

Stress Analysis Report



Analyzed File:	Sync pulley assembly.iam
Autodesk Inventor Version:	2018.2 (Build 222227000, 227)
Creation Date:	27/02/2018, 8:55 PM
Study Author:	CyprianWadzanai
Summary:	

Project Info (iProperties)

Summary

Author	CyprianWadzanai
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Project

Part Number	Sync pulley assembly
Designer	CyprianWadzanai
Cost	\$0.00
Date Created	26/02/2018

Status

Design Status	WorkInProgress
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Physical

Mass	0.404048 kg
Area	35900.7 mm^2
Volume	100917 mm^3
Center of Gravity	x=-35.8594 mm y=-0.0402338 mm z=16.5075 mm

Note: Physical values could be different from Physical values used by FEA reported below.

Modal Analysis:1

General objective and settings:

Design Objective	Single Point
Study Type	Modal Analysis
Last Modification Date	27/02/2018, 8:54 PM
Number of Modes	8
Frequency Range	Undefined
Compute Preloaded Modes	No
Enhanced Accuracy	No

Mesh settings:

Avg. Element Size (fraction of model diameter)	0.08
Min. Element Size (fraction of avg. size)	0.2
Grading Factor	1.5

Max. Turn Angle	60 deg
Create Curved Mesh Elements	No
Use part based measure for Assembly mesh	Yes

☐ **Material(s)**

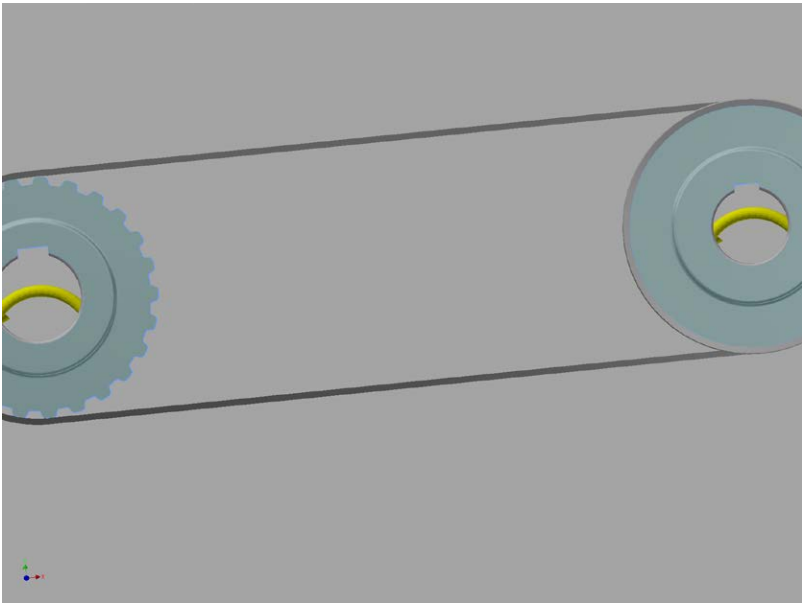
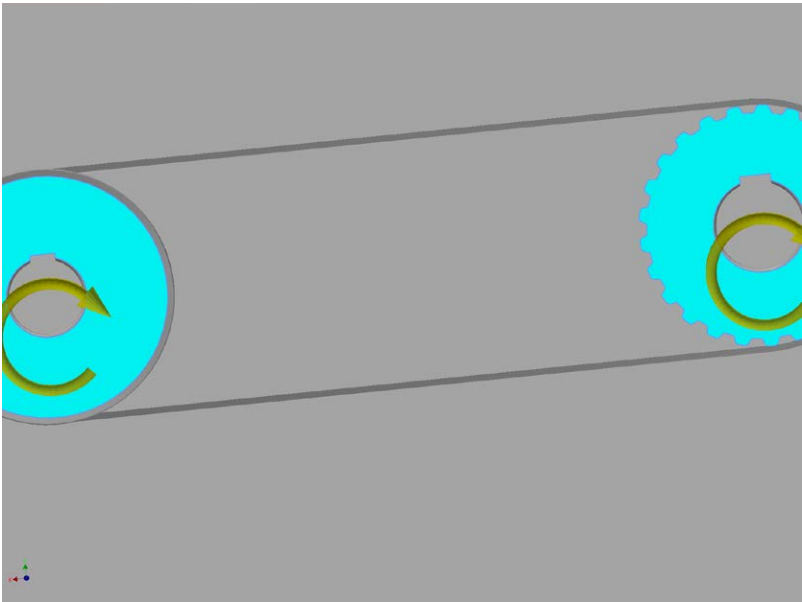
Name	Aluminum 6061-AHC	
General	Mass Density	2.7 g/cm^3
	Yield Strength	275 MPa
	Ultimate Tensile Strength	310 MPa
Stress	Young's Modulus	68.9 GPa
	Poisson's Ratio	0.33 ul
	Shear Modulus	25.9023 GPa
Part Name(s)	Sync pulley.ipt	
Name	Polyethylene, High Density	
General	Mass Density	0.952 g/cm^3
	Yield Strength	20.67 MPa
	Ultimate Tensile Strength	13.78 MPa
Stress	Young's Modulus	0.911 GPa
	Poisson's Ratio	0.392 ul
	Shear Modulus	0.327227 GPa
Part Name(s)	Synchronous Belt	
Name	Steel	
General	Mass Density	7.85 g/cm^3
	Yield Strength	207 MPa
	Ultimate Tensile Strength	345 MPa
Stress	Young's Modulus	210 GPa
	Poisson's Ratio	0.3 ul
	Shear Modulus	80.7692 GPa
Part Name(s)	Synchronous Pulley1 Synchronous Pulley2	

☐ **Operating conditions**

☐ **Moment:1**

Load Type	Moment
Magnitude	62.270 N mm
Vector X	0.000 N mm
Vector Y	0.000 N mm
Vector Z	62.270 N mm

☐ **Selected Face(s)**



☐ Contacts (Bonded)

Name	Part Name(s)
Bonded:1	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:2	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:3	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:4	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:5	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:6	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:7	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:8	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:9	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:10	Synchronous Belts Transmission:1/Synchronous Belt:1

	Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:11	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:12	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
Bonded:13	Synchronous Belts Transmission:1/Synchronous Belt:1 Synchronous Belts Transmission:1/Synchronous Pulley2:1
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☐ Results

☐ Frequency Value(s)

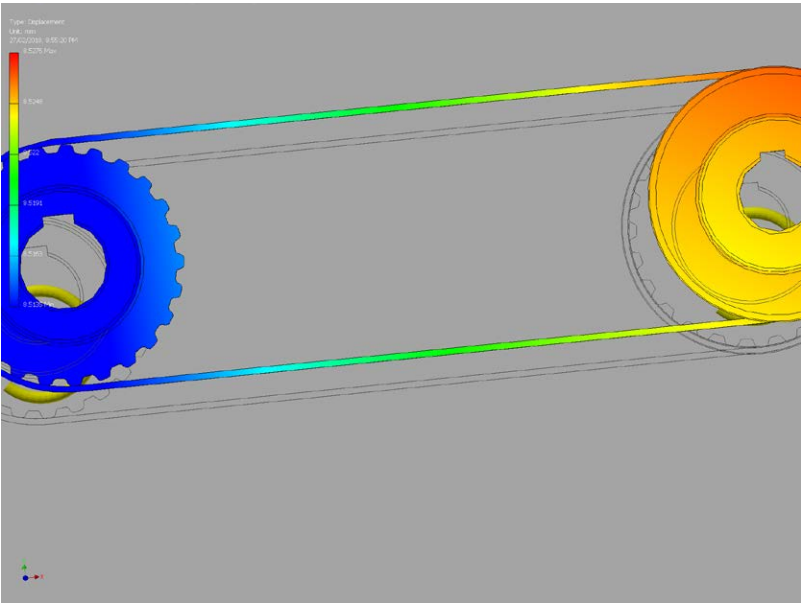
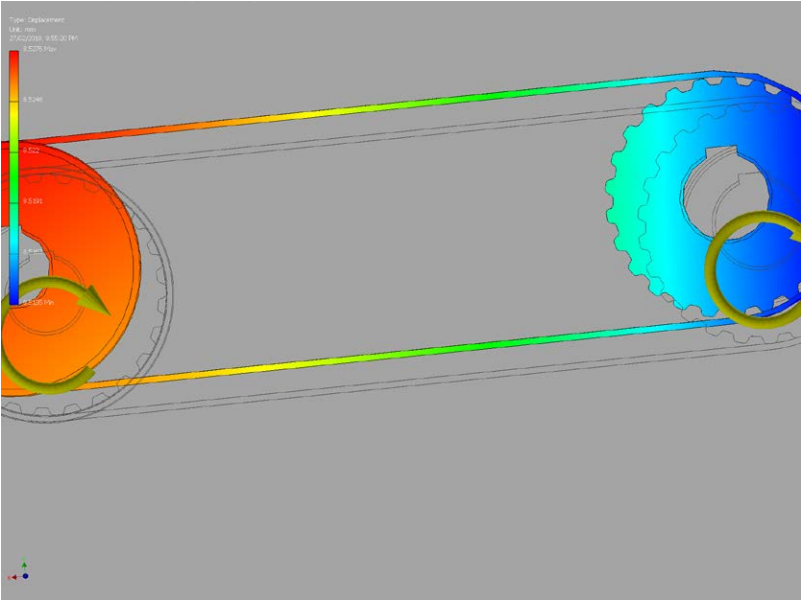
F1	0.00 Hz
F2	1.03 Hz
F3	1.04 Hz
F4	1.05 Hz
F5	1.13 Hz
F6	1.25 Hz
F7	1.43 Hz
F8	2.67 Hz

☐ Result Summary

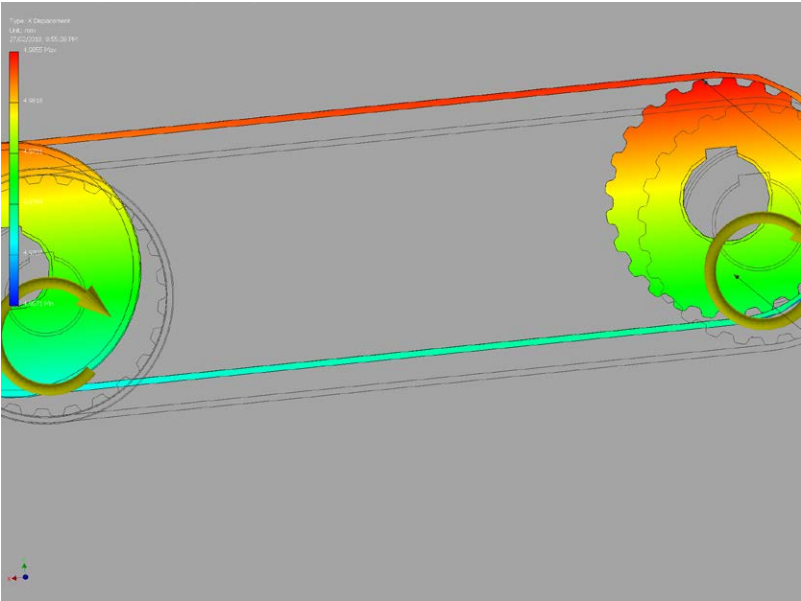
Name	Result Value
Volume	100917 mm^3
Mass	0.490748 kg

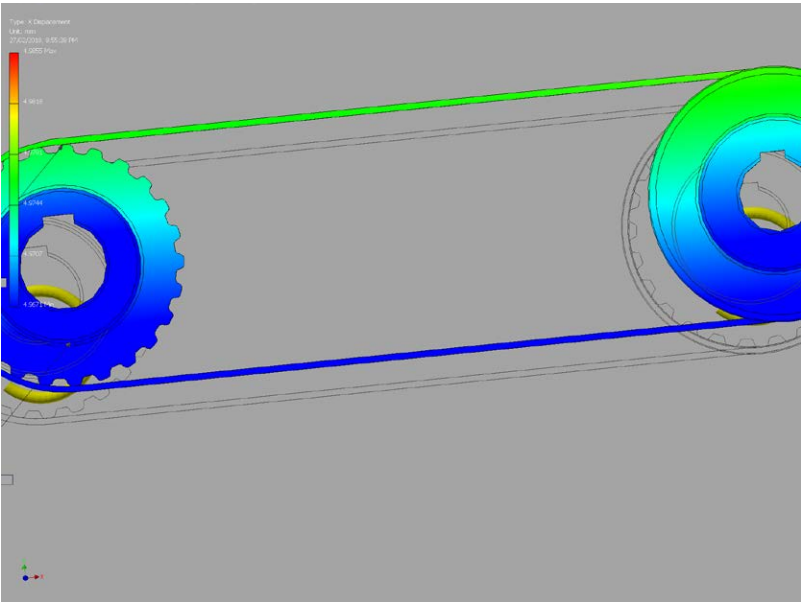
☐ Figures

☐ F1 0.00 Hz Displacement

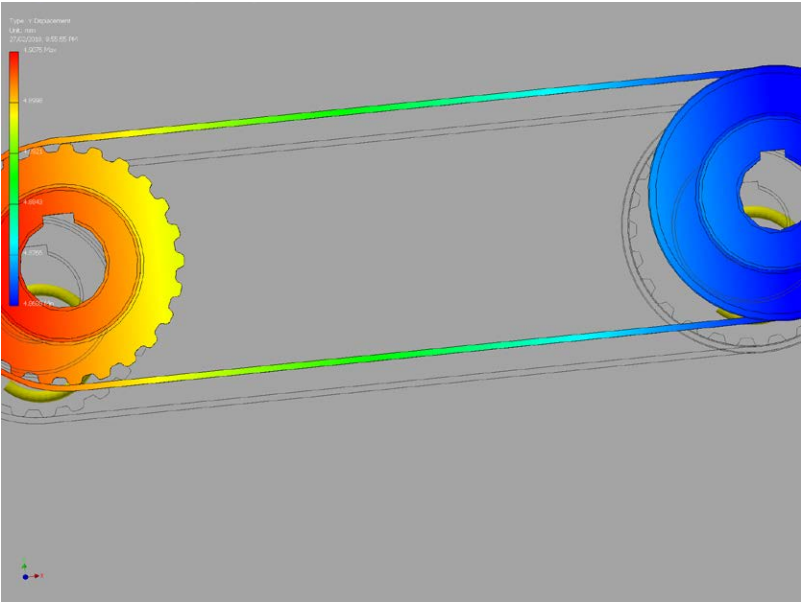
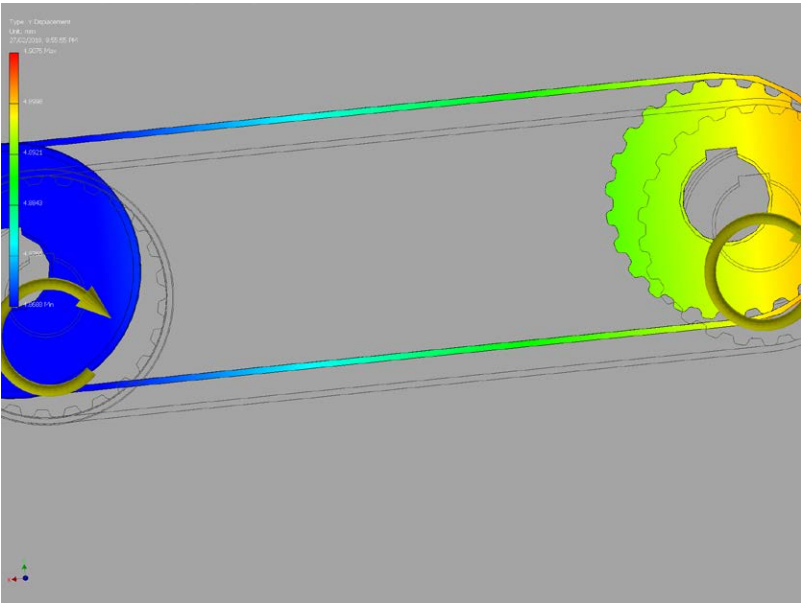


☐ F1 0.00 Hz X Displacement

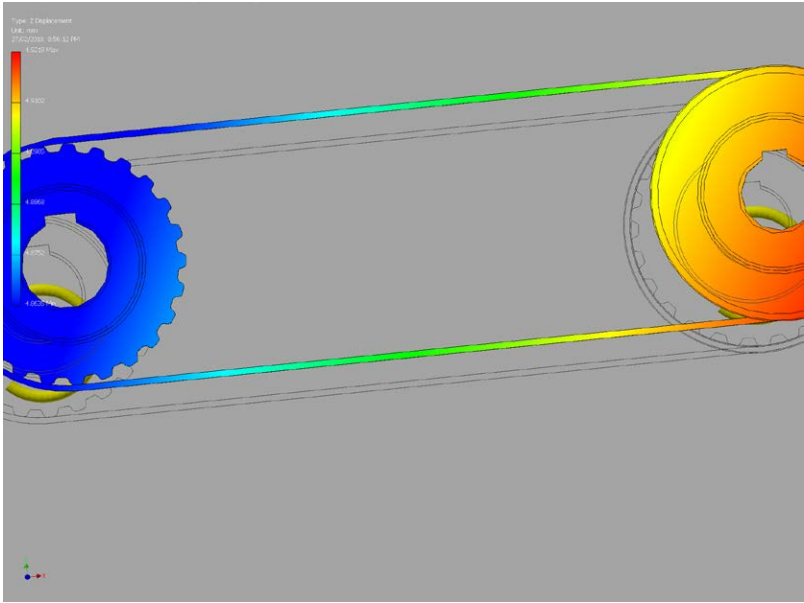
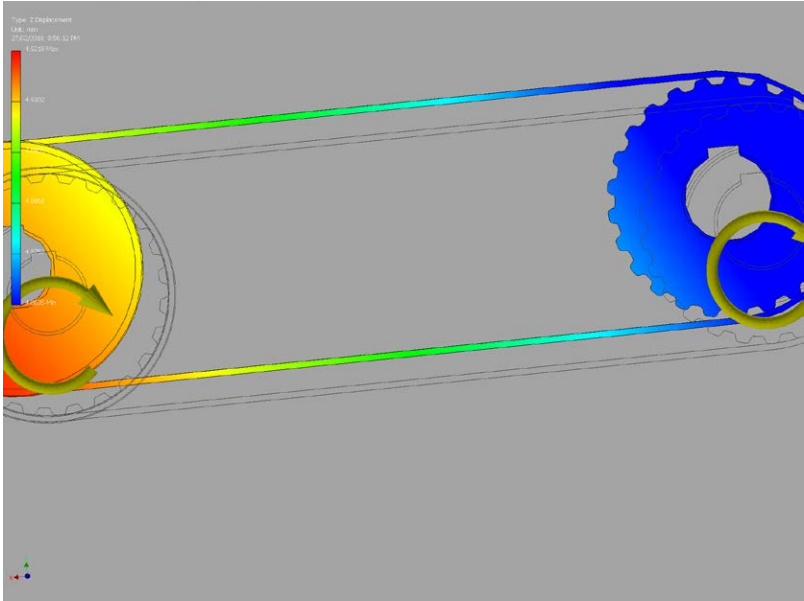




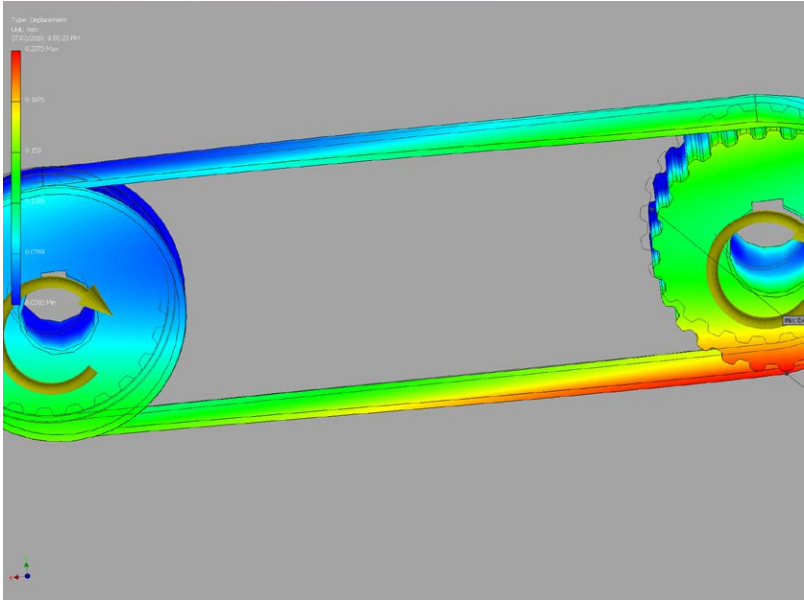
F1 0.00 Hz Y Displacement

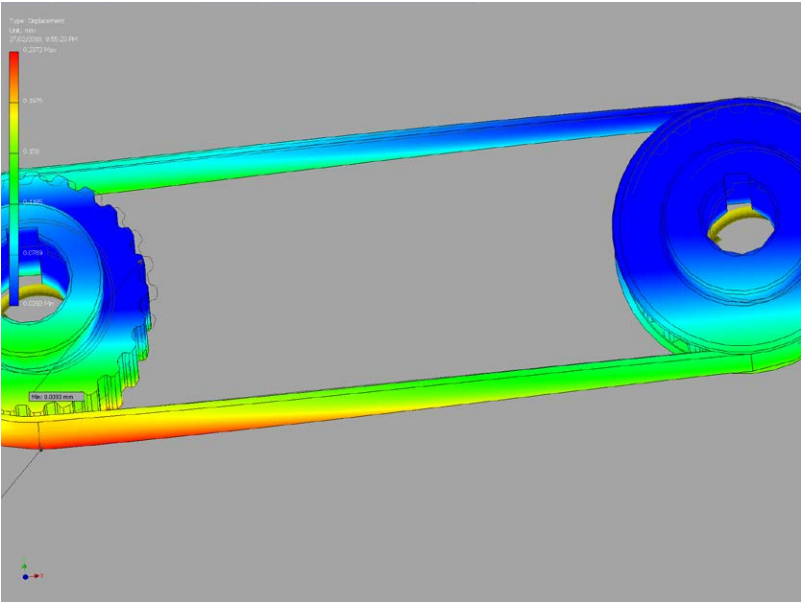


F1 0.00 Hz Z Displacement

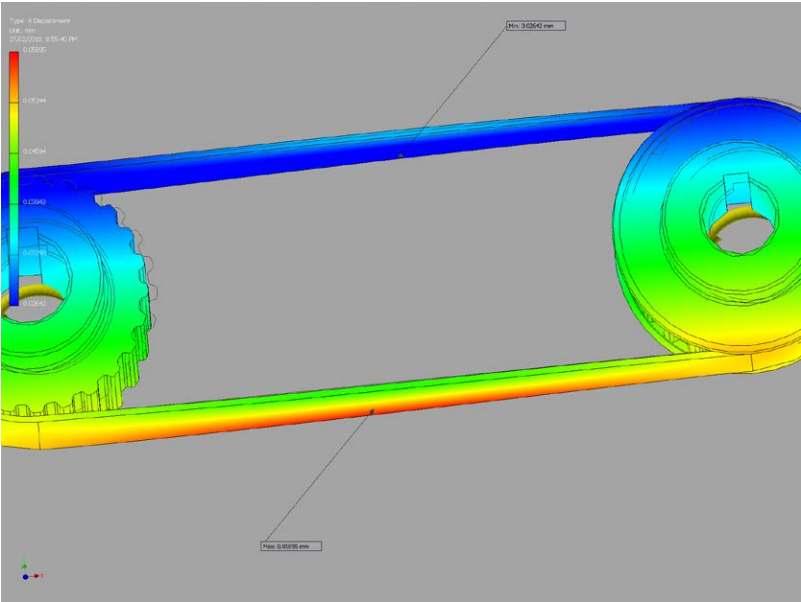
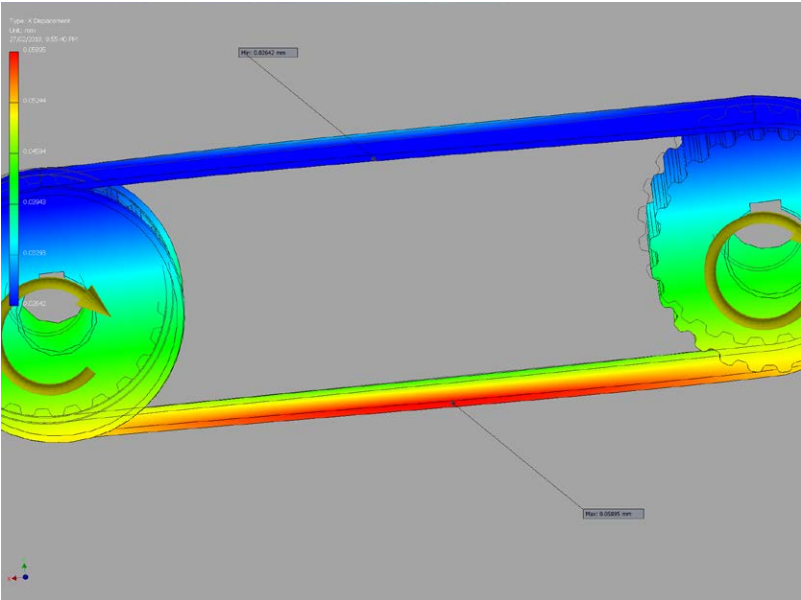


