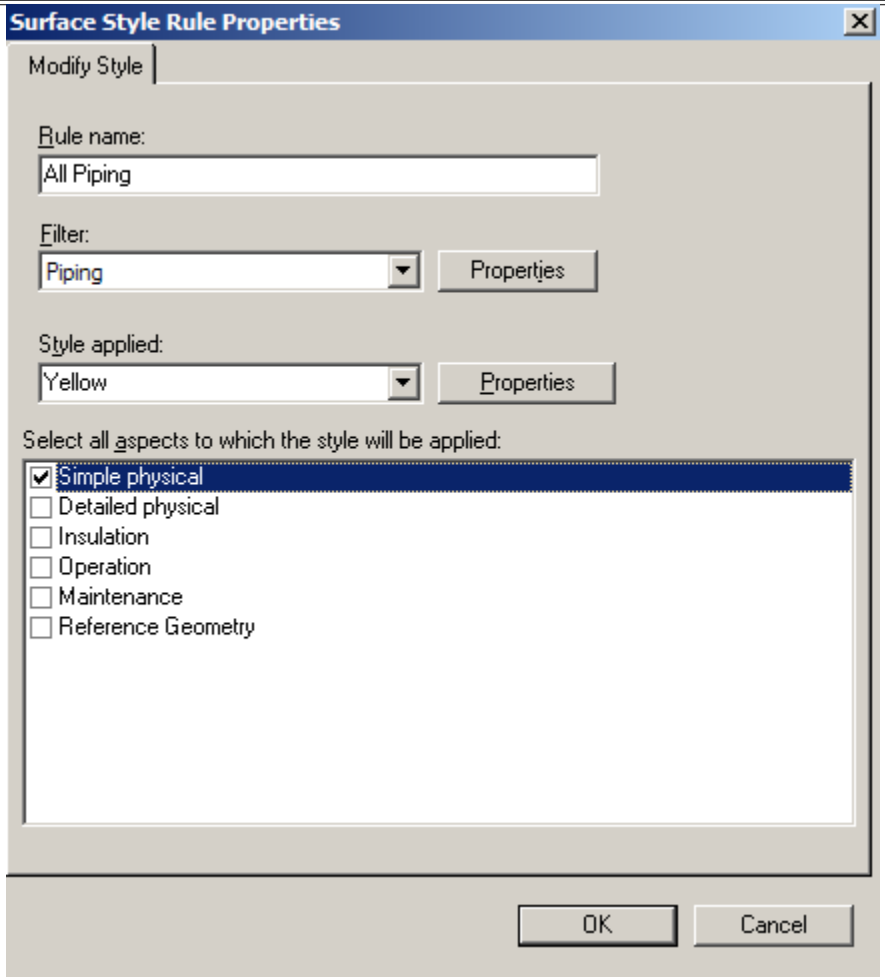
4 Key in ‘All Piping’, under rule name

5 Under the Filter pulldown, select More…

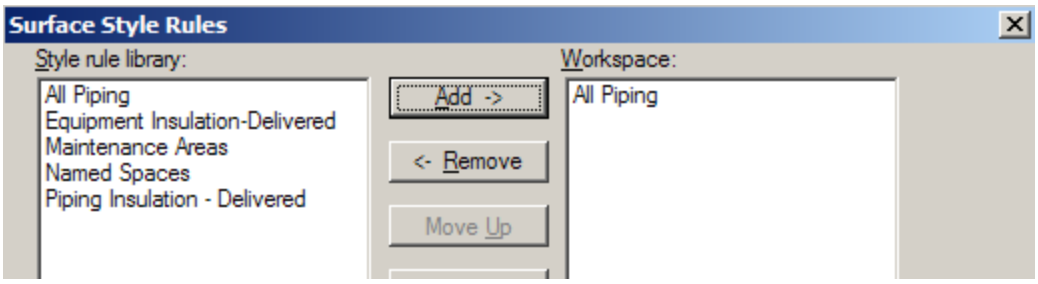
6 Under Catalog filters, expand Default Filters, SP3D Object Filters, Object Types and select Piping (select the filter not the folder) then OK

7 Select Yellow for the style.

8 Under Aspects uncheck everything except Simple Physical then OK



9 To apply the rule, select the 'All Piping' rule in the style rules library and Add it to the workspace using the Add button.



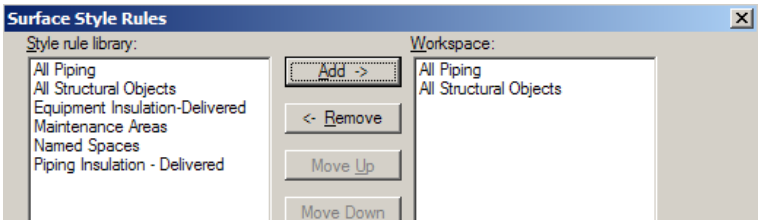
10 Click OK to apply the rule

11 Using same method, create a new rule called 'All Structural objects'.

12 Under Catalog filters, expand Default Filters, SP3D Object Filters, Object Types and select Structure filter (Do not Select Structure folder)

13 Select 'Green' as the Style to be applied and click OK to create the rule

14 Add this rule to the workspace and click OK
All piping should be yellow and all items from the structural task should be green

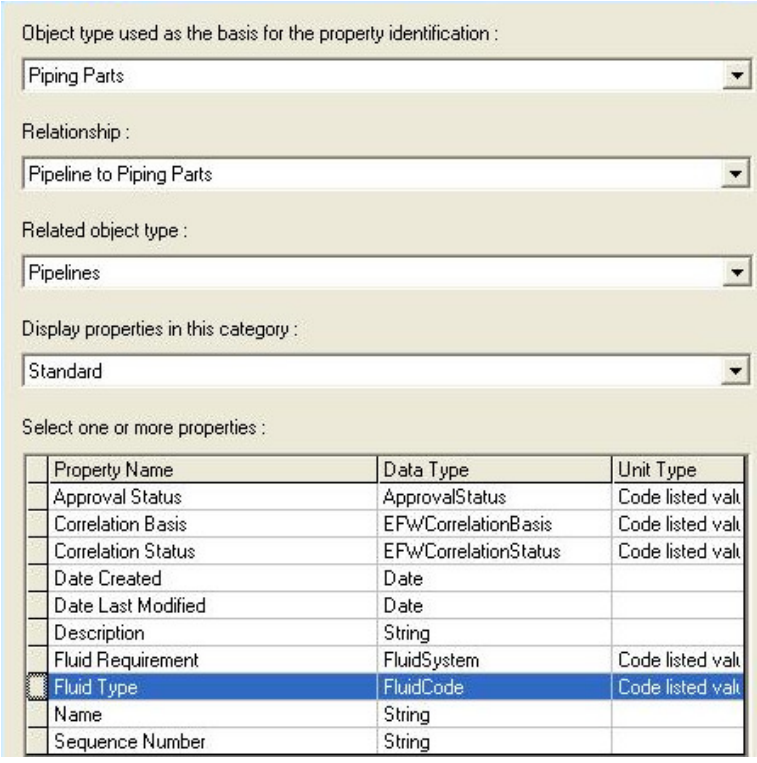


15 Select Format Surface Style Rule.

16 Select Both Rules from Right side and Remove.

17 Ok on the form

18 ADMIN USERS: Create a surface style rule to color piping based on Fluid Type attributes, e.g. show "Process" piping in dark green. Use the following example to create the filter: (xxxx TR open xxxx)



LAB-13: Inserting Control Points

1 Set your workspace to show U01

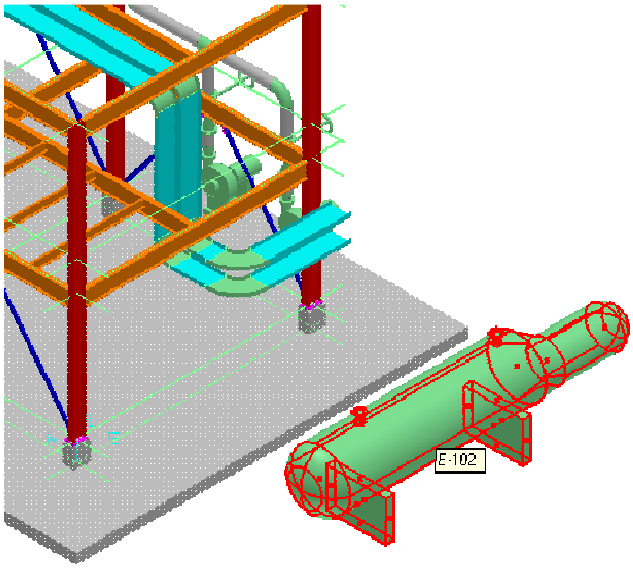
2 Go to the Main Menu and Select Format – View option to open the Format View dialog box.

