.SAT TO .RFA:

Use the SAT file exported from other applications to become Revit MEP "smart" families

Check out if :

1. Using applications like Solid works, Rhino, ProE, Inventor etc for 3D modeling of Mechanical equipments, parts etc?
2. Do these parts created in the above mentioned applications need to be used in Revit?
3. Are they just imported into the Revit Project making them just Dummy objects?
4. Not able to Use the Sat Models like the Revit families?

   If Yes to one or all of the above, check out this Tutorial to make use of the readily available SAT files to become Revit families.

In this example I will convert the SAT file of Pump exported from Solidworks

OPEN FAMILY TEMPLATE

Review these before you begin:

1. What units are used?
   Open family templates from the Metric or Imperial templates based on the units used for Sat files.
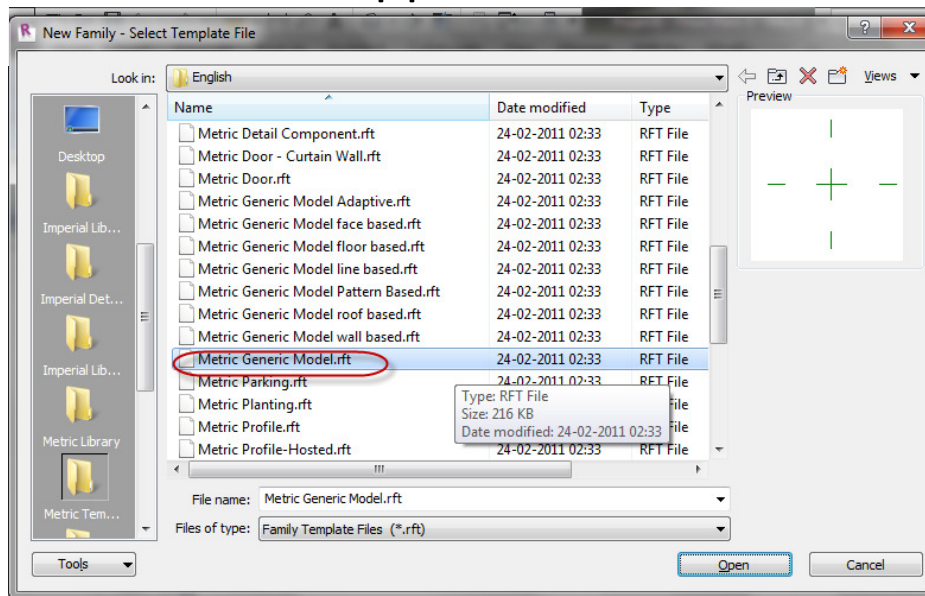
2. Which family template to use?
   Choose correct .rft file according to the category in the project, Eg a pump will belong to Mechanical equipment.rft, a Duct elbow belongs to Duct Elbow.rft

   OR

   Start with Generic model .rft & then Categorize the family.

3. Go to Application Menu→ New → Family→ M_Generic Model.rft

CATEGORIZE THE FAMILY

4. Go to Family Category & Parameters

5. Select from the list the type of Category, in this case Mechanical Equipment

6. Check out the family parameters options available.

7. The Part type Breaks into signifies the parts that can be joined into the pipe segments or Duct runs, eg Valves OR pipe fittings category lists different types of fittings like elbow, tee, cap etc.

