

## Simulation of Tomoe blade

**Date:** Friday, June 08, 2018  
**Designer:** Keyron Cozier  
**Study name:** SimulationXpress Study  
**Analysis type:** Static

### Table of Contents

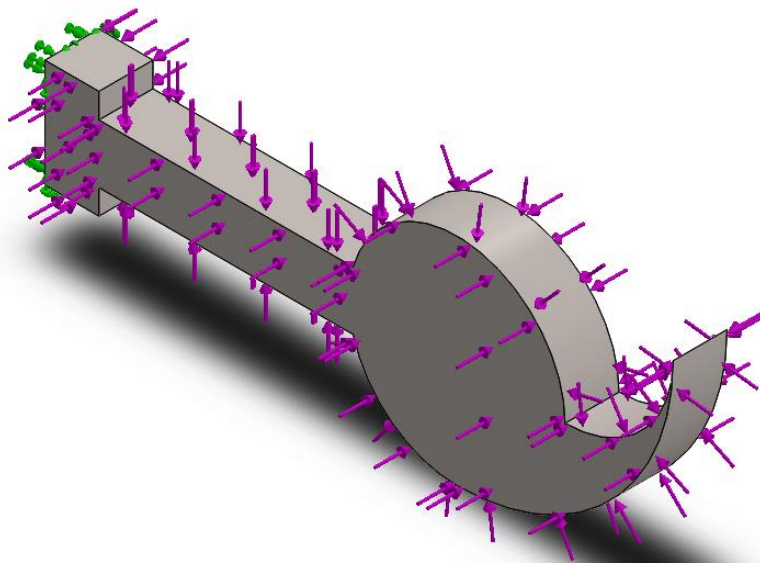
Description.....	1
Assumptions .....	2
Model Information .....	2
Material Properties .....	3
Loads and Fixtures.....	4
Mesh information .....	5
Study Results .....	7
Conclusion .....	10

### Description

Advanced Solid Modeling 2  
EX\_06

## Assumptions

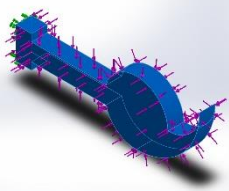
## Model Information



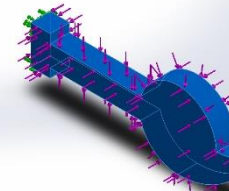
Model name: Tomoe blade  
Current Configuration: Default

### Solid Bodies

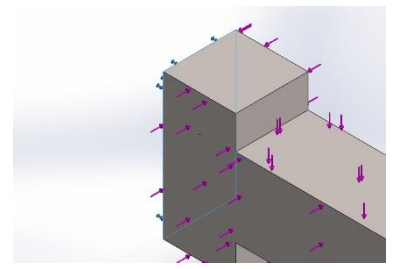
Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
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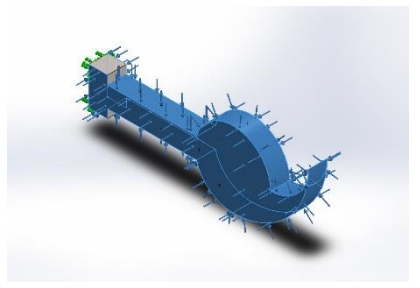
<p>Boss-Extrude2</p> 	<p>Solid Body</p>	<p>Mass:0.206323 kg Volume:4.48529e-005 m<sup>3</sup> Density:4600 kg/m<sup>3</sup> Weight:2.02197 N</p>	<p>F:\work\Solidworks (3510)\My Turbine\Tomoe blade.SLDPRT Jun 08 18:50:50 2018</p>
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### Material Properties

Model Reference	Properties	Components
	<p>Name: Titanium Model type: Linear Elastic Isotropic Default failure criterion: Max von Mises Stress Yield strength: 1.4e+008 N/m<sup>2</sup> Tensile strength: 2.35e+008 N/m<sup>2</sup></p>	<p>SolidBody 1(Boss-Extrude2)(Tomoe blade)</p>

