Pump Analysis Performed by AcuSolve Pump

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Contents

1 Background

Some background information.

2 Problem description

The geometry is given in Figure 1.

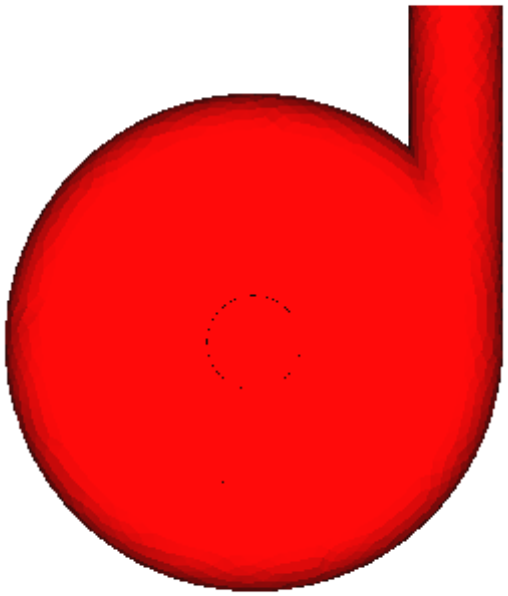


Figure 1: Geometry of the problem

2.1 Mesh

The geometry is given in Figure 2.

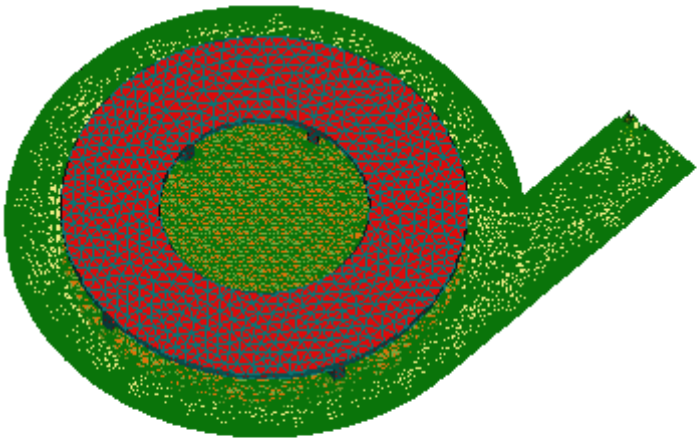


Figure 2: Geometry of the mesh

2.2 Solver Settings

Material model is given by:

Material Model for Fluid 'Water'

- *Density Model*
  - *Type = Constant*
  - *Density = 1000.0*
  - *Isothermal compressibility = 0.0*
- *Viscosity Model*
  - *Type = Constant*
  - *Viscosity = 0.001*
  - *Multiplier function = None*

Rotational speed is 10

Pressure Drop (Pa)	Mass Flux (Kg/sec)
2506.57	-2.00
13707.15	-4.00
24949.46	-6.00
36406.80	-8.00
48129.20	-10.00

Table 1: Fan performance

The fan performance curve is given in Figure 3 and Table 1

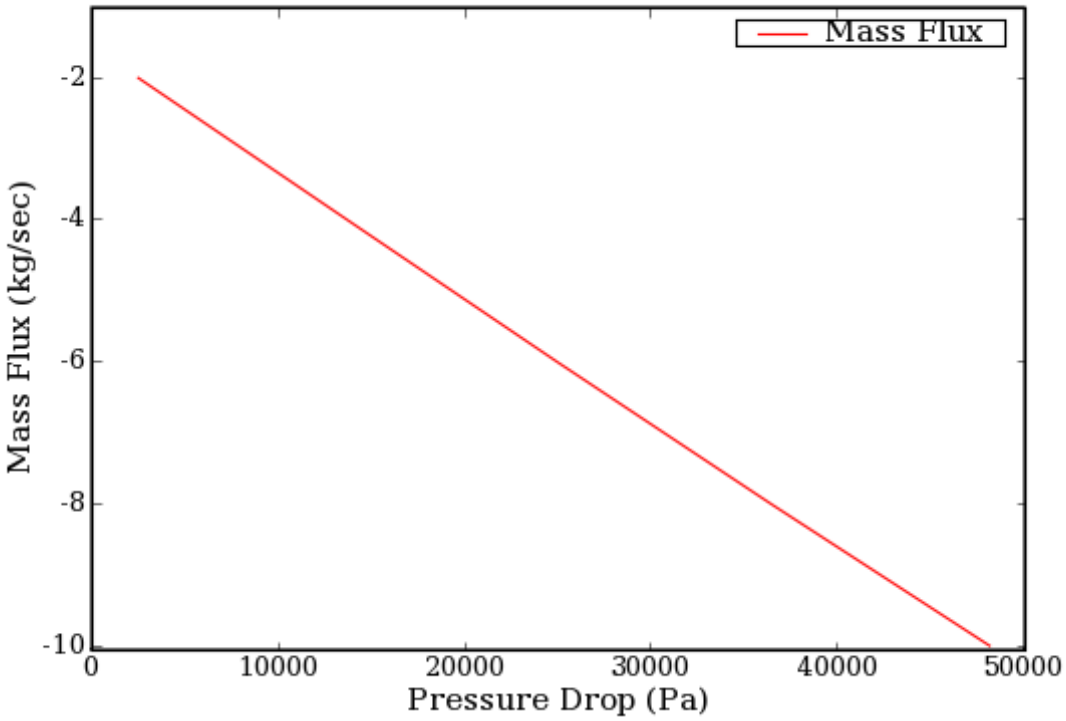
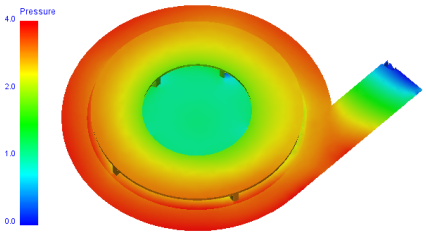


Figure 3: Fan performance

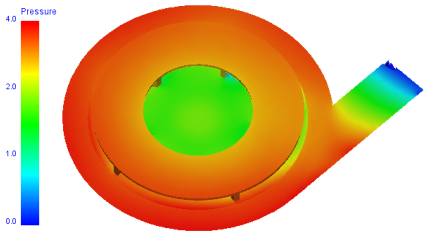
3 Results

The results are given in the following figures.

