Simulation of Assem1

Date: 11 December 2023
Designer: Solidworks
Study name: Static 1
Analysis type: Static

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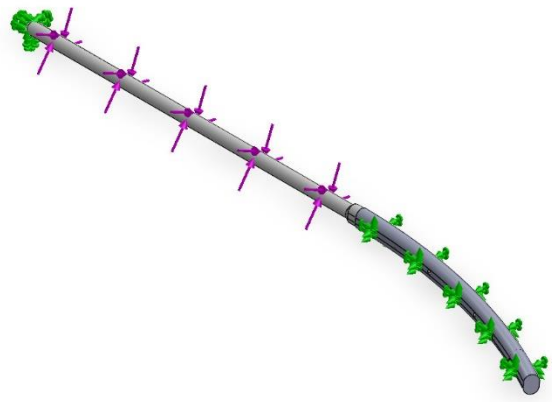
Description

No Data

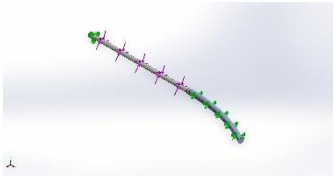
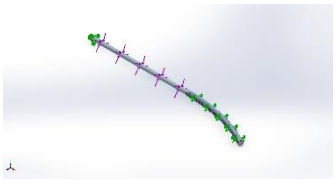
Assumptions

Model Information



Model name: Assem1
Current Configuration: Default

Solid Bodies

Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
Ø3.0mm Dowel Hole1 	Solid Body	**Mass:0.0176703 kg** **Volume:3.90936e-06 m^3** **Density:4,520 kg/m^3** **Weight:0.173169 N**	**C:\Users\2450027\OneDrive - University of Dundee\Desktop\Research and devlopment skills\Prosthetics\Luke\Solidworks\Distal Extension.SLDPRT** Dec 10 21:44:46 2023
Ø3.0mm Dowel Hole6 	Solid Body	**Mass:0.0315808 kg** **Volume:6.9869e-06 m^3** **Density:4,520 kg/m^3** **Weight:0.309492 N**	**C:\Users\2450027\OneDrive - University of Dundee\Desktop\Research and devlopment skills\Prosthetics\Luke\Solidworks\lumbar extension.SLDPRT** Dec 10 21:44:46 2023

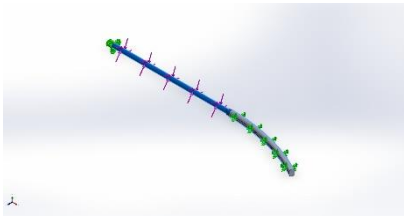
Study Properties

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 (C:\Users\2450027\OneDrive - University of Dundee\Desktop\Research and devlopment skills\Prosthetics\Luke\Solidworks)

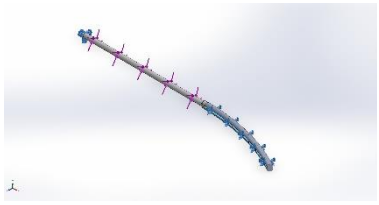
Units

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

Material Properties

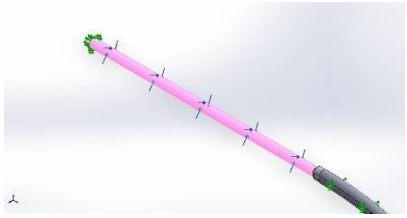
Model Reference	Properties	Components
	**Name:** Ti-6Al-7Nb **Model type:** Linear Elastic Isotropic **Default failure criterion:** Unknown **Yield strength:** 9e+08 N/m^2 **Elastic modulus:** 1.05e+11 N/m^2 **Poisson's ratio:** 0.34 **Mass density:** 4,520 kg/m^3 **Shear modulus:** 3.91791e+10 N/m^2	SolidBody 1(Ø3.0mm Dowel Hole1)(Distal Extension-1), SolidBody 1(Ø3.0mm Dowel Hole6)(lumbar extension-1)
Curve Data:N/A		

Loads and Fixtures

Fixture name	Fixture Image	Fixture Details
Fixed-1		**Entities:** 3 face(s) **Type:** Fixed Geometry

