ME 24-688 – Week 5

Project 5 – iLogic Part 4

Carnegie Mellon University

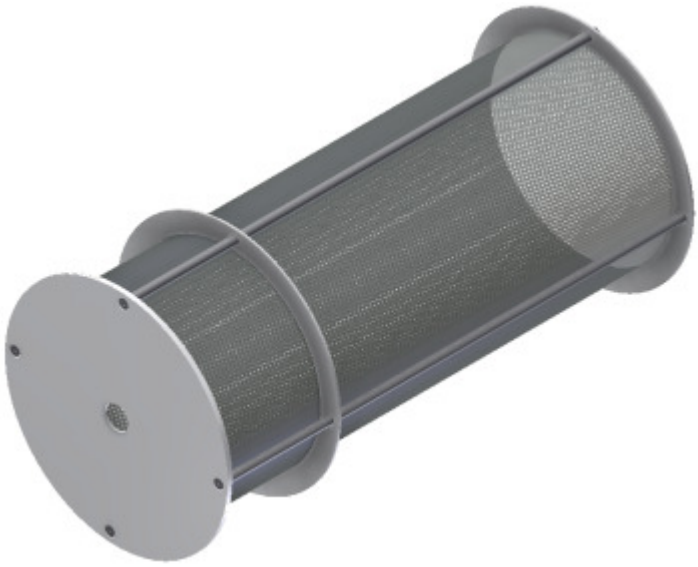
1 Assembly Configuration

This project will show how to drive part parameters from assembly parameters

1.1 Instructions

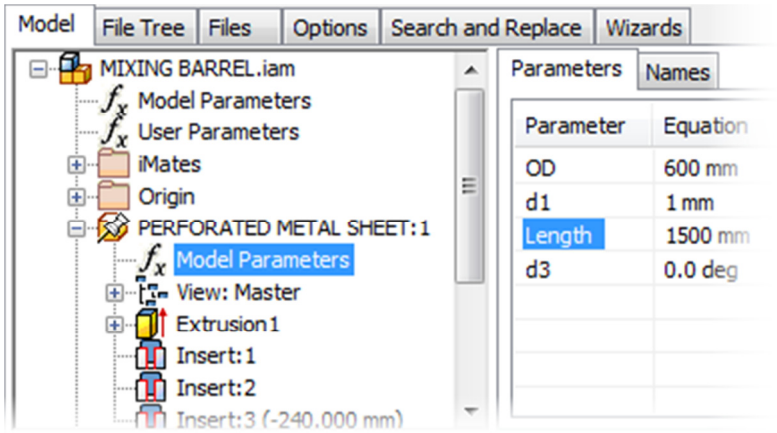
1. Using the Intro to CAD & CAE.ipj

2. Open *MIXING BARREL.iam.*



3. On the Ribbon, go to the **Manage** Tab | **iLogic** Panel | **Add Rule**
   - The **Rule Name** dialog appears
   - Enter **MIXING BARREL**
   - Click **OK**

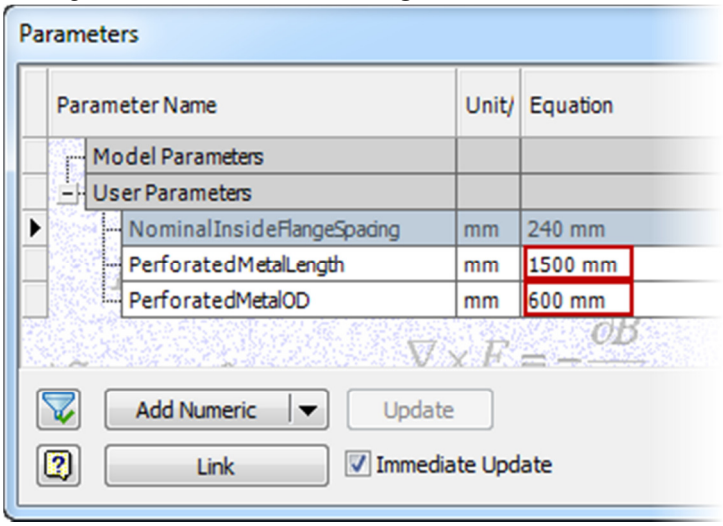
4. Set **OD** and **Length** in the **PERFORATED METAL SHEET:1**
   - Double-click on the **Length** parameter from the **Model Parameters** under **PERFORATED METAL SHEET:1** to add it to the program space.
   - Double-click on the **PerforatedMetalLength** parameter from the **User Parameters** under **MIXING BARREL.iam** to add it to the program space.
   - Repeat for **OD.**
   - Add Comment

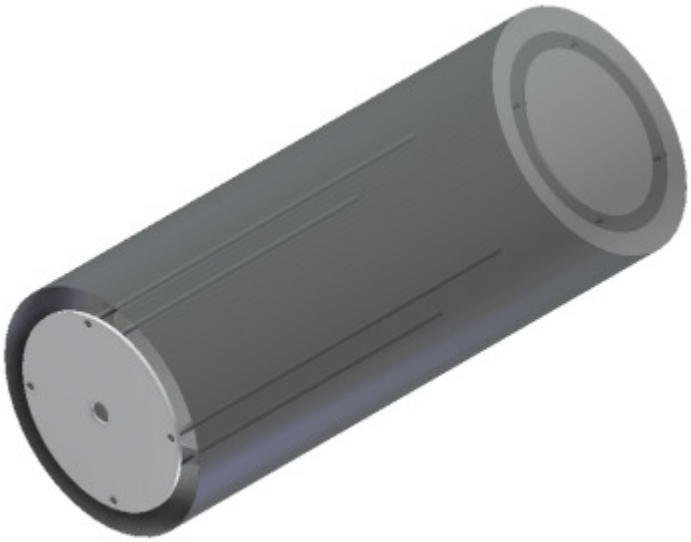



```
'PERFORATED METAL SHEET:1 Parameters
Parameter("PERFORATED METAL SHEET:1", "Length") = PerforatedMetalLength
Parameter("PERFORATED METAL SHEET:1", "OD") = PerforatedMetalOD
```

