

Description

No Data

Simulation of Bolt_m20

Date: Friday, October 20, 2017

Designer: Solidworks

Study name: Static 2

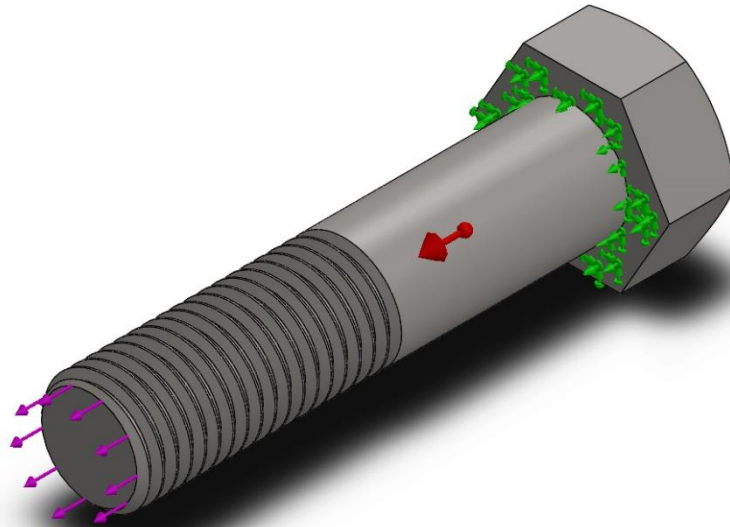
Analysis type: Static

Table of Contents

Description.....	1
Model Information	2
Study Properties	3
Units	3
Material Properties	4
Loads and Fixtures.....	5
Mesh information	6
Resultant Forces	7
Study Results	8

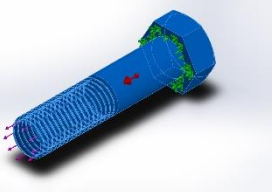


Model Information



Model name: Bolt_m20
Current Configuration: Default

Solid Bodies

Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
Cut-Sweep1 	Solid Body	Mass:0.272911 kg Volume:3.49886e-005 m ³ Density:7800 kg/m ³ Weight:2.67453 N	F:\Projects\SOLIDWORKS\I ab03\Bolt_m20.SLDPRT Oct 09 21:22:15 2017



Study Properties

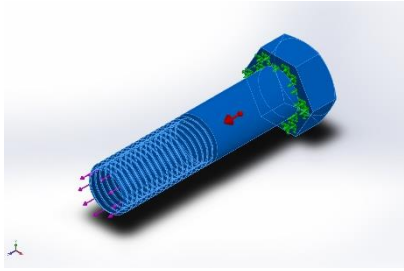
Study name	Static 2
Analysis type	Static
Mesh type	Solid Mesh
Thermal Effect:	On
Thermal option	Include temperature loads
Zero strain temperature	298 Kelvin
Include fluid pressure effects from SOLIDWORKS Flow Simulation	Off
Solver type	FFEPlus
Inplane Effect:	Off
Soft Spring:	Off
Inertial Relief:	Off
Incompatible bonding options	Automatic
Large displacement	Off
Compute free body forces	On
Friction	Off
Use Adaptive Method:	Off
Result folder	SOLIDWORKS document (F:\Projects\SOLIDWORKS\lab03)

Units

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

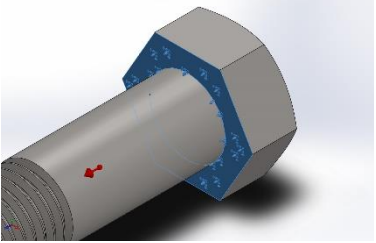


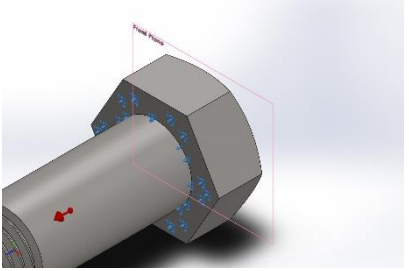
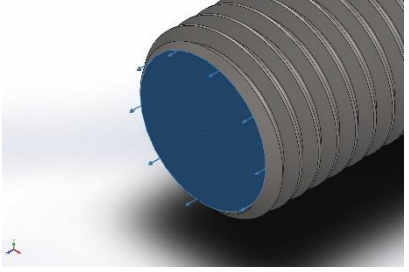
Material Properties

Model Reference	Properties	Components
	<p> Name: 1.0037 (S235JR) Model type: Linear Elastic Isotropic Default failure criterion: Max von Mises Stress Yield strength: 2.35e+008 N/m² Tensile strength: 3.6e+008 N/m² Elastic modulus: 2.1e+011 N/m² Poisson's ratio: 0.28 Mass density: 7800 kg/m³ Shear modulus: 7.9e+010 N/m² Thermal expansion coefficient: 1.1e-005 /Kelvin </p>	<p>SolidBody 1(Cut-Sweep1)(Bolt_m20)</p>
<p>Curve Data:N/A</p>		