IMPORT SAT FILE

8. The next stage is to import the SAT file. Go to insert tab→ import CAD→choose ACIS SAT file type & select the file→ Open

9. A Message & a warning appears which can be ignored in most of the cases.
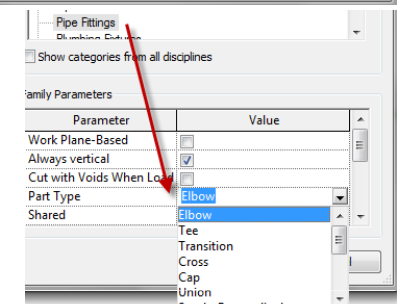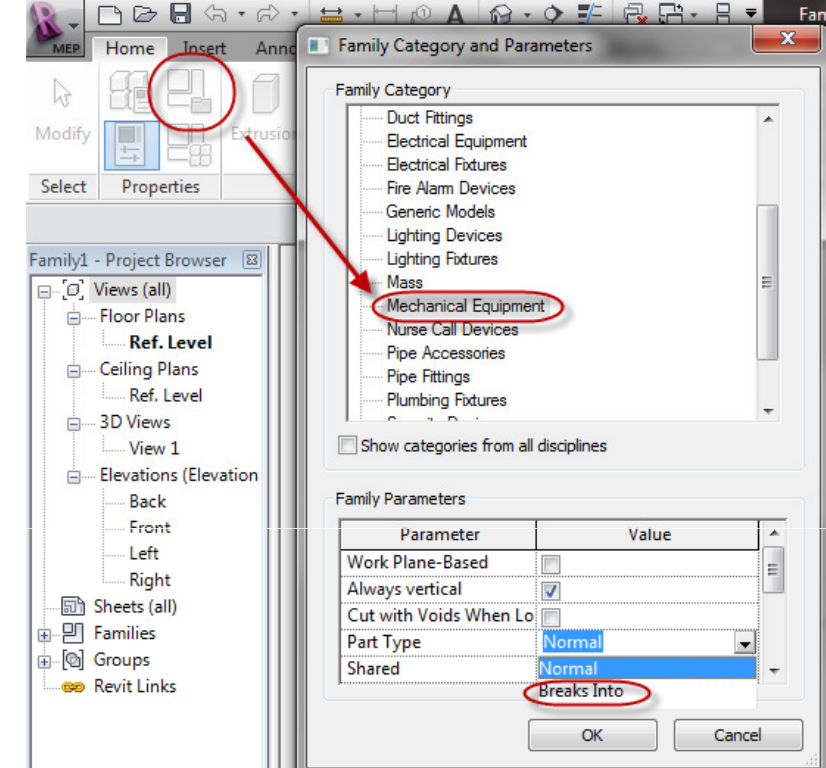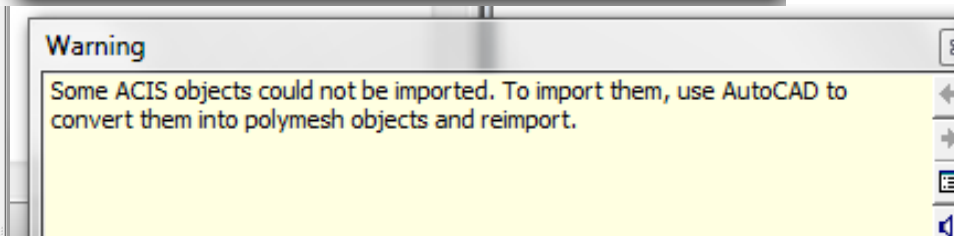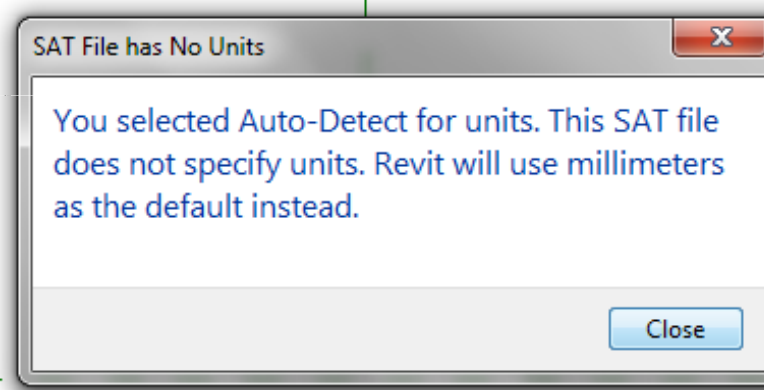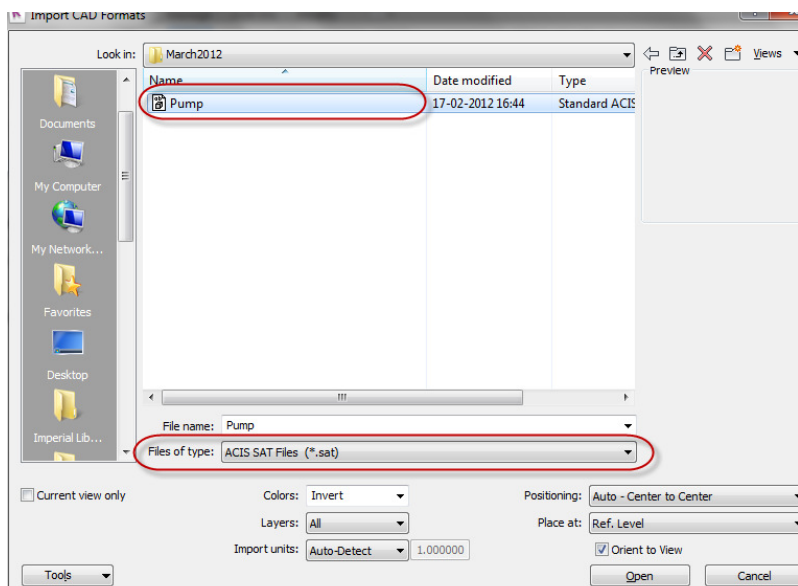
CORRECT ORIENTATION & PLACEMENT

