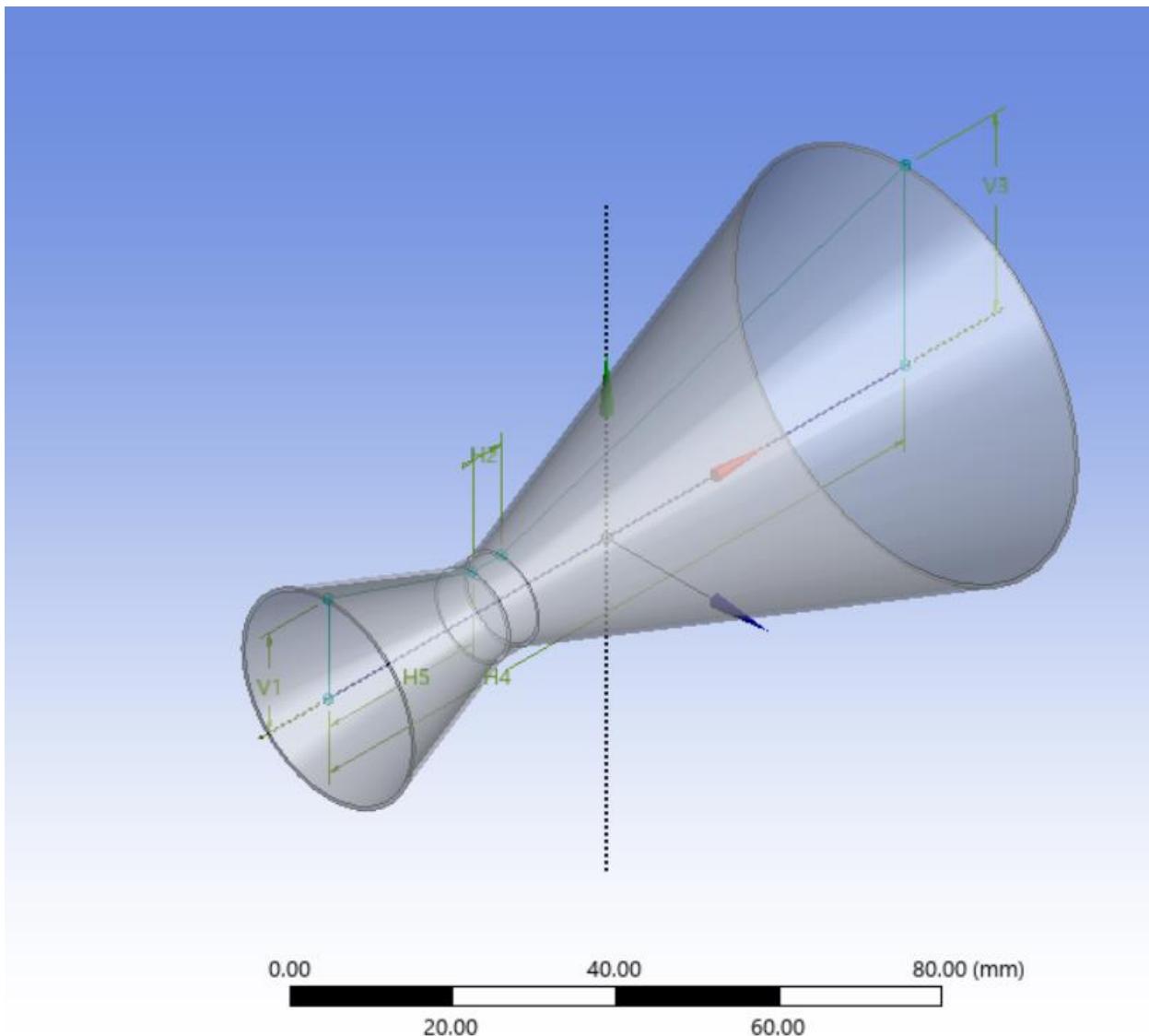


Project 18: ANSYS FLUENT: Fluid flow through a convergent-divergent nozzle

Problem Statement: Calculate the pressure contour inside a steel nozzle with air flowing inside ($v=365\text{m/s}$).