Loads and Fixtures

Fixture name	Fixture Image	Fixture Details		
Fixed-1		Entities: 1 face(s) Type: Fixed Geometry		
Resultant Forces				
Components	X	Y	Z	Resultant
Reaction force(N)	-0.0260551	0.0140192	-6630.63	6630.63
Reaction Moment(N.m)	0	0	0	0

Load name	Load Image	Load Details
Gravity-1		Reference: Front Plane Values: 0 0 9.81 Units: m/s ²
Force-1		Entities: 1 face(s) Type: Apply normal force Value: -6628 N



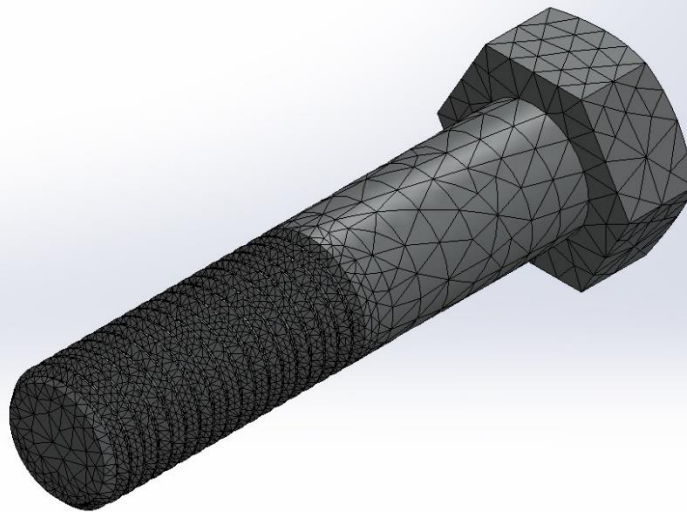
Mesh information

Mesh type	Solid Mesh
Mesher Used:	Curvature-based mesh
Jacobian points	4 Points
Maximum element size	5 mm
Minimum element size	1 mm
Mesh Quality Plot	High

Mesh information - Details

Total Nodes	146778
Total Elements	102229
Maximum Aspect Ratio	36.643
% of elements with Aspect Ratio < 3	96.9
% of elements with Aspect Ratio > 10	0.0245
% of distorted elements(Jacobian)	0
Time to complete mesh(hh:mm:ss):	00:00:14
Computer name:	

Model name: Bolt_m20
Study name: Static 26 (Default)
Mesh type: Solid Mesh



Resultant Forces

Reaction forces

Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N	-0.0260551	0.0140192	-6630.63	6630.63

Reaction Moments

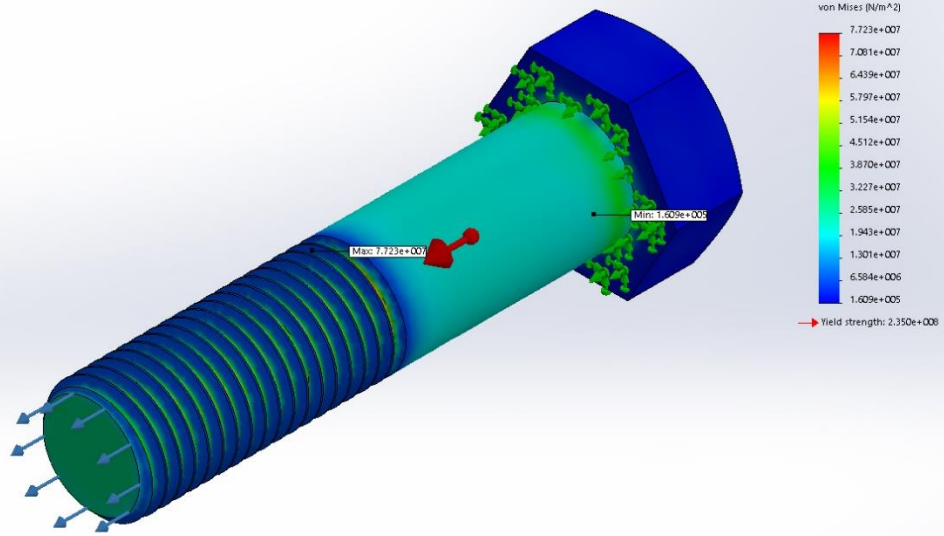
Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N.m	0	0	0	0



Study Results

Name	Type	Min	Max
Stress1	VON: von Mises Stress	1.609e+005N/m ² Node: 23432	7.723e+007N/m ² Node: 31767

