Problem Specification. 1. Create Geometry in GAMBIT.

- 2. Mesh Geometry in GAMBIT.
- 3. Specify Boundary Types in GAMBIT. 4. Set Up Problem in FLUENT.

5. Solve.

6. Analyze Results

7. Change the domain size.

8. Unsteady Flow.

Problem Set.

Citations.

Analyze Results

Drag / Lift coefficients

Report > Forces >

Under Force Vector, we set X = 1 and Y = 0 to identify the direction of drag force. Click Print to see what's displayed in the main window.

Options	Force Vector	Wall Zones 🔳 🗏
Forces Moments Center of Pressure Wall Name Pattern	X 1 Y 0 Z 0	eylinder wall
	Match	
Print Wri	te Close	Help

tone name	Pressure Force	viacous duras	2014L	confidence.	coefficient.	coefficient
egilinder nati	0.67449809	0.35555719	1.030363	1.3409962	0.71111438	2.0601106

Plot convergence of the drag coefficient versus the number of iterations. Report the drag coefficient and compare it with the result in literature as shown in Table 1.

Plot>File

Click Add... choose the file with drag or lift coefficient.

	File XY Plot	0
Plot Title	Legend Title	
Drag Convergence	Cd	6
Files	Legend Entries	
	Drag Convergence	
		Add
FI 1 2		Delete
/home/yin/Courses/ME263/cylind	Drag Convergence	Change Legend Entry
Plot Axes	Curves Close	Help

Before you plot, you can adjust the Axes and Curves to get a better view.

	Curves - File XY	r Plot	
Curve # Lin	ne Style	Marker Style	
Sample	Pattern Color foreground Veight	Symbol Color foreground Size 0.3	
	Apply Close	Help	
Avár	Apply Close	Help Ior Major Bular	
Aods \sim X \Rightarrow Y Label	Apply Close Axes - File XY P Number Format Type exponential Precision 2	Help Iot Major Rules Color background Weight O	V
Aods V Label Options	Apply Close Axes - File XY P Number Format Type exponential Precision 2 Range	Help Major Rules Color background Weight O Minor Rules	T



Close

Help

Apply

Similarly, you can plot the lift coefficient, which should be zero for the symmetric flow. As you can see, the drag coefficient is around 2.1, which is significantly higher than the result in the table. Next, we will try to increase the domain size and repeat the simulation.

Re	40	300	1000
Mittal 2	1.5 3	1.3 6	1.45
Henderson 3	1.5 4	1.3 7	1.51
Marella et al 4	1.5 2	1.2 8	-
Mittal&Balachandar 5	-	1.3 7	-

 Table 1 Mean drag coefficient in literature for the flow past a 2D cylinder.

Go to Step 7: Change the domain size.

See and rate the complete learning module.

Go to all FLUENT Learning Modules