### Loads and Fixtures

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

Load name	Load Image	Load Details
Force-1		<b>Entities:</b> 8 face(s) <b>Type:</b> Apply normal force <b>Value:</b> 1 N

**Mesh information**

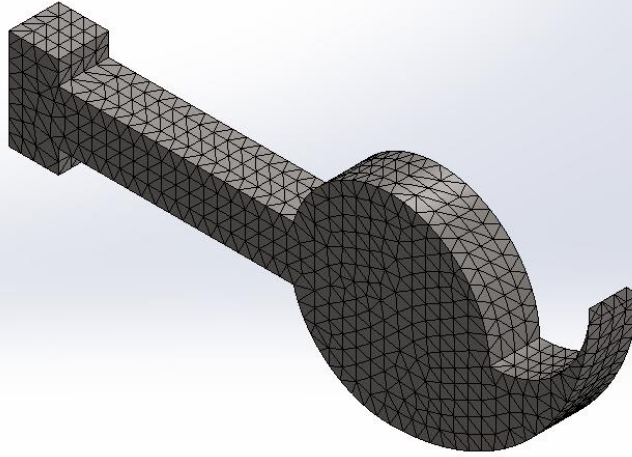
Mesh type	Solid Mesh
Mesher Used:	Standard mesh
Automatic Transition:	Off
Include Mesh Auto Loops:	Off
Jacobian points	4 Points
Element Size	0.139929 in
Tolerance	0.00699646 in
Mesh Quality Plot	High

**Mesh information - Details**

Total Nodes	12019
Total Elements	7371
Maximum Aspect Ratio	105.26
% of elements with Aspect Ratio < 3	98.8
% of elements with Aspect Ratio > 10	0.393
% of distorted elements(Jacobian)	0
Time to complete mesh(hh:mm:ss):	00:00:01
Computer name:	V511A-13



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



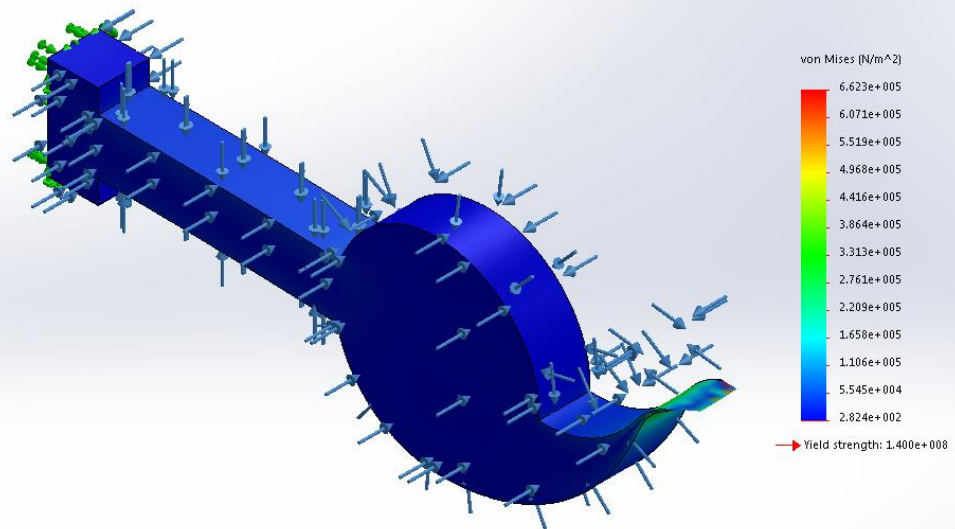
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### Study Results

Name	Type	Min	Max
Stress	VON: von Mises Stress	2.824e+002N/m <sup>2</sup> Node: 11171	6.623e+005N/m <sup>2</sup> Node: 10071

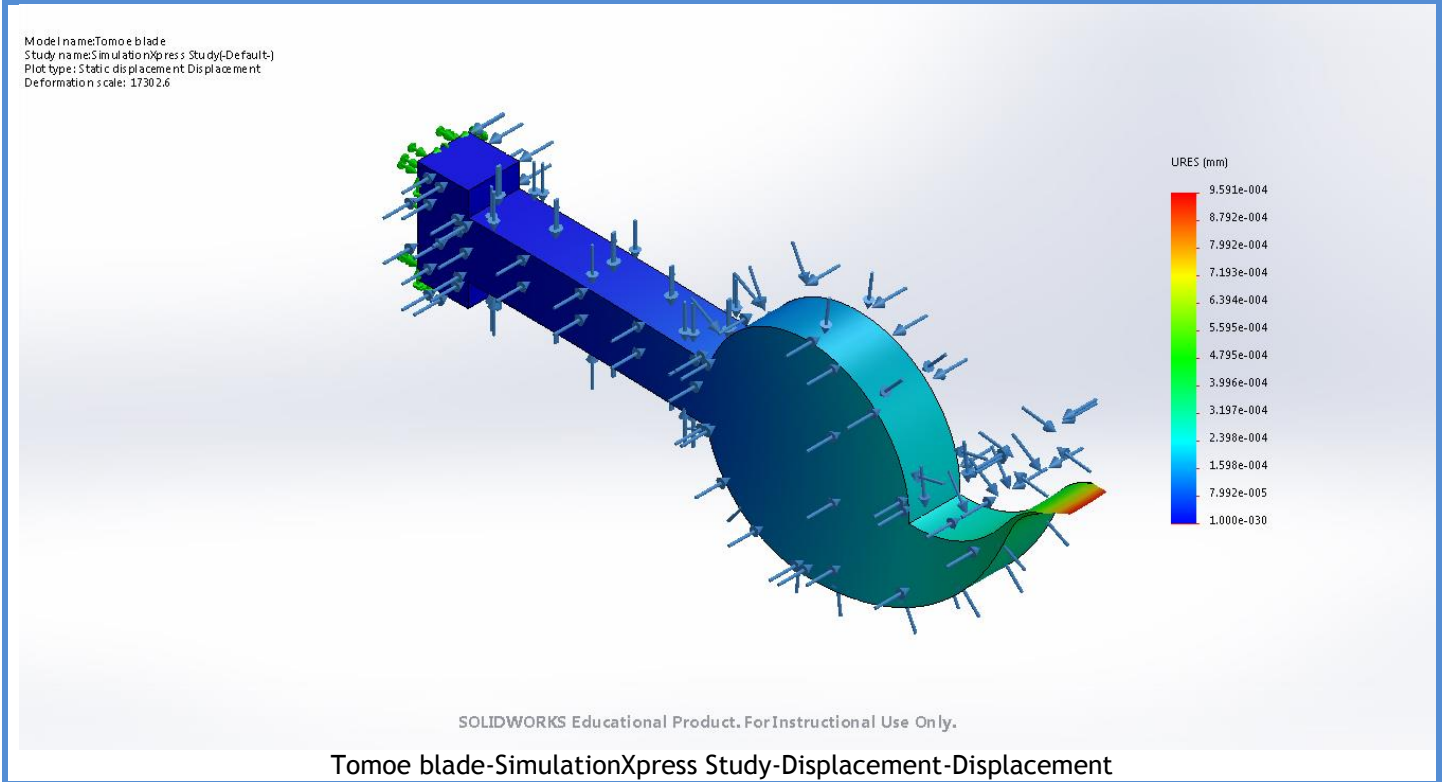
Model name: Tomoe blade  
Study name: SimulationXpress Study-(Default-)  
Plot type: Static nodal stress Stress  
Deformation scale: 17302.6



