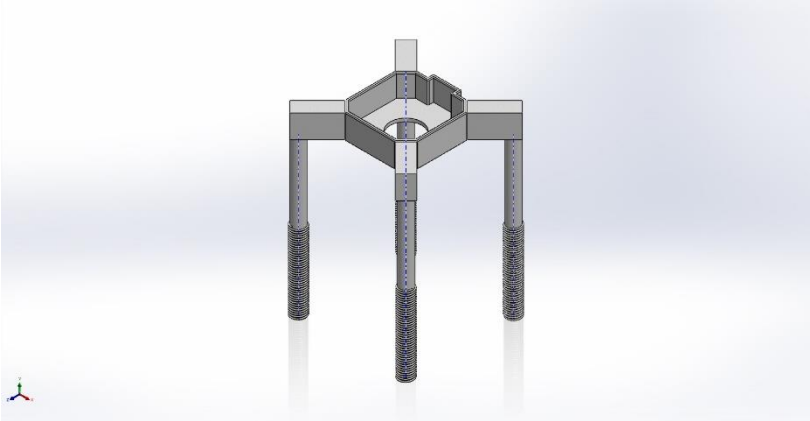


Simulation of MotorCage

Date: Monday, July 4, 2022
Designer: Solidworks
Study name: Static 1
Analysis type: Static

Table of Contents

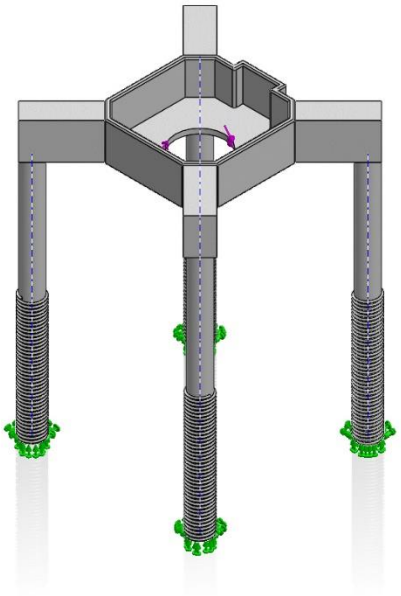
Description 1
Assumptions 2
Model Information 2
Study Properties 3
Units 3
Material Properties 4
Loads and Fixtures 4
Connector Definitions 5
Interaction Information 5
Mesh information 5
Sensor Details 5
Resultant Forces 6
Beams 6
Study Results 7
Conclusion 9
Appendix 9

Description

No Data

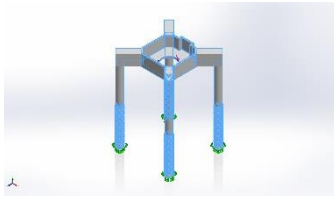
Assumptions

Model Information



Model name: MotorCage
Current Configuration: Default

Solid Bodies

Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
CirPattern1 	Solid Body	**Mass:0.0562956 kg** **Volume:4.43433e-05 m^3** **Density:1,269.54 kg/m^3** **Weight:0.551697 N**	**B:\5.1\PROJECT\progress\Synthetic-HdyroExperimental-Machine-Project\designs\DischargeFlowControl\MotorCage.SLDPRT** Jun 29 16:59:50 2022

Study Properties

Study name	Static 1
Analysis type	Static
Mesh type	Solid Mesh
Thermal Effect:	On
Thermal option	Include temperature loads
Zero strain temperature	298 Kelvin
Include fluid pressure effects from SOLIDWORKS Flow Simulation	Off
Solver type	Automatic
Inplane Effect:	Off
Soft Spring:	Off
Inertial Relief:	Off
Incompatible bonding options	Automatic
Large displacement	Off
Compute free body forces	On
Friction	Off
Use Adaptive Method:	Off
Result folder	SOLIDWORKS document (B:\5.1\PROJECT\progress\Synthetic-HdyroExperimental-Machine-Project\designs\DischargeFlowControl)

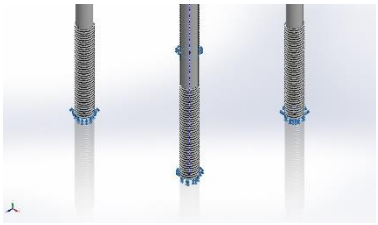
Units

Unit system:	SI (MKS)
Length/Displacement	mm
Temperature	Kelvin
Angular velocity	Rad/sec
Pressure/Stress	N/m^2

Material Properties

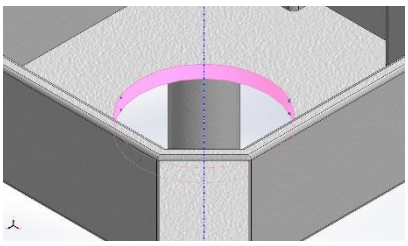
Model Reference	Properties	Components
	**Name:** PEI **Model type:** Linear Elastic Isotropic **Default failure criterion:** Unknown **Tensile strength:** 8.5e+07 N/m^2 **Compressive strength:** 1.4e+08 N/m^2 **Elastic modulus:** 3.1e+09 N/m^2 **Poisson's ratio:** 0.44 **Mass density:** 1,270 kg/m^3	SolidBody 1(CirPattern1)(MotorCage)
Curve Data:N/A		

Loads and Fixtures

Fixture name	Fixture Image	Fixture Details
Fixed-1		**Entities:** 4 face(s) **Type:** Fixed Geometry

Resultant Forces

Components	X	Y	Z	Resultant
Reaction force(N)	0.0130131	0.000182867	0.0268909	0.0298747
Reaction Moment(N.m)	0	0	0	0

Load name	Load Image	Load Details
Torque-1		**Reference:** Face< 1 > **Type:** Apply torque **Value:** 1.1768 N.m

Connector Definitions
No Data

Interaction Information
No Data

Mesh information

Mesh type	Solid Mesh
Mesher Used:	Blended curvature-based mesh
Jacobian points for High quality mesh	16 Points
Maximum element size	0.708231 cm
Minimum element size	0.0384384 cm
Mesh Quality	High

Mesh information - Details

Total Nodes	205590
Total Elements	126324
Maximum Aspect Ratio	43.898
% of elements with Aspect Ratio < 3	77.8
Percentage of elements with Aspect Ratio > 10	4.67
Percentage of distorted elements	0
Time to complete mesh(hh;mm;ss):	00:01:14
Computer name:	PROMETHEUS

Sensor Details
No Data

Resultant Forces

Reaction forces

Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N	0.0130131	0.000182867	0.0268909	0.0298747

Reaction Moments

Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N.m	0	0	0	0

Free body forces

Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N	-0.0104091	0.0103248	-0.0118516	0.0188524

Free body moments

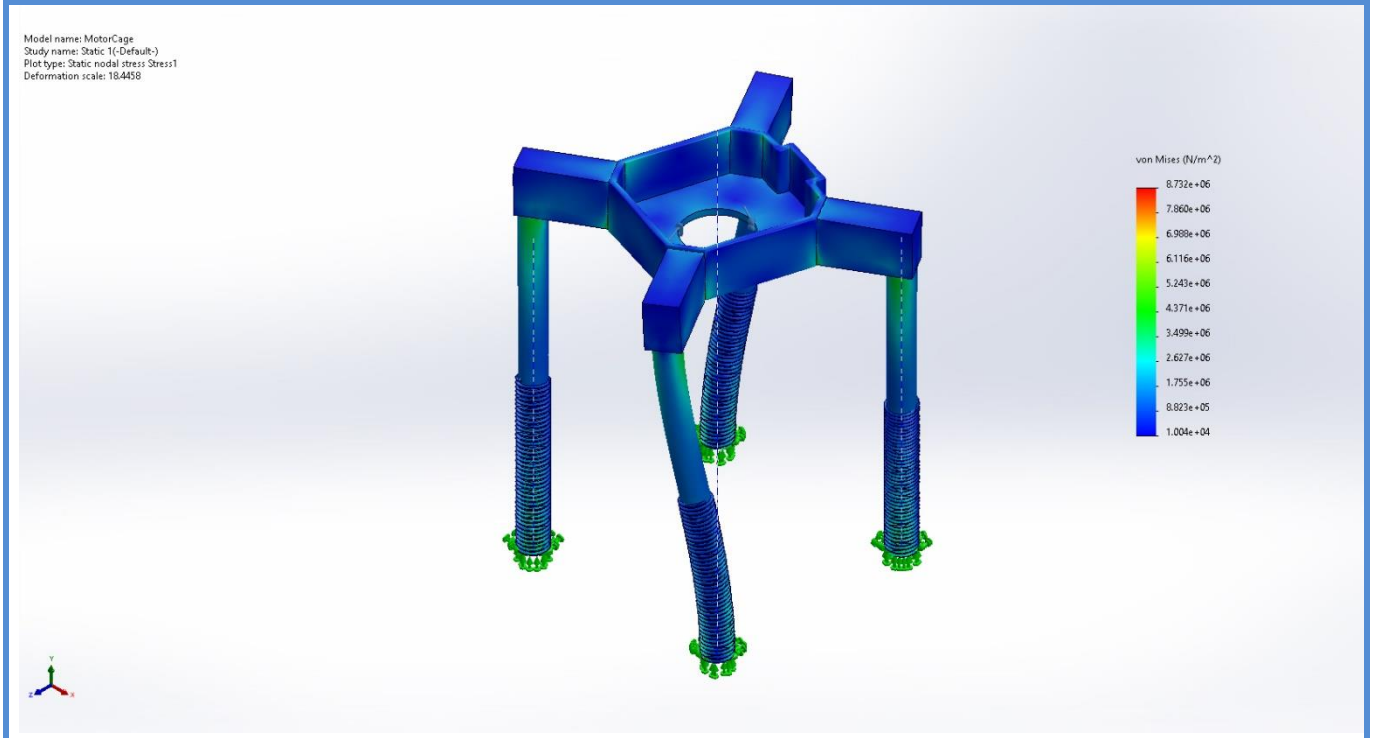
Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N.m	0	0	0	1e-33