5. Click **OK** in the **Edit Rule** dialog box.

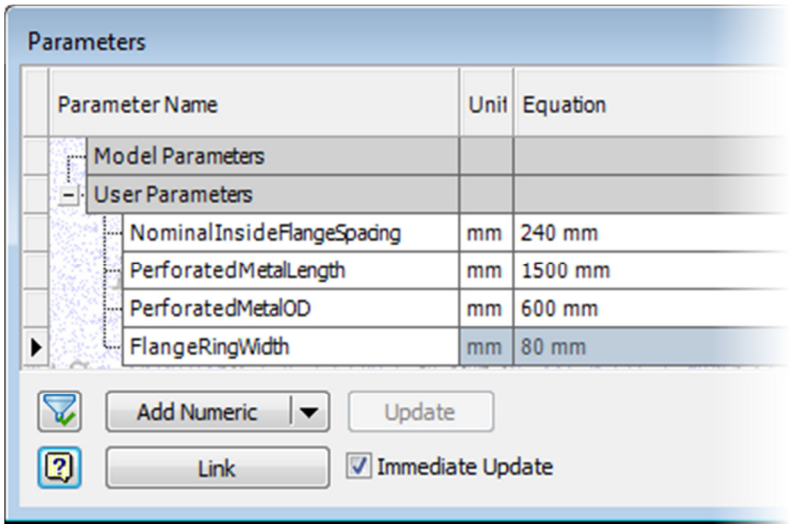
6. Change **PerforatedMetalOD** and **PerforatedMetalLength** in the **Parameters** dialog Box
   - Change the **PerforatedMetalOD** to **600**
   - Change the **PerforatedMetalLength** to **1500**



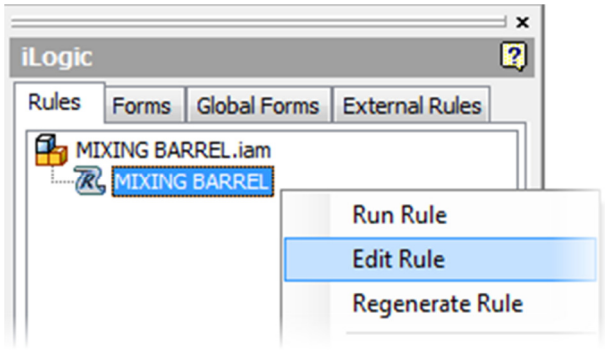


NOTE: The flanges and rods did not update because that are currently not being driven by an iLogic rule.

7. Add a numeric parameter named **FlangeRingWidth** with a value of **80 mm** in the **Parameters** dialog box



8. Right-click on **MIXING BARREL** and select **Edit Rule**.



9. Set **OD** and **ID** in the **OUTSIDE FLANGE RING:1**
   - **OD = PerforatedMetalOD + FlangeRingWidth**
   - **ID = PerforatedMetalOD**
   - Add Comment

```
'OUTSIDE FLANGE RING:1 Parameters
Parameter("OUTSIDE FLANGE RING:1", "OD") = PerforatedMetalOD + FlangeRingWidth
Parameter("OUTSIDE FLANGE RING:1", "ID") = PerforatedMetalOD
```

10. Set **OD** and **ID** in the **INSIDE FLANGE RING:1**

- After the Equal sign, double-click on the **OD** parameter from the **Model Parameters** under **OUTSIDE FLANGE RING:1** to add it to the program space.
- **ID = PerforatedMetalOD**
- Add Comment

NOTE: This line **Must** be **Below** the line setting **OD** in **OUTSIDE FLANGE RING:1** to ensure that parameter is set prior to passing it into the **INSIDE FLANGE RING:1**.

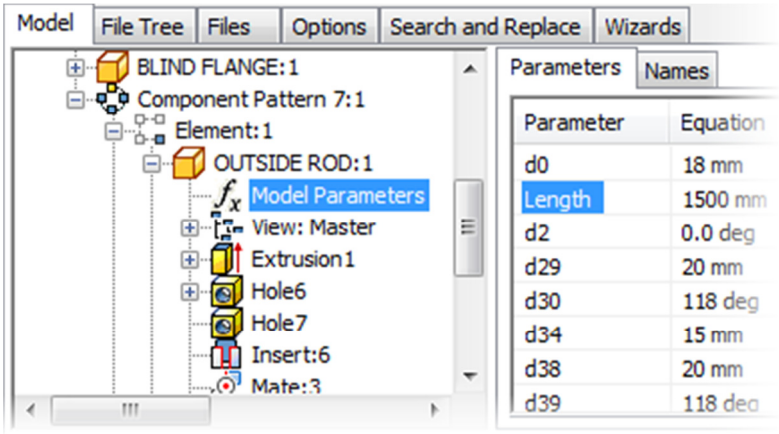
```
'INSIDE FLANGE RING:1 Parameters
Parameter("INSIDE FLANGE RING:1", "OD") = Parameter("OUTSIDE FLANGE RING:1", "OD")
Parameter("INSIDE FLANGE RING:1", "ID") = PerforatedMetalOD
```

11. Set **OD** in the **BLIND FLANGE:1**

```
'BLIND FLANGE:1 Parameters
Parameter("BLIND FLANGE:1", "OD") = Parameter("OUTSIDE FLANGE RING:1", "OD")
```

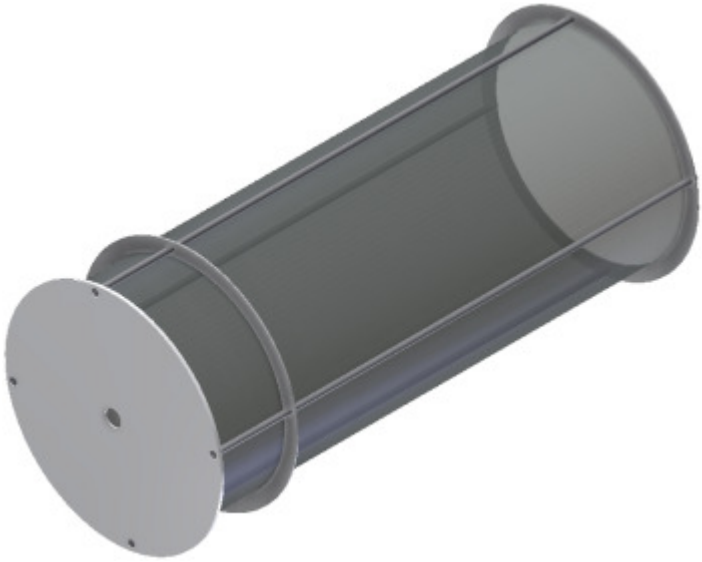
12. Set **Length** in the **OUTSIDE ROD:1**

- Add the **Length** parameter from the **Model Parameters** under **OUTSIDE ROD:1** to the program space and set it equal to **PerforatedMetalLength**



