SmartPlant P&ID
Creating a P&ID Course Labs

Process, Power & Marine

INTERGRAPH

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[1] NOTE: You must complete Lab 10 prior to this lab.
[2] NOTE: You must have completed Lab 11 prior to this lab.

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[3] NOTE: You must complete Lab 10 prior to this lab.
[4] NOTE: You must complete Lab 10, 12 and 16 prior to this lab.

Preface
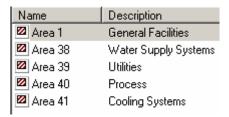
This document is a course guide for the various SmartPlant P&ID User Guides. The content is the similar as the online Help delivered as part of the software with the exception of the Labs.

Lab 1 – Creating, Revising, Deleting Plant Groups

Creating Areas

The lab exercises in this course guide are designed to be used with stand-alone plants (one plant per user). If these exercises are to be performed on a multi-user plant, you must develop a uniqueArea, Unit and Drawing Number naming convention so that each student is working in their own set of Area, Units and Drawings.

1. From SmartPlant Engineering Manager, create the following AREAS.

Name	Description
Area 1	General Facilities
Area 38	Water Supply Systems
Area 39	Utilities
Area 40	Process
Area 41	Cooling Systems

  i. Select the **Plant Groups** node underneath the **Plant** and right mouse click

      Or

      Select the **Plant Groups** node underneath the **Plant** and select **File** > **New**

2. Revise the Area if a typo exists in the Description.

3. Delete and Create any AREAS if the Name does not match the above.

4. Add the Path property to display in the List View when the Plant Group node is selected. Your List view should be similar to the below when complete.

Name	Description	Path
Area 1	General Facilities	\\sppid-training\Site_Ingr\TSPL1002E\Drawings\Area 1
Area 38	Water Supply Systems	\\sppid-training\Site_Ingr\TSPL1002E\Drawings\Area 38
Area 39	Utilities	\\sppid-training\Site_Ingr\TSPL1002E\Drawings\Area 39
Area 40	Process	\\sppid-training\Site_Ingr\TSPL1002E\Drawings\Area 40
Area 41	Cooling Systems	\\sppid-training\Site_Ingr\TSPL1002E\Drawings\Area 41

Notes: See **Tools** > **Show Fields** in the SmartPlant P&ID Creating a P&ID Course guide on how to adding the Path property to display in the List View.

Creating Units

1. From SmartPlant Engineering Manager, create the following UNIT under AREA 1.

Name	Description	Unit code
Unit 1	Equipment	1

   i. Select **AREA 1** from the **Plant Groups** node underneath the **Plant** and right mouse click

   Or

   Select **AREA 1** from the **Plant Groups** node underneath the **Plant** and select **File** > **New**
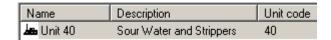
2. Revise the Unit if a typo exists in the Description.

3. Delete and Create the UNIT if the Name or Unit Code does not match the above.

4. Create the following UNIT under AREA 38.

Name	Description	Unit code
Unit 38	Water Clarification	38
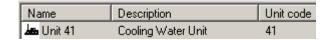
5. Create the following UNIT under AREA 39.

Name	Description	Unit code
Unit 39	Flare Header	39

6. Create the following UNIT under AREA 40.

Name	Description	Unit code
Unit 40	Sour Water and Strippers	40

7. Create the following UNIT under AREA 41.

Name	Description	Unit code
Unit 41	Cooling Water Unit	41
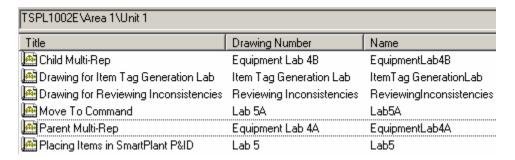
8. Add the Path property to display in the List View for the Unit when the Plant Group node for Area 1 is selected. Your List view, when selecting the Area 1 Plant Group Node should be similar to the below when complete.

Name	Description	Unit code	Path
Unit 1	Equipment	1	\\sppid-training\Site_Ingr\TSPL1002E\Drawings\Area 1\Unit 1
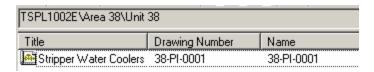
Lab 2 – Creating, Revising, Deleting Drawings

The lab exercise in this course guide is designed to be used with stand-alone plants (one plant per user). If these exercises are to be performed on a multi-user plant, you must develop a unique unit and drawing number naming convention so that each student is working in their own set of units and drawings.

1. From **Drawing Manager**, **View** > **Customize Current View** to add the **Title** and any other properties to the List **View** and order the properties in the following order.

   a. Title

   b. Drawing Number

   c. Name

   d. Out-of-Date Drawing Status

   e. Any additional properties you wish to include.

2. Create the following E size drawings within Unit 1.

   - The **Drawing Number** and **Name** do not have to be identical. The Name is the name of the file on the file system. The Drawing Number is used in the Title Block Label within the P&ID.

TSPL1002E\Area 1\Unit 1		
Title	Drawing Number	Name
Child Multi-Rep	Equipment Lab 4B	EquipmentLab4B
Drawing for Item Tag Generation Lab	Item Tag Generation Lab	ItemTag GenerationLab
Drawing for Reviewing Inconsistencies	Reviewing Inconsistencies	ReviewingInconsistencies
Move To Command	Lab 5A	Lab5A
Parent Multi-Rep	Equipment Lab 4A	EquipmentLab4A
Placing Items in SmartPlant P&ID	Lab 5	Lab5

3. Create the following E size drawings within Unit 38.

TSPL1002E\Area 38\Unit 38		
Title	Drawing Number	Name
Stripper Water Coolers	38-PI-0001	38-PI-0001

4. Create the following E size drawings within Unit 39

TSPL1002E\Area 39\Unit 39		
Title	Drawing Number	Name
Flare Header	39-PI-0001	39-PI-0001

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5. Create the following E size drawings within Unit 40.

Title	Drawing Number	Name
Drawing for SPPID Class	40 PID Class	40 PID Class
Sour Water	40-PI-0001	40-PI-0001
Stripper Feed/Bottom Exchangers	40-PI-0002	40-PI-0002

6. Create the following E size drawings within Unit 41.

TSPL1002E\Area 41\Unit 41		
Title	Drawing Number	Name
Sour Water Tank and Pumps	41-PI-0001	41-PI-0001

Notes:

- When revising/adding a property value for a drawing remember to either tab, enter or click on another property in order for the OK button to be highlighted.

- You can add to and modify the drawing properties that appear in the **New Drawing** dialog box by modifying them in **Database Tables** in Data Dictionary Manager.

- Several standard templates are delivered with SmartPlant P&ID, and you can create new templates in SmartPlant P&ID. If you want to create custom border files for your drawing templates, use Intergraph SmartSketch. You can then embed your border file in the new templates you create in SmartPlant P&ID. Once you embed a border file into a drawing template and a drawing is created in Drawing Manager using that template, any changes to the border file are not reflected in drawings created prior to the change.

- You can drag-and-drop drawings from one unit to another. Be aware if there are items placed in the drawing the drawing will have to be opened after dragging-and-dropping and the Plant Group Name may have to be revised for the applicable items.

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Lab 3 – Manipulating the Drawing Environment

1. Enter a drawing created in Lab 2.

    Start > **Programs** > **Intergraph SmartPlant P&ID** > **Drawing Manager**

    OR

    Start > **Programs** > **Intergraph SmartPlant P&ID** > **SmartPlant P&ID**.
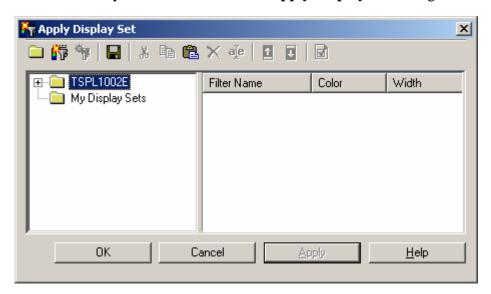
2. Move the Main Toolbar so is resides vertically on the left side of the graphic view.

    *   Select the toolbar on the left side and drag.

3. Switch positions of the **Catalog Explorer** and the **Properties Window**.

4. Resize the **Catalog Explorer**.

    *   drag the middle bar.

5. Turn off the display of the **Property Window**.

    *   Select **View** > **Display**

        OR

    *   Right mouse click in the gray area and deselect **Properties**.
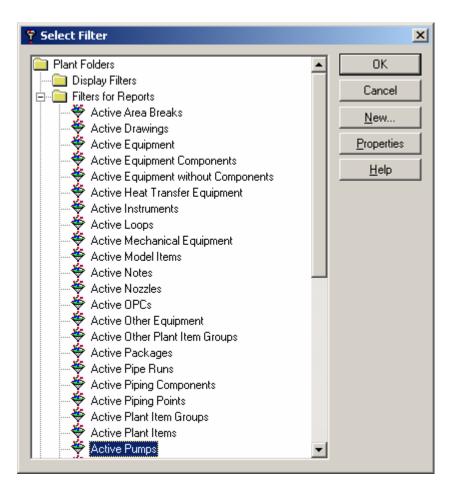
6. Turn on the display of the **Property Window**.

Lab 4 - Creating and Apply Display Sets

1. From the Catalog Explorer place assembly Pump03.

   - Select **Symbols** > **Assemblies** > **Equipment** > **Pump03**

   - After the Assembly has finished placing, select the **ESC** key to de-select the items.

2. Create a new display set to only display pumps in the drawing view.

   - Select **View** > **Apply Display Set**

   - Select your **Plant** name on the **Apply Display Set** dialog box.

   - Select the **Add Display Set** command

     1. Define a name for your Display Set, i.e. Pumps.

     2. Select the **Tab** key.

   - Select the **Add Filter** command to add various Filters used in displaying only pumps on the drawing.

     1. Select the **Plant Folder** > **Filters for Reports** > **Active Pumps** filter from the **Select Filter** dialog box.

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2. Select **OK** on the **Select Filter** dialog box.

3. Select **Apply** and **OK** on the **Apply Display Set** dialog box.

3. Fit your drawing view and notice only Pumps are displayed.

4. Select **View** > **Clear Display Set** to display all items on the drawing view.

Lab 5 - Working with the Toolbar and Commands

1. Add the **Save As Assembly** command to the toolbar.

   - Select **View** > **Toolbar** > **Customize**

     1. On the **Toolbar** tab, select **File.**

     2. Drag the **Save As Assembly** command to your toolbar.

     3. Select **Close** from the **Customize** dialog box.

2. Review the following commands:

   - **View** > **Properties**

     1. **General** tab

     2. **Display** tab

     3. **Grid** tab

     4. **Inconsistency Indicators** tab

   - **Tools** > **Options**

     1. **General** tab

     2. **Colors** tab

     3. **Placement** tab

     4. **Files** tab

3. Define your colors via **Tools** > **Options.**

4. Utilize Large or Small Icons in the **Catalog Explorer.**

Lab 6 - Working with the Catalog Explorer

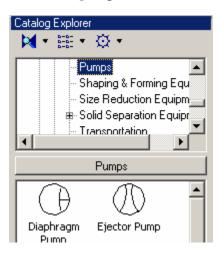1. Use the **Show** and **Add Buttons** from the **Catalog Explorer** to add **Pumps** to the Selection List.

2. Select the **Show Buttons** command

3. Highlight **Pumps** in the **Catalog Explorer**

   - Select **Symbols** > **Equipment** > **Mechanical** > **Pumps**
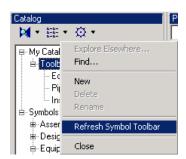
4. Select the **Add Button** command

5. You should have a button named **Pumps** between the tree view and list view in the **Catalog** Explorer.

Lab 7 - Creating a Symbol Toolbar in My Catalog

1. Select the + to expand **My Catalog** in **Catalog Explorer**.

2. Right-click on **Toolbars** and select **New** to create a **New Category**.

3. **Rename** the **New Category** to **Equipment and Components**.

