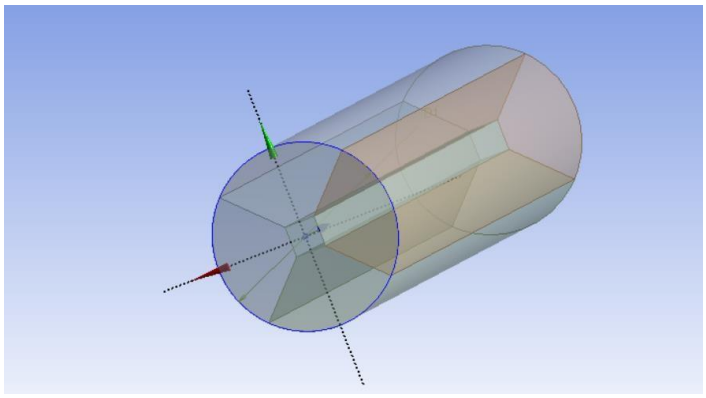
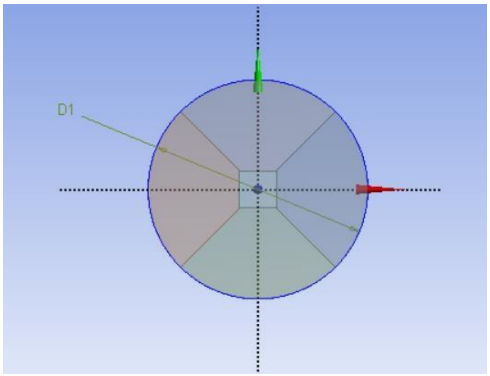
Mesh the geometry

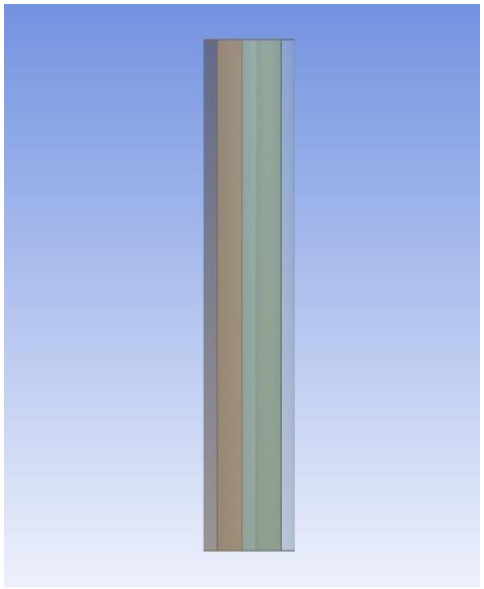
Image before meshig



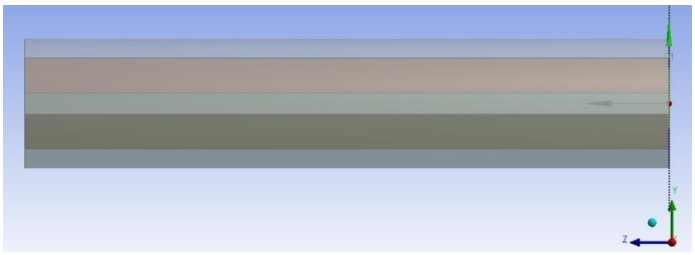
ISOMETRIC VIEW



FRONT VIEW



TOP VIEW



SIDE VIEW

Details For Meshing

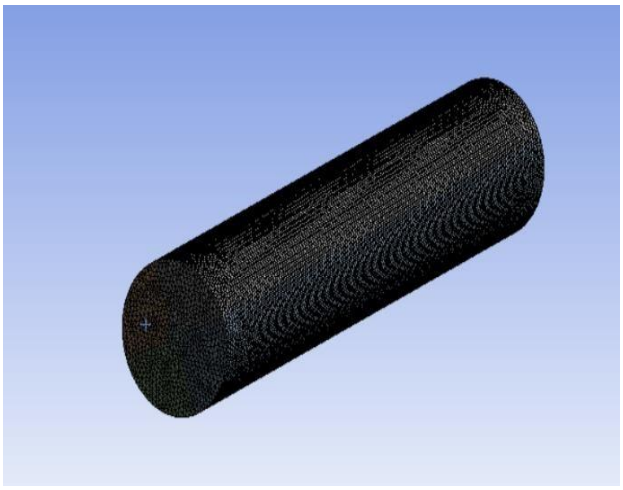
1. Method used for meshing is Tetrahedrons patch confirming
2. The element size is provided as 2mm

Mesh Statistics

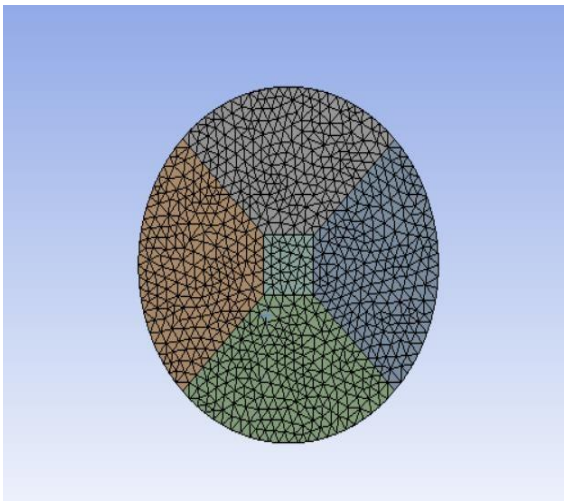
1. Number of Nodes = 1317957
2. Number of Elements = 925625

(Maximum layers obtained is 10 and having a growth rate of 1:2)

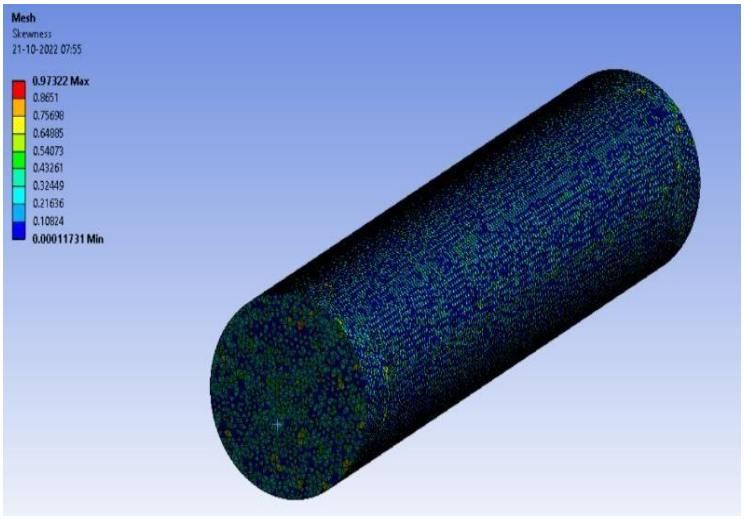
Images after meshing



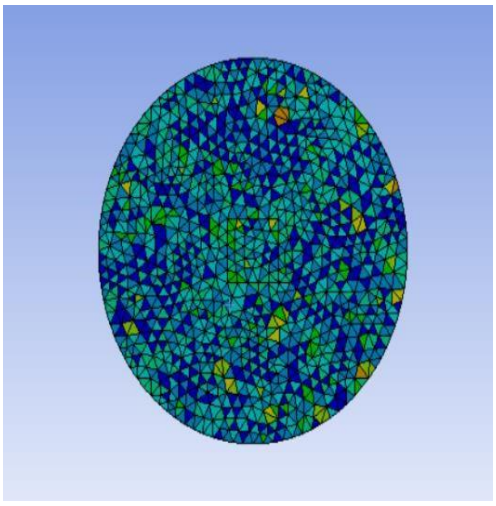