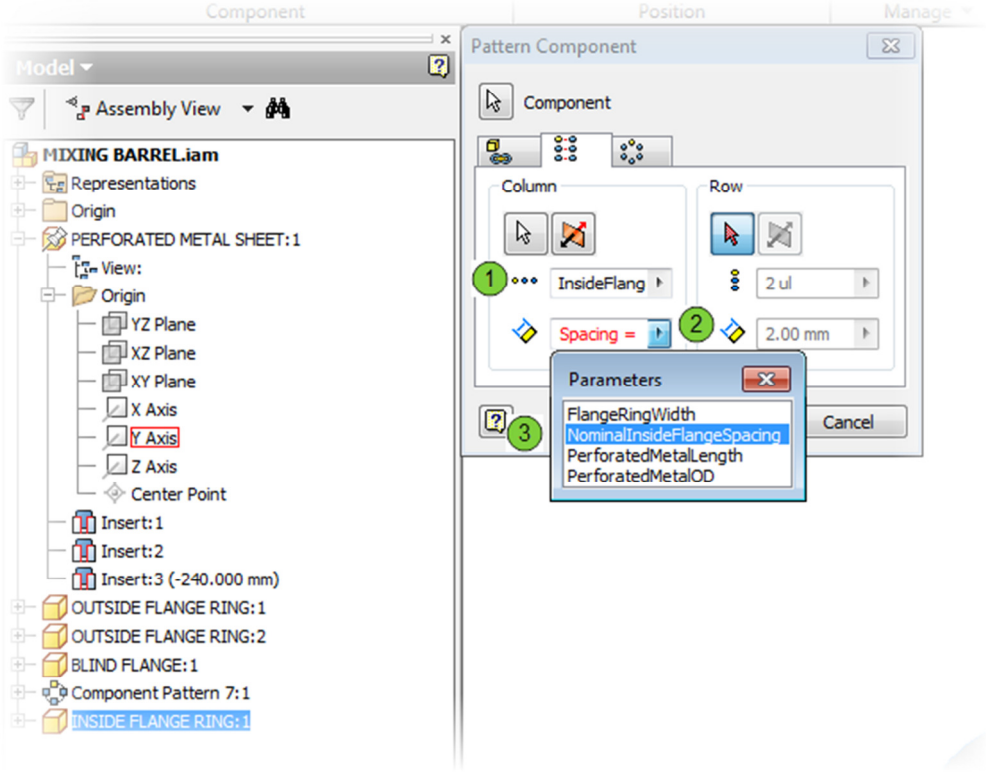

```
'OUTSIDE ROD:1 Parameters
Parameter("OUTSIDE ROD:1", "Length") = PerforatedMetalLength
```

13. Click **OK** in the **Edit Rule** dialog box.

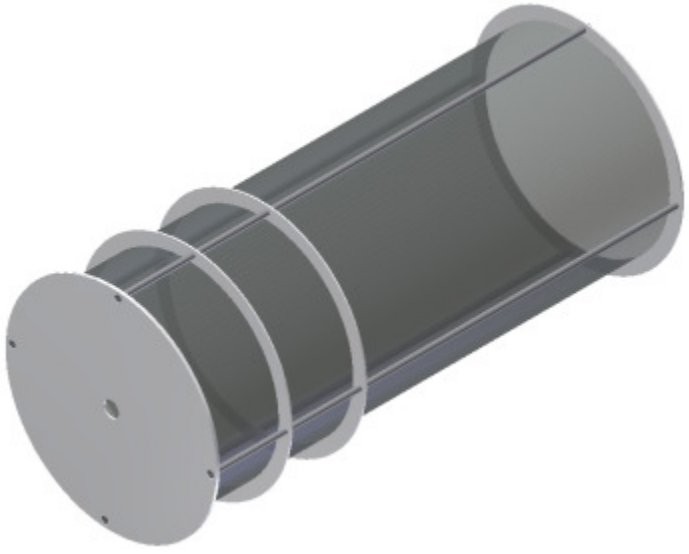


14. Add a Rectangular pattern for placing multiple occurrences of the **INSIDE FLANGE RING**

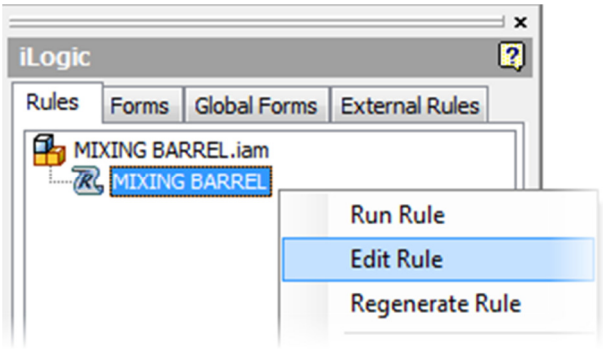
- Select **INSIDE FLANGE RING:1** as the **Component**
- Select the **Y Axis** from the **PERFORATED METAL SHEET:1** as the **Column**
- (1) Type **InsideFlangeQty = 2 ul** into the **Quantity** parameter
- (2) With the **2.00 mm** highlighted in the **Spacing** parameter, type **InsideFlangeSpacing =** and click the **List Parameters** option from the fly out next to the text box
- (3) Select **NominalInsideFlangeSpacing**



- Click **OK.**

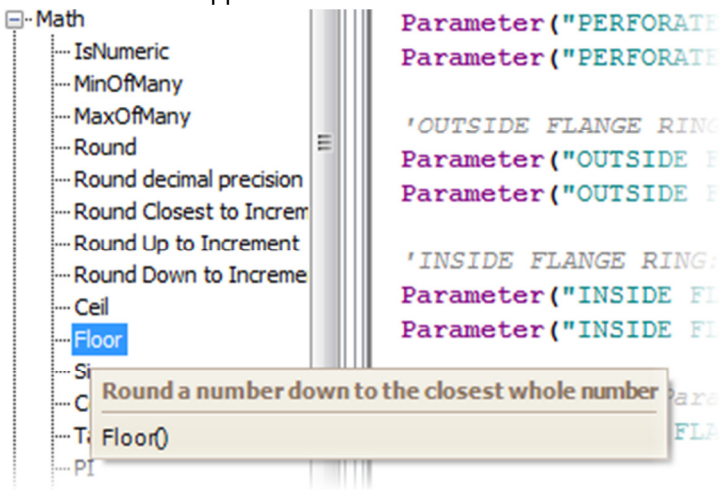


15. Right-click on **MIXING BARREL** and select **Edit Rule**.



16. Calculate **TmpQty**

- At the bottom of the rule type `Dim TmpQty =`
- Use the **Floor** snippet under the **Math**

