Study Report

Analyzed File	BOGIE v1
Version	Autodesk Fusion 360 (2.0.3174)
Creation Date	2019-06-17, 00:10:17
Author	MR ROBOT

Project Properties

Title	Studies
Author	MR ROBOT

BOGIE v1:1

Study 3 - Static Stress

Study Properties

Study Type	Static Stress
Last Modification Date	2019-06-17, 00:08:28

Settings

General

Contact Tolerance	0.1 mm
Remove Rigid Body Modes	No

Mesh

Average Element Size (% of model size)	
Solids	10
Scale Mesh Size Per Part	No
Average Element Size (absolute value)	-
Element Order	Parabolic
Create Curved Mesh Elements	No
Max. Turn Angle on Curves (Deg.)	60
Max. Adjacent Mesh Size Ratio	1.5
Max. Aspect Ratio	10
Minimum Element Size (% of average size)	20

Adaptive Mesh Refinement

Number of Refinement Steps	0
Results Convergence Tolerance (%)	20
Portion of Elements to Refine (%)	10
Results for Baseline Accuracy	Von Mises Stress

Materials

Component	Material	Safety Factor
BOGIE 2:1	Steel	Yield Strength

Steel

Density	7.85E-06 kg / mm^3
Young's Modulus	210000 MPa
Poisson's Ratio	0.3
Yield Strength	207 MPa
Ultimate Tensile Strength	345 MPa
Thermal Conductivity	0.056 W / (mm C)
Thermal Expansion Coefficient	1.2E-05 / C
Specific Heat	480 J / (kg C)

⊟ Mesh

Type	Nodes	Elements
Solids	17496	9045

⊟ Load Case1

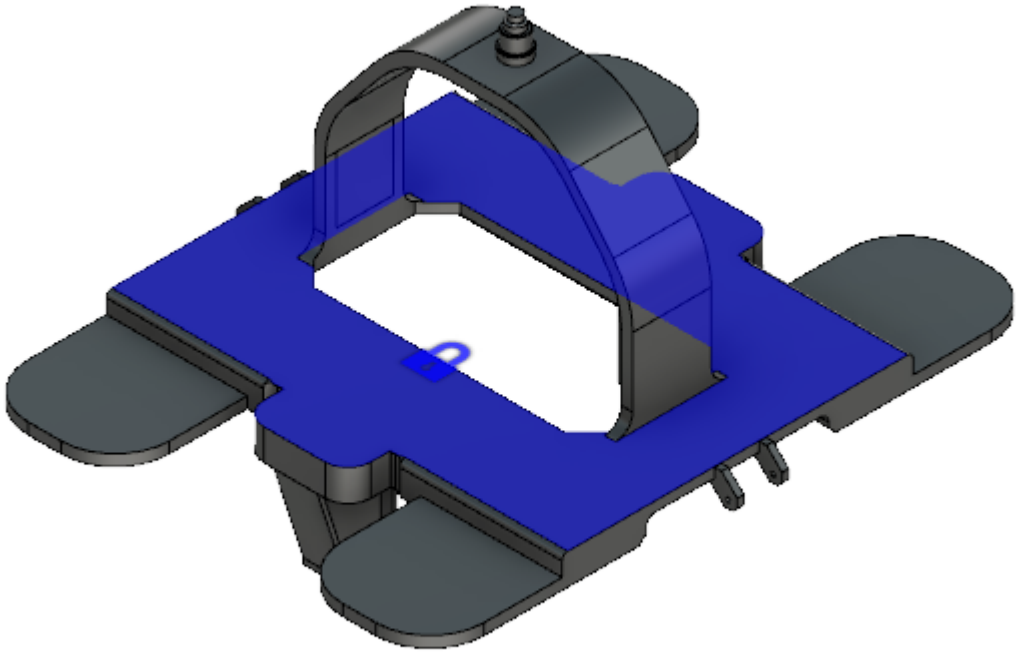
⚠ Solve result of this load case is out of date.