4. Create two (2) more categories in **Toolbars**

    - **Piping and Components**

    - **Instrumentation**

5. **Drag** and **Drop** the following symbols from the **Catalog Explorer** list view into the folders as listed below:

    - Equipment and Components

        1. Short 1D 1C 1 to 1 (located in Equipment>Vessels>Vertical Drums)

        2. Flanged Nozzle (located in Equipment Components>Nozzles)

    - Piping and Components

        1. Primary Piping (located in Piping>Routing)

        2. Utility Connector (located in Piping>Piping OPC's)

        3. Utility off-drawing connector (located in Piping>Piping OPC's)

        4. Ball Valve (located in Piping > Valves > 2 Way Common)

    - Instrumentation

        1. Diaphragm Actuator (located in Instrumentation>Actuators)

        2. 2 Way Generic Body Valve (located in Instrumentation>In-Line>Valves>2 Way Common)

6. After placing the symbols in the appropriate folders, right-click on **Toolbars** and select **Refresh Symbol Toolbar**.
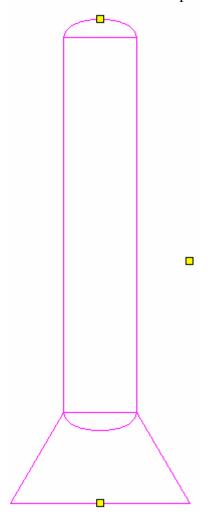
7. Your custom toolbars appear to the left side of the drawing view.

Lab 8 - Placing Equipment
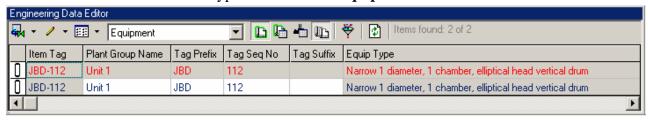
1. Enter drawing **EquipmentLab4A**.

2. Place various **Parametric** and **Non-Parametric Equipment** items from the **Catalog Explorer:**

   - **Symbols** > **Equipment** > **Vessels** > **Towers**

   - **Symbols** > **Equipment** > **Vessels** > **Vertical Drums**

3. Select one of the items placed

4. Stretch the parametric equipment by the yellow handles.

Lab 9 - Multi-Rep Equipment
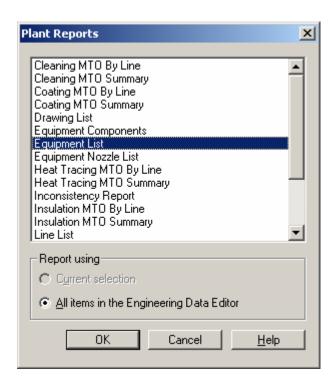
1. Enter drawing **EquipmentLab4A**.

2. Place an **Equipment** item:

   - **Equipment** > **Vessels** > **Vertical Drums** > **1D1C 2 to 1**

3. Assign your initials for a value of the **Tag Prefix**, note the **Item Tag** value.

4. **Exit** Drawing

5. Enter drawing **EquipmentLab4B**

6. Place the multi-rep of the Equipment placed in drawing EquipmentLab4A.

7. Run the **Equipment List** from the **Engineering Data Editor**.

   - Ensure the **Active Drawing** and **Other Drawings** are toggled on in the **EDE**
   - Set the Item Type in the **EDE** to **Equipment**
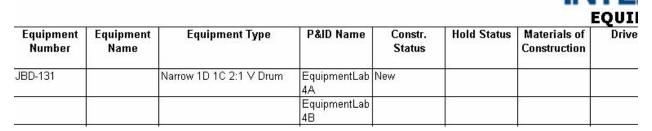
   a. From the **EDE**, select **View** > **Plant Reports**

   b. Run the **Equipment List** for **All item in the EDE.**

c. There should be an entry similar to the below in your report.

d. Notice the P&ID Name(s)

Equipment Number	Equipment Name	Equipment Type	P&ID Name	Constr. Status	Hold Status	Materials of Construction	Drive
JBD-131		Narrow 1D 1C 2:1 V Drum	EquipmentLab 4A	New			
			EquipmentLab 4B				
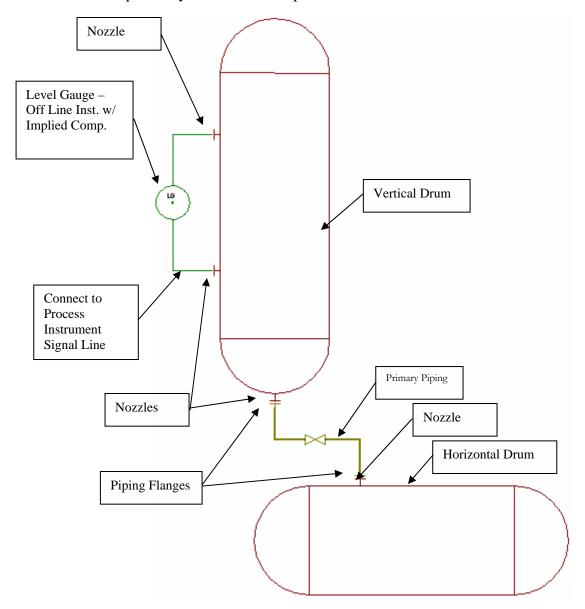
8. Replace the **1D1C 2to1** vessel in drawing EquipmentLab4B with a **Equipment > Vessels > Vertical Drums > Short 1D 1C 1to1**.

a. Toggle **Replace Mode ON** by selecting the command from the toolbar.

b. Select the **Short 1D 1C 1to1** from the **Catalog Explorer**.

c. Select the **1D1C 2to1** equipment item in the drawing

9. Turn **Replace Mode OFF** , otherwise the software will think you are still in Replace mode.

Lab 10 – Placing SPPID Objects

1. Open drawing **Lab 5** through **Drawing Manager** or **SmartPlant P&ID**.

2. Place the following graphics in the design file. Only place the graphics, do not place any labels in this step.

Nozzle

Level Gauge – Off Line Inst. w/ Implied Comp.

Vertical Drum

Connect to Process Instrument Signal Line

Primary Piping

Nozzles

Nozzle

Horizontal Drum

Piping Flanges

1. Vertical Drum = **Symbols** > **Equipment** > **Vessels** > **Vertical Drums** > **1D 1 to 1**

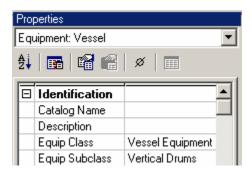2. Horizontal Drum = **Symbols** > **Equipment** > **Vessels** > **Horizontal Drum** > **Medium 1D 1 to 1**

3. Nozzles = **Symbols** > **Equipment Components** > **Nozzles** > **Flanged Nozzle**

4. Primary Piping = **Symbols** > **Piping** > **Routing** > **Process Lines** > **Primary Piping**

5. Flanges = **Symbols** > **Piping** > **Fittings** > **Flanges and Unions** > **Flange**

6. Valves = **Symbols** > **Piping** > **Valves** > **2 Way Common** > **Gate Valve**

7. Instrument Signal Line = **Symbols** > **Instrumentation** > **Signal Line** > **Connect to Process**

8. Off-Line Instrument = **Symbols** > **Instrumentation** > **Off-Line** > **With Implied Components** > **Level** > **Discr Field Mounted LG**

3. Place the **Symbols** > **Equipment** > Labels – **Equipment** > **Equipment ID** label on the **Vertical Drum**.

   📝 **Notes:**

   - This label is 2-point placement. The first data point identifies the item the label is defining; the second data point identifies the location of the label).

   - The label will not have data; a question mark will be displayed, until the properties are defined for the item.

4. Place the **Equipment ID** label on the **Horizontal Drum**.

5. Select the vertical drum. In the **Properties Window**, notice the **Select Items** list indicates **Equipment: Vessel**.

6. Become familiar with the difference between the **Alphabetic** and **Categorized** views.

7. Define the following properties for the **Equipment Vessel**.

   - **Tag Prefix**: **V**

Inventory Tag	
Item Tag	V-100
Name	
Package Item Ta⌐	
Part Number	
Plant Group Name	Unit 1
Plant Group Type	Unit
Plant Item Type	Equipment
Requisition No	
SP ID	2BF43674852C4A1588⌐
Tag Prefix	V
Tag Seq No	100

   🖉 **Notes:**

   - The Tag Sequence No is automatically assigned.

   - The Item Tag is a formatted property of the Tag Prefix, Tag Sequence No. and Tag Suffix.

8. **Zoom In** on the Vessel and notice the updated label.

9. Select the **Horizontal Drum** and from the **Property Window** define the following properties.

   - Tag Prefix: D

   - Tag Suffix: A

10. From the **Property Window**, define a **Tag Prefix** for the **Nozzles**.

   - Select ALL Nozzles.

   Hint: Use **View** > **Apply Display Set** command to create a **Display Set** for only **Nozzles**.

11. Set the Selected Items list in the **Property Window** to **Select Set**.

12. Define the **Tag Prefix** property in the **Property Window**.

- Tag Prefix: N

13. Verify the **Tag Sequence No** on **Nozzles** has been assigned.

14. Clear the Display Set with the **View** > **Clear Display Set** command if you utilized a display set in the previous steps to only display **Nozzles**.

15. Label the **Nozzles** with the **Symbols** > **Equipment Components** > **Labels – Equipment Components** > **EQ Nozzle Identification** label.

- Turn on the leader line from the shortcut menu with the **Show Leader Line** command.

16. Select the **Level Gauge** and from the property window and define a **Tag Seq No** of 999.

- Select the perimeter of the **Level Gauge**, not the embedded label within the **Level Gauge**.

17. Select the **Primary Piping** line and define a value for **Fluid System** from the **Property Window**.

- Fluid System = Process

18. Place a **Line Number** label on the **Primary Piping** line.

- **Symbols** > **Piping** > **Labels – Piping Segments** > **Line Number** label

19. Select the **Line Number** Label and define the following Properties or set the properties in the **Property Window**.

- Fluid Code: P

- Nominal Diameter: 2"

- Piping Materials Class: 1C0031

- Insulation Purpose: P

20. Select the **Primary Piping** line. Define the following properties in the **Properties Window**.

- Design Max Temp: 550 F

- Design Max Press: 800 psi

✎ **Notes:**

- In class, you will receive an error message since we have the PDS 3D Spec loaded.

- Properties are found in the **Process** category

- May require selecting **Show Case Data** to display full set of properties.

21. Place **Flow Direction** label on the **Primary Piping** line.

- **Symbols** > **Piping** > **Labels – Piping Segments** > **Flow Direction** label

22. Route a branch from the existing pipe line to the left side of the drawing

- **Symbols** > **Piping** > **Routing** > **Process Lines** > **Primary Piping**

23. Place an **End of Group** segment break, △ End of Group , at the intersection of the branch and the main line.

- **Symbols** > **Piping** > **Segment Breaks** > **End of Group**

24. Define a **Tag Sequence Number** of 999 and a **Piping Materials Class** of 2C0032 to the branch.

25. Place a **Line Number** label on the branch.

- **Symbols** > **Piping** > **Labels – Piping Segments** > **Line Number** label

26. Move the Horizontal Drum

1. Select the Horizontal Drum and select **Edit** > **Move**.

   o Notice the prompt field

      ▪ Select from point.

      ▪ Select to point.

OR
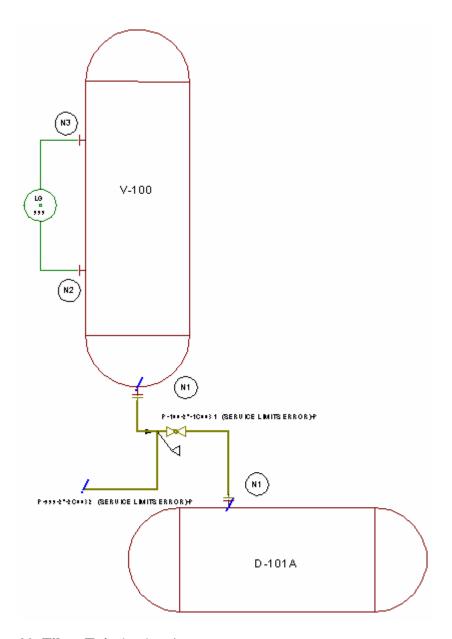
    2. Select the Horizontal Drum and hold down the left mouse key and drag the drum to a new position.

27. Replace the **Gate Valve** with a **Globe Valve**.

    1. Toggle **Replace Mode** On

    2. With the left mouse button from the **Catalog Explorer** select the **Symbols** > **Piping** > **Valves** > **2 Way Common** > **Globe Valve**

    3. Release the left mouse button

    4. Drag the **Globe Valve** over the **Gate Valve** in the drawing.

    5. Select the left mouse button

    6. Toggle **Replace Mode** Off

28. Move the **Piping Flange** so it connects directly to the **Nozzle**.

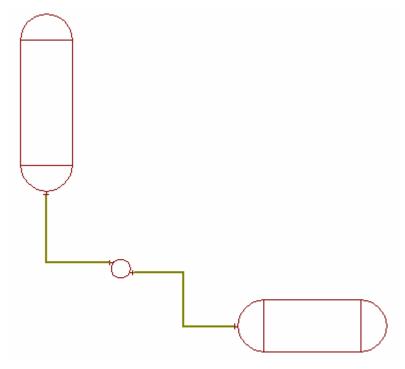29. Your Drawing should be similar to the below when complete with this Lab.

30. **File** > **Exit** the drawing.

Lab 11 – Working with Auxiliary Graphics

Purpose: To become familiar with using auxiliary graphics.

1. Create a new E size drawing called **Lab 10** in **Drawing Manager** under **Unit 1**.

2. Open drawing **Lab 6** through **Drawing Manager** or **SmartPlant P&ID**.

3. Place the following graphics in the design file.

1. Vertical Drum = **Symbols** > **Equipment** > **Vessels** > **Vertical Drums** > **1D 1 to 1**

2. Horizontal Drum = **Symbols** > **Equipment** > **Vessels** > **Horizontal Drum** > **Medium 1D 1 to 1**

3. Pump = **Symbols** > **Equipment** > **Mechanical** > **Pumps** > **Horiz Centrifugal Pump**

4. Nozzles = **Symbols** > **Equipment Components** > **Nozzles** > **Flanged Nozzle**

5. Primary Piping = **Symbols** > **Piping** > **Routing** > **Process Lines** > **Primary Piping**

4. Click **Edit** > **Insert** > **Auxiliary Graphics**.

5. Use the **Line/Arc Continuous** command to add a foot to the **Pump**.
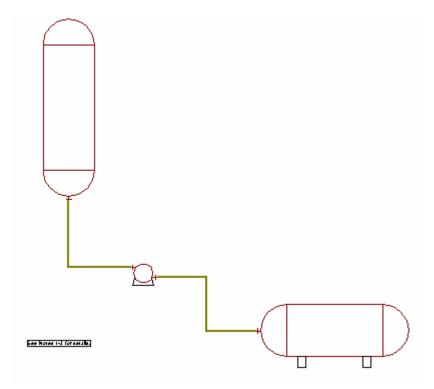

6. Use the **Rectangle** command to add stands to the **Horizontal Drum**.

7. Use the **Text Box** command to add the following note in the lower left corner of the drawing: See notes 1-3 for details.

Use the Arial font with font size of 0.1 inch. Use the **Border** command to add a border or a shadowed border around the text box.

8. Use another auxiliary graphics command such as the **Circle by Center Point**.

9. Click **File** > **Close Auxiliary Graphics** to exit the auxiliary graphics session.

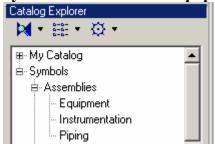10. Your Drawing should be similar to the one below after completing this Lab.

11. Click **File** > **Exit** to exit the drawing and **SmartPlant P&ID**.
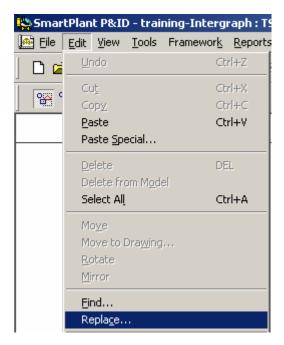
Lab 12 – Edit > Replace Command

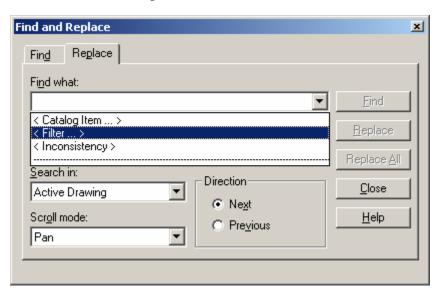Purpose: To become familiar with the Replace command.

1. From **Drawing Manager** open drawing **38-PI-0001** located under **Area** and **Unit 38**.

2. Place the following two (2) Assemblies in your drawing:

    - **Symbols** > **Assemblies** > **Piping** > **Control01**
    - **Symbols** > **Assemblies** > **Equipment** > **Pump03**

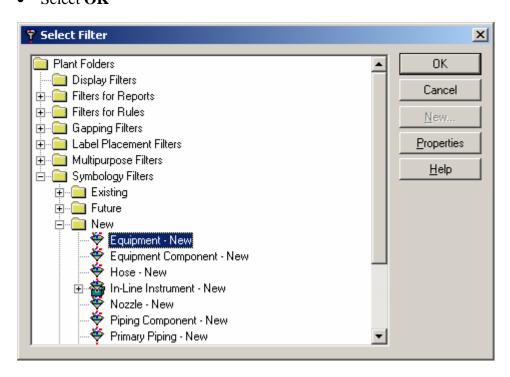# Replace Horizontal Centrifugal Pumps w/ Vane Pumps.

3. Utilize the **Edit** > **Replace** command to replace the **Horizontal Centrifugal Pumps** with **Vane Pumps.**

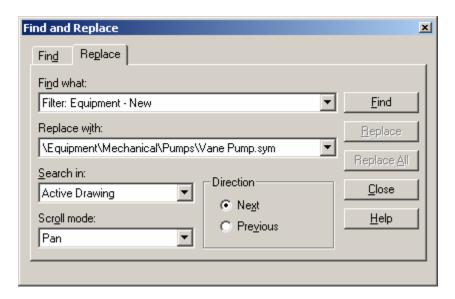4. In the **Find What** drop down box select **< Filter… >**

5. From the **Select Filter** dialog box select

- **Symbology Filters** > **New** > **Equipment - New**

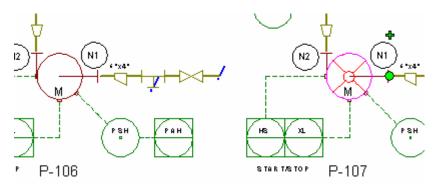- Select **OK**

6. In the **Replace With** dropdown box select **< Browse…>.**

7. From the **Select Catalog Item** dialog box select

    -   **Symbols** > **Equipment** > **Mechanical** > **Pumps** > **Vane Pump**
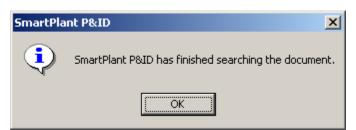
    -   Select **OK**

8. In the **Search In** drop down select **Active Drawing**, and in the **Scroll Mode** drop down select **Pan.**

9. Select **Find** to locate the first Equipment item.

    📝 **Notes:**

- The Vane Pump will be overlaid on the Centrifugal Pump to give you a Preview. You may Replace or select Find to continue to the next Equipment item.

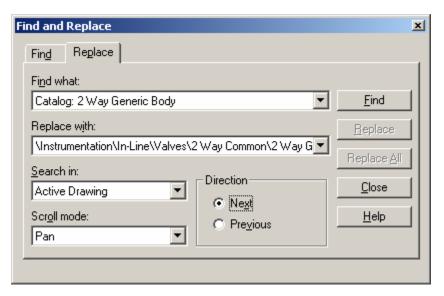10. Select **Replace** to replace the **Centrifugal Pump** with the **Vane Pump**.

11. The application will **Pan** to the next pump, select **Replace.**

12. You should have replaced two (2) Centrifugal Pumps with Vane Pumps in the previous step. Continue to select Find until you have cycled through all the Equipment and receive the below message box.

Replace 2-Way Generic Body Instrument Valves w/ 2-Way Globe Instrument Valves

13. Utilize the **Replace** command to replace **2 Way Generic Body Instrument Valves** with **2 Way Globe Instrument Valves**.

14. Select **Edit** > **Replace**

15. In the **Find What** drop down box select **<Catalog Item… >**

16. In the **Replace With** dropdown box select **< Browse…>**

17. From the **Select Catalog Item** dialog box select:

- **Symbols** > **Instrumentation** > **In-line** > **Valves** > **2 Way Common** > **2 Way Globe**

- Select **OK**

18. In the **Search In** drop down select **Active Drawing**, and in the **Scroll Mode** drop down select **Pan**.

19. Select **Find**.

20. Select **Replace All**.

21. When complete, an information message will display similar to the below.

- Select **OK**.

22. Select **Close**.

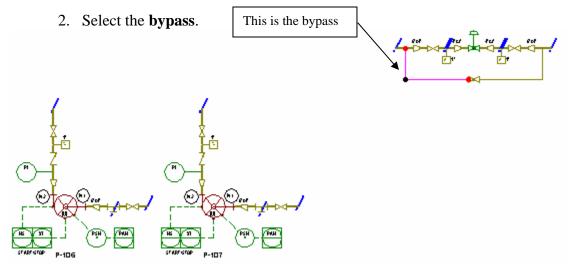23. Select **File** > **Exit Drawing**.

BONUS LAB:

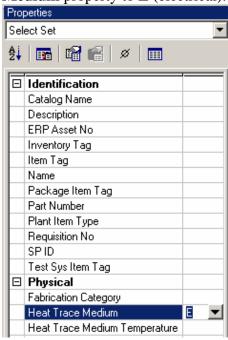1. Replace ALL Primary Piping with Secondary Piping in drawing 38-PI-0001.

Lab 13 – Select Connected Items

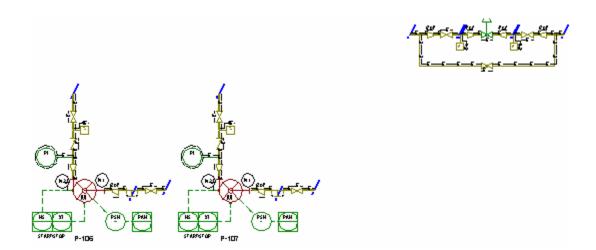Purpose: To become familiar with the Select Connected Items command.