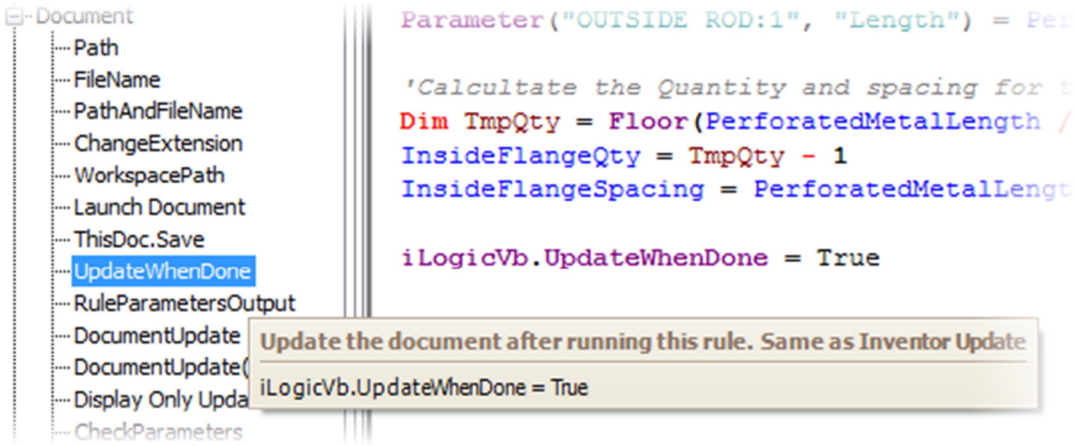


- Inside the parentheses add `PerforatedMetalLength / NominalInsideFlangeSpacing`
- Add Comment

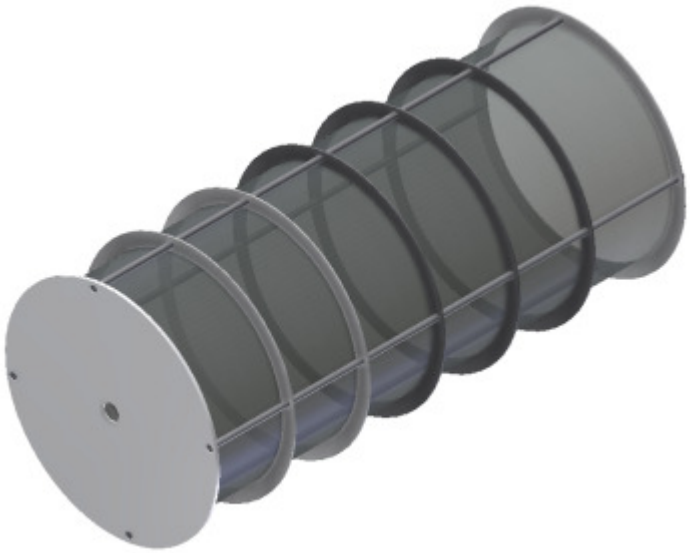
17. Use the `TmpQty` from the previous step to calculate **InsideFlangeQty** and **InsideFlangeSpacing**

```
'Calculate the Quantity and spacing for the Inside Flange
Dim TmpQty = Floor(PerforatedMetalLength / NominalInsideFlangeSpacing)
InsideFlangeQty = TmpQty - 1
InsideFlangeSpacing = PerforatedMetalLength / TmpQty
```