10. Correct the orientation of the Pump. Go to the Elevation views→ Select the object→ Use Rotate Tool to correct the orientation.

11. Use Move & Align Tools to place correctly along the Centre line & Bottom Reference plane as shown.
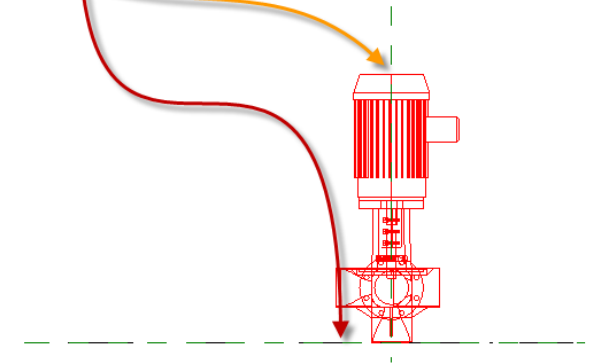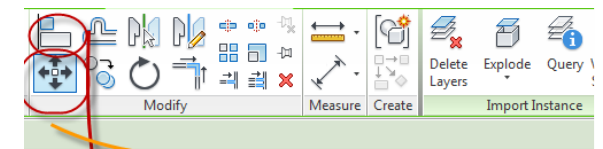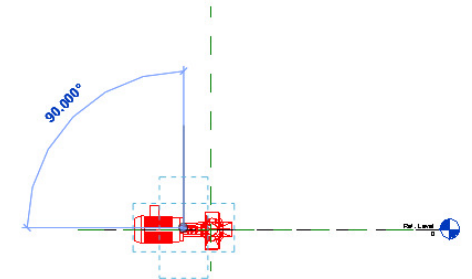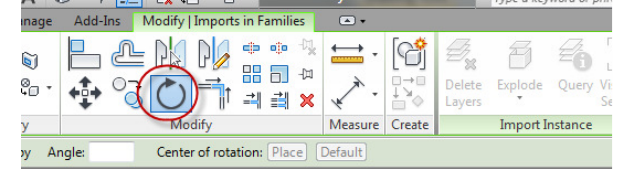
ADD CONNECTORS

12. Adding the connectors to the model breathes in life into them & makes them the 'smart' models

13. Go to Home tab→ pipe connectors→place on face→ select the face where the pipe has to connect in the model.

14. Select the connector & adjust its radius in the properties, create a parameter for controlling the radius in the project.

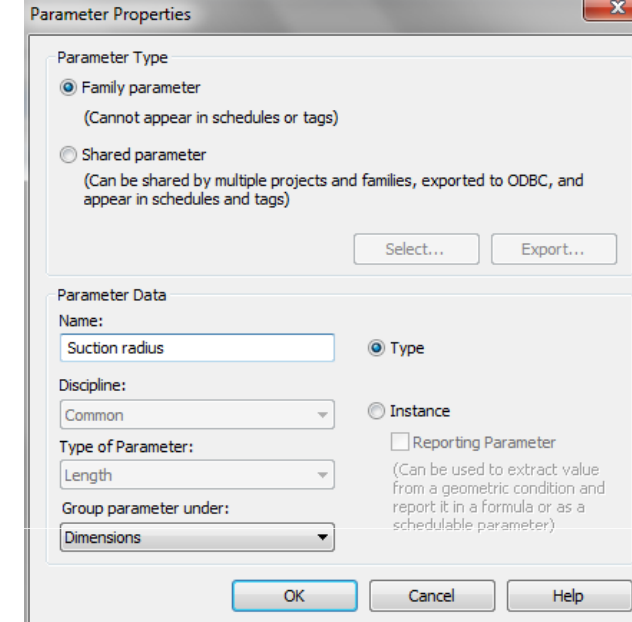15. Click on the extreme right of the radius parameter, add parameter
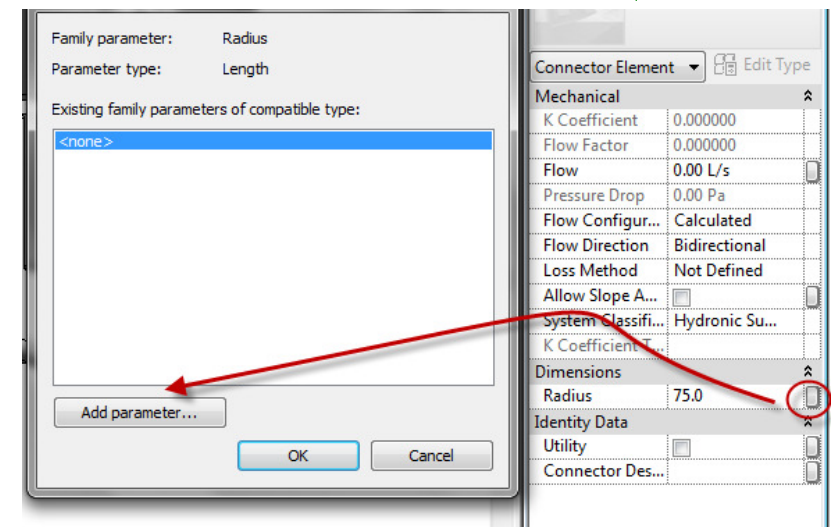
16. Give parameter name, choose Type or instance , OK. Here, Suction radius of type parameter.

17. In the properties of the connector, choose the system classification based on the type of pipe & system, here, Hydronic return with flow direction as In.