3 Select Reference Geometry aspect in the list

4 Hit OK button to close the dialog box.

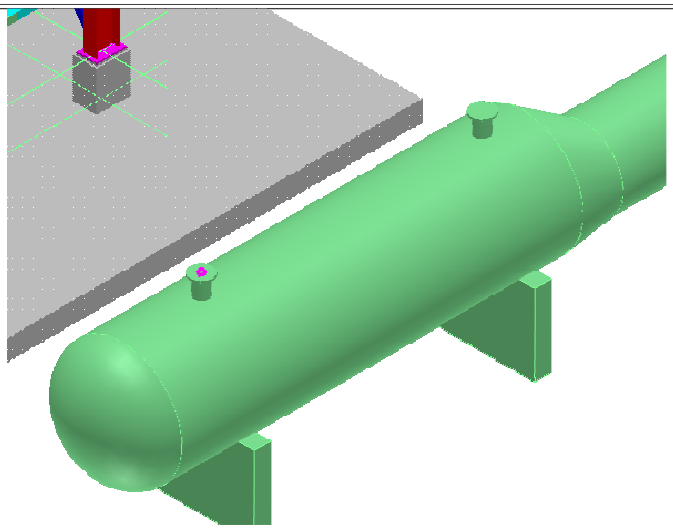
5 Go to the Main Menu and select Insert, Control Point option to open the control point ribbon bar.

6 Select E-102 as the parent object of the control point



7 Select Process Equipment in the Sub-Type combo box

8 Place the control point at nozzle N1



9 Select the control point and review its properties

General | Relationships | Configuration | Notes

Category:

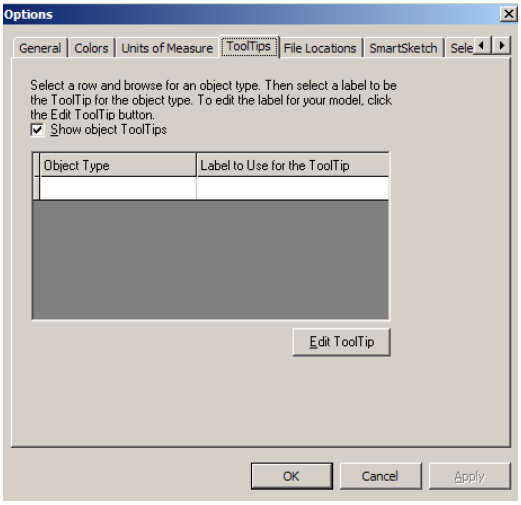
Standard

Property	Value
Control Point Type	Control Point
Control Point Sub Type	Process Equipment
Name	ControlPoint-1-0001
Naming Rule	DefaultNameRule
Diameter	0 ft 3.94 in
Parent Object	E-102
Associativity	True

LAB-14: Tool Tip Editing (Admin users)

1 Set your workspace to show U01

2 Select Tools, Options and click on the ToolTips tab

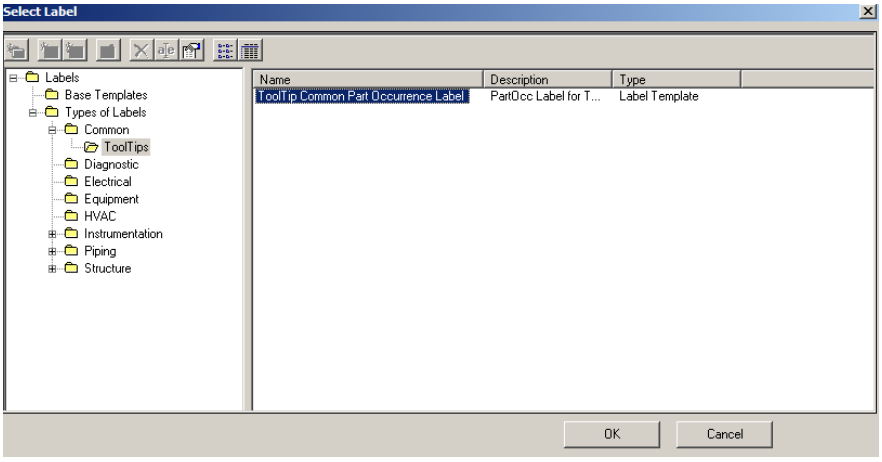


3 Click the Object type field to open the object type tree view

4 Select Equipment, under Equipment and Furnishing

5 In the ‘Label to use for the toolTip’ column, select ‘Catalog data labels’

6 Expand the tree view and select ToolTipPartOcc and click OK.



7 Select Edit label button

8 Edit the label description as Equipment Type

9 Under Layout field, Select the Dry Weight, Part Number and Part Class lines and delete them.

10 Under Properties filed, select Dry weight, Part Class and Part Number and select Remove

11 Select the empty column under Name and select Add

12 Under Object Type Used as Bases for Property Identification, select more, Expand equipment and furnishing and select Equipment