Beams

No Data

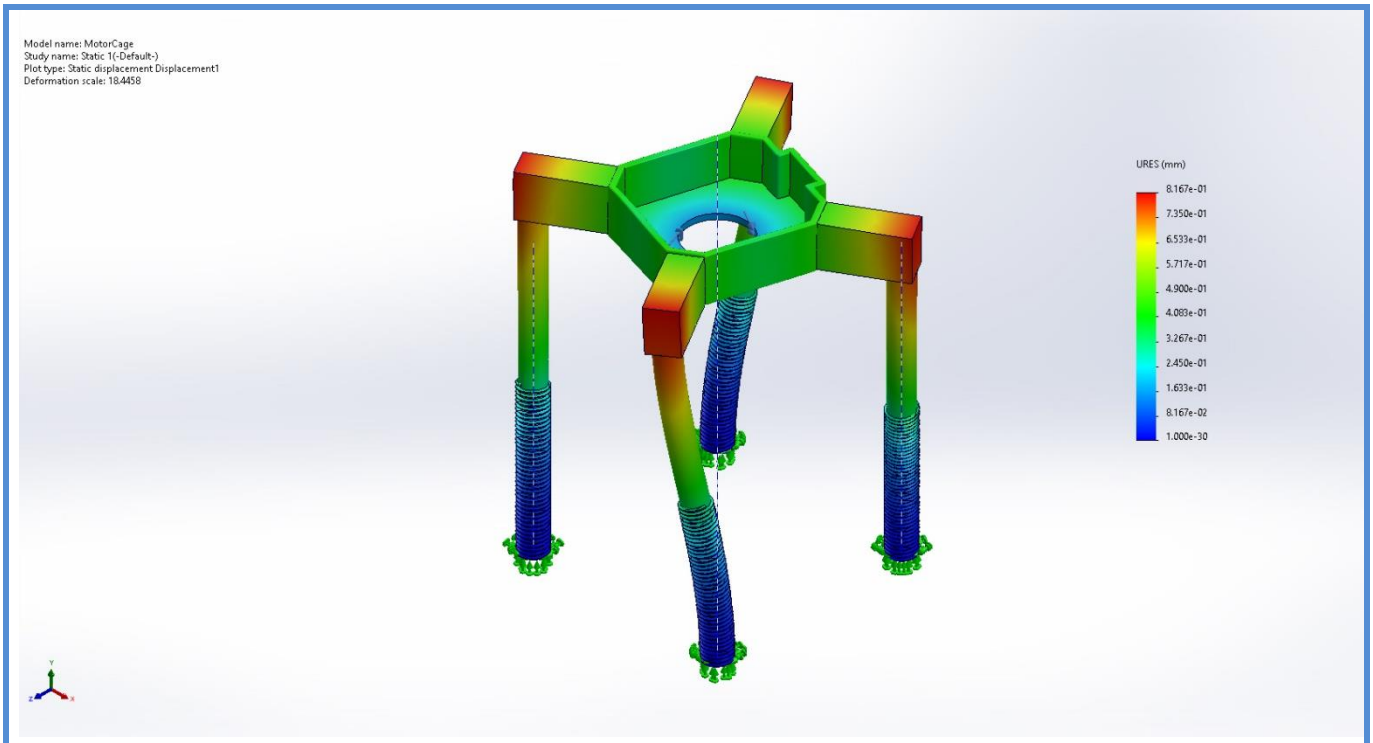
Study Results

Name	Type	Min	Max
Stress1	VON: von Mises Stress	1.004e+04N/m^2 Node: 200764	8.732e+06N/m^2 Node: 150889



MotorCage-Static 1-Stress-Stress1

Name	Type	Min	Max
Displacement1	URES: Resultant Displacement	0.000e+00mm Node: 129	8.167e-01mm Node: 223

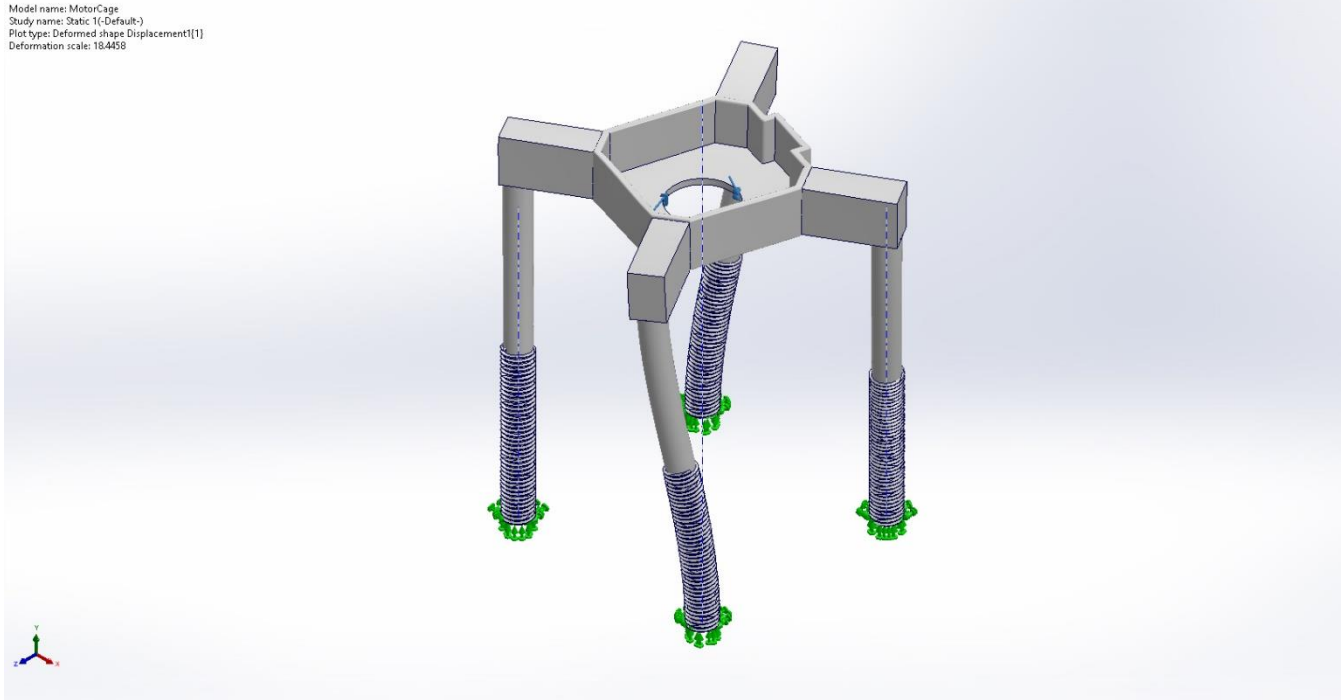


MotorCage-Static 1-Displacement-Displacement1

Name	Type	Min	Max
Strain1	ESTRN: Equivalent Strain	5.771e-06 Element: 117752	2.099e-03 Element: 62553

MotorCage-Static 1-Strain-Strain1

Name	Type
Displacement1{1}	Deformed shape



MotorCage-Static 1-Displacement-Displacement1{1}

Conclusion

Appendix