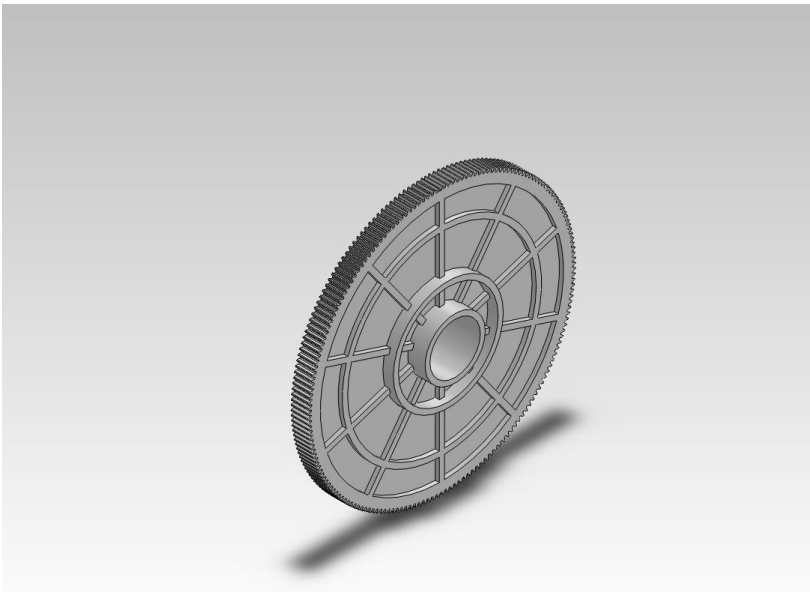


Simulation of LargeGear (I)

Date: Thursday, November 01, 2012
Designer: Nick Higgins
Study name: SimulationXpress Study
Analysis type: Static

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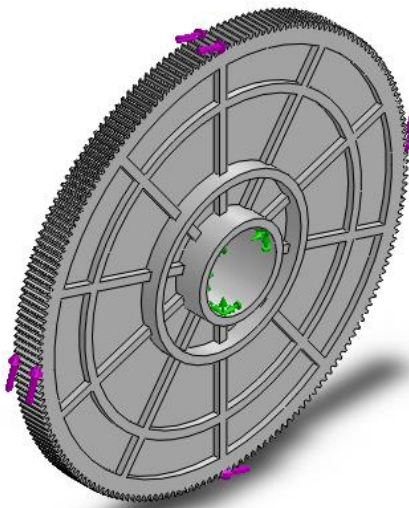


Description

With a 9 lbf applied to the pedal, the large gear inside generator housing experiences an overall torque, which is broken down into four forces at the outer radius of the gear.

Assumptions

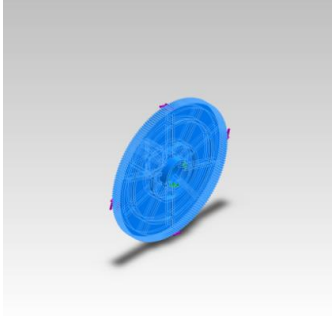
Model Information



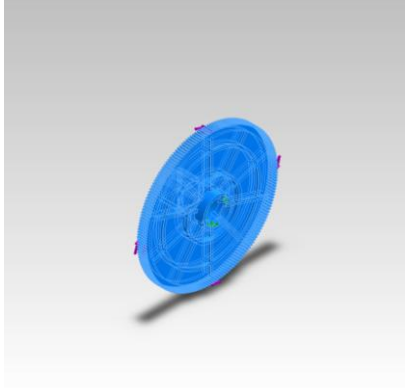
Model name: LargeGear (I)
Current Configuration: Default