⊟ Constraints

⊟ Fixed1

Type	Fixed
Ux	Yes
Uy	Yes
Uz	Yes

⊟ Selected Entities

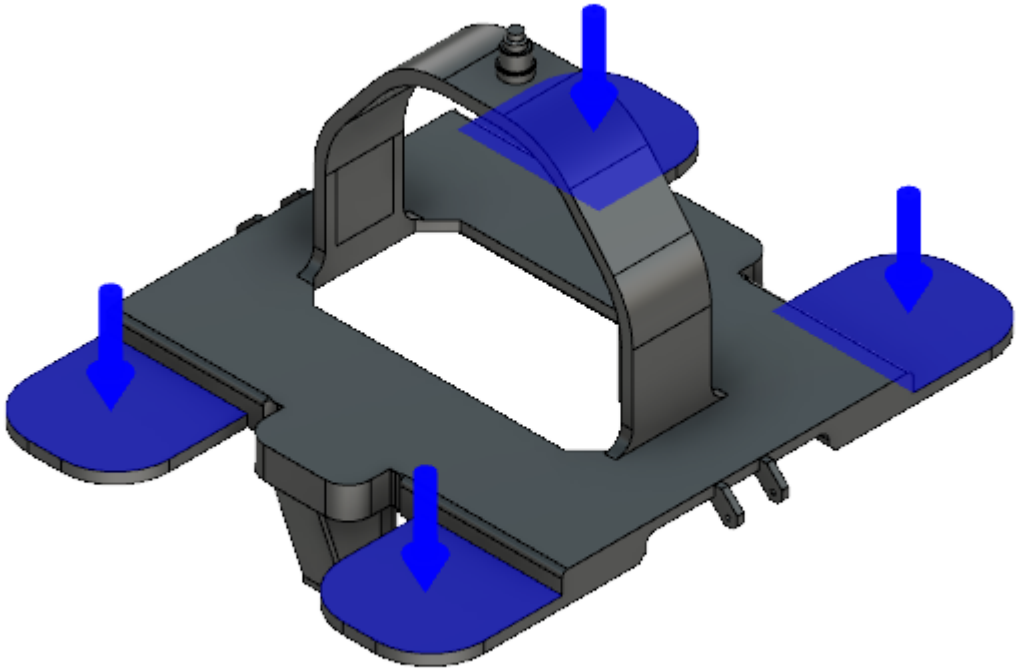


Loads

Force1

Type	Force
Magnitude	300000 N
X Value	-1.184E-25 N
Y Value	-300000 N
Z Value	-1.806E-29 N
Force Per Entity	No

Selected Entities



Results

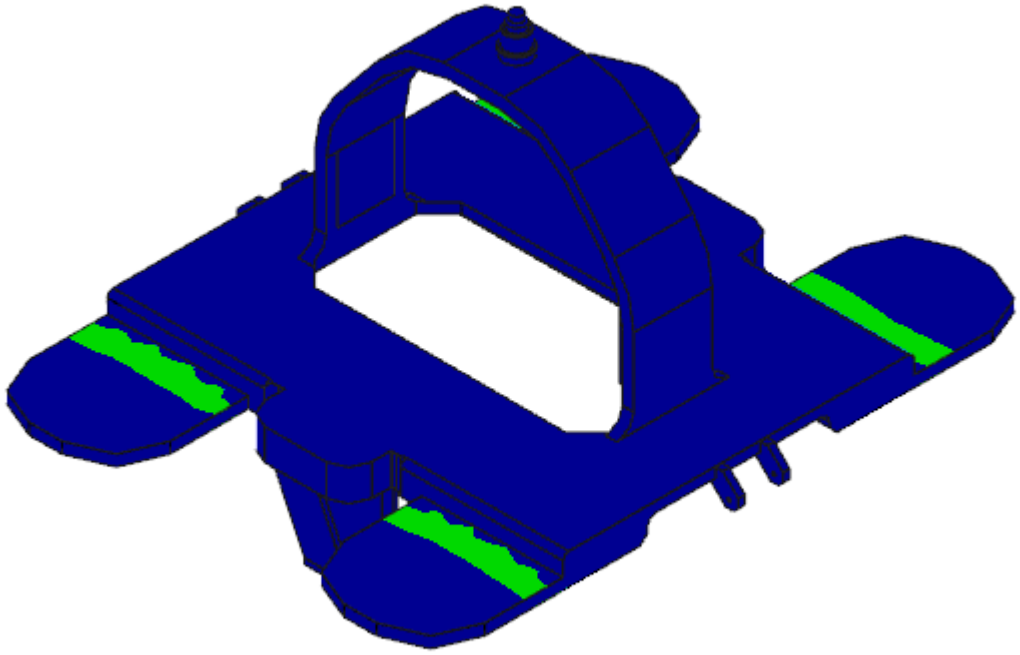
Result Summary

Name	Minimum	Maximum
Safety Factor		
Per Body	3.737	15
Stress		
Von Mises	8.861E-08 MPa	55.39 MPa
1st Principal	-7.159 MPa	60.87 MPa
3rd Principal	-62.48 MPa	17.03 MPa
Normal XX	-20.48 MPa	20.31 MPa
Normal YY	-10.53 MPa	21.16 MPa
Normal ZZ	-61.92 MPa	60.61 MPa