18. Similarly place another pipe connector on the other side of the flange, with the radius parameter as Discharge radius of type & having Hydronic Supply system classification & flow direction Out in the connector property.
•The two Connectors can be linked, select one connector → choose Link Connector→ select the other Connector.
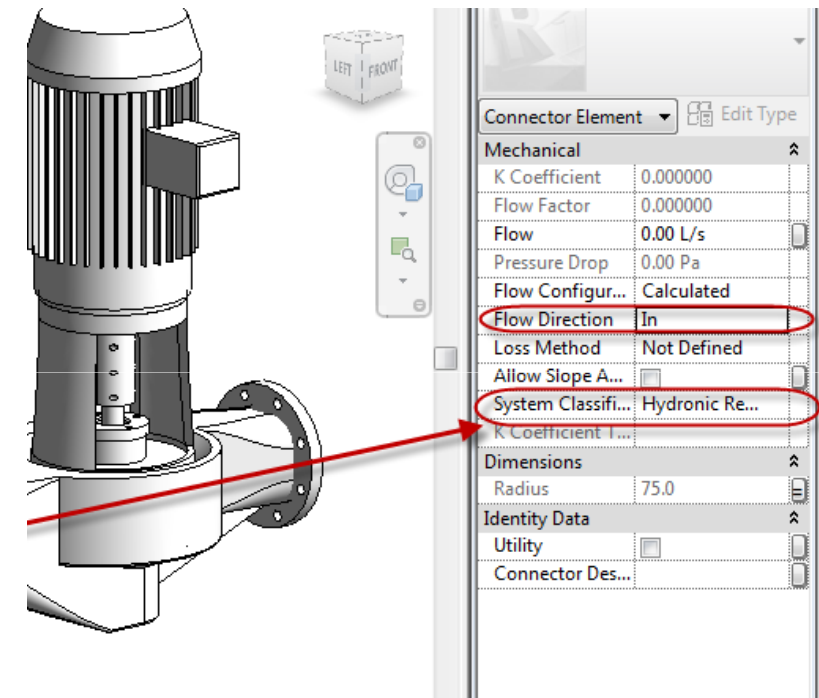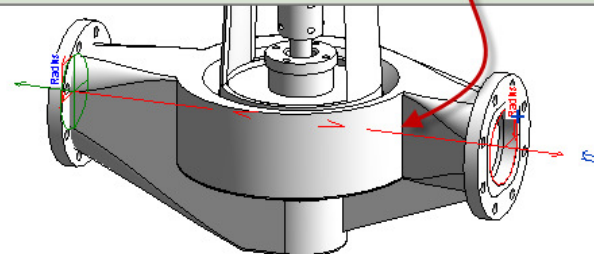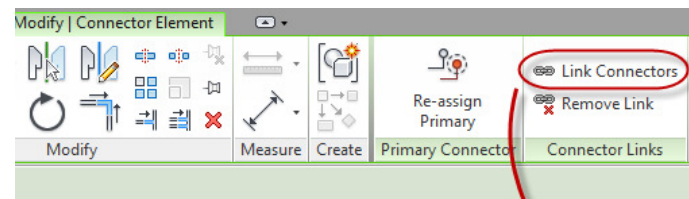
SYMBOLIC REPRESENTATION IN PLAN & ELEVATION

The object has to be viewed as it is in 3D view, but should have custom representation in Plan & elevation views

19. Go to top view, select the import object, visbility settings in the Ribbon, switch off the visibility of the object in all the views

20. Go to Annotate tab→ select Symbolic lines & sketch the plan view representation when placed in the project. Repeat the same in Front & Left views.
Alternatively,