Resultant Forces

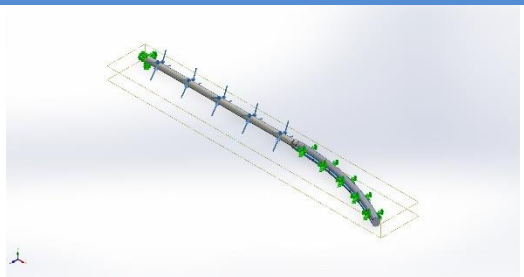
Components	X	Y	Z	Resultant
Reaction force(N)	2.38419e-07	-0.0659065	0.152096	0.165761
Reaction Moment(N.m)	0	0	0	0

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

Connector Definitions

No Data

Interaction Information

Interaction	Interaction Image	Interaction Properties
Global Interaction		**Type:** Bonded **Components:** 1 component(s) **Options:** Independent mesh

Mesh information

Mesh type	Solid Mesh
Mesher Used:	Blended curvature-based mesh
Jacobian points for High quality mesh	16 Points
Maximum element size	4.63715 mm
Minimum element size	0.574025 mm
Mesh Quality	High
Remesh failed parts independently	Off

Mesh information - Details

Total Nodes	29845
Total Elements	15071
Maximum Aspect Ratio	3,824.5
% of elements with Aspect Ratio < 3	2.42
Percentage of elements with Aspect Ratio > 10	34.3
Percentage of distorted elements	0
Time to complete mesh(hh;mm;ss):	00:00:03
Computer name:	W-011323

Sensor Details

No Data

Resultant Forces

Reaction forces

Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N	2.38419e-07	-0.0659065	0.152096	0.165761

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	1.16231e-06	2.41678e-05	6.35982e-05	6.80453e-05

Free body moments

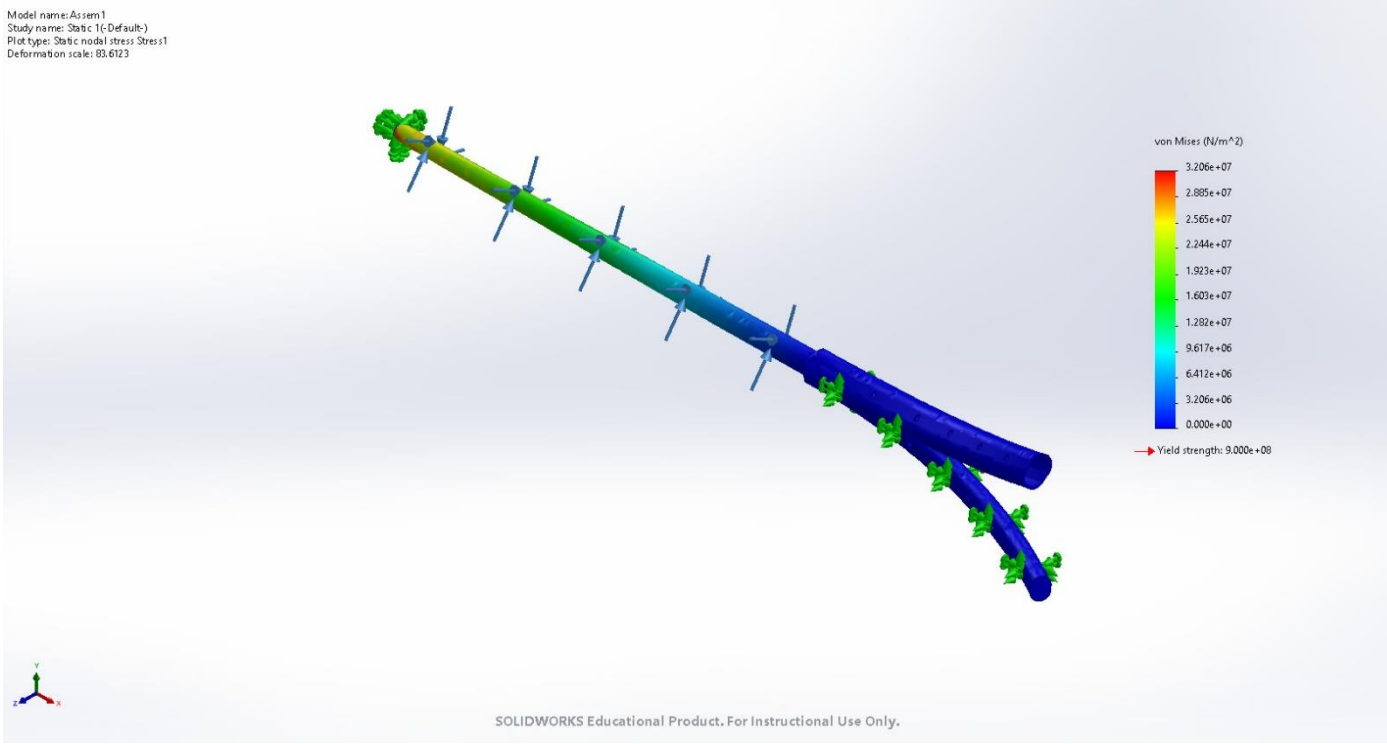
Selection set	Units	Sum X	Sum Y	Sum Z	Resultant
Entire Model	N.m	0	0	0	1e-33