Shear XY	-3.597 MPa	5.128 MPa
Shear YZ	-10.64 MPa	11.33 MPa
Shear ZX	-8.493 MPa	7.113 MPa
Displacement		
Total	0 mm	1.27 mm
X	-0.007905 mm	0.007801 mm
Y	-1.268 mm	0.002585 mm
Z	-0.07539 mm	0.07387 mm
Reaction Force		
Total	0 N	10317 N
X	-2144 N	2405 N
Y	-5343 N	8764 N
Z	-6234 N	7413 N
Strain		
Equivalent	6.436E-13	2.411E-04
1st Principal	-1.901E-11	2.621E-04
3rd Principal	-2.742E-04	2.304E-11
Normal XX	-4.087E-05	5.488E-05
Normal YY	-1.108E-04	1.252E-04
Normal ZZ	-2.655E-04	2.584E-04
Shear XY	-4.453E-05	6.35E-05
Shear YZ	-1.318E-04	1.403E-04
Shear ZX	-1.052E-04	8.807E-05

⊟ **Per Body**

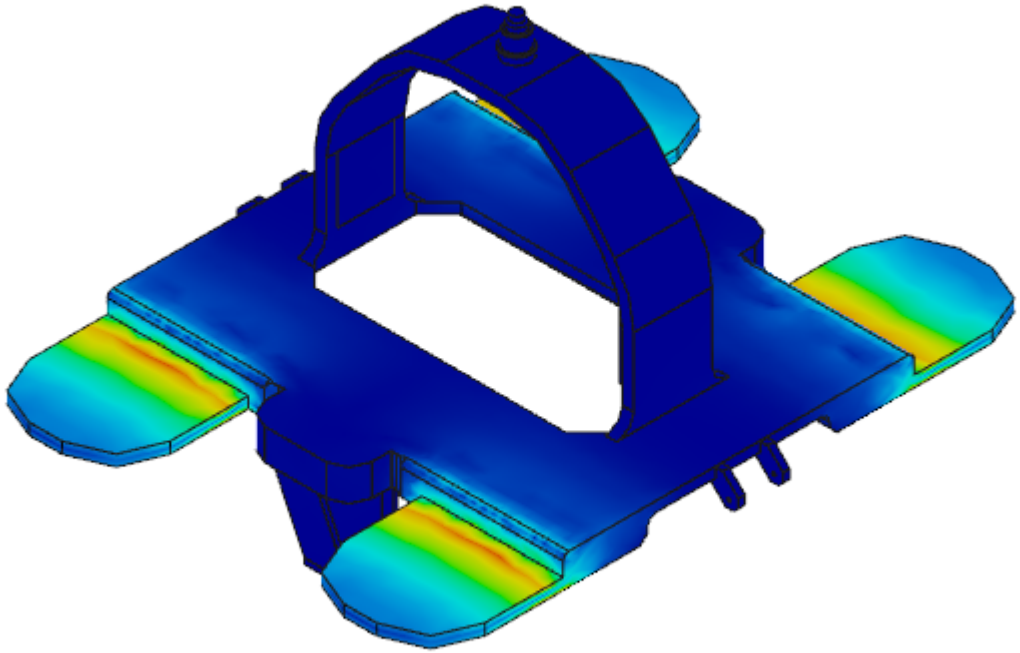
0  8



⊟ Stress

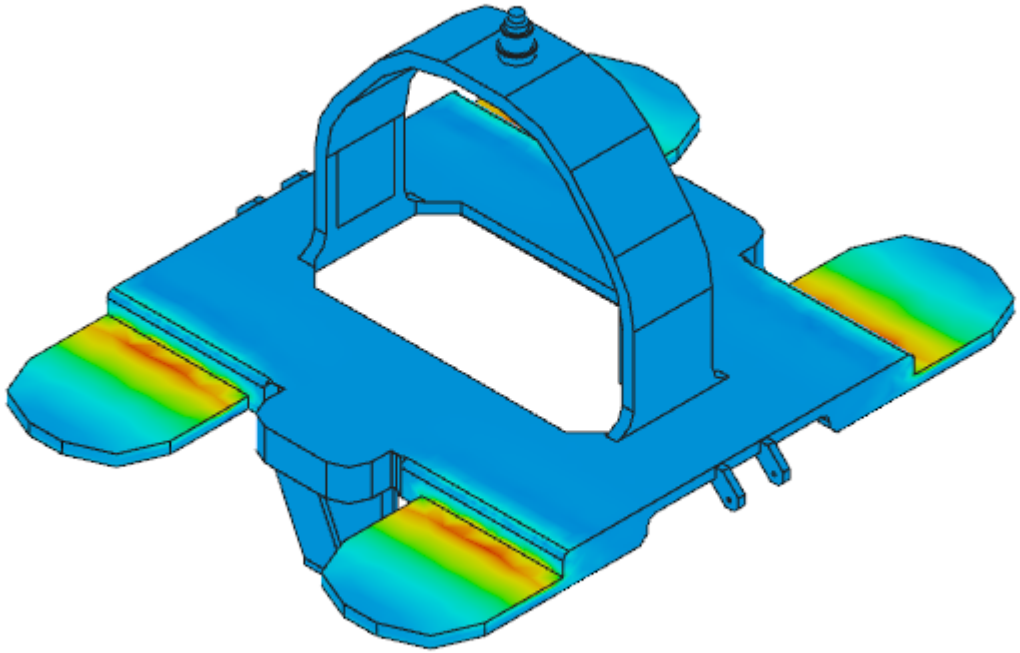
⊟ Von Mises

[MPa] 0 55.39



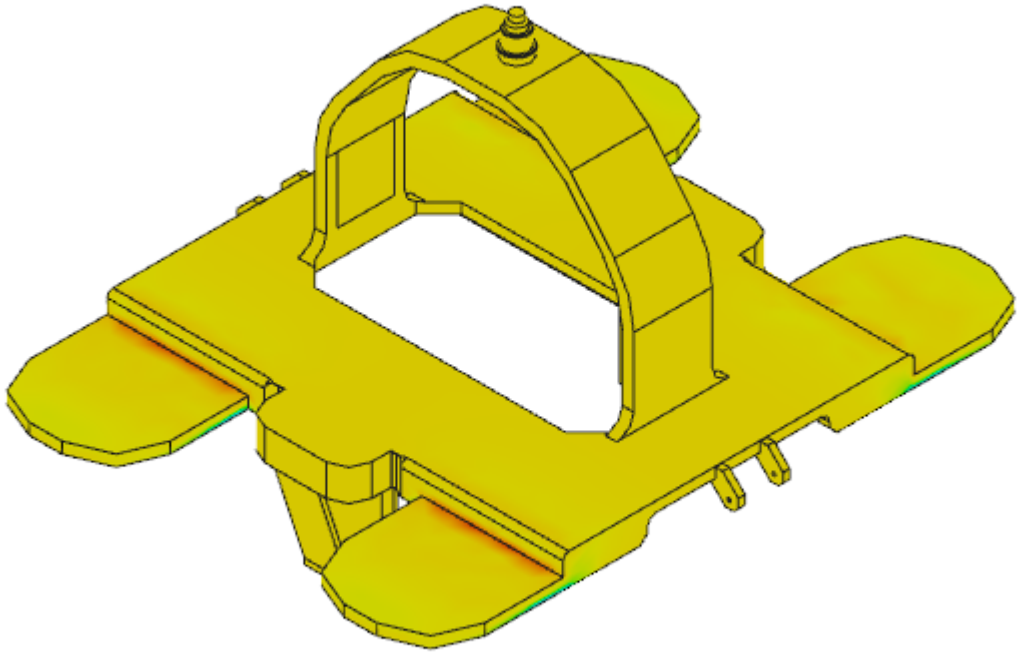
1st Principal

[MPa] -7.16 60.87



3rd Principal

[MPa] -62.48 17.03



⊟ Displacement

⊟ Total

[mm] 0 1.27