



Simulation of EX05_2 blade

Date: Friday, June 08, 2018
Designer: Solidworks
Study name: SimulationXpress Study
Analysis type: Static

Table of Contents

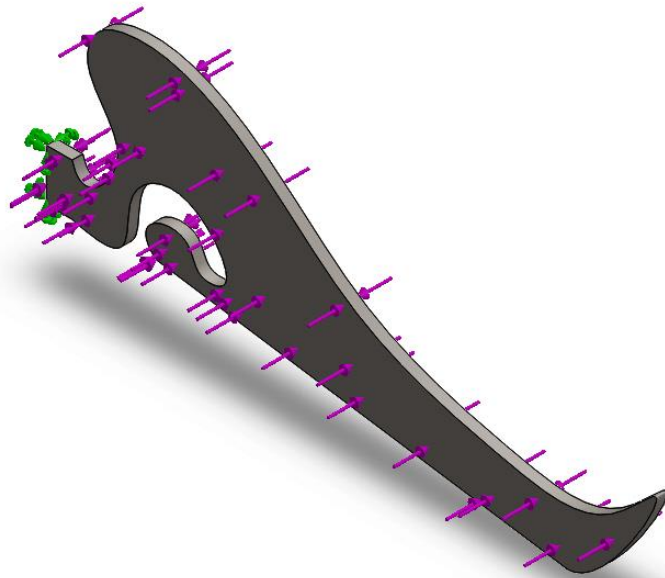
Description.....	1
Assumptions	2
Model Information	2
Material Properties	3
Loads and Fixtures.....	3
Mesh information	4
Study Results	6
Conclusion	8

Description

No Data

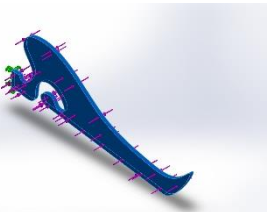
Assumptions

Model Information

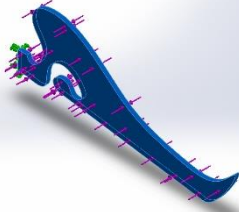


Model name: EX05_2 blade
Current Configuration: Default

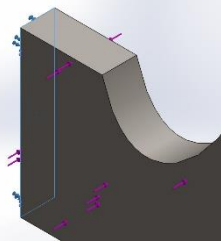
Solid Bodies

Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
Boss-Extrude3 	Solid Body	Mass:0.550479 kg Volume:6.99298e-005 m ³ Density:7871.88 kg/m ³ Weight:5.39469 N	F:\EX05_2 blade.SLDPR T Jun 07 19:22:22 2018

Material Properties

Model Reference	Properties	Components
	<p>Name: AISI 1020 Steel, Cold Rolled</p> <p>Model type: Linear Elastic Isotropic</p> <p>Default failure criterion: Max von Mises Stress</p> <p>Yield strength: 3.5e+008 N/m²</p> <p>Tensile strength: 4.2e+008 N/m²</p>	SolidBody 1(Boss-Extrude3)(EX05_2 blade)

Loads and Fixtures

Fixture name	Fixture Image	Fixture Details
Fixed-1		<p>Entities: 1 face(s)</p> <p>Type: Fixed Geometry</p>

Load name	Load Image	Load Details
Force-1		<p>Entities: 2 face(s)</p> <p>Type: Apply normal force</p> <p>Value: 10 lbf</p>



Mesh information

Mesh type	Solid Mesh
Mesher Used:	Standard mesh
Automatic Transition:	Off
Include Mesh Auto Loops:	Off
Jacobian points	4 Points
Element Size	0.162283 in
Tolerance	0.00811413 in
Mesh Quality Plot	High

Mesh information - Details

Total Nodes	15855
Total Elements	9016
Maximum Aspect Ratio	5.6851
% of elements with Aspect Ratio < 3	99.8
% of elements with Aspect Ratio > 10	0
% of distorted elements(Jacobian)	0
Time to complete mesh(hh:mm:ss):	00:00:01
Computer name:	V511A-17

Model name: EX05_2 blade
Study name: SimulationXpress Study(Default-)
Mesh type: Solid Mesh



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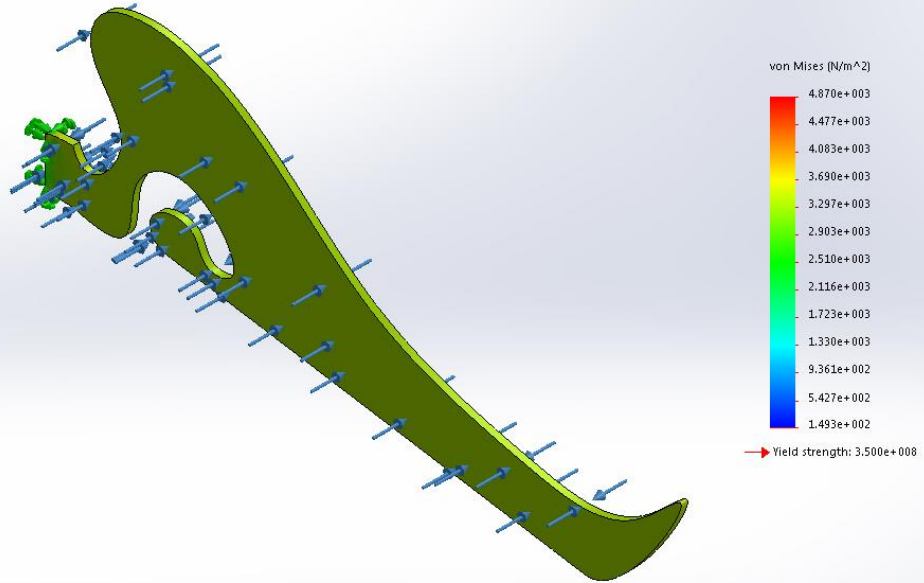




Study Results

Name	Type	Min	Max
Stress	VON: von Mises Stress	1.493e+002N/m ² Node: 14117	4.870e+003N/m ² Node: 306

Model name: EX05_2 blade
 Study name: SimulationXpress Study-(Default-)
 Plot type: Static modal stress Stress
 Deformation scale: 2.06914e+007

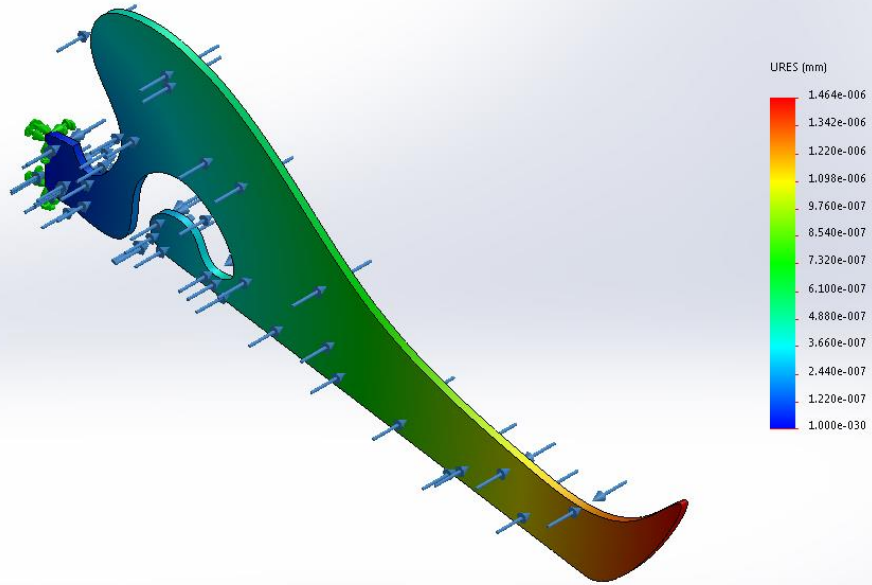


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EX05_2 blade-SimulationXpress Study-Stress-Stress

Name	Type	Min	Max
Displacement	URES: Resultant Displacement	0.000e+000mm Node: 292	1.464e-006mm Node: 13314

Model name: EX05_2 blade
 Study name: SimulationXpress Study-(Default-)
 Plot type: Static displacement Displacement
 Deformation scale: 2.06914e+007

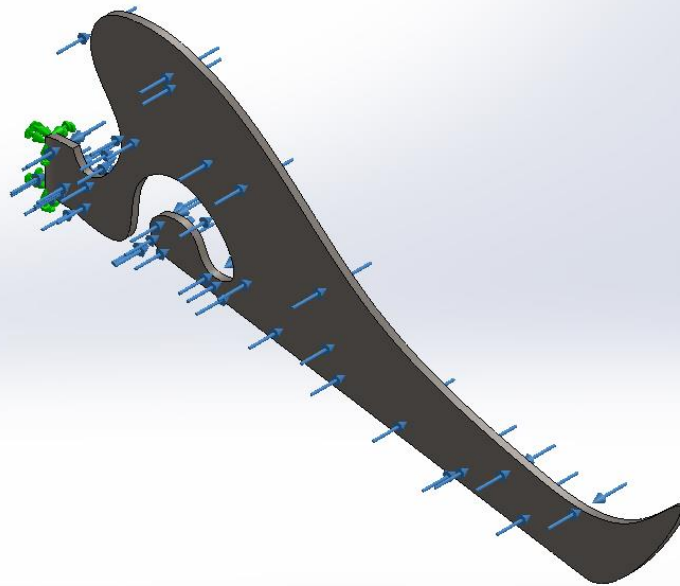


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EX05_2 blade-SimulationXpress Study-Displacement-Displacement

Name	Type
Deformation	Deformed shape

Model name: EX05_2 blade
 Study name: SimulationXpress Study-(Default-)
 Plot type: Deformed shape Deformation
 Deformation scale: 2.06914e+007

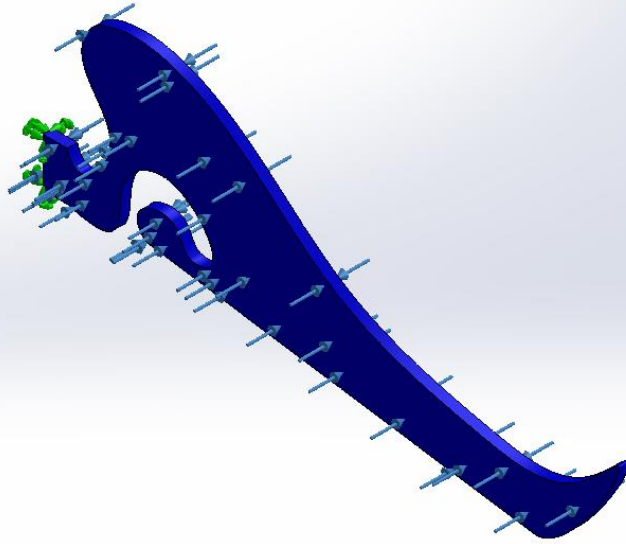


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EX05_2 blade-SimulationXpress Study-Displacement-Deformation

Name	Type	Min	Max
Factor of Safety	Max von Mises Stress	7.186e+004 Node: 306	2.344e+006 Node: 14117

Model name: EX05_2 blade
 Study name: SimulationXpress Study(-Default-)
 Plot type: Factor of Safety Factor of Safety
 Criterion: Max von Mises Stress
 Red < FOS = 1 < Blue



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EX05_2 blade-SimulationXpress Study-Factor of Safety-Factor of Safety

Conclusion