LPG Storage Tank

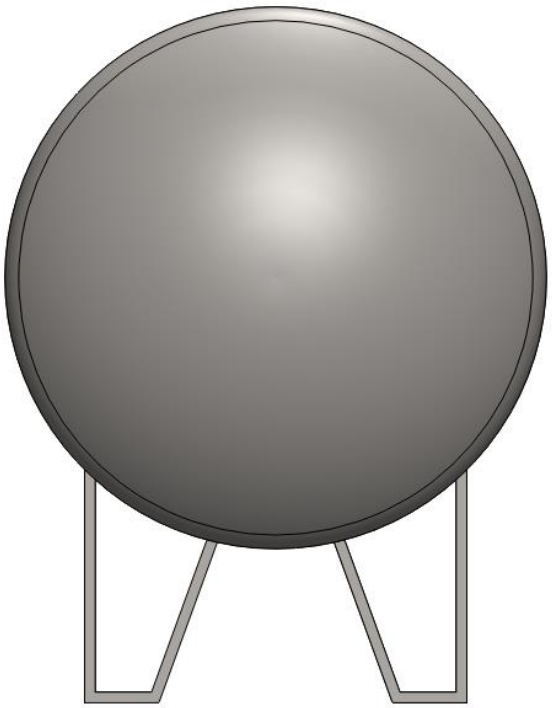
By: Saroj Basnet(077BME037)

Specification	**Value**
Capacity	1000 Ltr +
Type	Horizontal Cylindrical with Torispherical Ends
Outer Diameter (D)	1.0 m
Straight Cylinder Length (Lc)	1.28 m
Total Tank Length (Lt)	1.78 m (including end caps)
Wall Thickness (t)	10 mm
End Cap Type	Torispherical
End Cap Depth (h)	0.3 m (on both sides)
Shell Material	Stainless Steel 304
Inside Pressure	15 bar
LPG density	530 kg/m^3
Liquid LPG Level	0.4 m high from center of cylinder

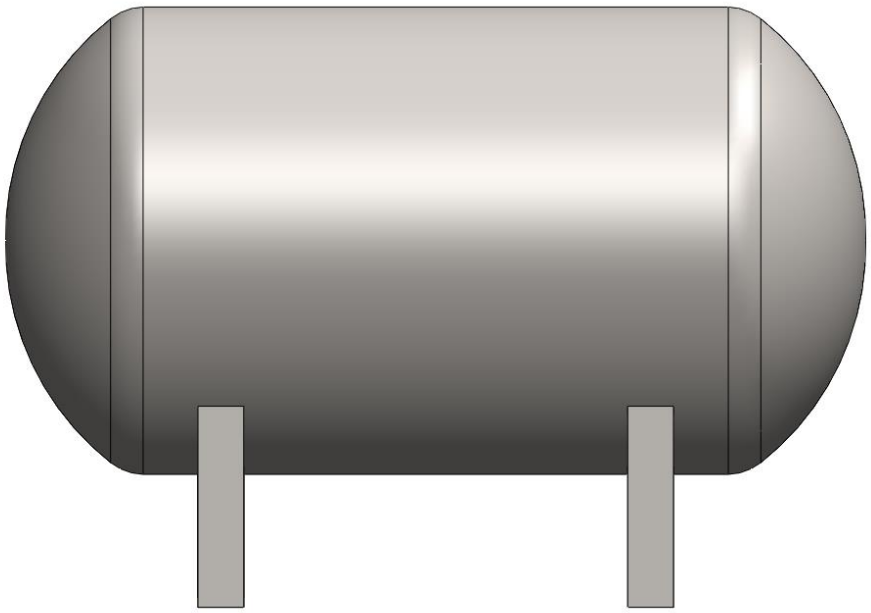
Gemoetry:

In SolidWorks 2024

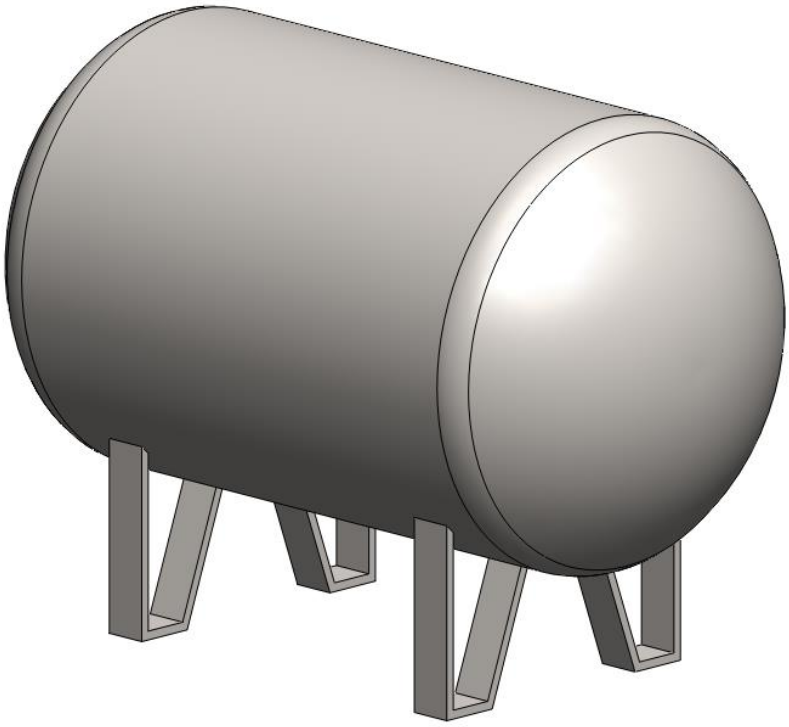
Side view:



Front View:



Isometric view:



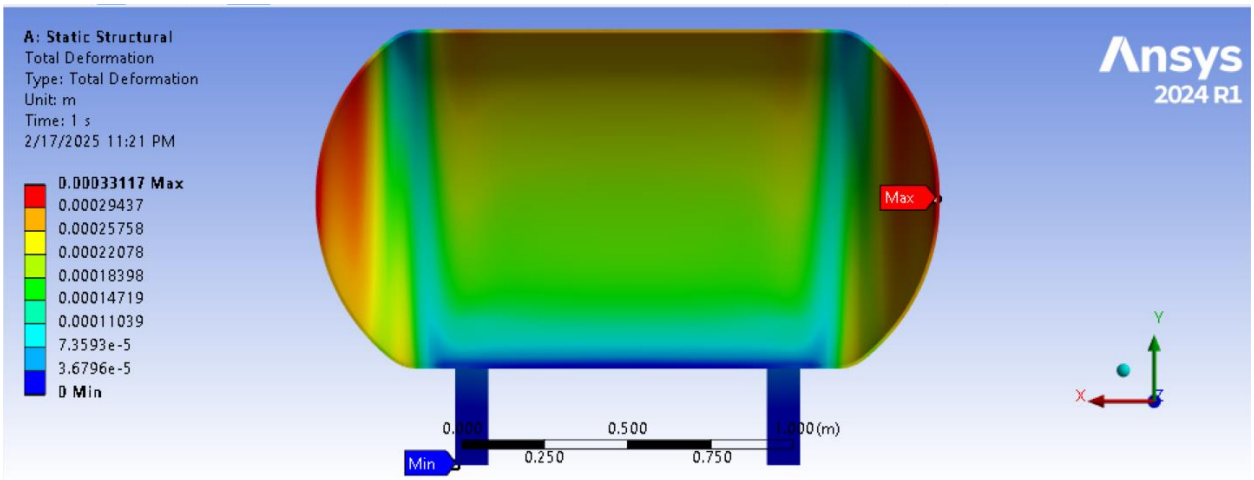
Simulation:

In ANSYS 2024R1.
Material: Stainless steel
Bottom face of 4 leg is fixed.
Atmospheric pressure is applied from outer surfaces.
Standard earth gravity and Hydrostatic pressure is applied.

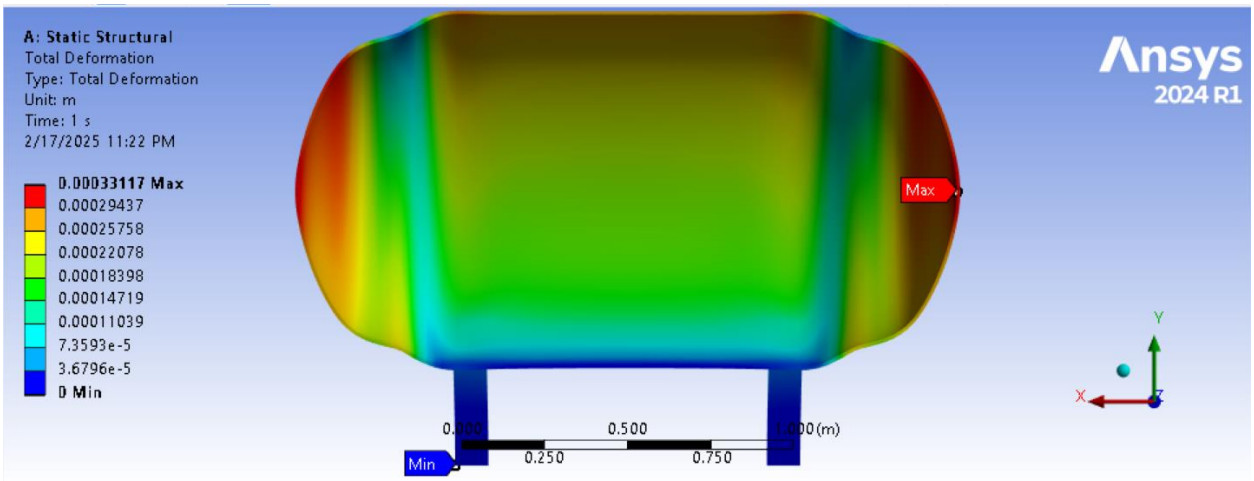
Deformation:

Maximum deflection: 3.3117e-004 m at center of Torispherical face.
Average deflection: 1.9081e-004 m

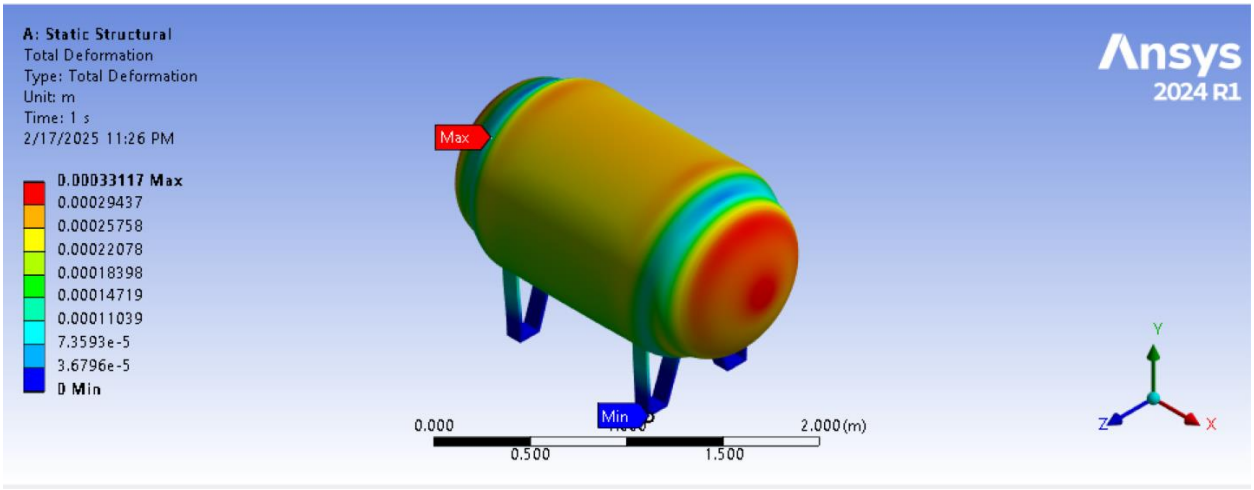
Scale: 1(true scale)



Scale: 200x



Isometric view.



Stress: