



Description

Gear 3 (Gear Small Radius) with 25 lbf applied at crank arm handle (pedal)

Simulation of Modified_SmallGear

Date: Tuesday, November 06, 2012
Designer: Solidworks
Study name: SimulationXpress Study
Analysis type: Static

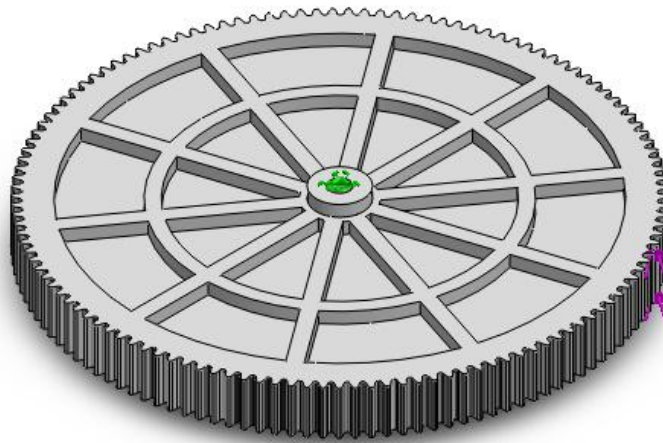
Table of Contents

Description.....	1
Assumptions	2
Model Information	2
Material Properties	4
Loads and Fixtures.....	5
Mesh Information	6
Study Results	8
Conclusion	10

Assumptions

Model Information

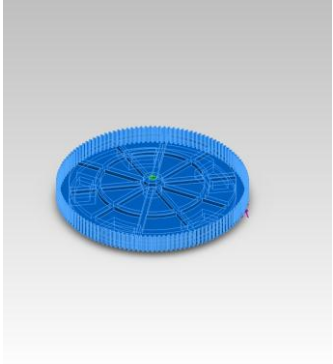





Model name: Modified_SmallGear
Current Configuration: Default

Solid Bodies

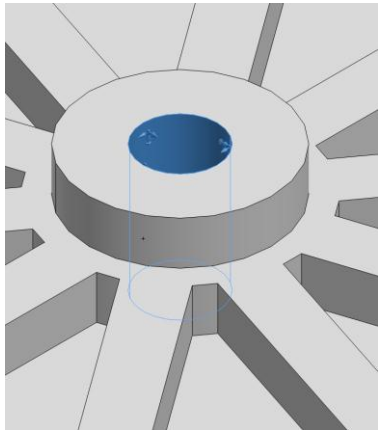
Document Name and Reference	Treated As	Volumetric Properties	Document Path/Date Modified
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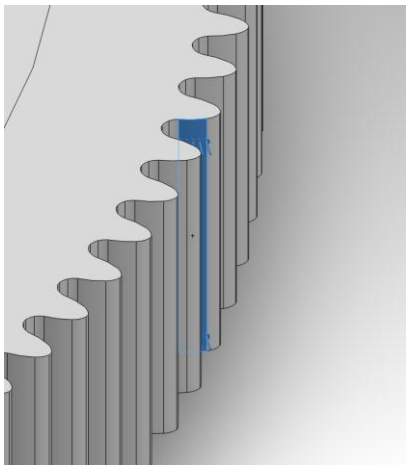
<p>Boss-Extrude6</p> 	<p>Solid Body</p>	<p>Mass:0.139146 lb Volume:3.70858 in³ Density:0.03752 lb/in³ Weight:0.139052 lbf</p>	<p>E:\Sr. Design\Concept Parts\Modified Design\Modified_SmallGear.SLDPRT Nov 04 17:37:00 2012</p>
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Material Properties

Model Reference	Properties	Components
	<p>Name: HARBEC Plastic Model type: Linear Elastic Isotropic Default failure criterion: Max von Mises Stress Tensile strength: 10700 psi</p>	<p>SolidBody 1(Boss-Extrude6)(Modified_SmallGear)</p>

Loads and Fixtures

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

Load name	Load Image	Load Details
Force-1		<p>Entities: 1 face(s) Type: Apply normal force Value: 7.71 lbf</p>