Geometry:



Material Properties:

Name <input type="text" value="steel"/>	Material Type <input type="text" value="solid"/>	Order Materials by <input checked="" type="radio"/> Name <input type="radio"/> Chemical Formula
Chemical Formula <input type="text"/>	Fluent Solid Materials <input type="text" value="steel"/>	Fluent Database... GRANTA MDS Database... User-Defined Database...
	Mixture <input type="text" value="none"/>	

Properties

Density [kg/m ³] <input type="text" value="constant"/>	<input type="button" value="Edit..."/>
<input type="text" value="8030"/>	

Name <input type="text" value="air"/>	Material Type <input type="text" value="fluid"/>	Order Materials by <input checked="" type="radio"/> Name <input type="radio"/> Chemical Formula
Chemical Formula <input type="text"/>	Fluent Fluid Materials <input type="text" value="air"/>	Fluent Database... GRANTA MDS Database... User-Defined Database...
	Mixture <input type="text" value="none"/>	

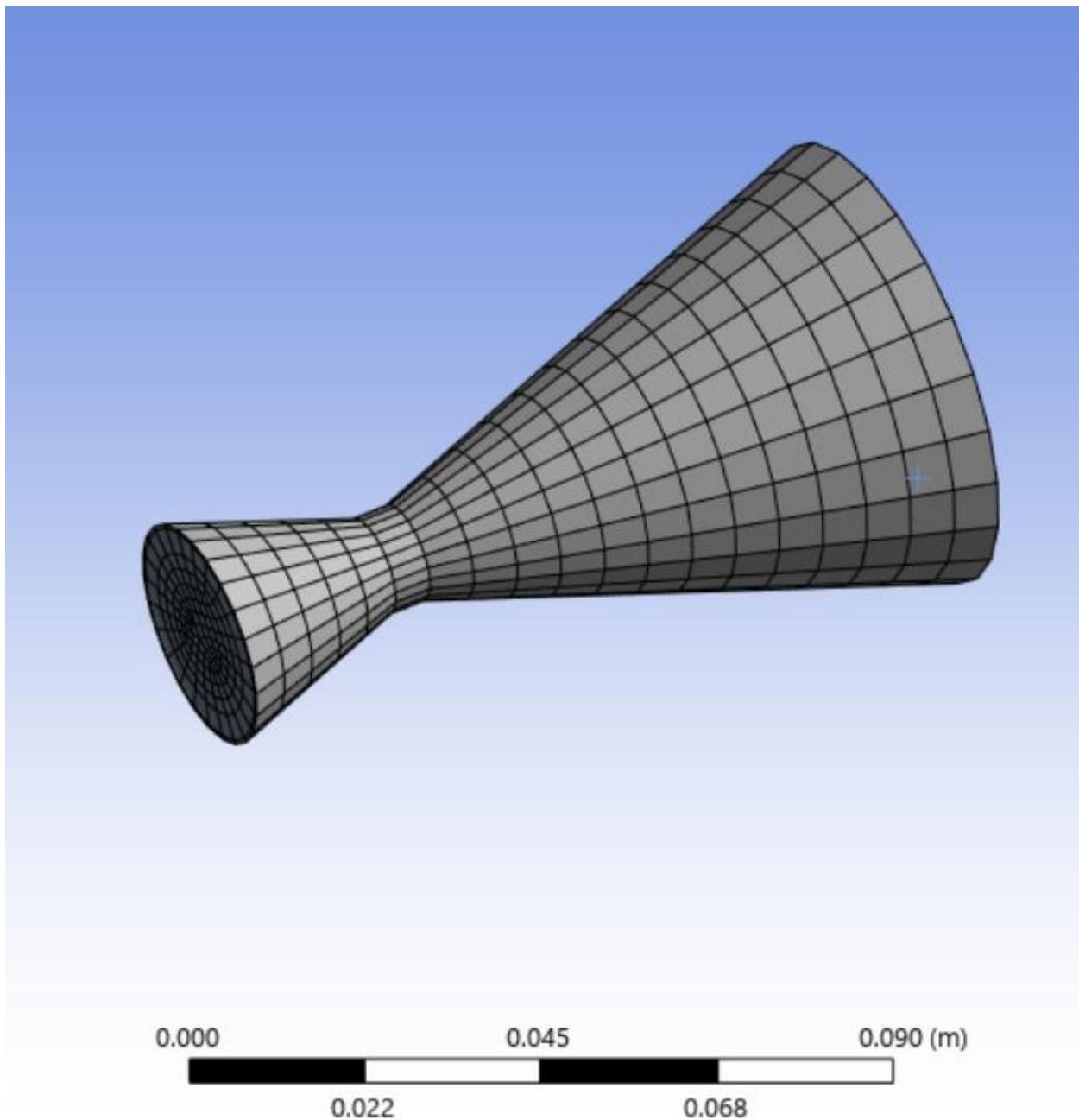
Properties

Density [kg/m ³] <input type="text" value="constant"/>	<input type="button" value="Edit..."/>
<input type="text" value="1.225"/>	
Viscosity [kg/(m s)] <input type="text" value="constant"/>	<input type="button" value="Edit..."/>
<input type="text" value="1.7894e-05"/>	

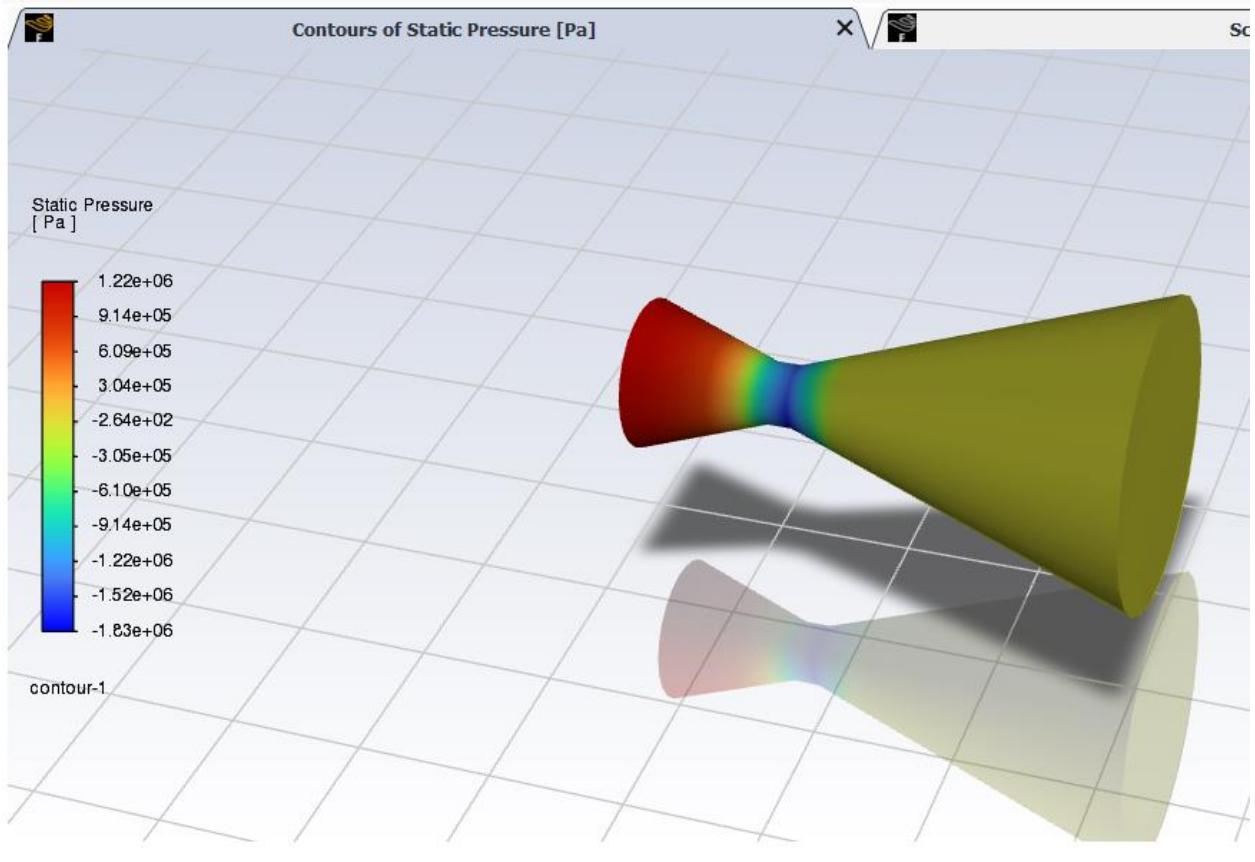
Boundary Conditions:

Inlet: $v=365\text{m/s}$. Outlet: $p=0 \text{ Pa}$.