FRONT VIEW



ISOMETRIC VIEW

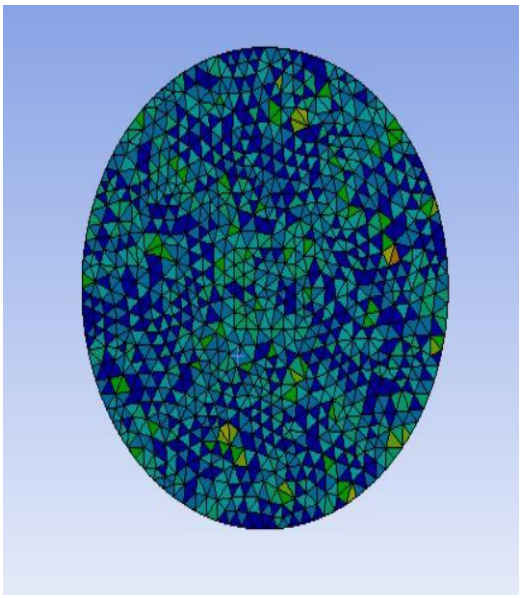


ISOMETRIC VIEW

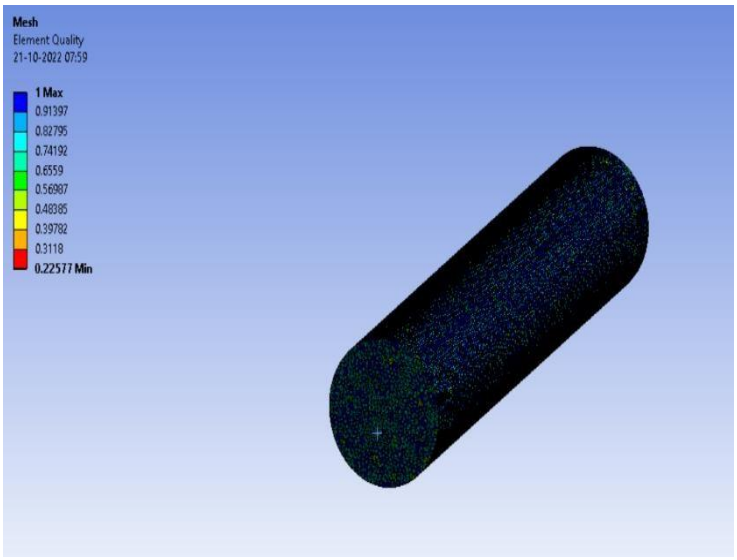


TOP VIEW

ELEMENT QUALITY

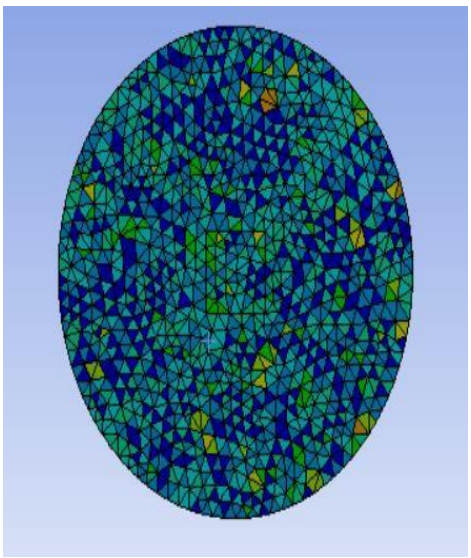


TOP VIEW

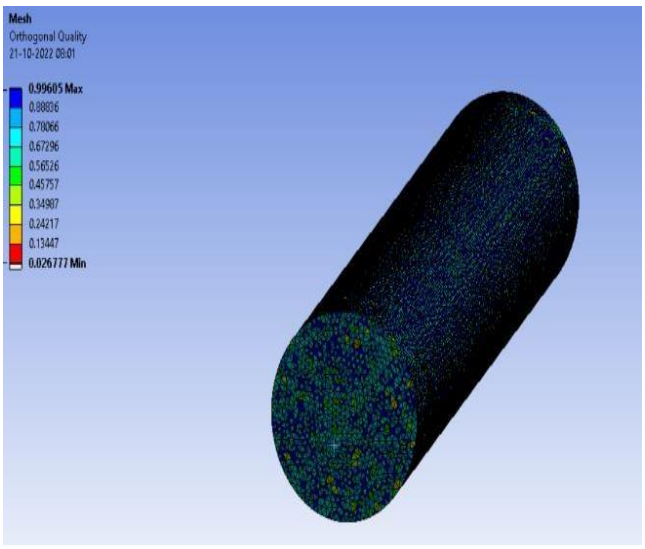


ISOMETRIC VIEW

ORTHOGONAL QUALITY



TOP VIEW

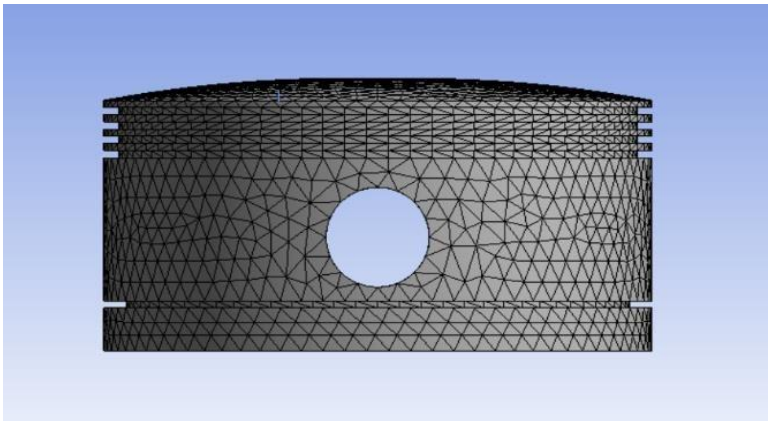


ISOMETRIC VIEW

Static structural analysis of the given piston

Meshing Details

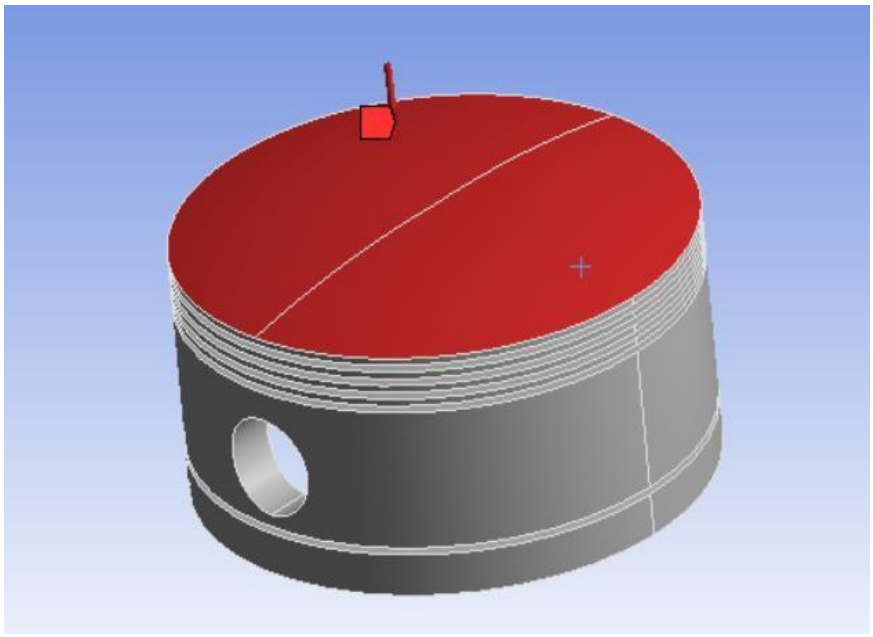
1. The method used for meshing = is Automatic
2. Body Sizing is provided as 3mm
3. Element Size= 3mm



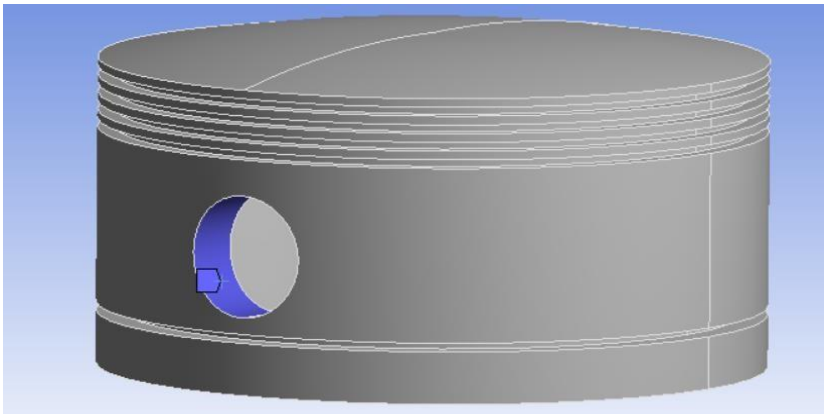
Boundary Conditions

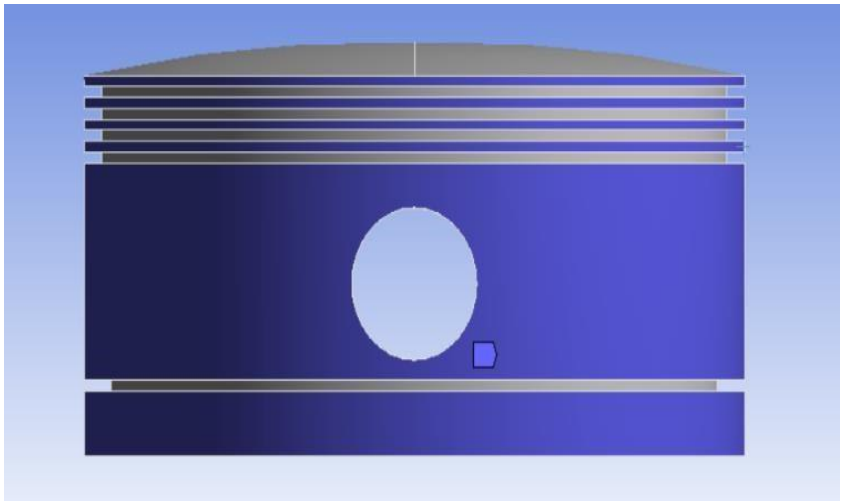
1. Material used is steel
2. Applying pressure of 5Mpa
   (Frictionless support)