18. Add the **UpdateWhenDone** snippet

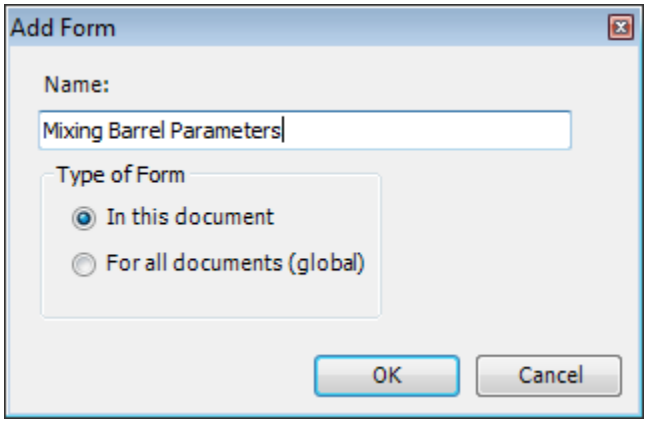


19. Click **OK** in the **Edit Rule** dialog box.

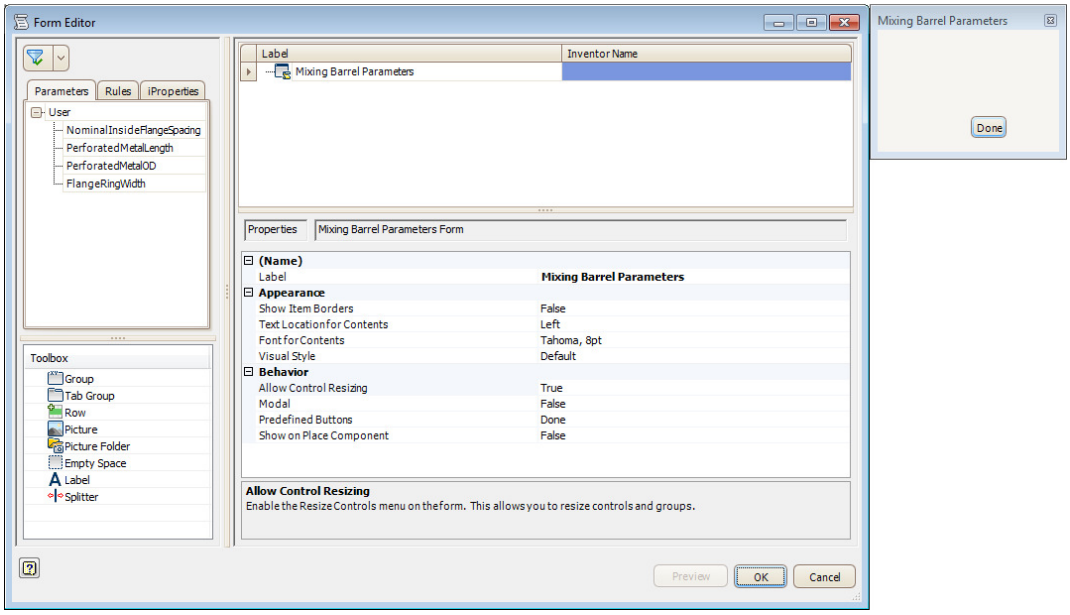


20. On the Ribbon, go to the **Manage** Tab | **iLogic** Panel | **Add Form**

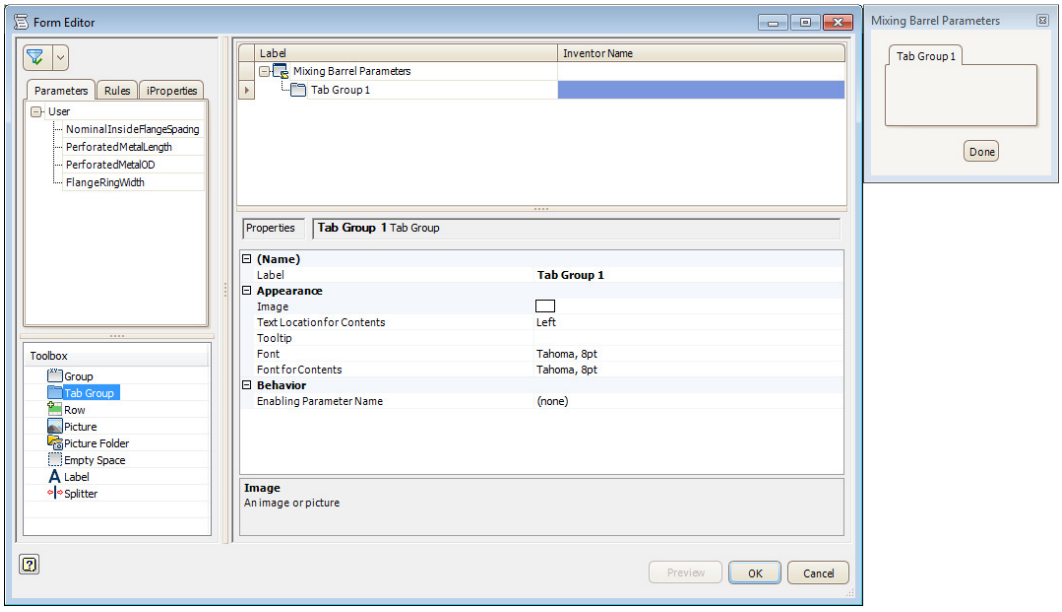
- The **Add Form** dialog appears
- Enter **Mixing Barrel Parameters** in the **Name** text box



- Click **OK**
- The **Form Editor** dialog box appears

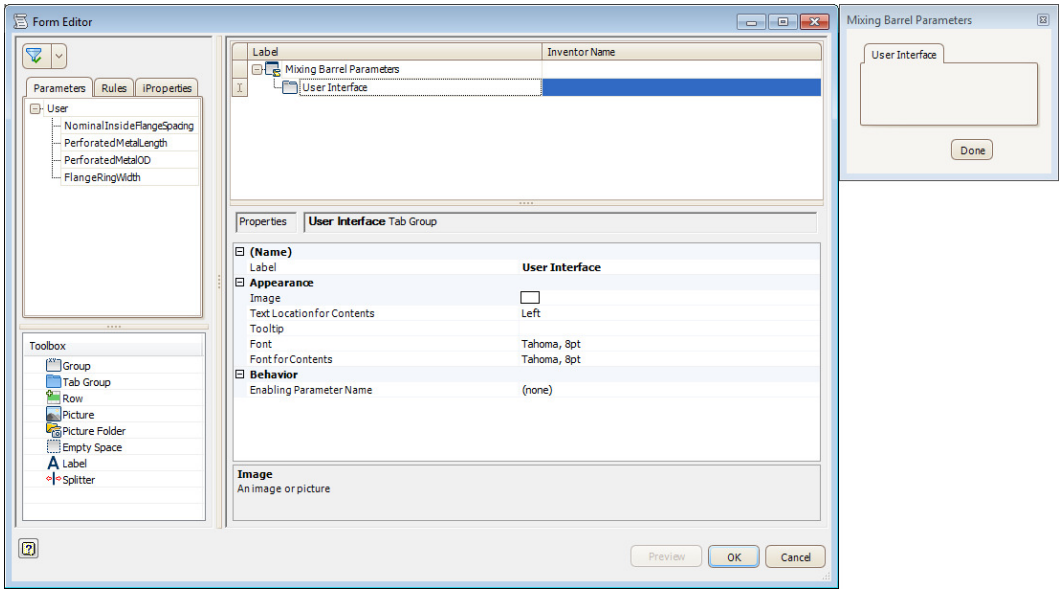


- Add a tab group to the form by dragging the **Tab Group** item from the **Toolbox** into the **Mixing Barrel Parameters** form

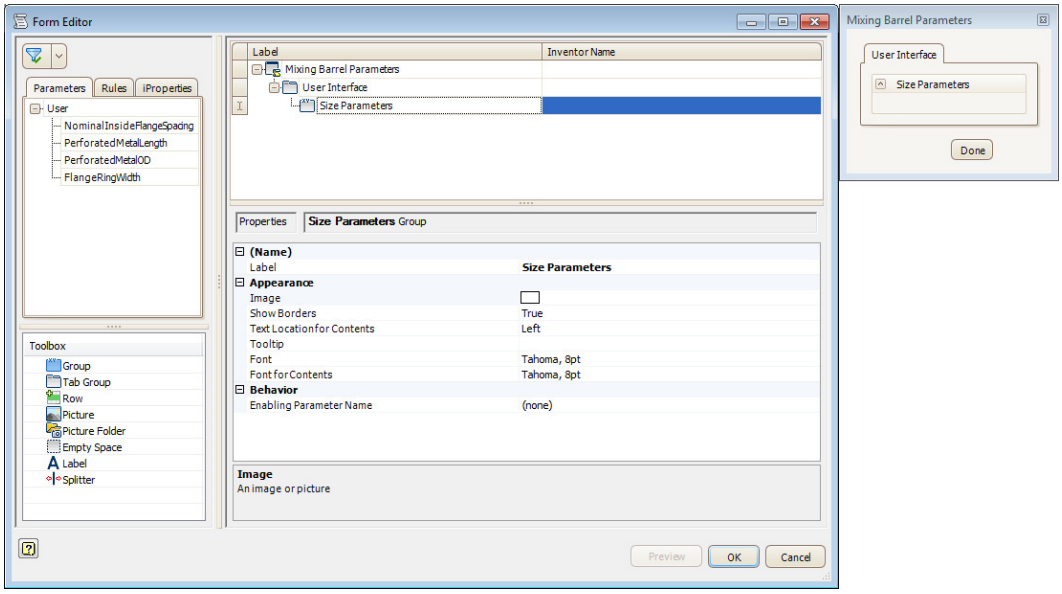


Note: The form preview window to the right of the **Form Editor** dialog box shows what the form will look like as each item is added.