Solid Bodies

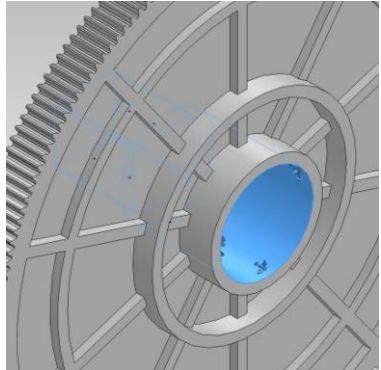
Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
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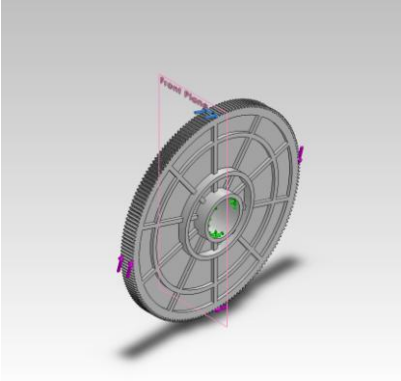
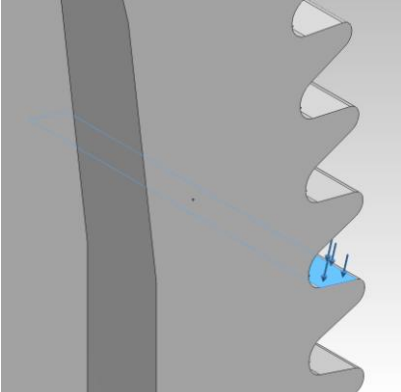
<p>CirPattern1</p> 	<p>Solid Body</p>	<p>Mass:0.315316 lb Volume:8.40171 in³ Density:0.03753 lb/in³ Weight:0.315103 lbf</p>	<p>E:\Sr. Design\Concept Parts\LargeGear (I).SLDPRT Nov 01 10:37:20 2012</p>
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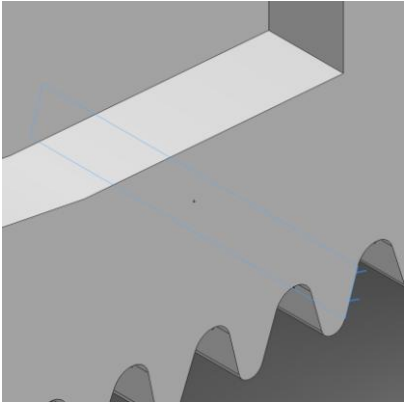
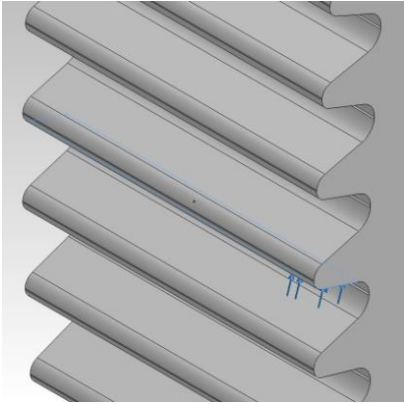
Material Properties

Model Reference	Properties	Components
	<p>Name: Harbec Plastic Model type: Linear Elastic Isotropic Default failure criterion: Unknown Tensile strength: 7.37739e+007 N/m²</p>	<p>SolidBody 1(CirPattern1)(LargeGear (I))</p>

Loads and Fixtures

Fixture name	Fixture Image	Fixture Details
Fixed-1		Entities: 5 face(s) Type: Fixed Geometry

Load name	Load Image	Load Details
Force-1		Entities: 1 face(s), 1 plane(s) Type: Apply normal force Value: 4.11 lbf
Force-2		Entities: 1 face(s) Type: Apply normal force Value: 4.11 lbf

<p>Force-3</p>		<p>Entities: 1 face(s) Type: Apply normal force Value: 4.11 lbf</p>
<p>Force-4</p>		<p>Entities: 1 face(s) Type: Apply normal force Value: 4.11 lbf</p>

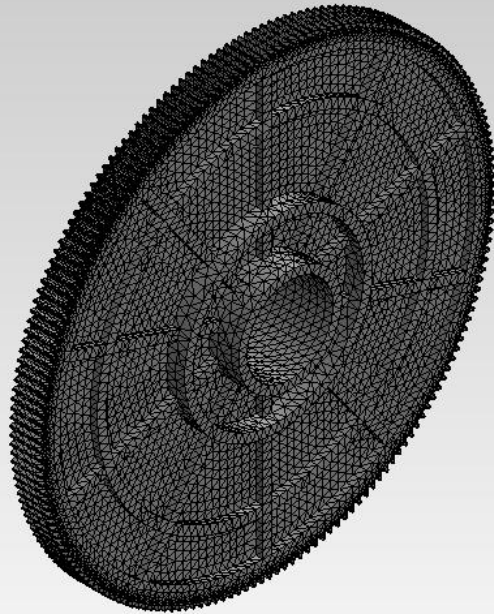
Mesh Information

Mesh type	Solid Mesh
Mesher Used:	Standard mesh
Automatic Transition:	Off
Include Mesh Auto Loops:	Off
Jacobian points	4 Points
Element Size	0.102783 in
Tolerance	0.00513917 in
Mesh Quality	High

Mesh Information - Details

Total Nodes	179423
Total Elements	106373
Maximum Aspect Ratio	25.608
% of elements with Aspect Ratio < 3	81.2
% of elements with Aspect Ratio > 10	0.576
% of distorted elements(Jacobian)	0
Time to complete mesh(hh:mm:ss):	00:01:07
Computer name:	TWCVIA22