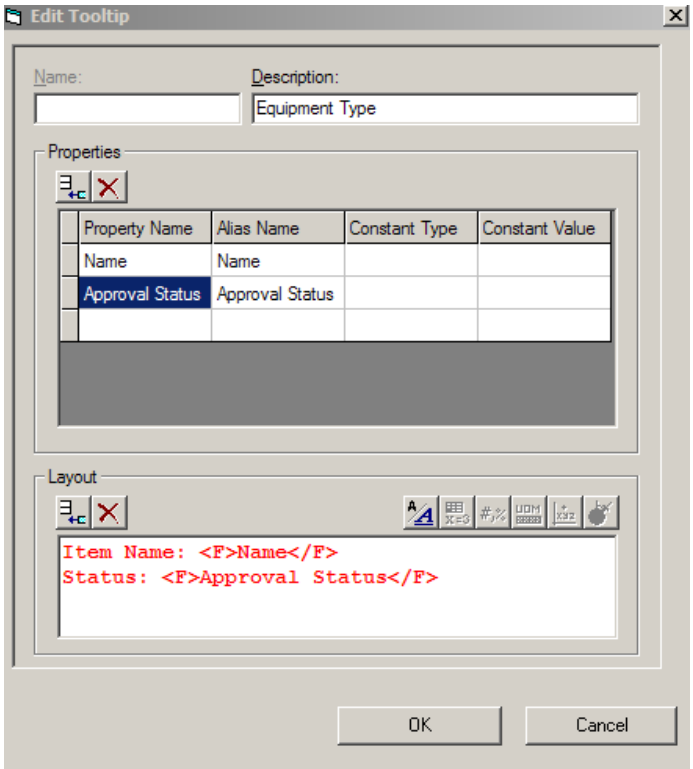
13 Under Relationship, select Direct property of object

14 Select Standard under Display properties in this category

15 Select Approval Status and OK

16 In Layout Field type “Status:”

17 Select Approval Status from Property field and select Insert Field Option



18 Select all the fields under Layout and select the Format Button

19 Change the font to Arial, font style to bold and size to 8.

20 Hit OK button to save the label

21 Hit OK button to close the Tool option dialog box.

22 Now hover mouse over the pump to see the tooltip label.

LAB-15: SQL Filter (Admin users)

1 Set your workspace to show U01

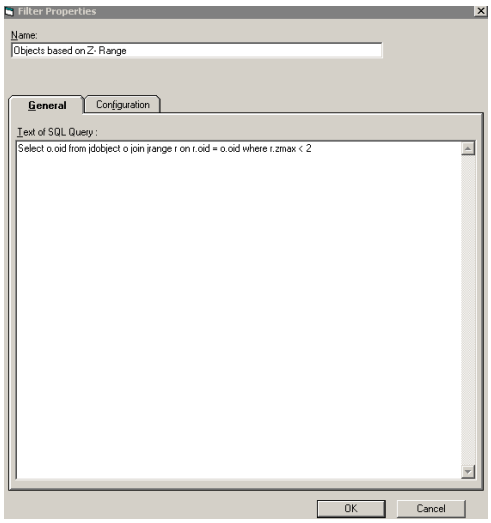
2 Select Tools, Select by Filter command to open the Select Filter dialog box

3 Select the Plant Filters folder

4 Select the SQL Filter Icon to open The New Filter Properties dialog box

5 Name the filter “Objects based on Z Ranges”

6 Go to the General Tab and key in the following SQL statement,
”Select o.oid from jdobject o join jrange r on r.oid = o.oid where r.zmax < 2”

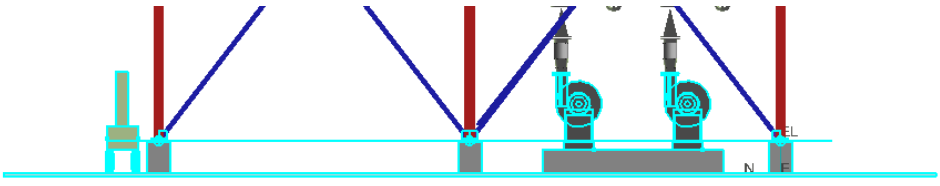


7 Click OK to create the filter

8 OK to accept it

9 The system should select all objects where their z-ranges are less than 2 meter

10 Your View should now resemble the following graphic



11 Using same procedure, create another SQL filter based on permission group. Use the following SQL statement,
select o.oid from jdobject o join jdpermissiongroup p on o.ConditionID = p.PermissionGroupID where p.Name like 'E%'

12 Click OK to create the filter. Ok to Accept

13 The system should select all electrical and equipment objects

14 Your View should now resemble the following graphic.