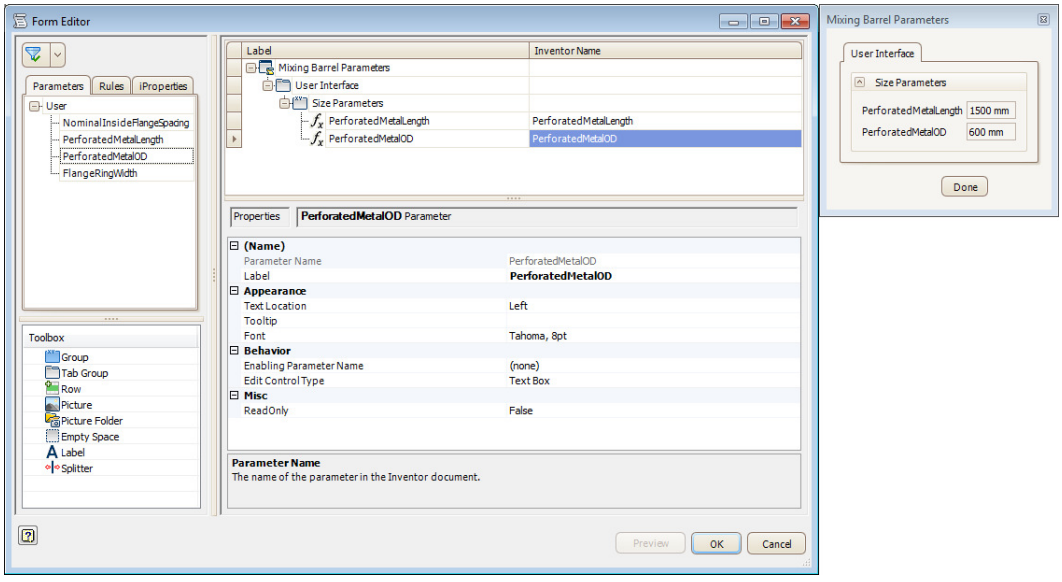
- Click on the **Tab Group** label to highlight it and type **User Interface** to rename it



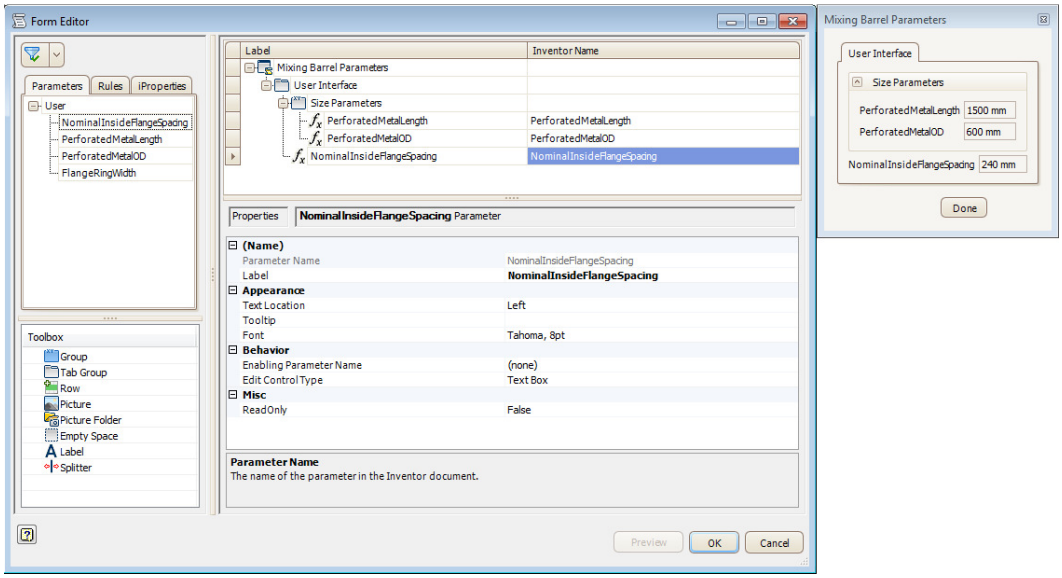
- Add a group to the form by dragging the **Group** item from the **Toolbox** onto the **User Interface** label to add it to the tab group
- Click on the **Group** label and rename it to **Size Parameters**



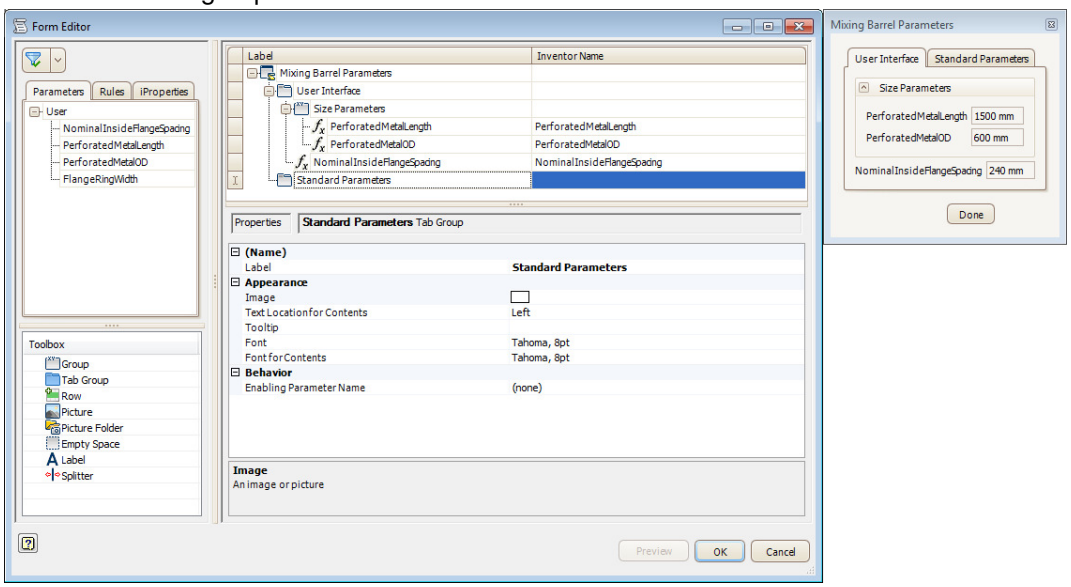
- Add the parameters **PerforatedMetalLength** and **PerforatedMetalOD** to the group by dragging the items from the **Parameters** tab onto the **Size Parameters** label