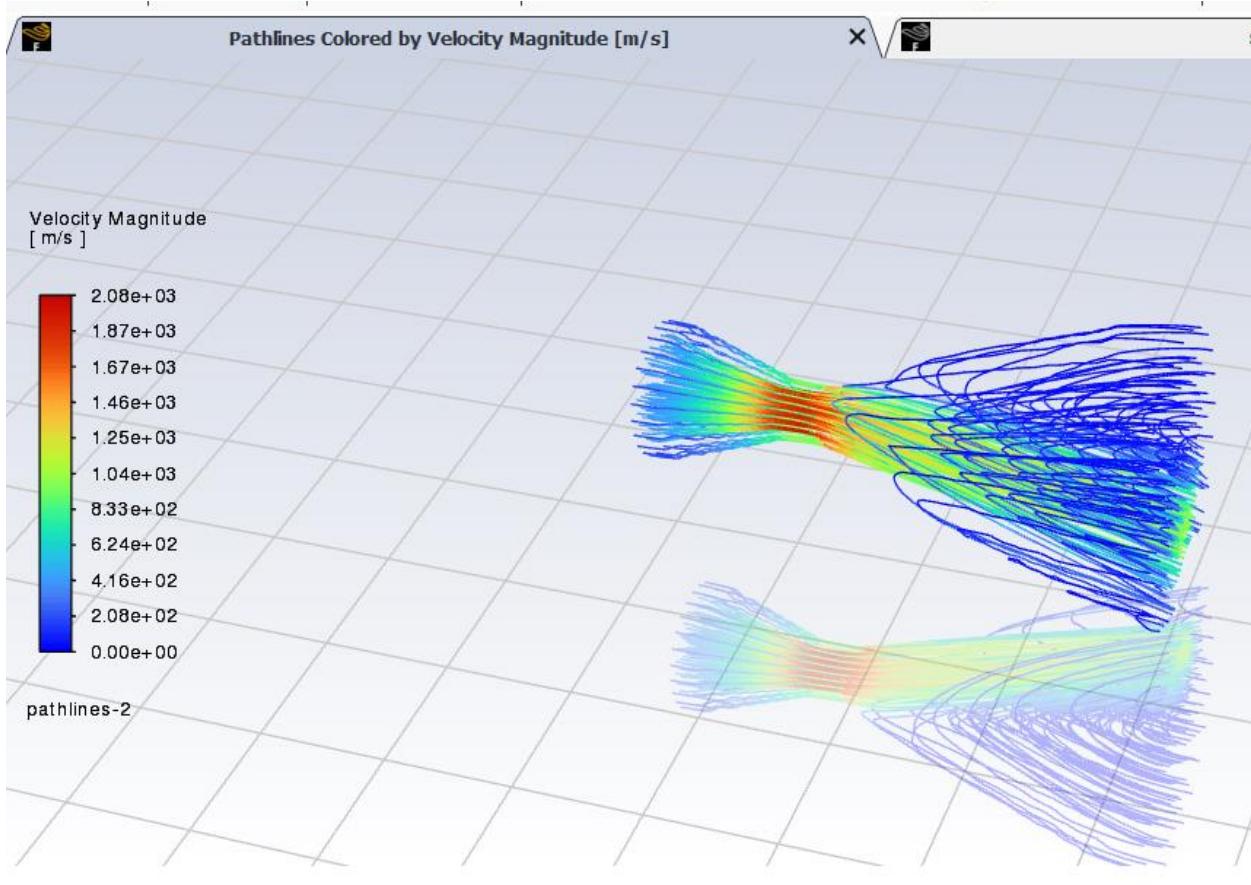
Mesh:



Results: Pressure Contour inside the nozzle.



Velocity Pathline:



Dynamic Pressure Pathline:

