Study Report

Analyzed File	Lower Column v3
Version	Autodesk Fusion (2.0.20754)
Creation Date	2024-11-25, 13:54:20
Author	dulnethweerasinghe

Report Properties

Title	Studies
Author	dulnethweerasinghe

Simulation Model 1

Study 1 - Static Stress

Study Properties

Study Type	Static Stress
Last Modification Date	2024-11-25, 13:53:05

Settings

General

Contact Tolerance	0.10 mm
Remove Rigid Body Modes	No

Mesh

Average Element Size (% of model size)	
Solids	4
Scale Mesh Size Per Part	Yes
Average Element Size (absolute value)	-
Element Order	Parabolic
Create Curved Mesh Elements	Yes
Max. Turn Angle on Curves (Deg.)	20
Max. Adjacent Mesh Size Ratio	1.5
Max. Aspect Ratio	9
Minimum Element Size (% of average size)	20

Adaptive Mesh Refinement

Number of Refinement Steps	4
Results Convergence Tolerance (%)	10
Portion of Elements to Refine (%)	25
Results for Baseline Accuracy	von Mises Stress

Materials

Component	Material	Safety Factor
Body1	Steel, Mild	Yield Strength

Steel, Mild

Density	7.850E-06 kg / mm^3
Young's Modulus	220000.00 MPa
Poisson's Ratio	0.275
Yield Strength	207.00 MPa
Ultimate Tensile Strength	345.00 MPa
Thermal Conductivity	0.045 W / (mm C)
Thermal Expansion Coefficient	1.200E-05 / C
Specific Heat	480.00 J / (kg C)

Contacts

Mesh

Type	Nodes	Elements
Solids	135660	80235

Load Case1

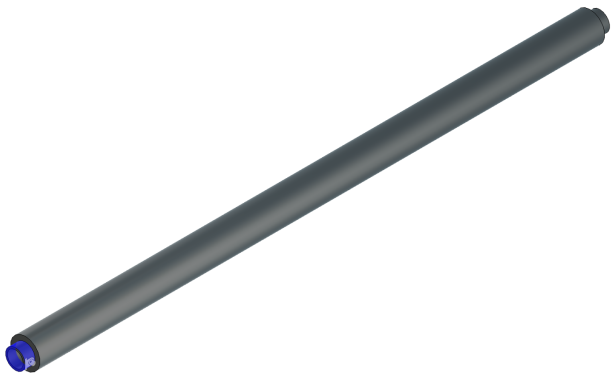
⚠ **Solve result of this load case is out of date.**

Constraints

Pin1

Type	Pin
Radial	Fixed
Axial	Fixed
Tangential	Fixed

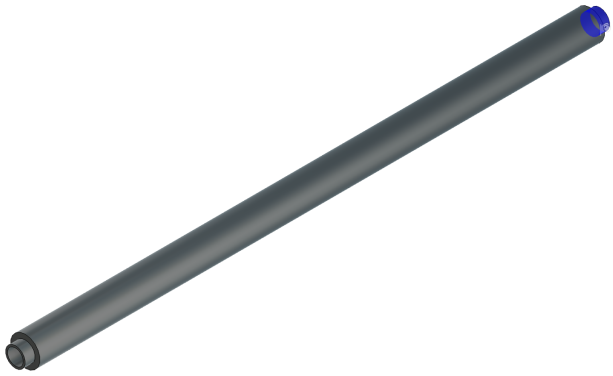
Selected Entities



Pin2

Type	Pin
Radial	Fixed
Axial	Fixed
Tangential	Fixed

Selected Entities

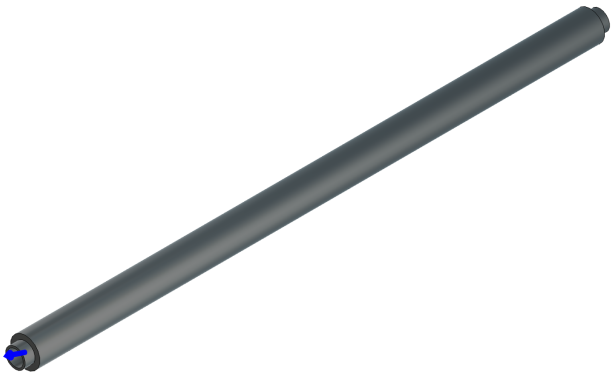


Loads

Gravity

Type	Gravity
Magnitude	9.807 m / s^2
X Value	0.00 m / s^2
Y Value	-9.309 m / s^2
Z Value	3.084 m / s^2
X Angle	0.0 deg
Y Angle	71.7 deg
Z Angle	0.0 deg

Selected Entities

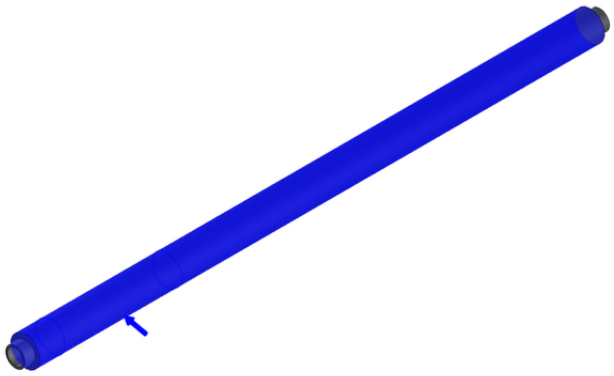


Force1

Type	Force
Magnitude	440.00 N
X Value	-429.26 N
Y Value	0.00 N
Z Value	96.624 N
X Angle	0.0 deg