Beams

No Data

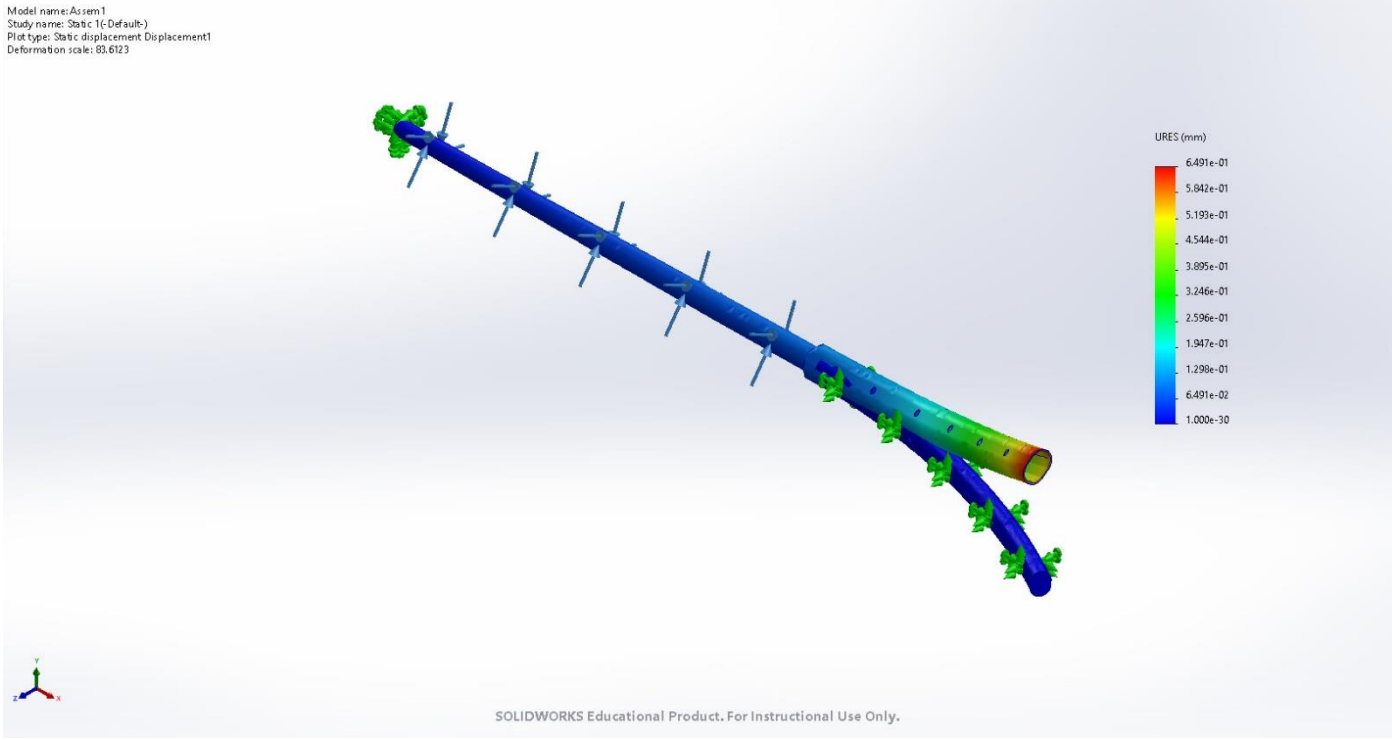
Study Results

Name	Type	Min	Max
Stress1	VON: von Mises Stress	0.000e+00N/m^2 Node: 1	3.206e+07N/m^2 Node: 24172