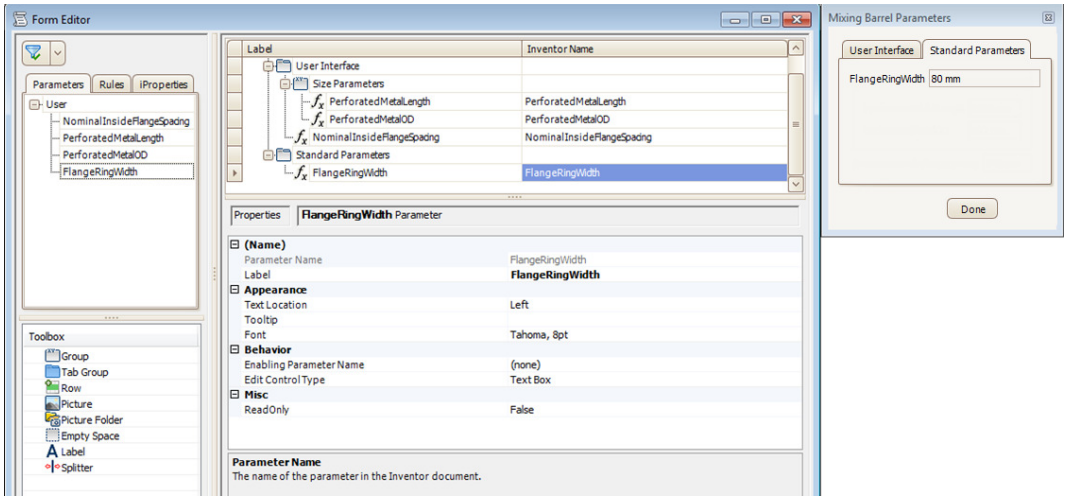
- Add the parameter **NominalInsideFlangeSpacing** to the tab group by dragging it from the **Parameters** tab onto the **User Interface** label



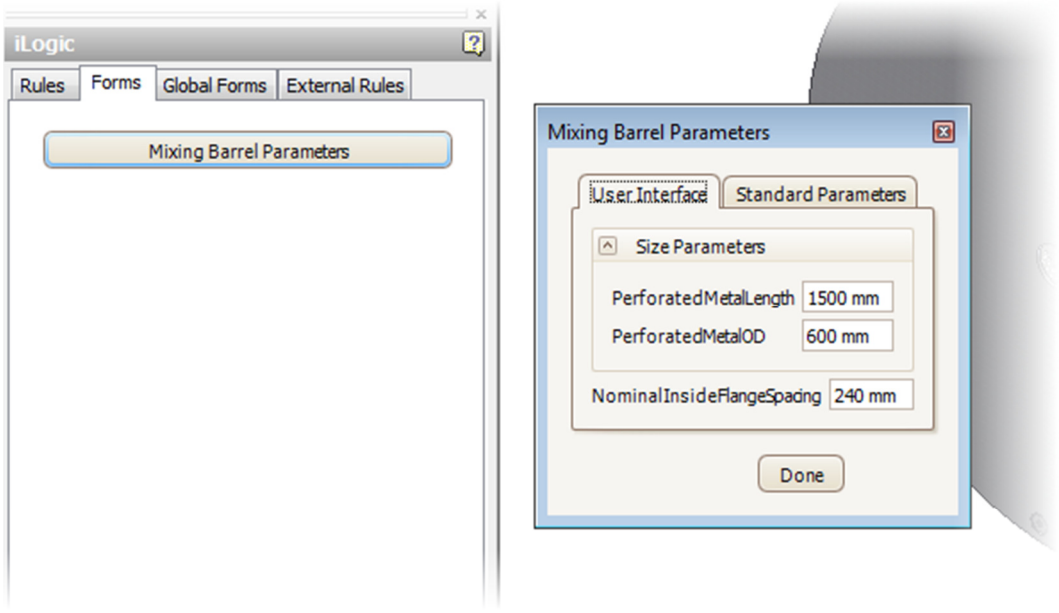
- Add another tab group to the form by dragging the **Tab Group** item onto the **Mixing Barrel Parameters** label
- Rename the tab group to **Standard Parameters**



- Add the **FlangeRingWidth** parameter to the **Standard Parameters** tab group



- Click **OK** to close the dialog box and add the form to the design
- Click on the **Mixing Barrel Parameters** button in the **Forms** tab in the **iLogic** browser to open the form



- Drive the design by entering various values for each parameter in the form and note how the model changes

