Moldflow Plastics Insight
MSE 365

Moldflow is a program that simulates the flow of polymer into the mold. It is used by industry, everyone from part and mold designers who want to check manufacturing feasibility to CAE analysts who need detailed predictions about all phases of part and mold design, manufacturing, and resulting part quality.
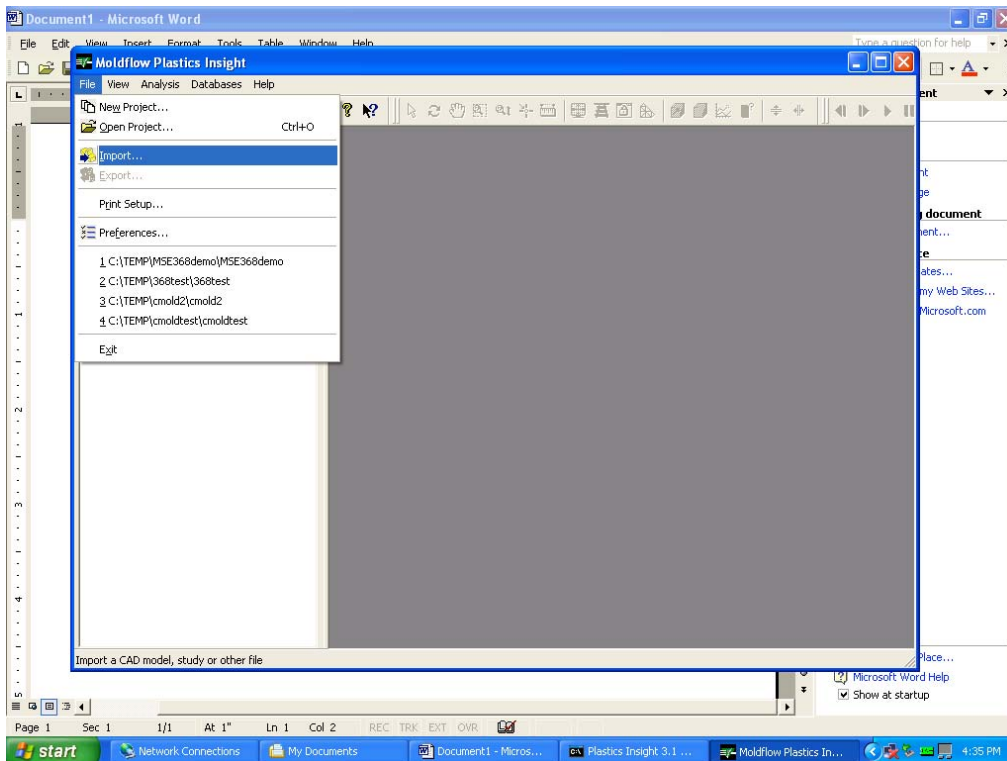
Part I – Setup
Launch Moldflow
Start->Programs-> MoldFlow Plastics Insight 5.1 -> Plastics Insight 5.1
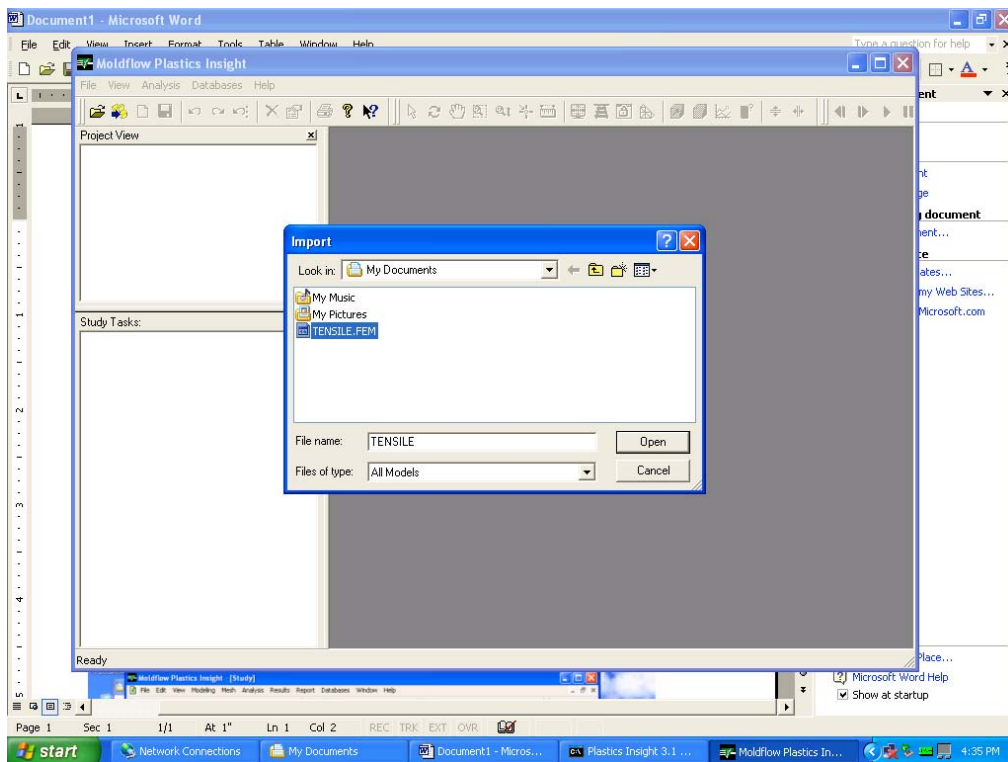
Part II – Design the Simulation
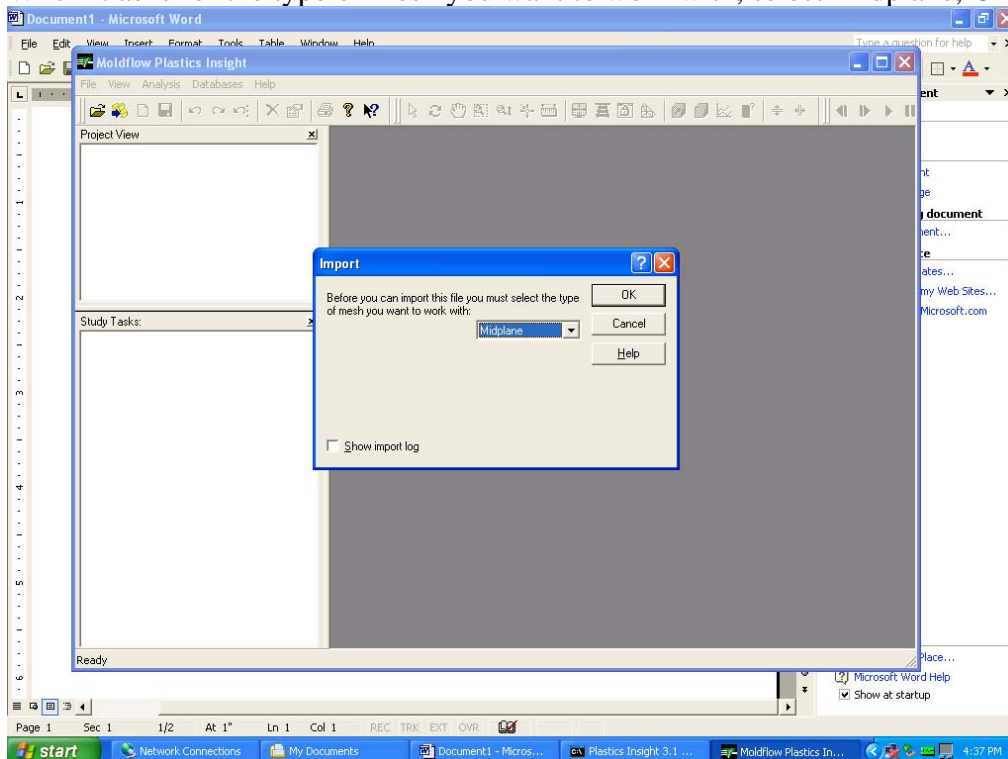Open the .fem file by File-> Import

Navigate to the folder that has the TENSILE.FEM file.

The finite element mesh file is in C:\Courses\mse365\moldflow\TENSILE.FEM
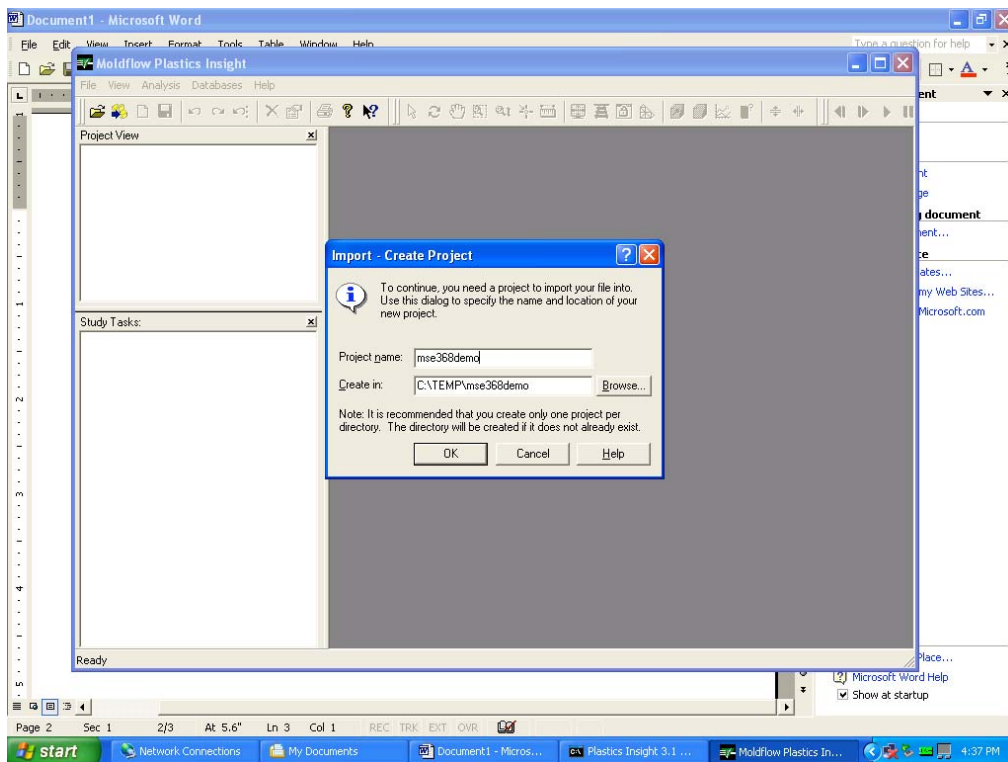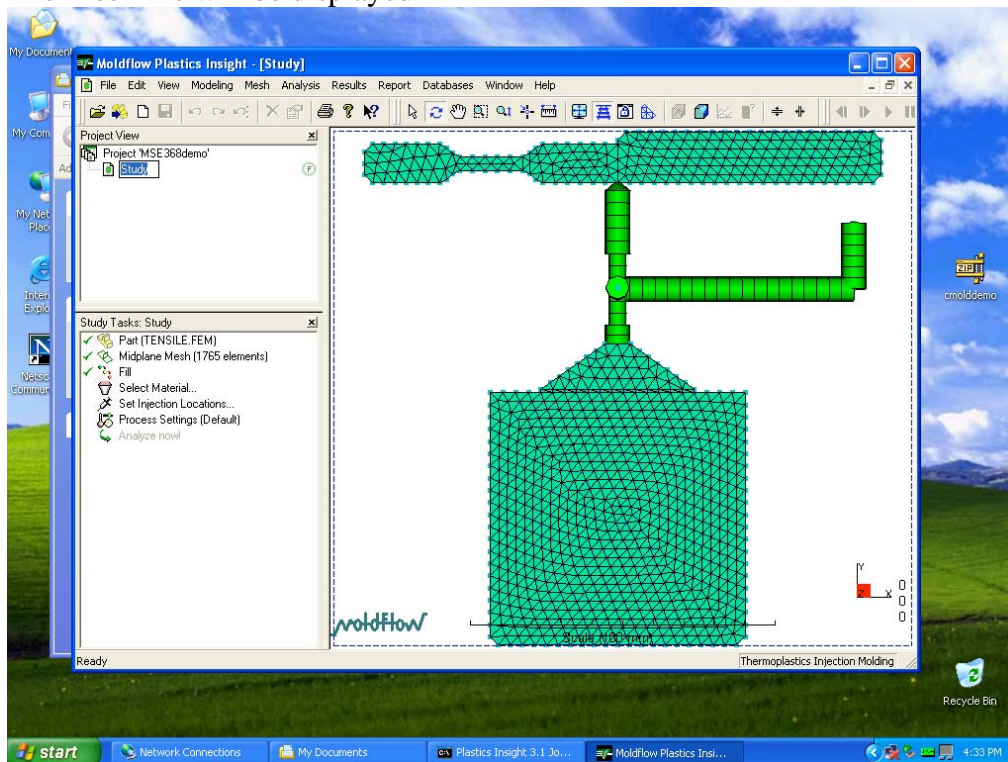
Select TENSILE.FEM, and click OK

When it asks for the type of mesh you want to work with, select Midplane, Click OK

It will prompt you for a project name. Call is something useful (like demoMSE365)

The Mesh file will be displayed

You can move the mold around to see it in all directions. It can be tricky to get it back aligned so you can work with it – it may be easier to start over if you can't get it back. However you can view the "viewpoint" toolbar by going to View->Toolbars->Viewpoint

Now that the part is loaded, we need to setup the process, by choosing the material we are going to mold and the injection molding machine we are going to use.

Double click on Gerneric PP: Generic Default from the "Study Tasks" pane. In lab, you will be working with High Density Polyethylene (HDPE) and Polypropylene (PP). Choose the manufacturer as Fina Oil and Chemical Company and the trade name is Fina 3720Z. for PP. The manufacturer is Dow Chemicals USA and trade name is HDPE 12450N for HDPE.
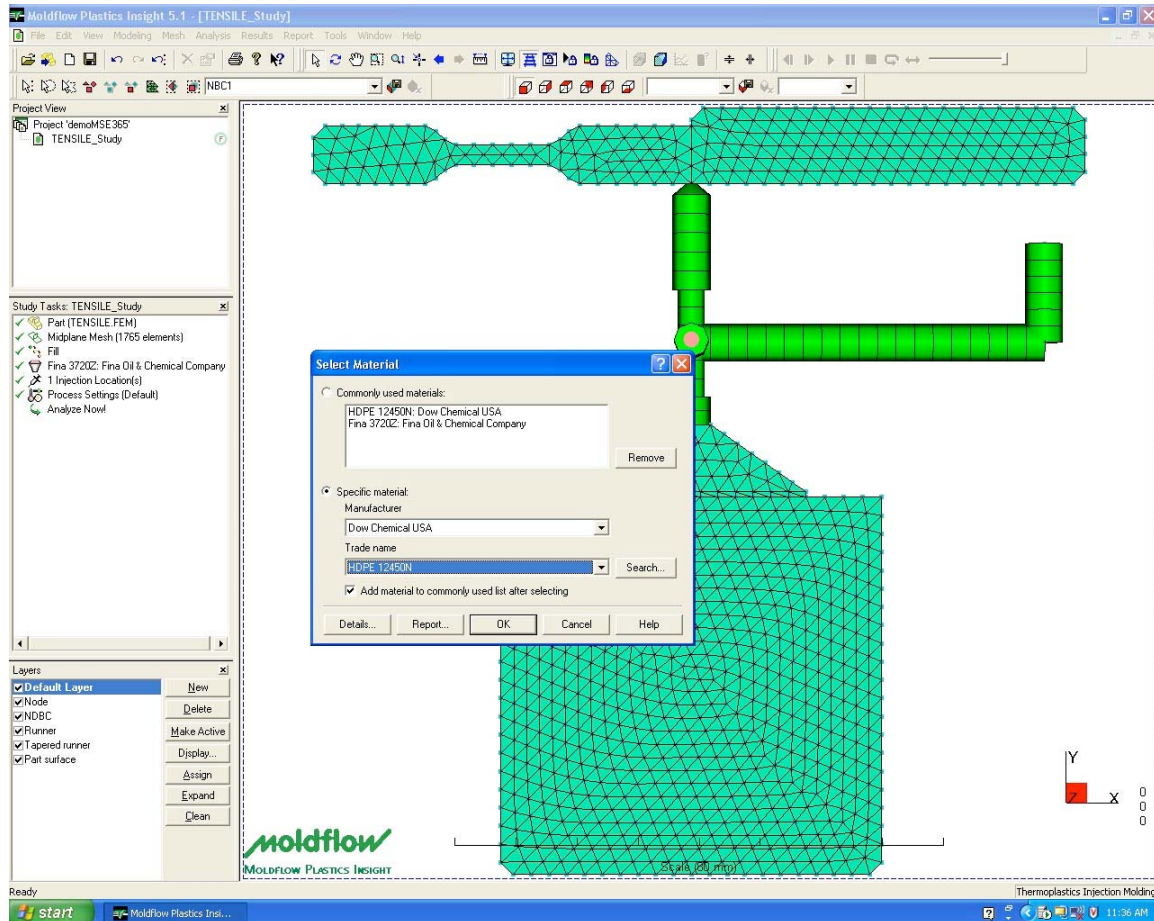
Next, Set the Injection location. Double click on Select Injection locations from the "Study Tasks" pane. Move the cursor over to the right side where the model is. The cursor should look like a plus sign with a cone next to it. Click on the injection location. The injection will change color when you have selected it, and the "Study Tasks" pane will display "1 Injection Locations(s)"

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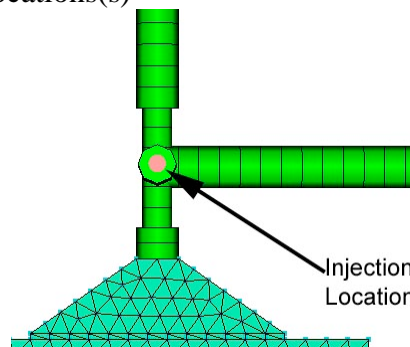
Then, click on Process Settings from the "Study Tasks" pane.
Enter the Mold and Melt Temperatures. The mold temp is 37°C, the melt temperature for PP it is 190°C, PE is 245°C.
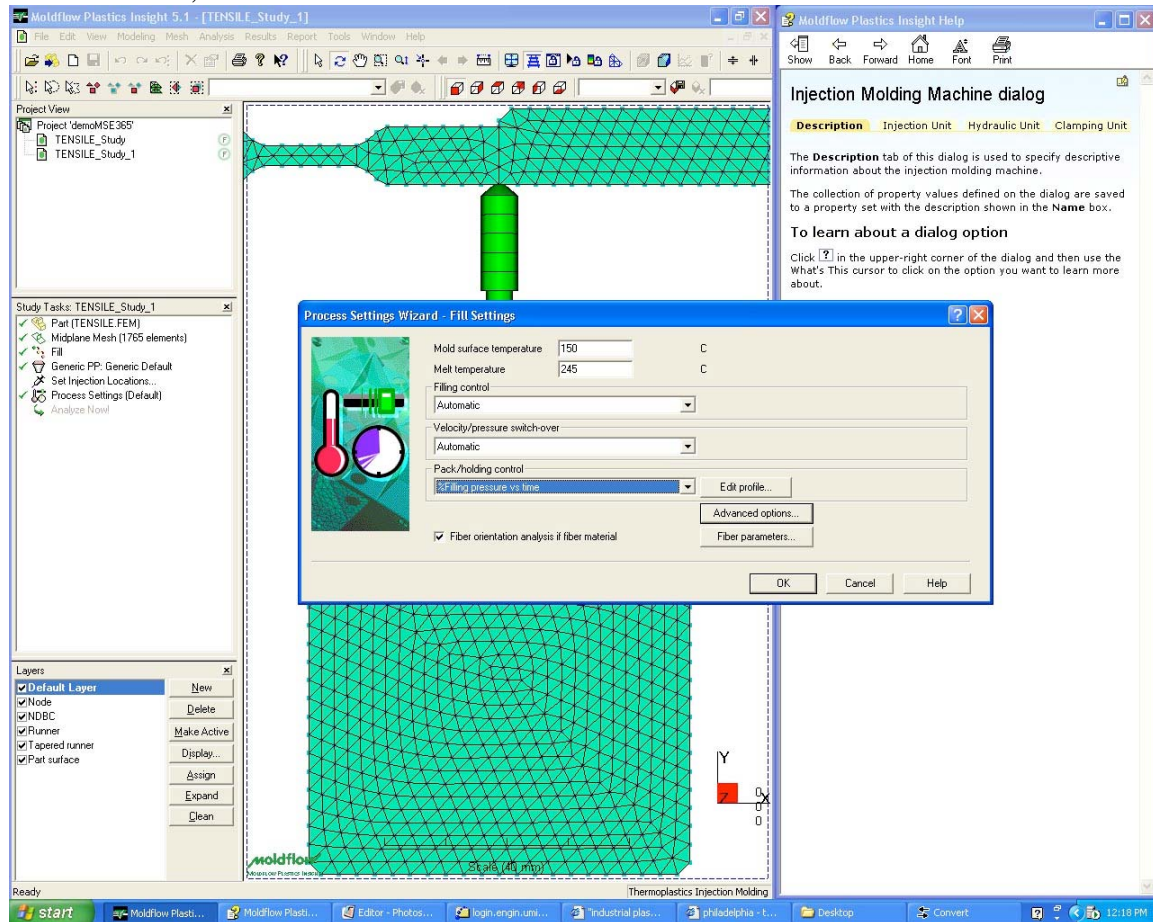
Click Advanced Options… This will allow you to select the Injection Molding machine and the mold material.

Under "Injection Molding Machine" press "Edit..." to edit the default injection molder. Follow the parameters given by the GSI's.
In the lab, you will be using an AMATROL Industrial Plastics Center T9013-P Under "Mold Material" press "Select..." and choose "Aluminum A1" as your mold material.
Press OK twice to exit out of "Process Settings"

The simulation is now setup and ready to run. Double click "Analyze now!" , click OK and wait for the simulation to run.

The injection takes around 1.5-4 seconds, depending on which material you chose. The simulation takes about 2 minutes or so, depending on what else the computer is doing. The computer will display a dialog box when the simulation is complete.

Part III - Analysis
Now that the simulation is complete, we can examine the results, make any adjustments necessary, and re-run it to get a good part.

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