F2 1.03 Hz Displacement

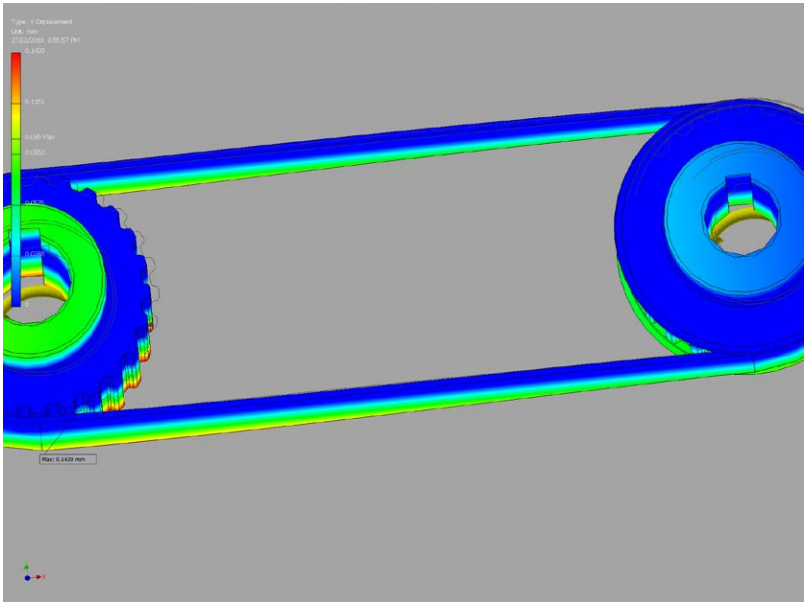
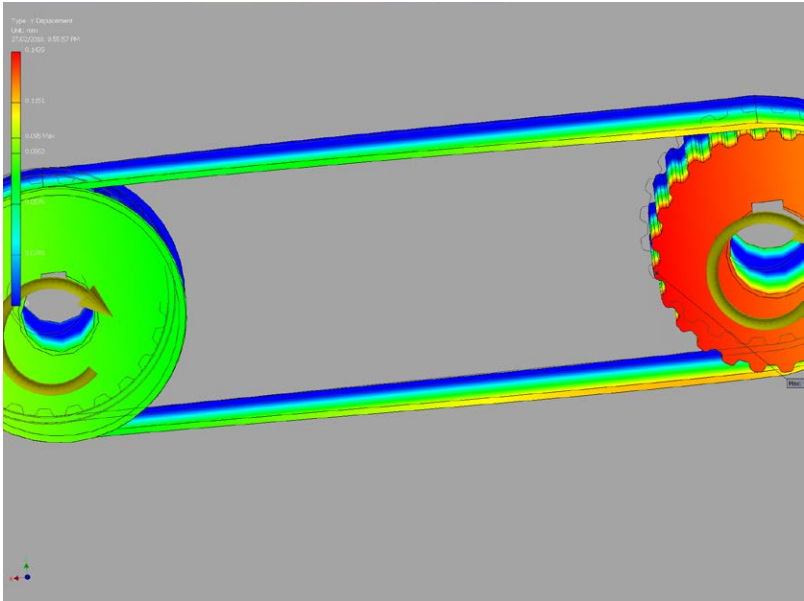




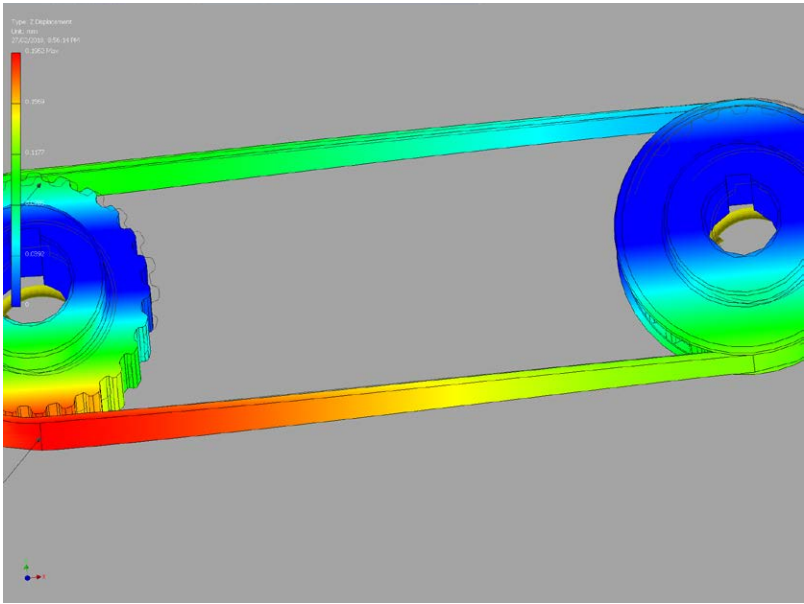
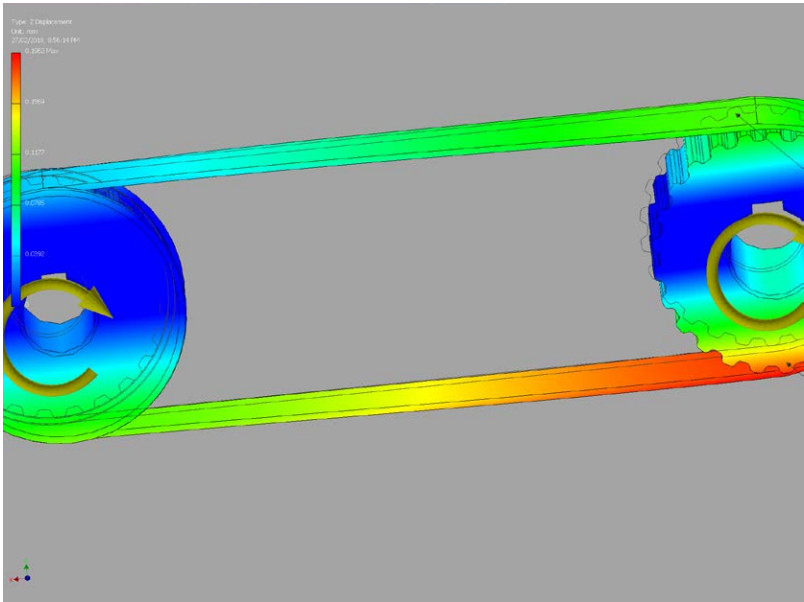
F2 1.03 Hz X Displacement