Y Angle	0.0 deg
Z Angle	0.0 deg
Radius	30.00 mm
Force Per Entity	No

Selected Entities



Results

Result Summary

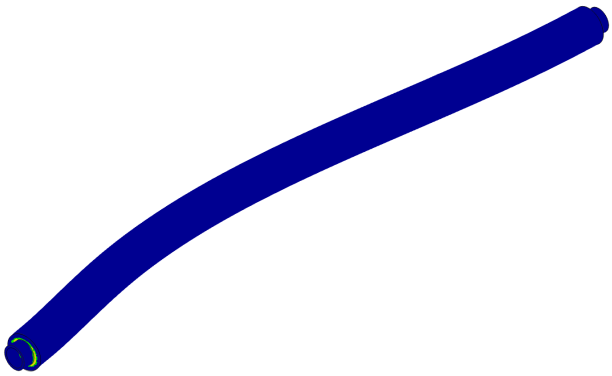
Name	Minimum	Maximum
Safety Factor		
Safety Factor (Per Body)	1.041	15.00
Stress		
von Mises	0.00 MPa	198.917 MPa
1st Principal	-56.392 MPa	191.36 MPa
3rd Principal	-242.649 MPa	59.327 MPa
Normal XX	-58.276 MPa	62.856 MPa
Normal YY	-207.852 MPa	191.024 MPa
Normal ZZ	-78.252 MPa	59.649 MPa
Shear XY	-54.453 MPa	60.331 MPa
Shear YZ	-54.877 MPa	47.13 MPa
Shear ZX	-21.383 MPa	20.758 MPa
Displacement		
Total	0.00 mm	0.041 mm
X	-0.04 mm	8.962E-05 mm
Y	-0.004 mm	0.004 mm
Z	-1.330E-04 mm	0.009 mm
Reaction Force		
Total	0.00 N	44.691 N
X	-8.994 N	19.174 N
Y	-43.881 N	43.868 N
Z	-16.031 N	9.656 N
Strain		
Equivalent	0.00	0.001

1st Principal	0.00	8.480E-04
3rd Principal	-0.001	0.00
Normal XX	-2.506E-04	2.594E-04
Normal YY	-7.894E-04	7.513E-04
Normal ZZ	-1.473E-04	1.108E-04
Shear XY	-6.312E-04	6.993E-04
Shear YZ	-6.361E-04	5.463E-04
Shear ZX	-2.478E-04	2.406E-04
Contact Force		
Total	0.00 N	0.00 N
X	0.00 N	0.00 N
Y	0.00 N	0.00 N
Z	0.00 N	0.00 N

Safety Factor

Safety Factor (Per Body)

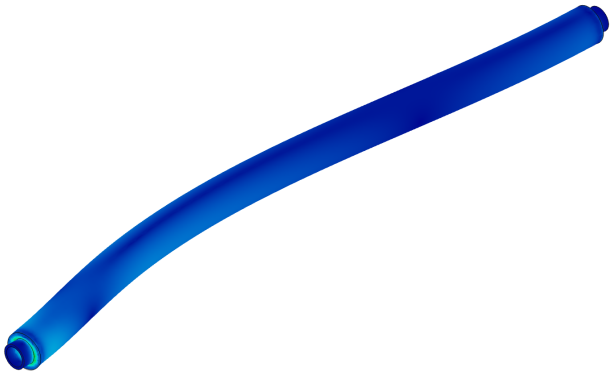
0.00 8.00



Stress

von Mises

[MPa] 0.00 198.917



1st Principal

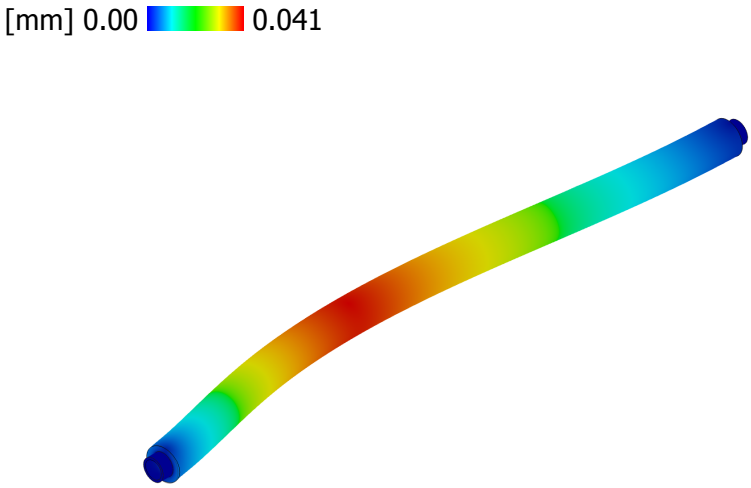
[MPa] -56.392 191.36

3rd Principal

[MPa] -242.649 59.327

Displacement

Total


[mm] 0.00
0.041