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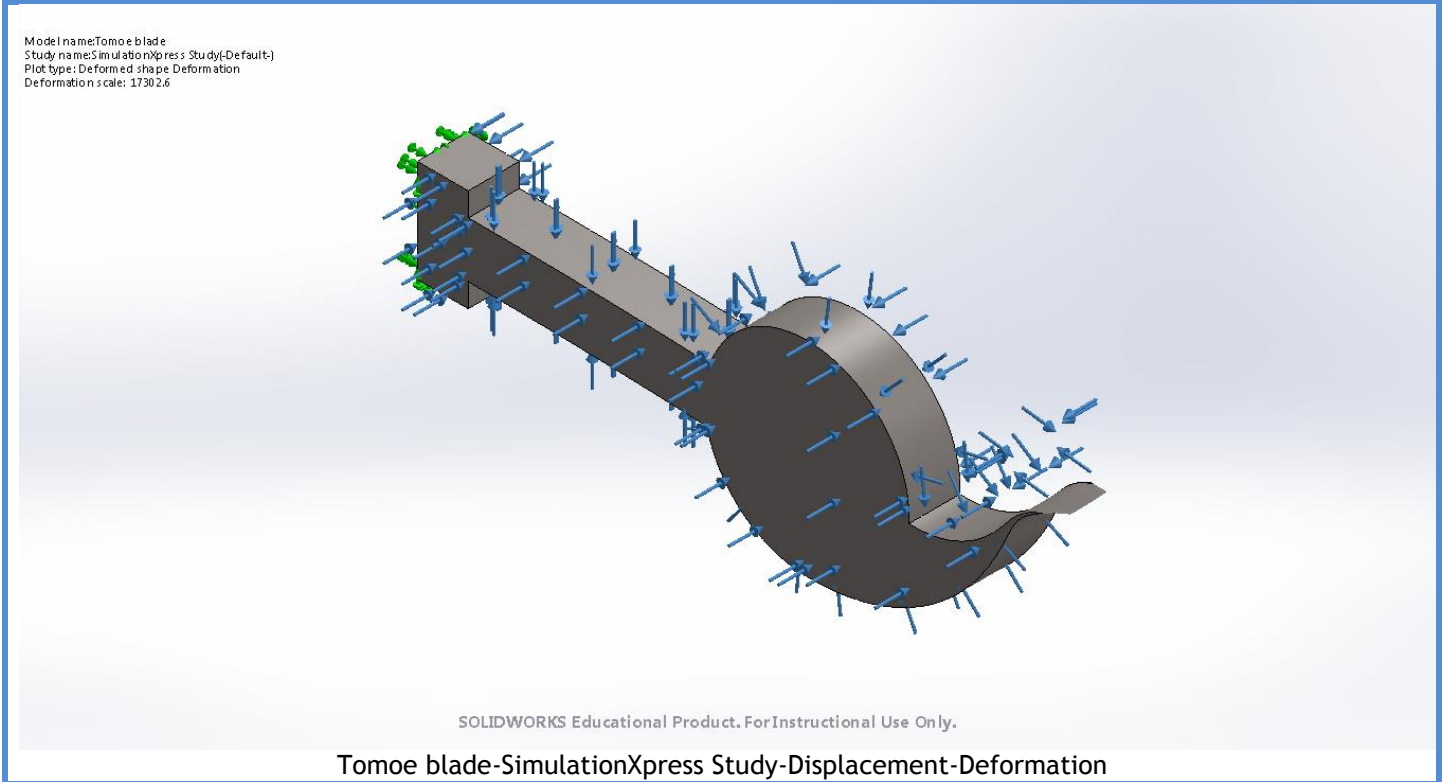
Tomoe blade-SimulationXpress Study-Stress-Stress

Name	Type	Min	Max
Displacement	URES: Resultant Displacement	0.000e+000mm Node: 76	9.591e-004mm Node: 10058