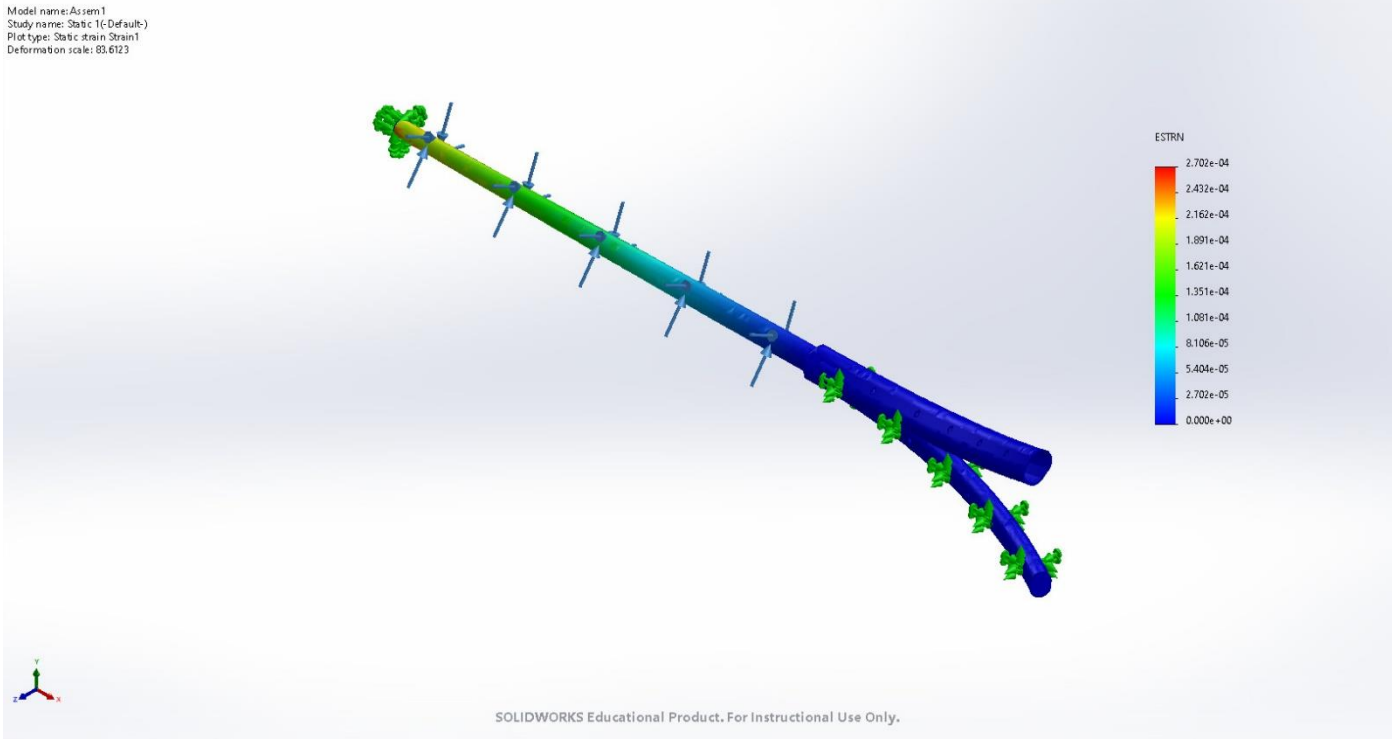
Assem1-Static 1-Stress-Stress1

Name	Type	Min	Max
Displacement1	URES: Resultant Displacement	0.000e+00mm Node: 1	6.491e-01mm Node: 10474



Assem1-Static 1-Displacement-Displacement1

Name	Type	Min	Max
Strain1	ESTRN: Equivalent Strain	0.000e+00 Element: 1	2.702e-04 Element: 8752



Assem1-Static 1-Strain-Strain1

Conclusion