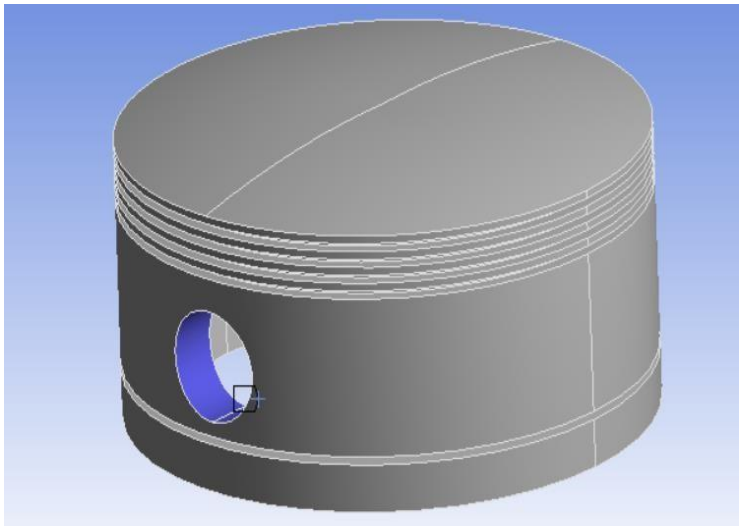
PRESSURE APPLIED



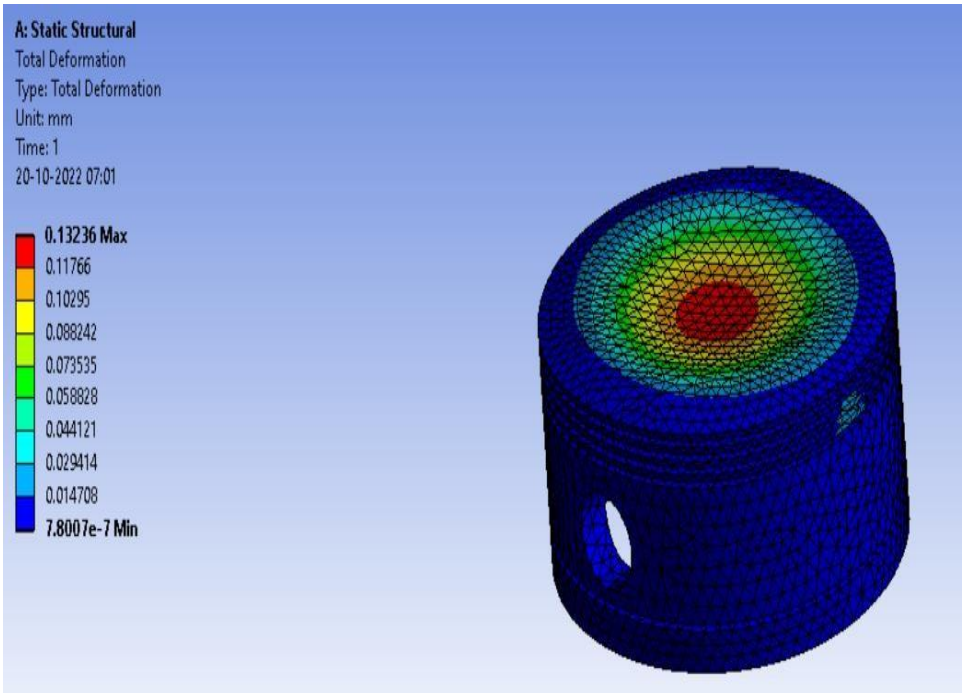
FRICTIONLESS SUPPORTS

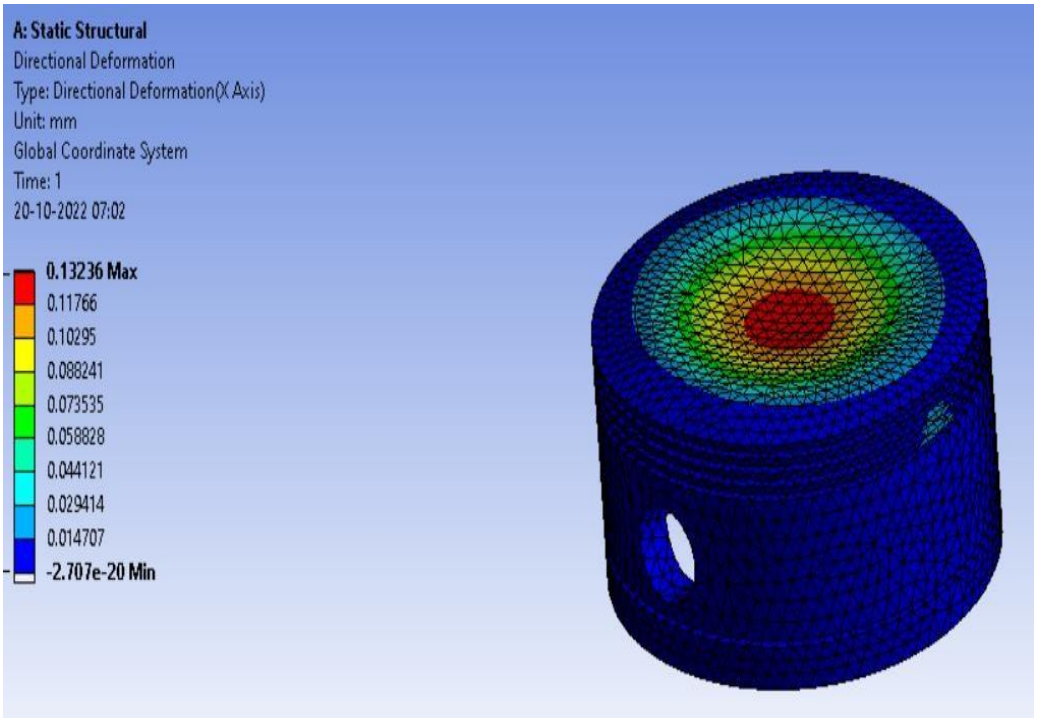






Results


A: Static Structural
Total Deformation
Type: Total Deformation
Unit: mm
Time: 1
20-10-2022 07:01
0.13236 Max
0.11766
0.10295
0.088242
0.073535
0.058828
0.044121
0.029414
0.014708
7.8007e-7 Min


A: Static Structural
Directional Deformation
Type: Directional Deformation(X Axis)
Unit: mm
Global Coordinate System
Time: 1
20-10-2022 07:02
0.13236 Max
0.11766
0.10295
0.088241
0.073535
0.058828
0.044121
0.029414
0.014707
-2.707e-20 Min