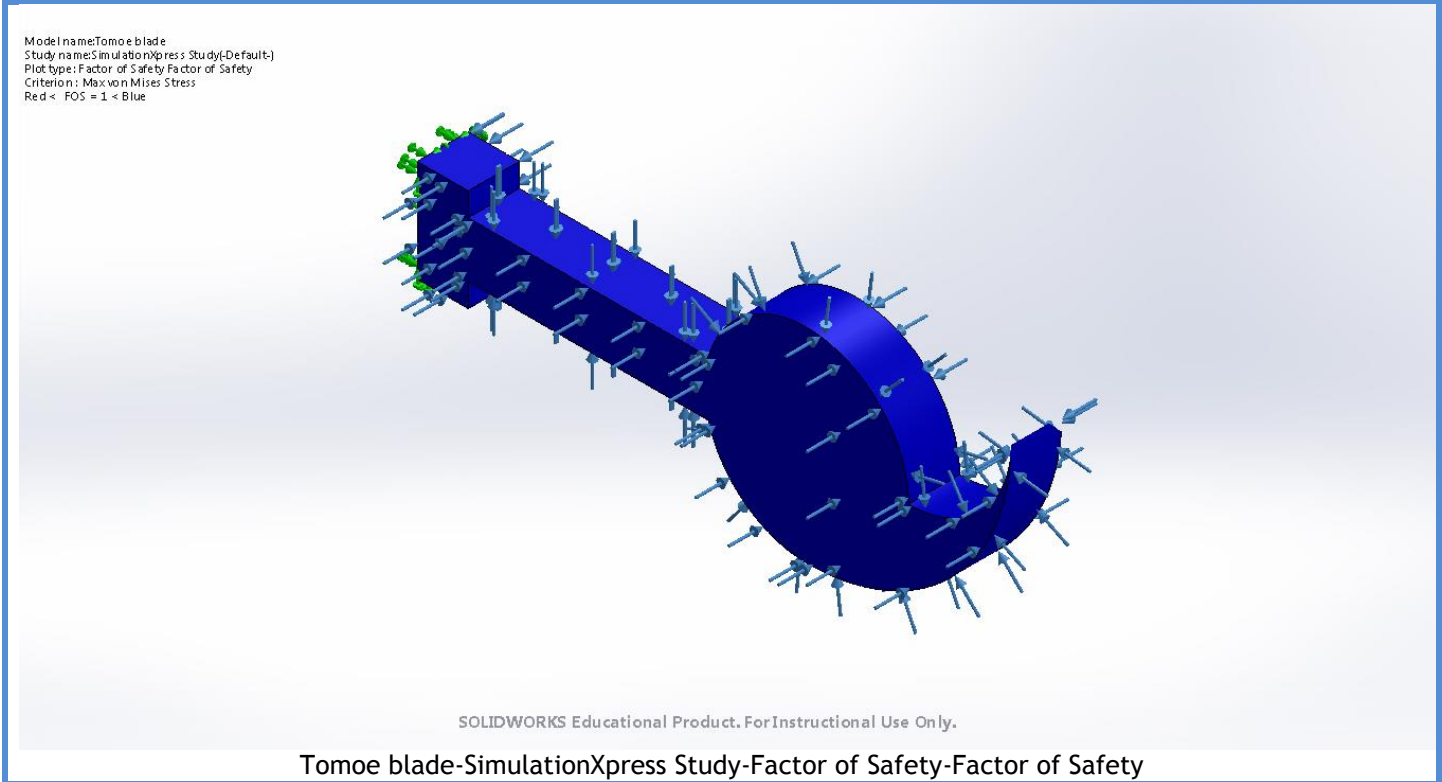


Name	Type
Deformation	Deformed shape





Name	Type	Min	Max
Factor of Safety	Max von Mises Stress	2.114e+002 Node: 10071	4.957e+005 Node: 11171



## Conclusion