

# SIMULATION AND VALIDATION USING SIMULIA

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There are various types of commercial software available in market, and have different potentials for different approaches. In this chapter, Simulia is used for CFD and thermal simulations; and is illustrated with examples. The solution to a problem is explained in a step wise snapshots during each succession of processes in simulation. The steps adopted for any solution is to import CAD files in .step/.stp or .igs files and then setting the pre-processing steps like material selection and setting of physics problems. After that meshing is completed and setting the boundary conditions as specified in the problem. Then, simulation is run after the updating of simulation steps up to meshing. The following problems and their solutions are depicted below:

## Simulation-1

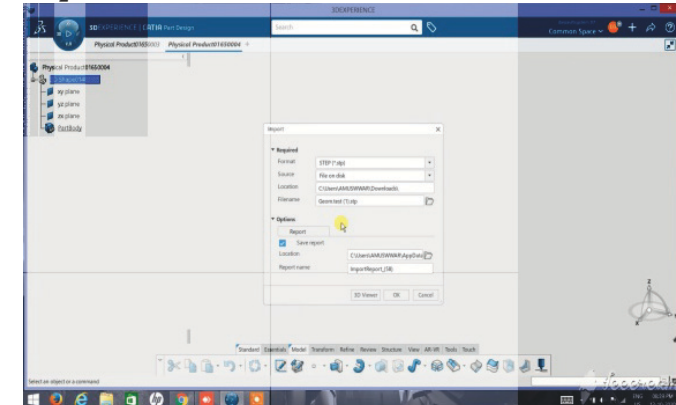
Question: - A 90° flanged solid elbow in step format is attached herewith this question. Determine the velocity, temperature and pressure distribution in the pipe; if inlet to it has a mass flow rates of 0.08 kg/s and temperatures of 30 °C.

Also, a heat flux of 2000 W/m<sup>2</sup> is applied on the pipe's outer lateral surface. Use water as the fluid material and aluminium as the pipe material.

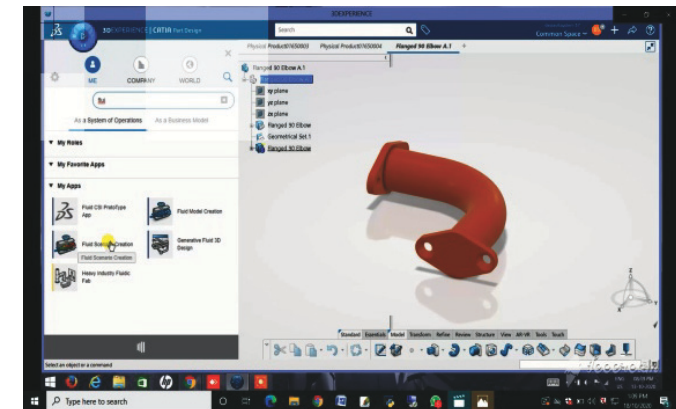
Procedures: -

First of all, we have to import the CAD model to the 3-D

experience software.



After the completion of importing we have to open the fluid scenario creation by clicking the 3-D button from 3-D Experience. After doing this it will create the physics of the elbow.



Now we have to select the material inside the elbow (i.e. water)