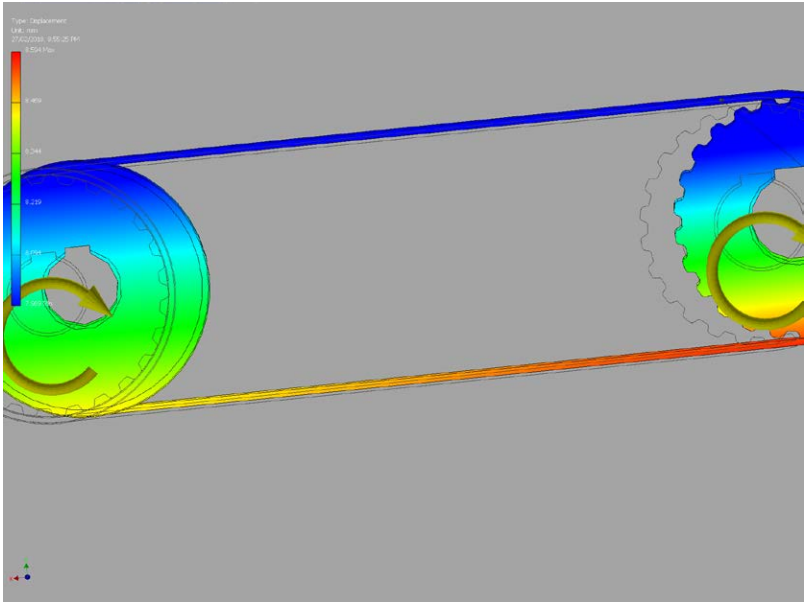
F2 1.03 Hz Y Displacement

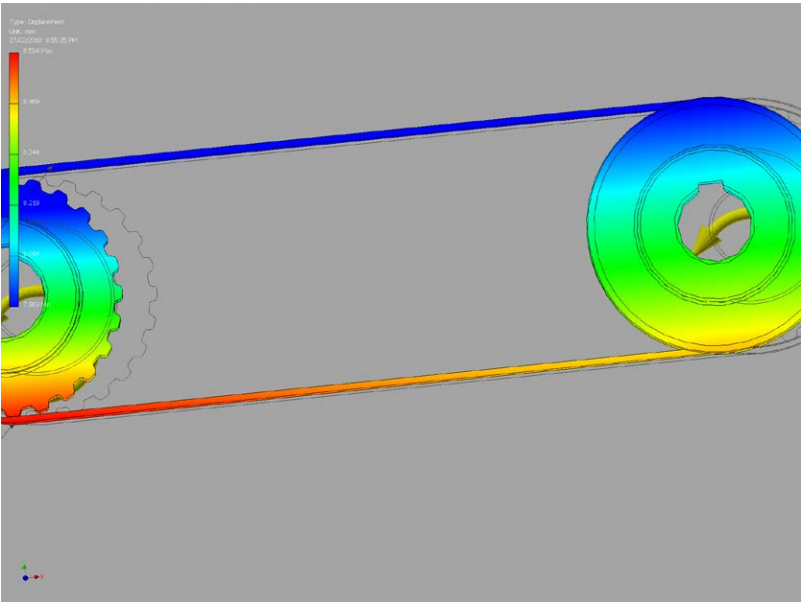


F2 1.03 Hz Z Displacement

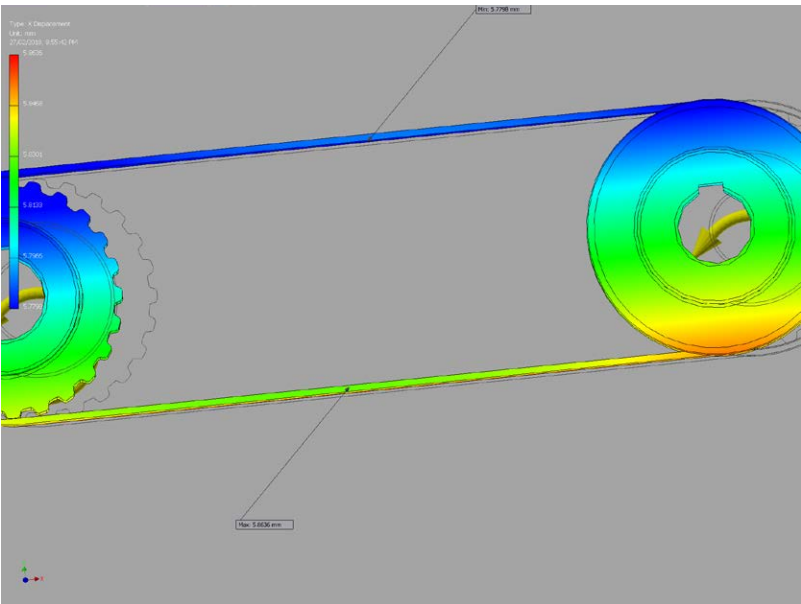
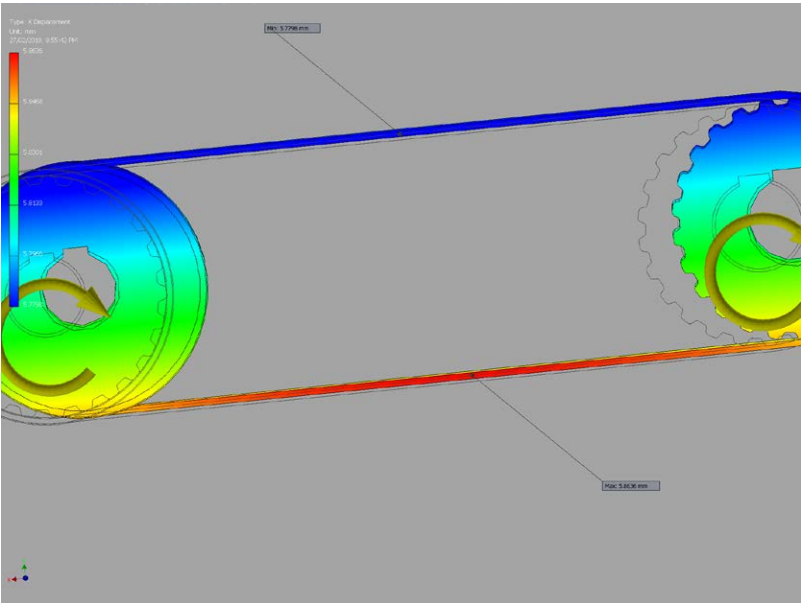