1. Open Drawing **38-PI-0001** and **Zoom Area** around all graphics.

2. Select the **bypass**.

> This is the bypass

3. Select the **Edit** > **Connected Items** command.

4. Toggle the **Scope** to **Drawing** and select **OK**.

5. Toggle the **Property Window** to **Select Set** and define the **Heat Tracing Medium** property to **E** (electrical).
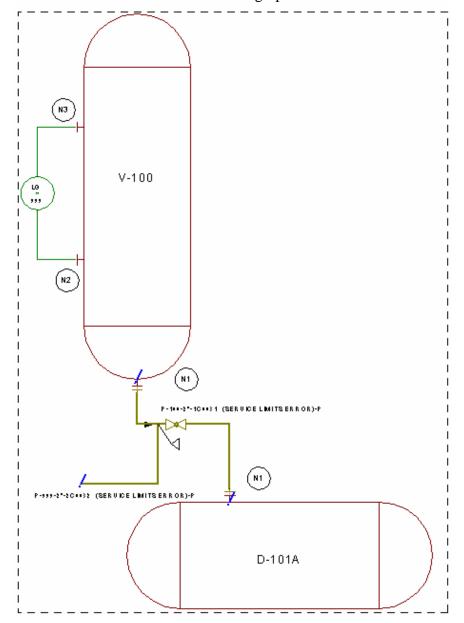
6. All piping should have heat tracing with electrical symbology including off-line instruments connected to the piping.
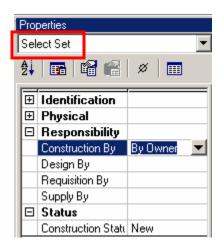
Lab 14 – Properties[5]

Purpose: To become familiar with the functionality available for defining Properties.

1. From **Drawing Manager** enter drawing **Lab 5**, located in **Area** and **Unit 1**.

2. Create a **Select Set** around all the graphics.

---

[5] NOTE: You must have completed Lab 10 prior to this lab.

3. Set the **Item Type** in the **Property Window** to **Select Set** and define the
   Construction By property value to **By Owner**.

4. Verify the value for the property is defined for all items in the **Select Set**

   - Toggle the **Item Type** to **Piping Component**

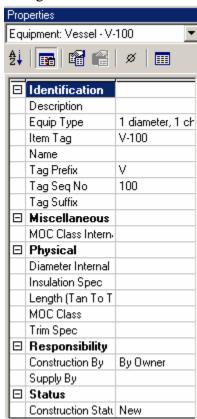   - The value for **Construction By** should display **By Owner**

   - Toggle the **Item Type** to **Equipment**

   - The value for **Construction By** should display **By Owner**.

Lab 15 - Brief/Bulk List[6]

Purpose: Utilizing the Brief/Bulk List.

1. From **Drawing Manager** enter drawing **Lab 6**.

2. Select the **Vertical Drum**.

3. Select the **Show Brief Properties** command ![icon] from the **Property Window**.

    *   The software includes a default set of brief properties, but now we will change this set by editing the Layout tab of the Advanced Table Properties dialog box.
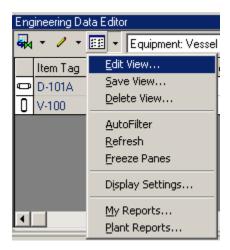

4. From the **Engineering Data Editor** toggle the **Item Type** to **Equipment Vessel**.
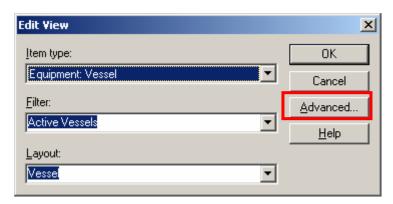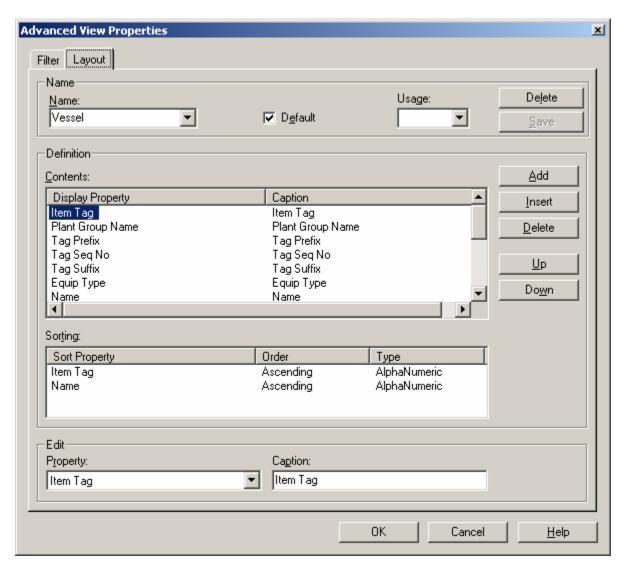
5. From the **Engineering Data Editor**, select the **Edit** > **View** command. We will add a custom **Brief/Bulk** list for **Equipment Vessels**.

6. Select the **Advanced** button on the **Table Properties** form to modify the **Layout**.

7. Select the **Layout** tab on the **Advanced Table Properties** form to add a custom Brief/Bulk list.
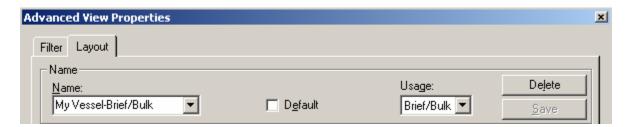
Define the following in the **Name** frame on the **Advanced Table Properties** form.

- Name: My Vessel – Brief/Bulk
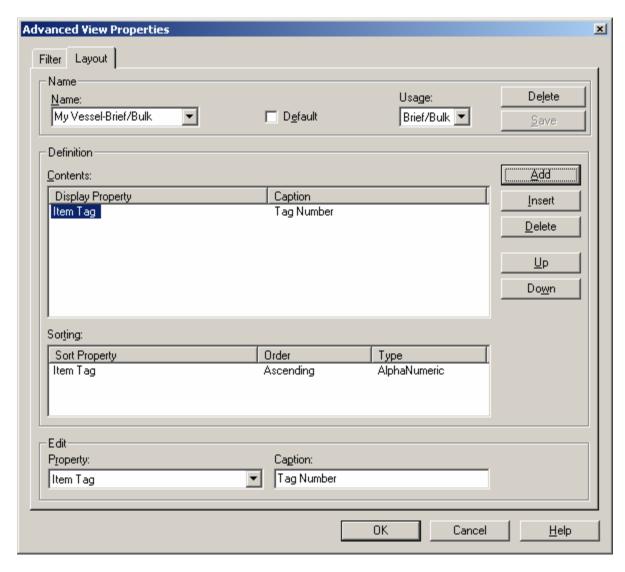
- Un-check the Default box

- Usage: Brief/Bulk

- Save
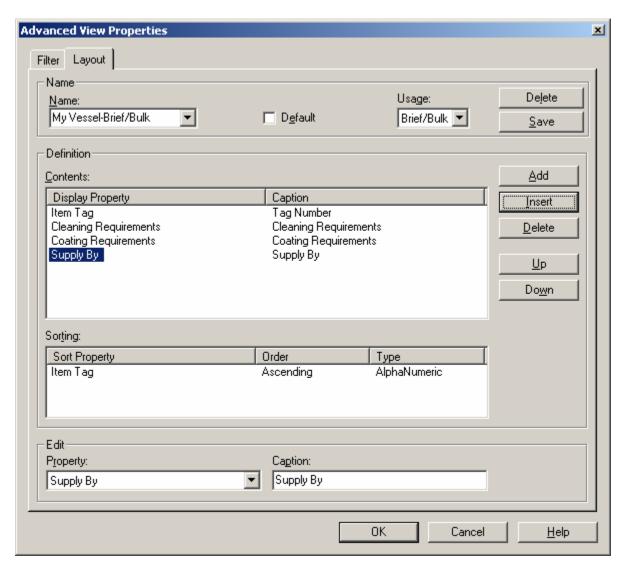
8. Delete all Properties except the **Item Tag** from the **Display** and **Sort Property** fields in the **Definition** frame. Select **Save.** Your **Advanced View Properties** form should be similar to the below.
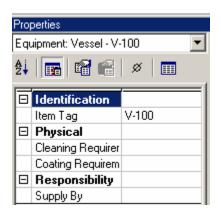
9. Complete the following sub steps to add the following Properties to the **Display** field in the **Definition** frame.

- Select **Add**

- Select the property from the **Edit – Property**

  o Cleaning Requirements

- Select **Add**

- Select the property from the **Edit – Property**

  o Coating Requirements

- Select **Add**

  o Supply By

- Select **Save**

10. When complete your **Advanced Table Properties** should be similar to the below. When complete your **Advanced Table Properties** should be similar to the below.

- Select **OK** and **OK**.

11. From the design file, de-select the Vertical Drum. and re-select the Vertical Drum.

12. Select **Show Brief Properties** command from the **Property Window** if the command is not enabled.

13. In the Brief list define the following values.

- In the Brief List define the following values.

    o Cleaning Requirements: CC1

    o Coating Requirements: Galv
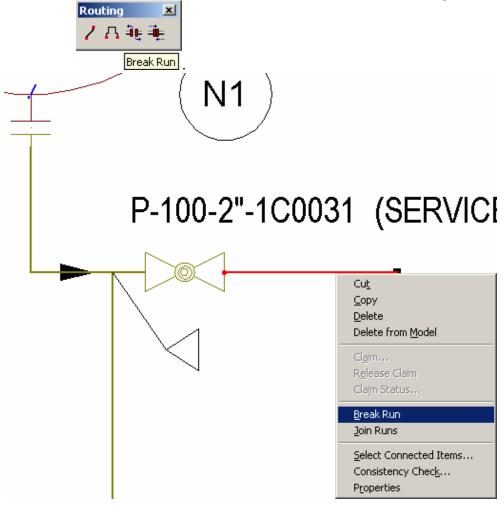
    o Supply By: By A

14. **Copy** the **Bulk Properties** from the **Vertical Drum** to the **Horizontal Drum**

- Select **Copy Bulk Properties** from the **Property Window**.

- Select the Horizontal Drum in the Drawing.

- Select **Paste Bulk Properties** from the **Property Window**.

15. Verify Properties were copied to the **Horizontal Drum**.

16. **File** > **Exit** drawing.
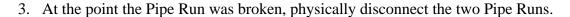
Lab 16 – Move To Command[7]
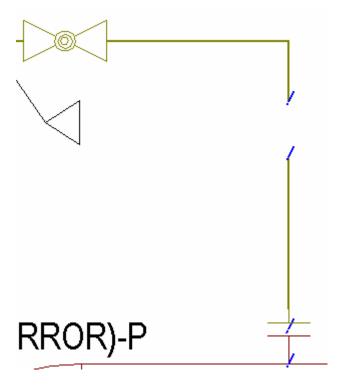
Purpose: Utilizing the Move To command

1. From **Drawing Manager** enter drawing **Lab 5**.

2. **Break** the **Pipe Run** between the **Globe Valve** and **Piping Flange**. The Piping Flange is the one connected to the Nozzle on the Horizontal Drum.

    a. Select the **Pipe Run.**

    b. Right mouse click on the **Pipe Run.**

    c. Select **Break Run** or select **Break Run** from the **Routing** toolbar

---

[7] NOTE: You must complete Lab 10 prior to this lab.

3. At the point the Pipe Run was broken, physically disconnect the two Pipe Runs.
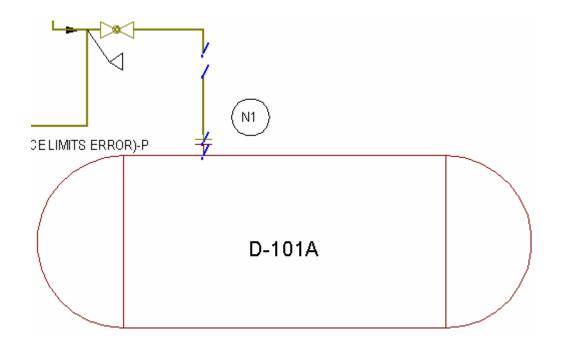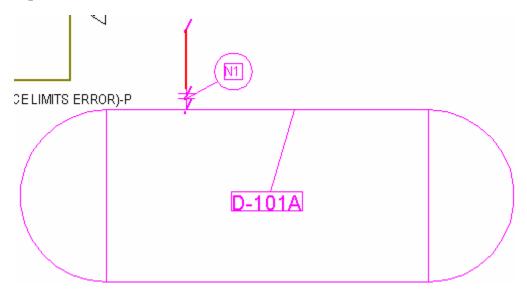
4. Select **File** > **Open** and select Drawing Lab5A.