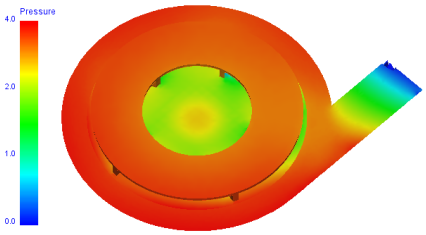
The pressure distribution are shown in the following figures.



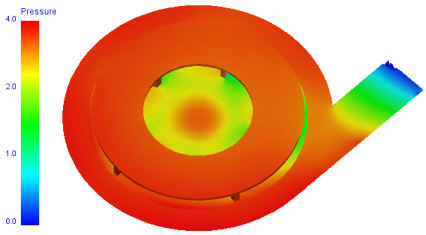
a. mass flux = -2



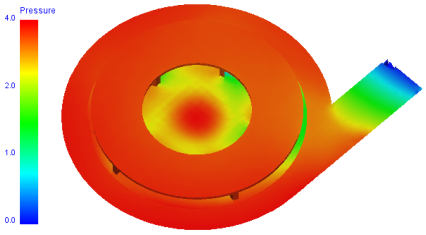
b. mass flux = -4



c. mass flux = -6



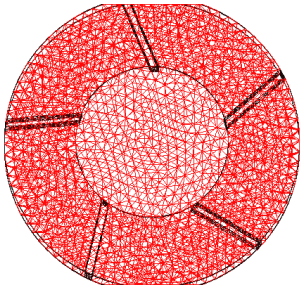
d. mass flux = -8



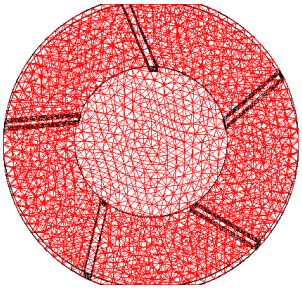
e. mass flux = -10

Figure 4: Pressure contour on center plane

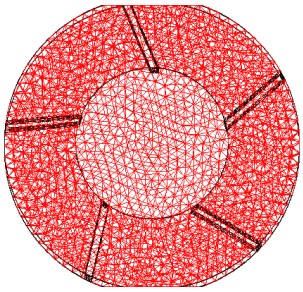
The velocity distribution are shown in the following figures.



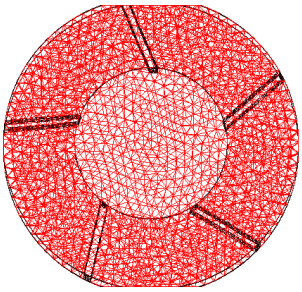
a. mass flux = -2



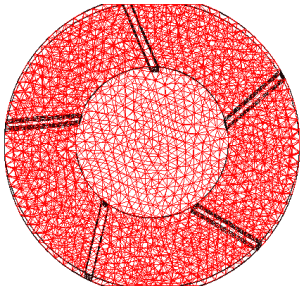
b. mass flux = -4



c. mass flux = -6



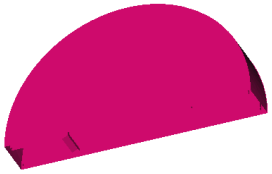
d. mass flux = -8



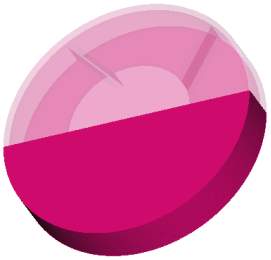
e. mass flux = -10

Figure 5: Velocity vector on center plane

Several samples of clipping are shown in the following figures.

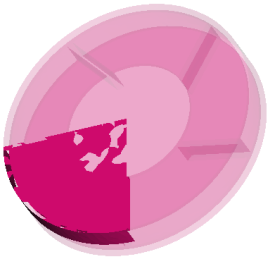


Fully-Transparent 'Up' Clip Plane

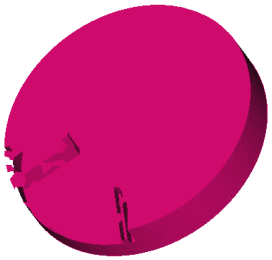


90%-Transparent 'Down' Clip Plane

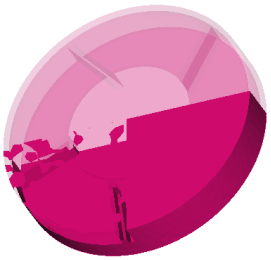
Fully-Transparent 'Max' Clip Box



90%-Transparent 'Max' Clip Box



Fully-Transparent 'Min' Clip Box



90%-Transparent [Prep by a Clip-Plane] 'Min' Clip Box

Figure 6: Clipping Samples

4 Conclusions

Some conclusion goes here