TIP: You can create a detail component family of all the views(Top, Left & front) & place them using Annotate→ Detail Component tool in the respective views the respective component family. Use this method when you have the 2D views readily generated from AutoCAD or exported as dwg format from other applications. It saves time drawing the symbolic lines.
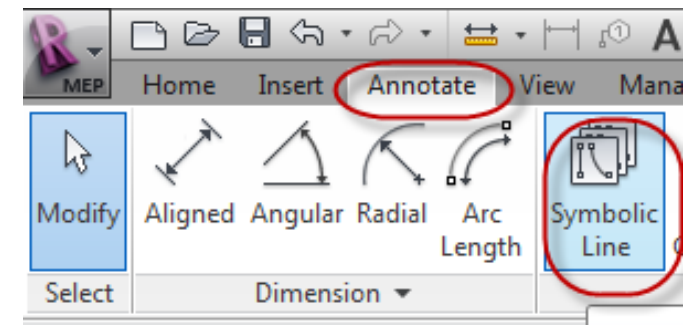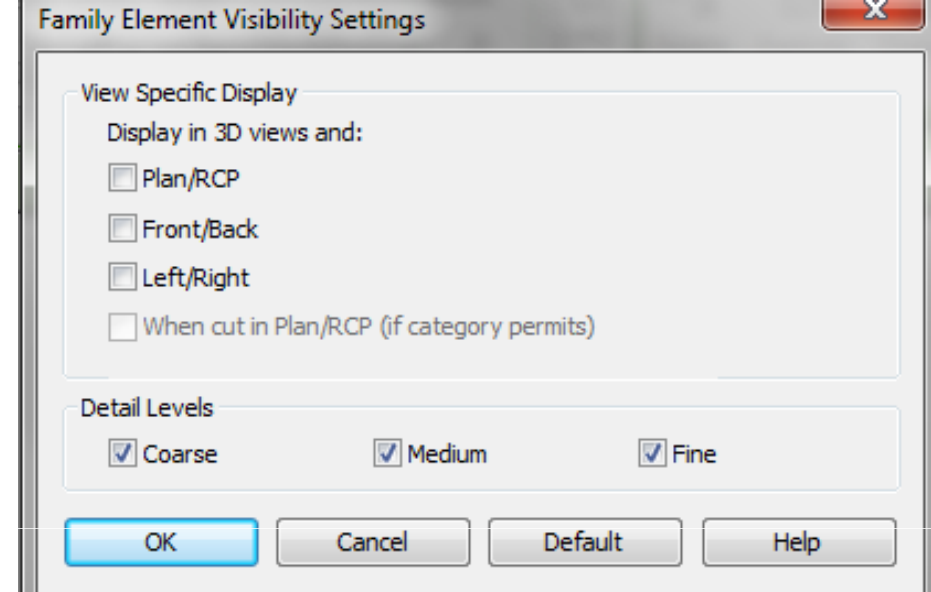
21. Save the file & Load into Project & Test the family for the connectors & Symbolic line representations.

These Sat files may not be parametric in nature, but will save time in recreating in Revit, keeping the connector details to make it "SMART" enough to be used effiectively in the project

Note:
To keep the family file size small, construct the geometry as simple as possible avoiding hollow sections, holes , threadings, fins etc where possible since Revit needs only basic geometry representation.
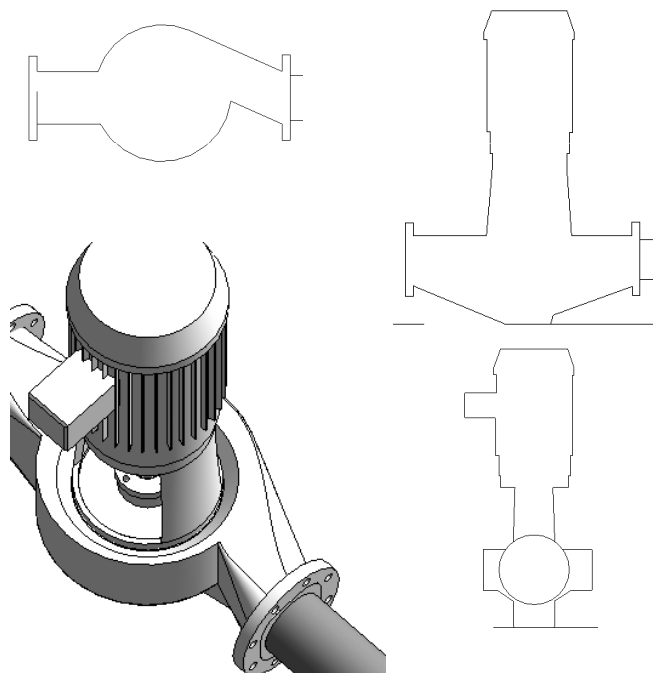
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