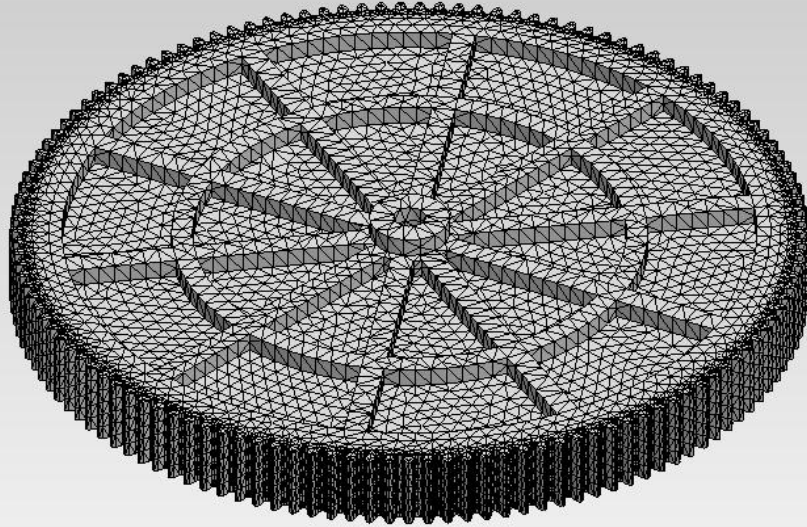
Mesh Information

Mesh type	Solid Mesh
Mesher Used:	Standard mesh
Automatic Transition:	Off
Include Mesh Auto Loops:	Off
Jacobian points	4 Points
Element Size	0.0870962 in
Tolerance	0.00435481 in
Mesh Quality	High

Mesh Information - Details

Total Nodes	153496
Total Elements	93358
Maximum Aspect Ratio	21.171
% of elements with Aspect Ratio < 3	74.4
% of elements with Aspect Ratio > 10	3.72
% of distorted elements(Jacobian)	0
Time to complete mesh(hh:mm:ss):	00:00:51
Computer name:	TWCVIA07

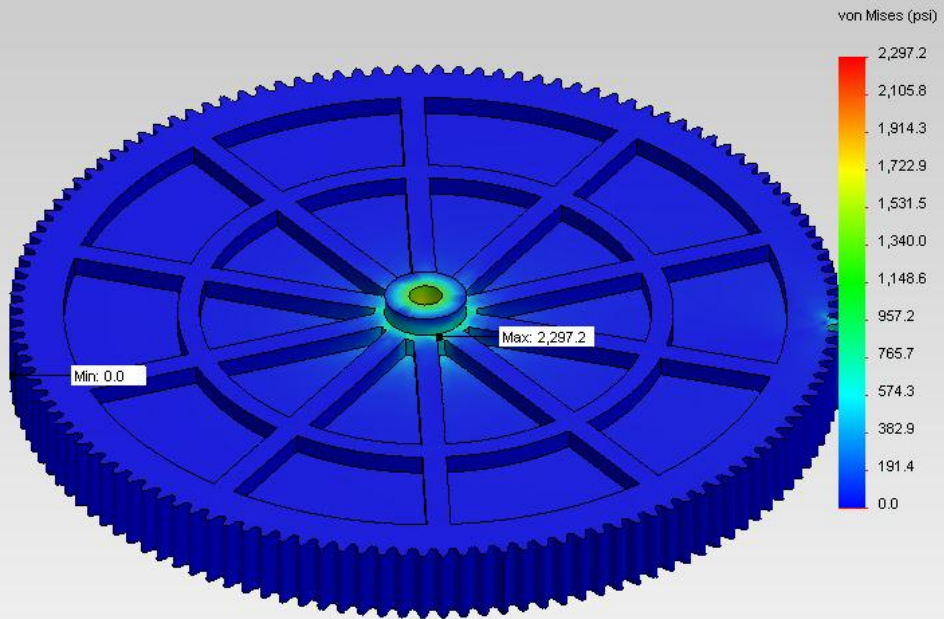
Model name: Modified_SmallGear
Study name: SimulationXpress Study
Mesh type: Solid mesh



Study Results

Name	Type	Min	Max
Stress	VON: von Mises Stress	0.00641164 psi Node: 132094	2297.21 psi Node: 115168