5. Turn off the **EDE**, **Catalog Explorer** and **Property Grid** in order to gain more real estate.

   a. **View > Display**

6. Select **Window** > **Tile Horizontally** to view both drawings.

   a. **Fit the W**indow for Lab5a.pid

   b. **Zoom Area** around the **Horizontal Drum** and broken **Pipe Run**.
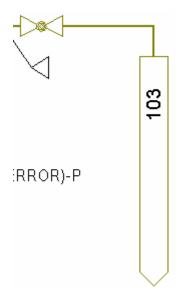
7. Create a **Select Set** of around the **Horizontal Drum Nozzle**, **Piping Flange** and **Pipe Run**.
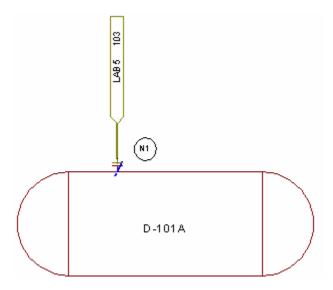
8. Select **Edit** > **Move To Drawing** and move the selected graphics from drawing **Lab5** to drawing **Lab5A**.

    a. Watch the Prompt Field

        1. select **From Point**

        2. select **To Point**

9. Save both Drawings

10. Place an OPC on the end of the Pipe Run in drawing LAB5.

11. Place the mating OPC on drawing LAB5A.

   a. Be sure drawing Lab5A is the active drawing before selecting the OPC
       from the Stockpile in the Engineering Data Editor.
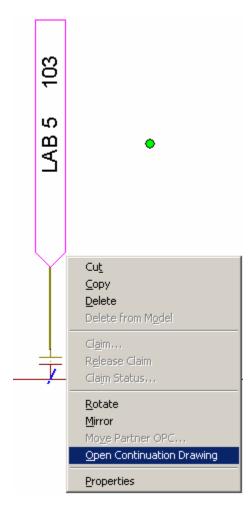
12. **File** > **Exit** drawings

13. Open drawing LAB5A and place a Line Number Label on the Pipe Run.

   a. **Symbols** > **Piping** > **Labels – Piping Segments** > **Line Number**

14. Select **OPC**, right mouse click, and select **Open Continuation Drawing**.

✎ **Notes:**

- Remember to select the perimeter of the OPC not the embedded label within the OPC.

15. **Window** > **Tile Horizontally** to view both drawings and note the values in the **Line Number Label**.

16. **File** > **Exit** drawings.

Lab 17 – Select Sets[8]

Purpose: Utilizing Select Sets to copy properties.

1. From **Drawing Manager** enter drawing **Lab5**.

2. Ensure **System Editing** is enabled (turned on); enabling System Editing is a toggle and a check mark beside the command indicates System Editing is enabled.

3. Ensure the **Brief Properties** is not enabled on the Property Window.

4. Place a **Flanged Nozzle** on the **Vertical Drum**.

    a. **Symbols** > **Equipment Component** > **Nozzles** > **Flanged Nozzle**

    b. Select **Tools** > **System Editing**
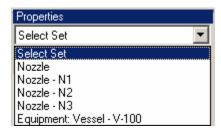
5. Verify that the following three properties were copied to the **Flanged Nozzle**.

    a. **Cleaning Reqr**

    b. **Coating Reqr**

---

[8] NOTE: You must have completed Lab 10 prior to this lab.

      c. **Supply By**

6. Select the **Vertical Vessel** and define the value of **1C0031** to the **Piping Materials Class** property.

7. Select the **Flanged Nozzle**, did the value for **Piping Materials Class** copy to the **Flanged Nozzle**?

   📝 **Notes:**

   - Reference **Rule Manager > Plant Rules** > **Relationship** > **Equipment Component** > **Nozzle to Equipment** and select the **Consistency** tab. Notice Piping Materials Class is not set to copy from the Equipment to the Nozzle or from the Nozzle to Equipment.

8. Create a **Select Set** of the **Vertical Vessel** and the **Nozzles** and toggle the **Selected Items** list in the **Property Window** to **Select Set**

   a. Utilize **Display Sets** to create the **Select Set** of items.

     - Refer to Creating and Apply Display Sets in this document or the on-line Help.

9. Assign **1C0031** to the **Piping Materials Class** property. This will copy the value to all items in the **Select Set**. Verify **1C0031** was applied to the **Nozzles** and **File** > **Exit** the drawing.

Lab 18 - EDE[9]

Purpose: Utilizing the Engineering Data Editor

1. From **Drawing Manager** enter drawing **Lab 5**.
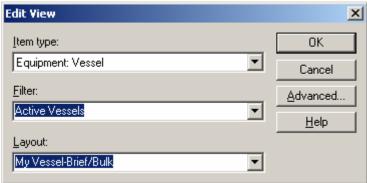
2. From the **Engineering Data Editor** toggle the **Item Type** to **Equipment**:**Vessel** to create a tabular view of the Equipment Vessels in your Plant.

3. Verify the following are toggled on.

    - Stockpile
    - Active Drawing Stockpile
    - Active Drawing

4. Utilize the **View** > **Display Settings** from the **Engineering Data Editor** for icons, rows and columns in the Engineering Data Editor.

    - For the Active Drawing Row Item set

        a. Color = Red
        b. Font = MS Sans Serif; apply **Bold** & *Italics*
        c. Select OK

5. Select one of the items from the **Engineering Data Editor** and notice the item will be highlighted in the Drawing.

    - Also note the Property Window is displaying the data for this Equipment item.

6. Display only the Active Drawing for Equipment in Engineering Data Editor.

    - Toggle off the **Active Drawing Stockpile**

    - Toggle off the **Stockpile**.

7. Set the Engineering Data Editor Item Type to the Brief/Bulk list from previous lab.

    - **View** > **Edit View**

---

[9] NOTE: You must have completed Lab 10 prior to this lab.

8. Set the **Layout** to **My Vessel – Brief/Bulk** on the **Edit View** form.

9. From the **Engineering Data Editor**, set the **Cleaning Requirements** to **CC4** for the **Vertical Drum** by double clicking in the **Cleaning Requirement** field for the **Vertical Drum**.

    - Select anywhere in the **Engineering Data Editor** to **Accept** this value.

    - Notice the **Property Window** will not refresh until you re-select the Equipment item.

10. **File** > **Exit** the drawing.
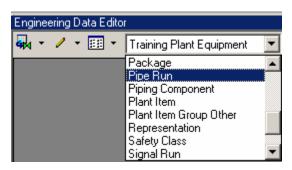
Lab 19 - EDE[10]

Purpose: Utilizing the Engineering Data Editor

1. From **Drawing Manager** enter drawing **Lab 5**.

2. From the **Engineering Data Editor**, set the item type to **Plant Item**.

3. Activate the **View** > **Display Settings** dialog box.

   - Change the background color to **Yellow** for **Read-Only** Properties.

   - Change the background color to **Cyan** (light blue) for **Read-Write** Properties.

4. Set the tabular view to only **Active Drawings** in the **Engineering Data Editor**.

   - Deselect the **Active Drawing Stockpile**, **Stockpile** and **Other Drawings**.

5. From the **Engineering Data Editor**, set the item type to **Equipment.**

6. Select **View** > **Save View** to create a new **View**.

7. Enter **Training Plant Equipment** in the **Name** field and select **OK.**
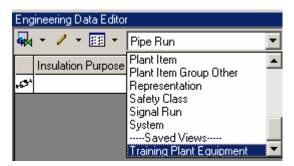
8. Set the **Item Type** to **Pipe Run** in the **Engineering Data Editor**.

---

[10] NOTE: You must have completed Lab 10 prior to this lab.

9. Set the **Item Type** to **Training Plant Equipment** from the **Saved Views**.
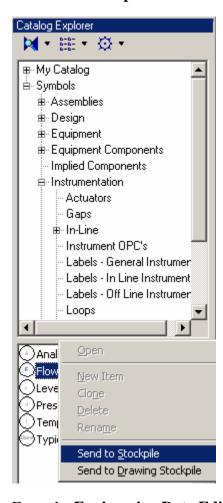
10. From the **Engineering Data Editor**, set values for various properties.

- Name

- MOC Class

11. **File** > **Exit** the drawing.

Lab 20 – Saved Views

Purpose: Utilizing Saved Views from the Engineering Data Editor
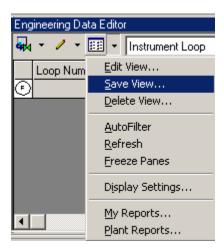
1. From **Drawing Manager** enter drawing **Lab 5**.

2. Send a **Flow Loop** and **Pressure Loop** to the **Stockpile**.

3. From the **Engineering Data Editor** set the **Item Type** to **Instrument Loop**.

4. From the **Engineering Data Editor** select **View** > **Save View**
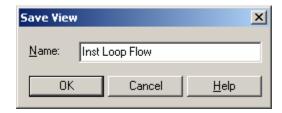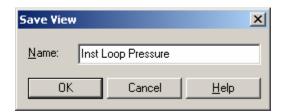
5. Create two new views named:

   a. **Inst Loop Flow**
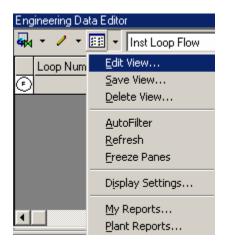
   b. **Inst Loop Pressure**
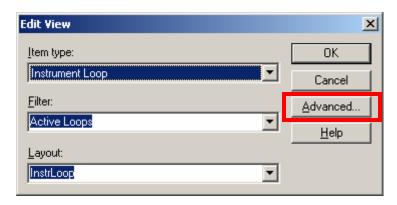
6. Set the **Engineering Data Editor** Item Type to **Inst Loop Flow**.
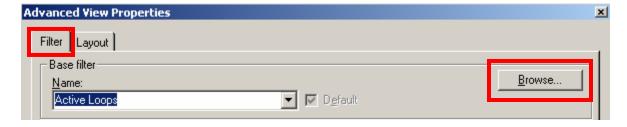
7. From the **Engineering Data Editor** select **View** > **Edit View** to edit the **Inst Loop Flow** view to add a new **simple filter** where we discriminate on **Loop Function** of **F** (Flow).

a. On the **Edit View** form select the **Advanced** button.

b. On the **Advanced View Properties** form, **Filter** tab, select the **Browse** button. We will add a **new** Filter of Inst Loop Flow in the next step.
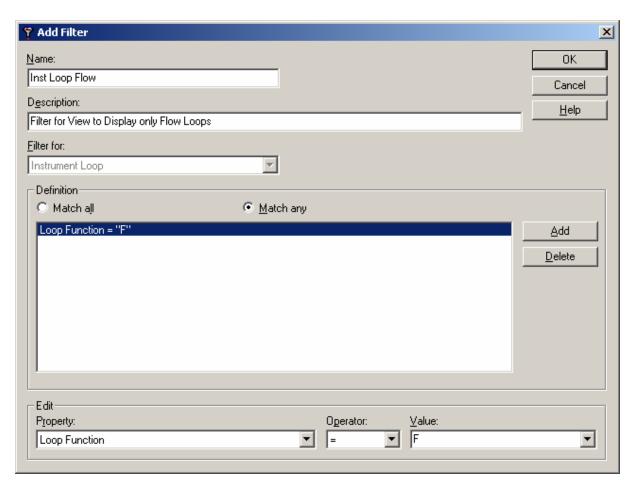
c. On the **Select Filter** form, select the **Display Filters** and select the **New** button to add a new **simple Filter** (Inst Loop Flow).

d. Select **Simple filter** and **OK.**
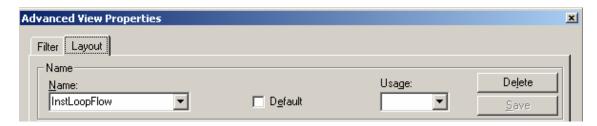
e. On the **Add Filter** form:

　　i. Define the **Name** of the filter as **Inst Loop Flow**

　　ii. Define a **Description**.

　　iii. Select **Loop Function** from the **Edit Property** drop down box.

　　　　1. **Operator** of =

　　　　2. **Value** of **F**

　　iv. Select **OK**

　　v. Select **OK**
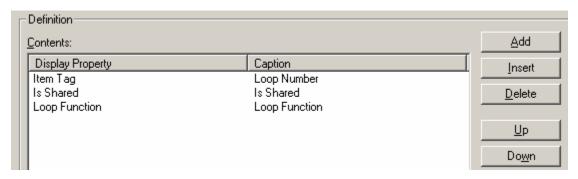
f. The **Base Filter** name on **Advanced View Properties** form should display **Inst Loop Flow**.

8. Select the **Layout** Tab on the **Advanced View Properties** form.

    a. Define the **Name** of the layout as **InstLoopFlow**

    b. Select **Save**
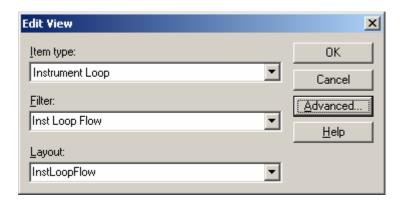
9. **Delete** all properties in the **Definition Display Properties** with the exception of **Item Tag** and **Loop Function**.

10. **Add** the **IS Shared** property to the **Definition Display Properties.**

    a. Select **ADD**

    b. Select the **IS Shared** property from the **Edit Property** drop down box.

11. Utilize the **Up** button to move the **IS Shared** property between the **Item Tag** and **Loop Function** properties.

12. **Delete** the **Name** property from the **Sort Property** field.

    a. Select **Save**

    b. Select **OK**

    c. The **Edit View** dialog box should have the Filter set to Inst Loop Flow and the Layout set to InstrLoopFlow

d. Select **OK**

e. Select **View > Save View** from the Engineering Data Editor and save the **Inst Loop Flow** view again.

  • Select **Yes** when prompted to replace.
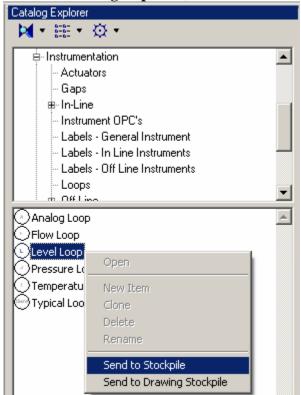
  • View should be successfully updated.

  • Select **OK**

13. Set the **Engineering Data Editor** Item Type to **Inst Loop Pressure**.

14. Repeat steps 7 – 12 to edit the **Inst Loop Pressure** view to create a new **simple filter** and **layout** to discriminate on **Loop Function** of **P** (Pressure)

15. From the **Catalog Explorer**, send a **Level Loop** to the **Stockpile.**

16. From the **Catalog Explorer**, send a **Temperature Loop** to the **Stockpile**.

17. Toggle the **Engineering Data Editor** to **Instrument Loops**.

   • Notice the change

18. Toggle the **Engineering Data Editor** to **Inst Loop Flow**.

   • Notice the change.

19. Toggle the **Engineering Data Editor** to **Inst Loop Pressure**.

Lab 21 – Item Tag Generation

Purpose: Becoming familiar with Item Tag Generation

1. From **Drawing Manager** enter drawing **Lab 5**.

2. Place the following graphics.

    - Horizontal Drum

        i.   **Symbols** > **Equipment** > **Vessels** > **Horizontal Drums**

    - Nozzle on Horizontal Drum

        i.   **Symbols** > **Equipment Components** > **Nozzles**

    - Route Piping from the Nozzle to free space.

        i.   **Symbols** > **Piping** > **Routing** > **Process Lines**

    - Place an Off-Line Instrument w/ Implied Components.

        i.   **Symbols** > **Instrumentation** > **Off**-Line > **With Implied Components**

    - Place an Off-Page Connector on the end of the Pipe.

        i.   **Symbols** > **Piping** > **Piping OPC's** > **Off -Drawing**

        ii. Send the mating **OPC** to the **Stockpile**

        iii. Notice the number generated at placement of the Off-Page Connector.

    - Send an Instrument Loop to the Stockpile.

        i.   **Symbols** > **Instrumentation** > **Loops**

        ii. Toggle the **Engineering Data Editor** to **Instrument Loop**.

3. Define the following property values in the **Property Window** for the below items by selecting the item in the drawing.

    - Horizontal Drum - Tag Prefix

    - Nozzle - TagPrefix
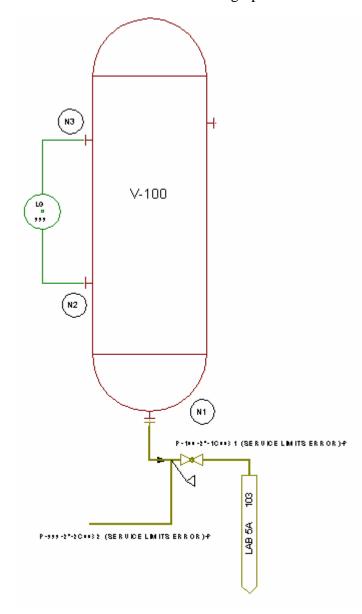
- Piping - Fluid Code

- Instrument Loop – Tag Suffix. (Utilize the Engineering Data Editor for the defining the Tag Suffix for the Instrument Loop.

4. Place another Horizontal Drum.

5. Define the same Tag Prefix and Tag Sequence Number as defined for the previous Horizontal Drum.

6. Select Yes if you receive the below message.

Item Tag Validation

⚠ Duplicate tag 'TK-101' for Equipment found in active plant. Do you want the next available sequence number to be generated for you?

[Yes]   [No]

Lab 22 - Assemblies[11]

Purpose: Creating and Placing Assemblies

1. From **Drawing Manager**, open drawing **Lab 5.**

2. Place a **Select Set** around the graphics.

---

3. Create an assembly with the **File** > **Save As Assembly** command.

4. Review the log file.

5. Place the **Assembly** from the **Catalog Explorer**.

6. Review the log file.

7. **File** > **Exit** the Drawing

Lab 23 - Working with the Stockpile[12]

Working with Components in the Stockpile

1. From **Drawing Manager**, open drawing **Lab 5**.

2. From the **Property Window** assign an **Item Tag** for the **Globe Valve**.

3. Label the **Globe Valve** with the **Number** label.

   a. **Symbols** > **Piping** > **Labels – Piping Components** > **Number**

4. **Delete** the **Globe Valve**.

   a. Right mouse click on the **Globe Valve**

   b. Select **Delete**

5. Does the item reside in the **Stockpile**?

   a. Select **Piping Components** from the **Engineering Data Editor**

   b. Turn off the display of the **Engineering Data Editor** except for the **Stockpile**.

Answer = No, Piping Components do not meet the criteria required for an item to be placed in the stockpile upon deleting. The criteria is **Tag Required** property must equal **True**, as defined in **Catalog Manager** for the Globe Valve and Piping Components are not listed as **StockpileItems** in **Option Manager** > **Settings**.

6. **Delete** the **PipeRun** that was routed as a **branch**.

7. Does the item reside in the **Stockpile**?

Answer = Yes, **PipeRuns** do meet the criteria required for an item to be placed in the stockpile upon deleting and there is NOT another PipeRun with the same ItemTag still in the drawing. The criteria is **Tag Required** property must equal

---
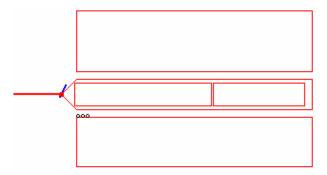
[12] NOTE: You must complete Lab 9 prior to this lab.

True, as defined in **Catalog Manager** for the **PipeRun** and **PipeRuns** are listed as **StockpileItems** in **Option Manager** > **Settings**.
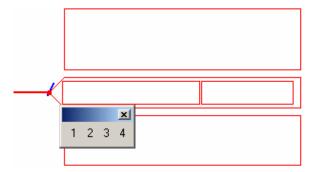
8. Select the **PipeRun** from the **Engineering Data Editor** and place in free space, connect the **PipeRun** to the **main run**.

9. Review and Resolve the **Inconsistency** between the **main run** and the **branch**.

10. Route a **branch** from the **main run** to the right side of the drawing.

Working with Off-Page Connectors in the Stockpile
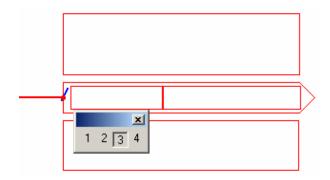
1. Place a Piping Off-Page Connector on the end of the branch which was routed from the previous step.

   a. **Symbols** > **Piping** > **Piping OPC's** > **Off-Drawing**

2. Pass the cursor over the end of the line and pause until the 3 ellipses appear
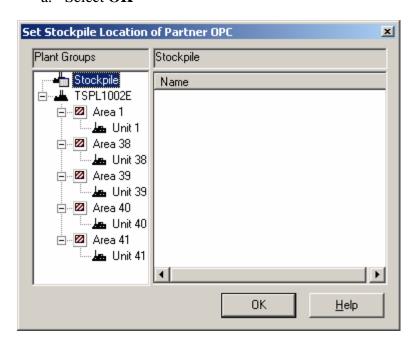
3. Left click to receive the **PickQuick Tool**.
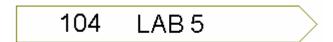
4. Choose option 3 for placing.

5. Place the mating **OPC** in the **Stockpile**.

    a. Select **OK**
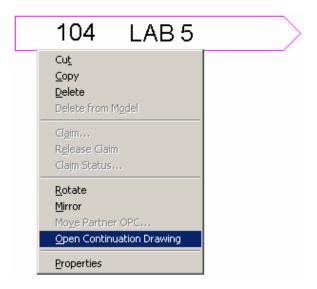
6. **File** > **Exit** drawing

7. Open another drawing.

8. Place mating **OPC** from the **Stockpile** in the **Engineering Data Editor** on drawing.

9. Notice Off-Page Connector Transfer Destination drawing number is displayed.

10. Select the graphics of the Off-Page Connector

    a. right mouse click on the **Off-Page Connector**

    b. Select **Open Continuation Drawing**

11. Notice OPC Transfer Destination drawing number is displayed.

12. From the menus select **Window > Tile Horizontal**

    a. You should have two drawing displayed

13. Close drawing Lab 5A.

    a. Make sure Lab 5A is the active drawing, the bar across the top of the drawing will be blue.

    b. Select the **X**

OR

    c. Select **File > Close**

Working with Loops in the Stockpile
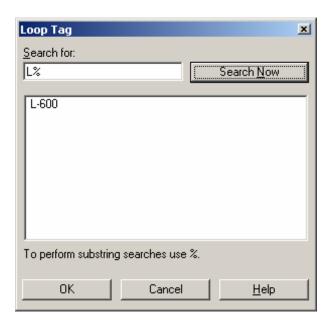
1. Send a **Level Loop** to the **Stockpile**

    a. Select **Symbols** > **Instrumentation** > **Loops** > **Level Loop**

    b. Right mouse click

    c. Select **Send to Stockpile**

2. Set the Item Type to **Instrument Loop** in the **Engineering Data Editor**.

    a. Toggle the **Engineering Data Editor** to only view **Stockpile** items.

3. From the **Engineering Data Editor**, define the **Tag Seq No = 600**

    a. Select **Enter**

4. Assign the **Instrument Loop** to the **Level Gauge** Instrument in the Drawing.

    a. Select the **Level Gauge** in the Drawing.

        i. Select the perimeter of the graphics not the label inside the perimeter.

    b. From the **Property Window**, select the **Loop Tag** property.

        i. Select the box with the three (3) ellipses.

5. Search for **Loops Tag** that begins with a **L%.**

    a. Select **Search Now**

6. Select the **Loop** from the list.

7. Notice the **Sequence Number** on the **Instrument** updates.

   a. The **Relationship Rule** in **Rule Manager** of **Loop to Instrument** is set to copy the **Sequence Number** of the **Loop** into the **Sequence Number** of the **Instrument.**

Working with Plant Item Groups in the Stockpile

Packages, Test System, Safety Class, Hydro Test System, Contract Package

1. Send the **Symbols** > **Design** > **Package** to the **Stockpile**.

2. Set the Item Type to **Package** in the **Engineering Data Editor**.

3. From the **Engineering Data Editor**, define an **Item Tag** = **Skid123** for the **Package**.

   a. Toggle the **Engineering Data Editor** to only view **Stockpile** items.

4. Place an **Area Break** around the items in the P&ID

    a. Select **Symbols** > **Design** > **Area Break**

5. Select the **Area Break**, right mouse click and select **Select Contents**.

    a. This will select all items within the **Area Break**, including the **Area Break**.

6. Deselect the **Area Break** and **Off-Page Connectors** from the **Select Set**.

    a. Hold **Shift** or **Ctrl** as you click the items that you want to deselect.

    b. Remember a **Select Set** will display properties that are common between all items within the **Select Set**. The **Area Break** and **OPC** do not have this Property.

7. Assign the **Package Item Tag** of **SKID123** to the **Select Set**.

    a. Be sure the Item Type in the **Property Window** is set to **Select Set**.

8. You will receive the below message a number of times if the Item Tag has not been defined on items included in the Select Set

---

Item Tag Validation ☒

⚠️ Duplicate tag '1100-P' for Pipe Run found in active plant. Do you want the next available sequence number to be generated for you?

[Yes]   [No]
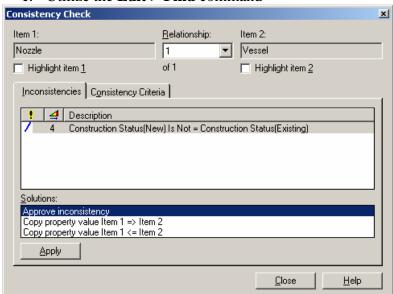
Lab 24 – Inconsistencies
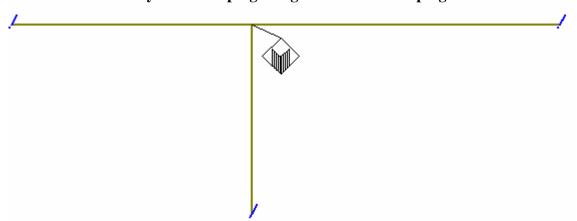
Purpose: Understanding how Inconsistencies are created.

Segment Breaks and Inconsistencies

1. From **Drawing Manager** open drawing **Reviewing Inconsistencies.**

2. Ensure **System Editing** is **ON** .

3. Place a **Horizontal Drum** and assign **Construction Status** of **Existing**.

    a. **Symbols** > **Equipment** > **Vessels** > **Horizontal Drums**

4. Place a **Nozzle** with a **Construction Status** of **New** on the **Horizontal Drum**.

    a. **Symbols** > **Equipment Components** > **Nozzles** > **Flanged Nozzle**

5. View the **Inconsistencies** between the **Nozzle** and **Drum**

    a. Select the **Inconsistency**, right click, select **Properties**

    OR

    b. Double click on the **Inconsistency**

    OR

    c. Utilize the **Edit** > **Find** command
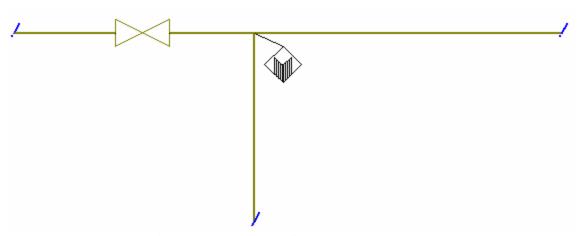
6. If Inconsistencies are not appearing on Drawing, right mouse click in the free space of your drawing and select **Show** -> **Inconsistencies** or select **View** > **Show Inconsistencies.**

7. Route a Horizontal Pipe in Free Space

   a. **Symbols** > **Piping** > **Routing** > **Process Lines** > **Primary Piping**

8. Define the Property of **Piping Materials Class** to be **1C0031**.

9. Route a branch in the vertical direction from the Horizontal Pipe.

   a. **Symbols > Piping** > **Routing** > **Process Lines > Primary Piping**

10. Notice the Piping Materials Class from the Horizontal Pipe copies to the Vertical Pipe.

11. Place a Piping Material Class segment break at the intersection of the branch and horizontal Pipe.

    a. **Symbols > Piping** > **Segment Breaks** > **Piping Materials Class**
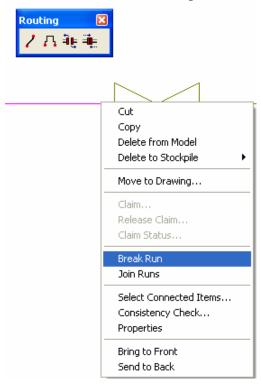
12. On the branch define **Piping Materials Class** to be **2C0032**.

Approving an Inconsistency

1. Ensure **System Editing** is **ON** .

2. Place a **Gate Valve** on the horizontal **PipeRun**.

   a. **Symbols > Piping** > **Valves** > **2 Way Common > Gate Valve**

3. Select the **Pipe** to the left of the **Gate Valve.**

4. Select the **Piping Material Class** property from the **Property Window.**

   a. Notice the entire horizontal pipe is highlighted indicating the entire scope of the change to the value for **Piping Material Class**.

5. Select **ESC** from the keyboard.

6. From the Routing toolbar or the ShortCut Menu, utilize the **Break Run** command to break the Pipe Run to the left of the valve.
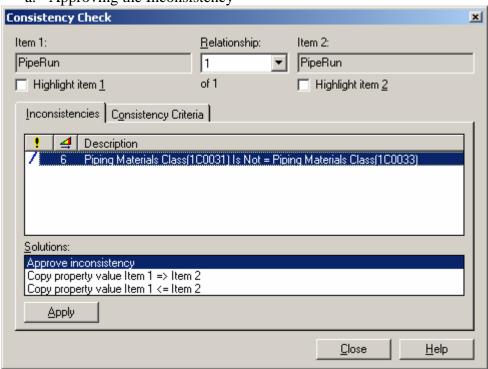
7. Turn **System Editing OFF** .

8. Select the **Pipe** to the left of the **Gate Valve.**

9. Select the **Piping Material Class** property from the **Property Window.**

    a. Notice ONLY the horizontal pipe left of the **Gate Value** is highlighted indicating the scope of the change to the value for **Piping Material Class**.

    b. Change the value for **Piping Materials Class = 1C0033.**

10. Resolve the Inconsistency between the **Gate Valve** and **Pipe Run** by:

    a. Approving the Inconsistency

AND/OR
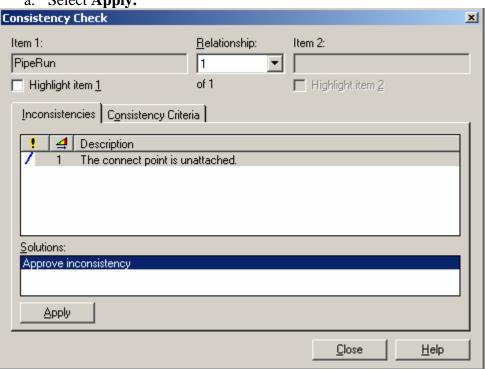
    b. Placing a Piping Material Class Segment Break

11. Turn **System Editing ON** .

12. Select the **Inconsistency** at the end of the **Pipe Run**.

13. Right mouse click and select **Consistency Check** or double click on the Inconsistency.

14. Select the Solution of **Approve Inconsistency.**
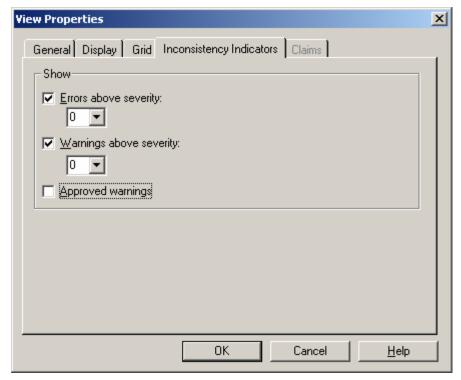
    a.   Select **Apply.**

15. Notice the change in the display of the Inconsistency.
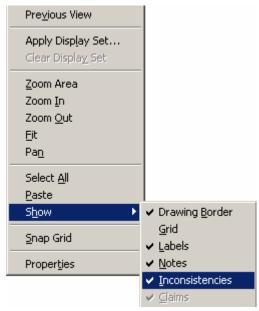
16. Turn off the Display of Approved Inconsistency Indicators by selecting **View** > **Properties** > **Inconsistency Indicators**.

    a.   Uncheck the **Approved Warnings**

OR
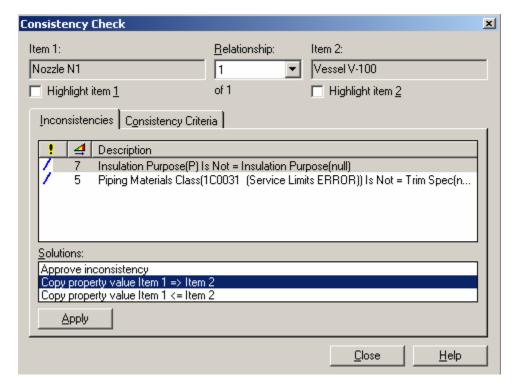
17. Right mouse click in Free Space and select **Show** > **Inconsistencies**

   a. ✎ **Note: Show > Inconsistencies** will turn the display off of **ALL** inconsistencies.

18. File > Exit the Drawing.

Resolving Inconsistencies
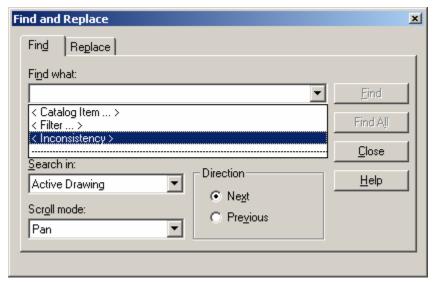
1. From **Drawing Manager**, open drawing **Lab 5.**

2. Select the **Vertical Vessel**.

3. Select **FIT** from the toolbar or **View** > **Fit** from the menu.

4. Select the **Inconsistency** at the bottom of the **Vertical Vessel** between the **Nozzle** and **Vertical Vessel.**

5. Double click the **Inconsistency**, this will display the **Consistency Check** dialog box.

6. Resolve the **Inconsistencies** by copying the property value from **Item 1** (**Nozzle**) to **Item 2** (**Vessel**).

    a. Notice the other inconsistencies, on the left of the **Vessel**, between the **Nozzles** and **Vessel** is resolved.

Utilizing FIND to review Inconsistencies

1. Select **Edit** > **Find**

2. Select **Inconsistency** in the **Find What** field.

3. Select **Active Drawing** in the **Search in** field.

4. Select **Pan** in the **Scroll mode** field

5. Select **Find**

6. Continue to select **Find** and cycle through several Inconsistencies.

7. Select **OK**.

8. Select **Close**

9. **File > Exit** the drawing.
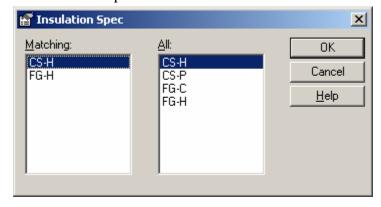
Lab 25 – Insulation Specification Access

Purpose: Utilize the insulation spec. information.

1. From **Drawing Manager** open the **40PIDClass** drawing.

2. Route pipe.

   a. **Symbols** > **Piping** > **Routing** > **Process Lines** > **Primary Piping**

3. Place 3 valves on the pipe (gate, globe, and check valve).

   a. **Symbols** > **Piping** > **Valves** > **2 Way Common**

4. Define a **Nominal Diameter** of **4"** and an **Insulation Temperature** of **150 F** for the pipe.

5. Choose an Insulation Spec for the pipe. (When you select the field you receive a button ⚊ in the properties field. This is because a calculation prog id is defined in the data dictionary for this property. Select the button, and choose a spec from the list.)

   a. Insulation Spec: CS-H

6. The software should run a routine to retrieve the following property values:

   • Insulation Density: 13.0 lbm/ft^3

   • Insulation Purpose: H

- Insulation Thk: 3.000 in

- Insulation Type: Calcium Silicate

- Insulation Thk Source: Software

7. For the next steps, turn **System Editing OFF** .

   a. Why? Because if you do not turn System Editing Off, then when we change the Nominal Diameter to 6"of the Gate Valve the Pipe will also be changed to 6"

8. On the **Gate Valve**, define:

   a. **Nominal Diameter** = **6"**

9. The software should run the routine again to retrieve the following property values for the valve:

- Insulation Density: 13.0 lbm/ft^3

- Insulation Purpose: H

- Insulation Thk: 3.500 in

- Insulation Type: Calcium Silicate

- Insulation Thk Source: Software

10. Resolve the **Inconsistency** on the upstream and downstream side of the **Gate Valve**.

   a. Approve the Inconsistency

   AND/OR

   b. Place the appropriate Segment Break.

11. Select the **Check Valve**.

   a. Set the **Insulation Thickness** property.

      1. Set a value of 4.000 in.

   b. The **Insulation Thk Source** property changes from **System** to **User**.

12. Try to change the **Insulation Spec** for the pipe from **CS-H** to **CS-P**.

a. You will receive a message of:

Project Insulation Specification

The temperature or diameter value falls outside the range of the insulation specification. Please enter another value.

OK
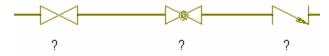
13. Turn **System Editing ON** .

14. Now change the **Insulation Spec** to **FG-H**.

a. Note the changes in the property values of:

1. Insulation Density

2. Insulation Thickness

3. Insulation Purpose

4. Insulation Type

Lab 26 – Piping Specification Access

Purpose: Utilize the specification information in the PDS3D database.

1. From **Drawing Manager** open the **40PIDClass** drawing.

2. Route pipe.

   a. **Symbols** > **Piping** > **Routing** > **Process Lines** > **Primary Piping**

3. Place 3 valves on the pipe.

   a. **Symbols > Piping** > **Valves** > **2 Way Common**

      i.   Gate

      ii. Globe

      iii. Check

4. Place a commodity code label on each valve.

   a. **Symbols** > **Piping** > **Labels – Piping Components** > **Commodity Code**

5. Define a value for **Piping Material Class** for the pipe.

   a. Piping Materials Class = 1C0031
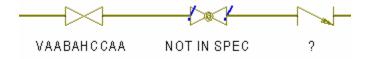
   • When you select the field you receive a **Calc** button in the properties field. This is because a calculation prog id is defined in the data dictionary. Select the button, and choose a **Piping Material Class** from the list.

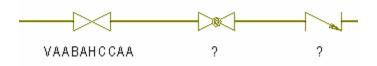6. On the **Gate Valve**, define:

    a. Nominal Diameter = 3"

    b. The Nominal Diameter of the Pipe is now 3" also; due to the Rules and System Editing enabled.

7. The software will run a routine to retrieve the **Commodity Code** and will update the **Commodity Code** label.
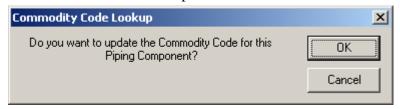
8. Turn **System Editing OFF** .

    a. We turn System Editing off because when we set the Nominal Diameter on the Globe Valve to 36", in the next step, we do not want the 36" to copy down into the Pipe Run.

9. On the **Globe Valve**, define:

    a. Nominal Diameter = 36"

10. You should receive a value for the **Commodity Code** property of **Not In Spec**.
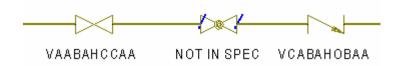
11. Select the **Check Valve**.

12. Select the **Commodity Code** property.

13. Select the Calc button . This automatically runs the lookup.

14. Select **OK** to run the lookup.

VAABAHCCAA   NOT IN SPEC   VCABAHOBAA

15. Review the error log in ~\temp\PipeSpecError.log.

Lab 27 – Running Reports

Purpose: How to run Reports.

Reports from the Engineering Data Editor

1. From **Drawing Manager**, open drawing **38-PI-0001**

2. Create a table view.

   a. **Window** > **New** > **Engineering Data Editor**

3. Display both the table view and the drawing view.

   a. **Window** > **Tile Horizontally**

4. Display all **Plant Items** in the **Engineering Data Editor** for the Plant.

5. Run the following Reports from the **Engineering Data Editor** and save the reports.

   - Equipment List

   - Pump List

   - Valve List

Reports from a Drawing

1. Run the following Reports for the entire drawing 38-PI-0001 and save the reports.

   - Equipment List

   - Pump List

   - Valve List

Running the Line List

1. Run the following **Line List** for the entire drawing **38-PI-0001**

2. Run the Macro for FROM / TO data.

   a. Select **Tools** > **Macro** > **Macros**

   b. Select **Print From To Data for Active Sheet**

   c. Select **Run**

   Notes:

   - **Flow Direction** must be defined for the **FROM/TO** information to be displayed.

Bonus Lab

1. Run an **Equipment List** of Items highlighted in the **Engineering Data Editor**.

2. Run an **Equipment List** of Items highlighted in the **38-PI-0001** drawing.

Lab 28 – Importing Data

Purpose: To utilize the import functionality.

Importing an Equipment List for Zyqad.

1. Use **Windows Explorer** to open the file **VESS.XLS**.

    a. VESS.XLS is a Zyqad Equipment List.

    b. Your instructor will let you know the location of this file.

2. View the contents of the file

📝 **Notes:**

-   Review the **Item Tag** definitions in the first column ATI-1 through ATI-4.

3. **Close** file, do not save

4. Open Drawing 38-PI-0001

5. Delete some or all items from the **Stockpile**.

    a. Toggle the Item Type in the **EDE** to **Plant Item**

    b. Only have the **Stockpile** active in the **EDE**

    c. Select **Edit** > **Select All**

    d. Select **Stockpile** > **Delete Stockpile Item**

6. Place 4 Vessels in the drawing.

    a. **Symbols** > **Equipment** > **Vessels** > **Vertical Drums**

7. Define Properties for the 4 Vessels

    a. Tag Prefix = ATI (use this value for all four vessels)

    b. Tag Seq No of:

    -   1 (you will need to override the autogenerated number)

- 2

- 3

- 100

8. Import the Vess.xls file.

    a. **File** > **Import** > **Data File**

9. Review the log file.

    a. ~\temp\SPImport.log

```
--------------------------------------------------------
SmartPlant import log
Date: 11/21/2006 3:00:48 PM
--------------------------------------------------------
Starting Microsoft Excel
Opening workbook 'VESS.XLS'
Starting import of sheet 'Sheet1'
Getting data from sheet 'Sheet1'
Updating database
Item: ATI-1 --> Updating item properties
Item: ATI-2 --> Updating item properties
Item: ATI-3 --> Updating item properties
Item: ATI-4 --> Creating new item
Item: ATI-5 --> Creating new item
Closing Excel workbook
```
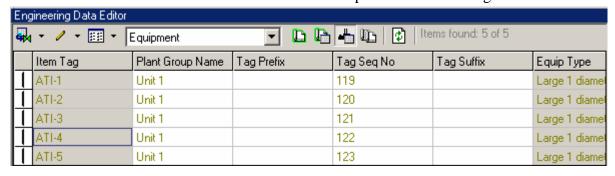
10. Place ATI-4 and ATI-5 from the Stockpile into the Drawing.

Item Tag	Plant Group Name	Tag Prefix	Tag Seq No	Tag Suffix	Equip Type
ATI-1	Unit 1		119		Large 1 diame
ATI-2	Unit 1		120		Large 1 diame
ATI-3	Unit 1		121		Large 1 diame
ATI-4	Unit 1		122		Large 1 diame
ATI-5	Unit 1		123		Large 1 diame

Engineering Data Editor — Equipment — Items found: 5 of 5
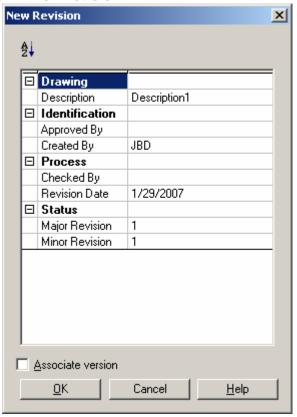
11. **File** > **Exit** drawing.

Bonus Lab

1. Run an **Equipment List** of drawing **38-PI-0001.**

2. Edit the output of the **Equipment List** report and assign the following:

       a. **Material of Construction Class** of **M1** or **M99**.

       b. Key in a Name

3. Import the Equipment List Report.

       a. **File** > **Import** > **Data File**

4. Were there any warnings/errors?

5. Did some of the data import?

Lab 29 – Reving Drawings

1. Create a new drawing named **38-PI-0002**

2. Create 5 revisions for Drawing **38-PI-0002**

   a. For each revision, as a minimum assign a value for :

      i. **Description**

      ii. Change **Created By** to your initials

      iii. Remove the **Time** from the **Revision Date**

      iv. **Major Revision**

      v. **Minor Revision**

3. **Open** the drawing

4. Place the **Drawing Revision Record - D.sym** from **Symbols** > **Design**.

5. **Exit** the Drawing.

6. **Open** the Drawing.

5	5	50% completion	JBD	2/1/2007
4	4	Incorporating ECN's #456 and #678	JBD	1/9/2007
3	3	30% Completion	JBD	1/6/2007
2	2	Incorporating ECN #890	JBD	1/2/2007
1	1	Incorporating ECN #123	JBD	1/1/2007

Lab 30 – Versioning Drawings

1. Create a new **version** of Drawing **38-PI-0001**.

   b. Select **Versions** > **New Versions**

2. Open **38-PI-0001** and make a change.

3. Create a new **version** of Drawing **38-PI-0001**.

4. Select **Versions** > **Show History**

5. **Compare** two of the versions.

6. Become familiar with the commands on the **Compare** form.

7. **Delete** Drawing **38-PI-0001**

8. Now **Fetch** the deleted drawing **38-PI-0001**.

   c. Select the **Plant**

   d. Select **Versions** > **Fetch Deleted Drawings**

Lab 31 – The P&ID

1. Create a Drawing (Name = 40-E-0002) within Unit 40, utilizing an E-Size Template.

2. Open the drawing

3. **Layout the P&ID from a hard copy the instructor will supply.**