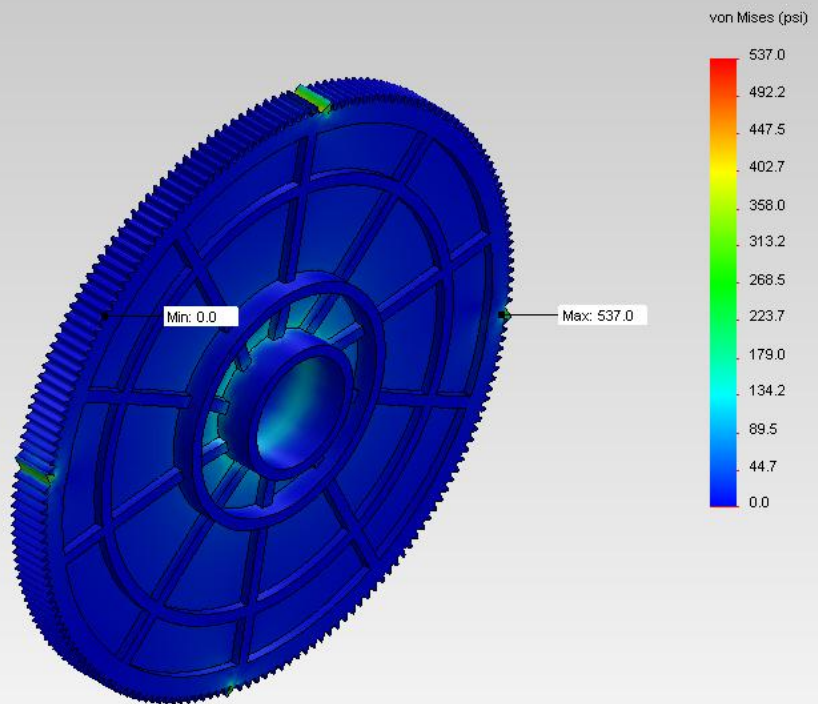
Model name: LargeGear (1)
Study name: SimulationXpress Study
Mesh type: Solid mesh



Study Results

Name	Type	Min	Max
Stress	VON: von Mises Stress	8.96976e-006 psi Node: 83854	536.966 psi Node: 131850

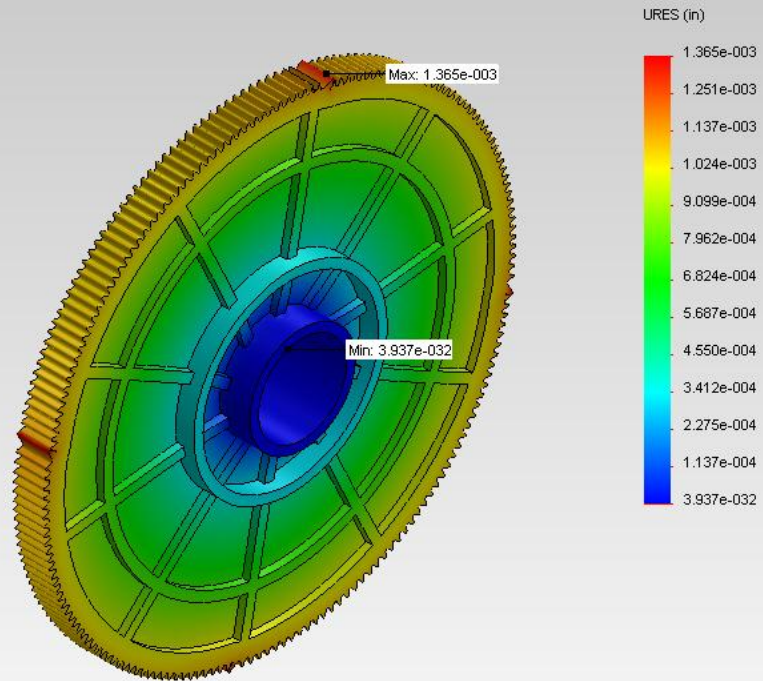
Model name: LargeGear (1)
Study name: SimulationXpress Study
Plot type: Static nodal stress Stress
Deformation scale: 446.328



LargeGear (1)-SimulationXpress Study-Stress-Stress

Name	Type	Min	Max
Displacement	URES: Resultant Displacement	0 in Node: 1	0.00136489 in Node: 1438

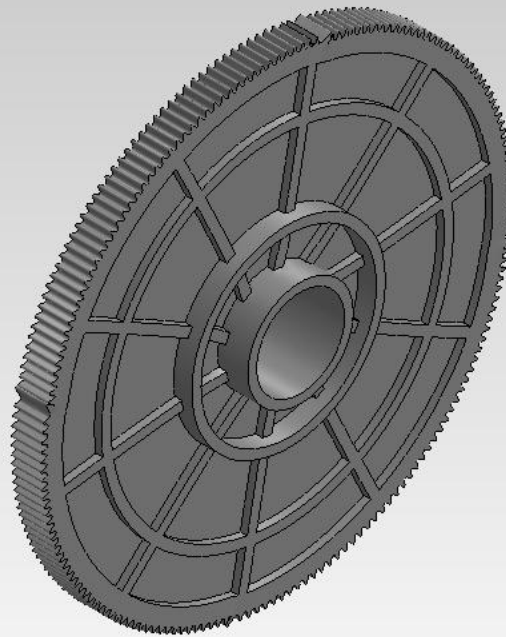
Model name: LargeGear (I)
Study name: SimulationXpress Study
Plot type: Static displacement Displacement
Deformation scale: 446.328



LargeGear (I)-SimulationXpress Study-Displacement-Displacement

Name	Type
Deformation	Deformed Shape

Model name: LargeGear (1)
Study name: SimulationXpress Study
Plot type: Deformed Shape Deformation
Deformation scale: 446.328



LargeGear (1)-SimulationXpress Study-Displacement-Deformation

Conclusion