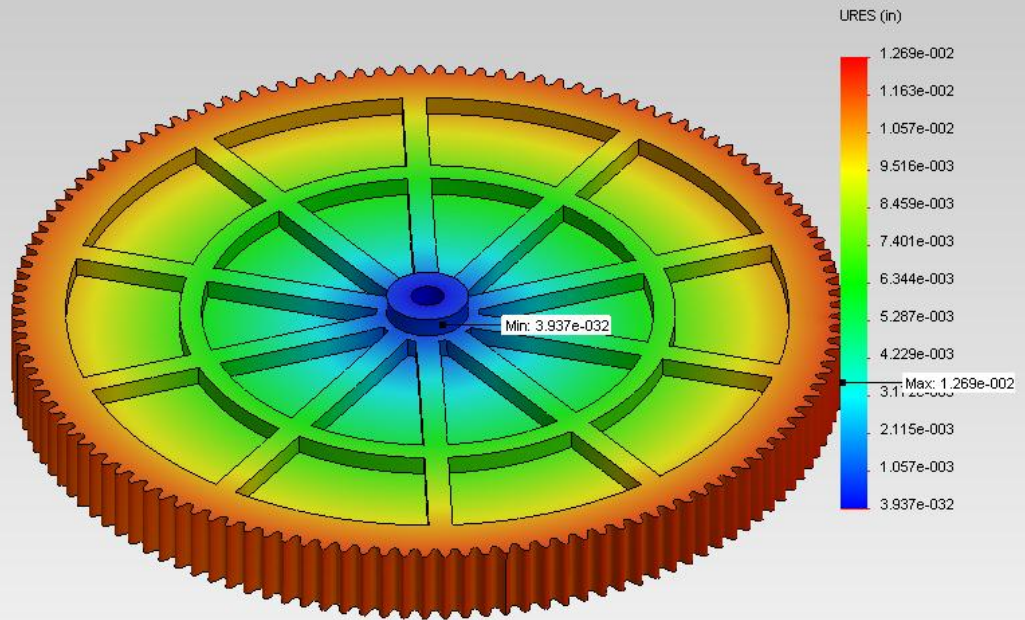
Model name: Modified_SmallGear
 Study name: SimulationXpress Study
 Plot type: Static nodal stress Stress
 Deformation scale: 34.4777



Modified_SmallGear-SimulationXpress Study-Stress-Stress

Name	Type	Min	Max
Displacement	URES: Resultant Displacement	0 in Node: 51	0.0126879 in Node: 2163

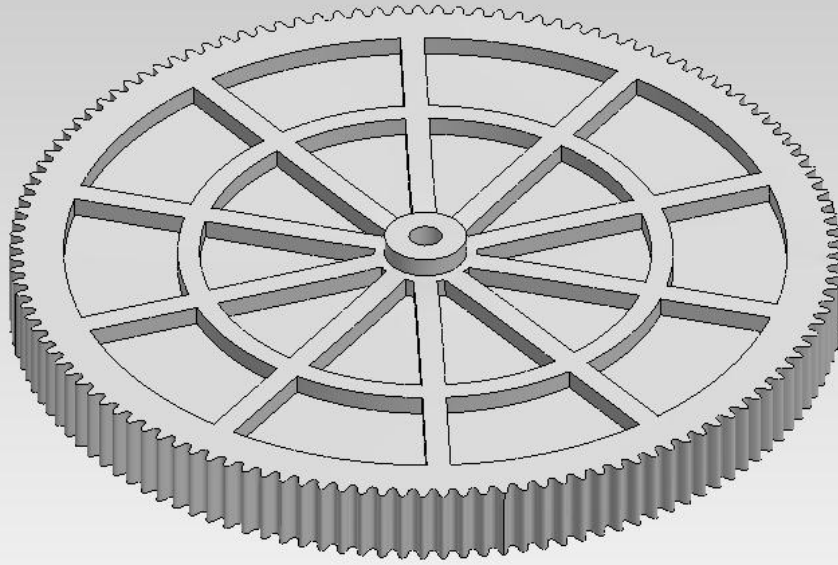
Model name: Modified_SmallGear
 Study name: SimulationXpress Study
 Plot type: Static displacement Displacement
 Deformation scale: 34.4777



Modified_SmallGear-SimulationXpress Study-Displacement-Displacement

Name	Type
Deformation	Deformed Shape

Model name: Modified_SmallGear
Study name: SimulationXpress Study
Plot type: Deformed Shape Deformation
Deformation scale: 34.4777



Modified_SmallGear-SimulationXpress Study-Displacement-Deformation

Conclusion