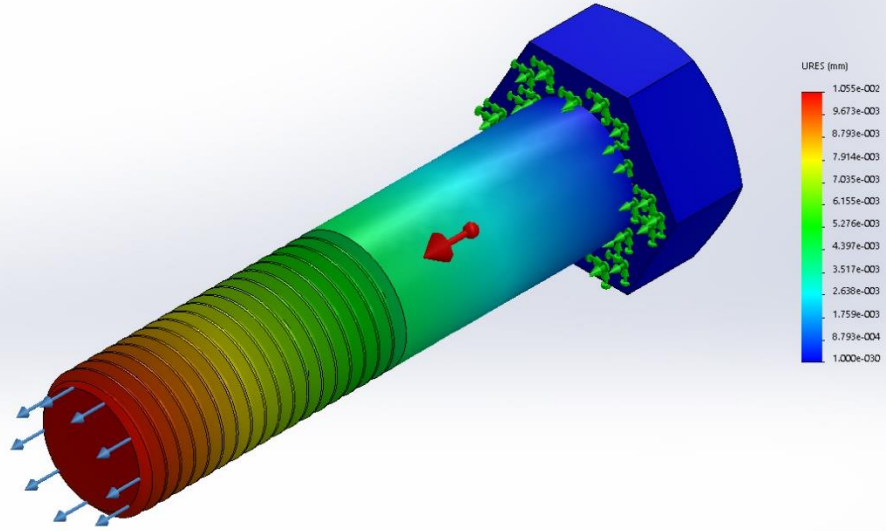
Model name: Bolt_m20
 Study name: Static 2(-Default-)
 Plot type: Static nodal stress Stress1
 Deformation scale: 1



Bolt_m20-Static 2-Stress-Stress1

Name	Type	Min	Max
Displacement1	URES: Resultant Displacement	0.000e+000mm Node: 6	1.055e-002mm Node: 3930

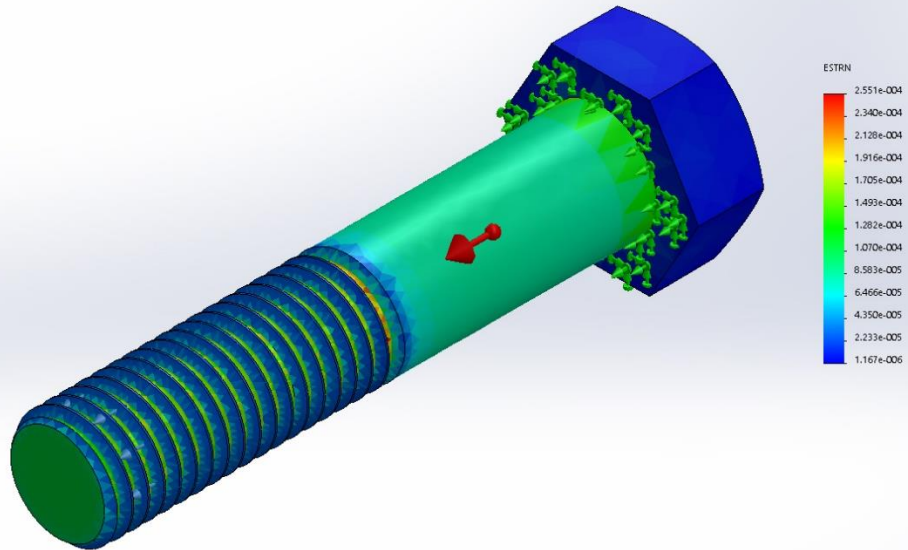
Model name: Bolt_m20
 Study name: Static 2(-Default-)
 Plot type: Static displacement Displacement1
 Deformation scale: 1



Bolt_m20-Static 2-Displacement-Displacement1

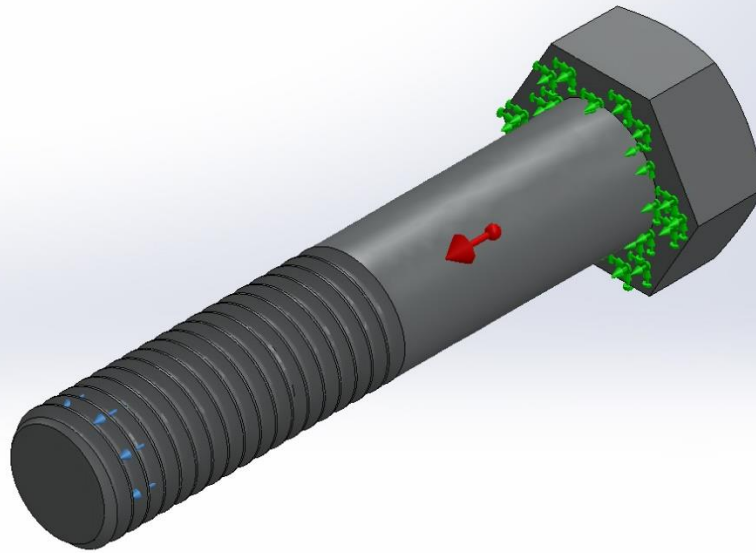
Name	Type	Min	Max
Strain1	ESTRN: Equivalent Strain	1.167e-006 Element: 25851	2.551e-004 Element: 25643

Model name: Bolt_m20
 Study name: Static 2(-Default-)
 Plot type: Static strain Strain1
 Deformation scale: 938.984



Name	Type
Displacement1{1}	Deformed shape

Model name: Bolt_m20
 Study name: Static 2(-Default-)
 Plot type: Deformed shape Displacement1{1}
 Deformation scale: 998.364



Bolt_m20-Static 2-Displacement-Displacement1{1}