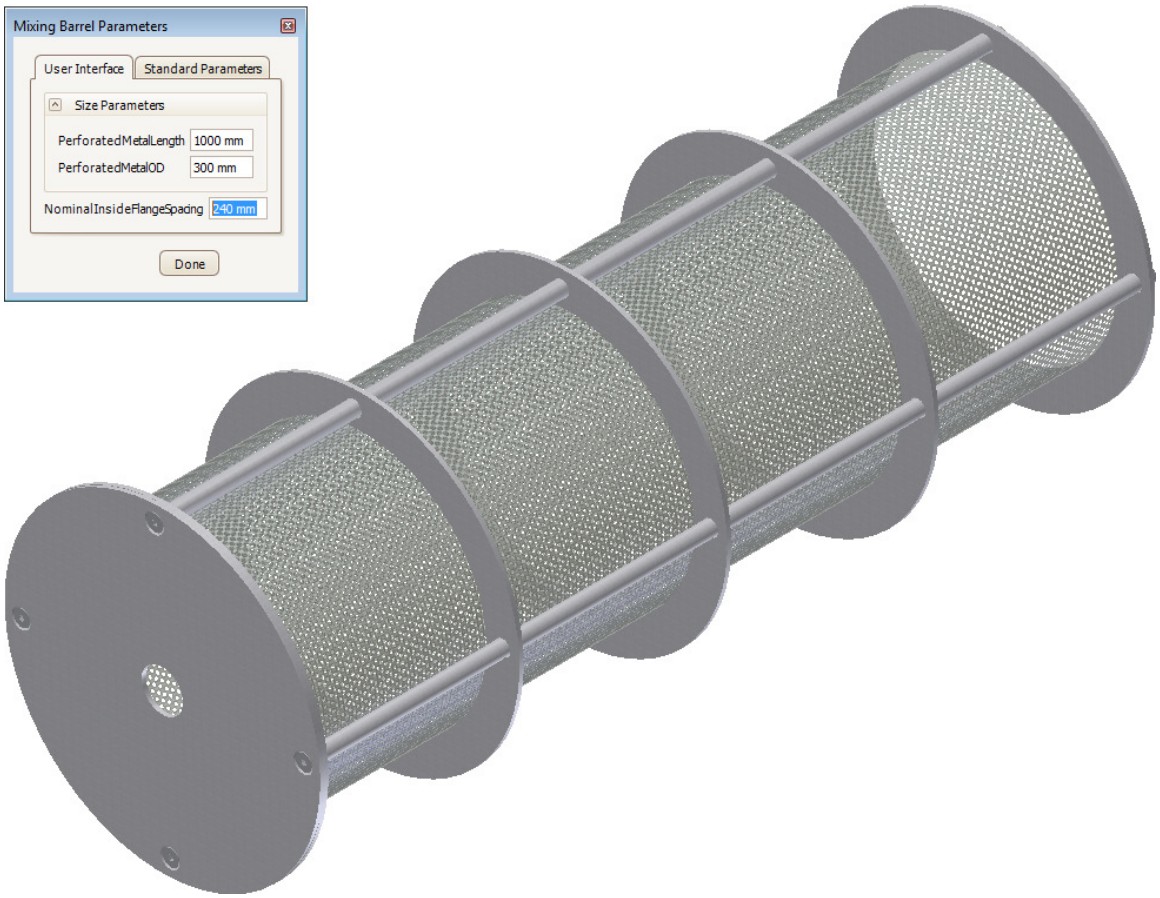
21. Close the file. Do NOT save.

22. The File result has been provided… it is named ***MIXING BARREL with rule.iam.***

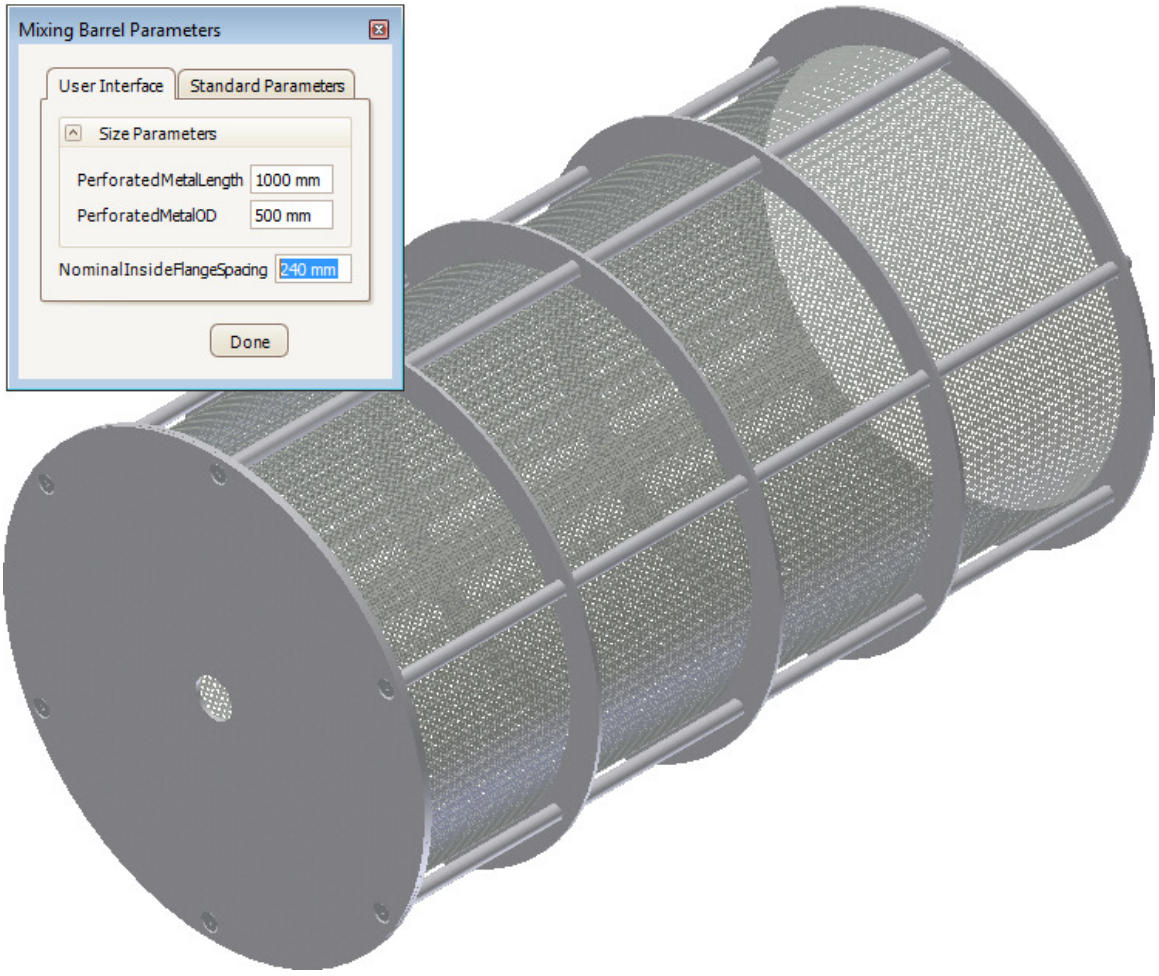
1.2 Challenge Exercise

1. Add an **If-Then-ElseIf** statement to the rule to do the following
    - **When PerforatedMetalOD <=450**
        - **HoleQty = 4**
    - **When PerforatedMetalOD > 450 and <=600**
        - **HoleQty = 6**
    - **Every other PerforatedMetalOD**
        - **HoleQty = 8**

2. **PerforatedMetalOD = 300**



3. **PerforatedMetalOD = 500**



4. **PerforatedMetalOD = 700**