F3 1.04 Hz Displacement

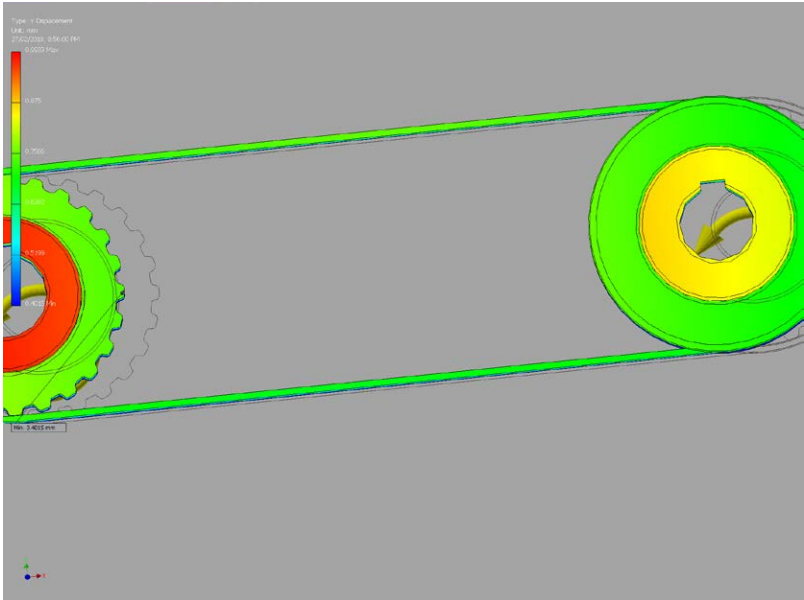
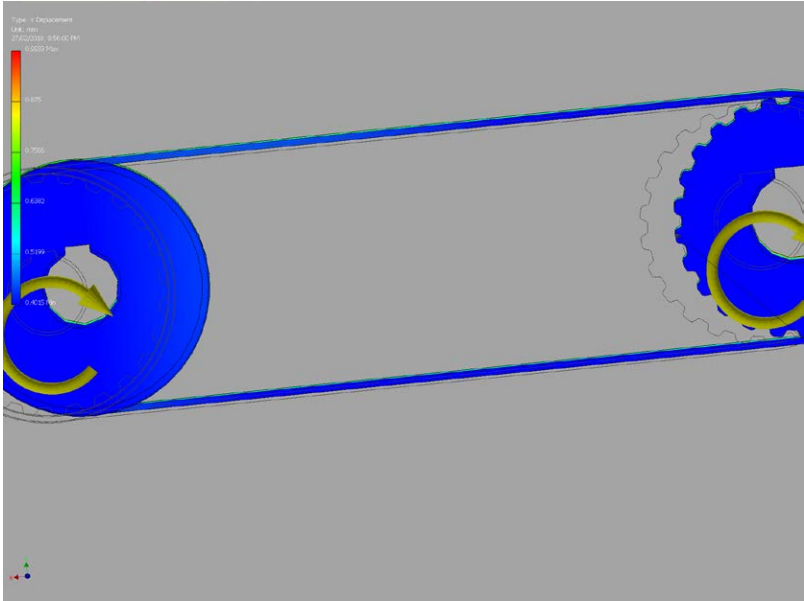




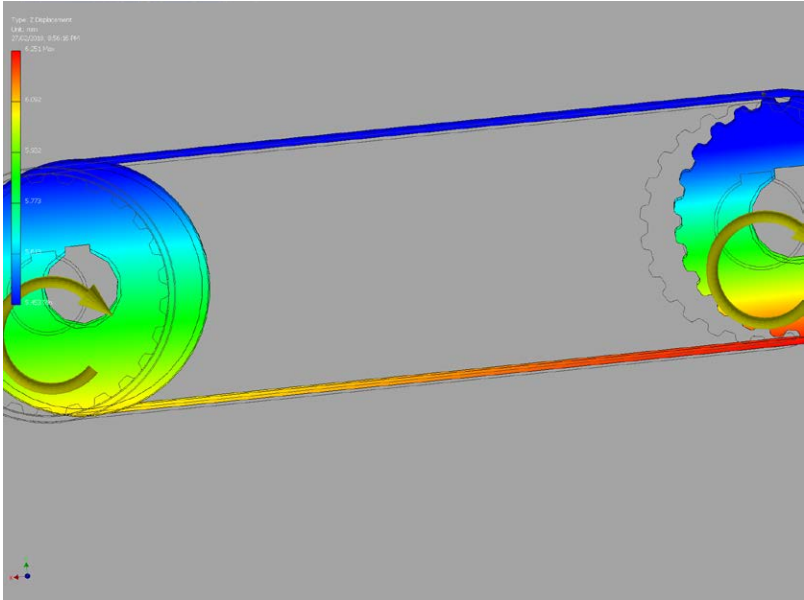
F3 1.04 Hz X Displacement

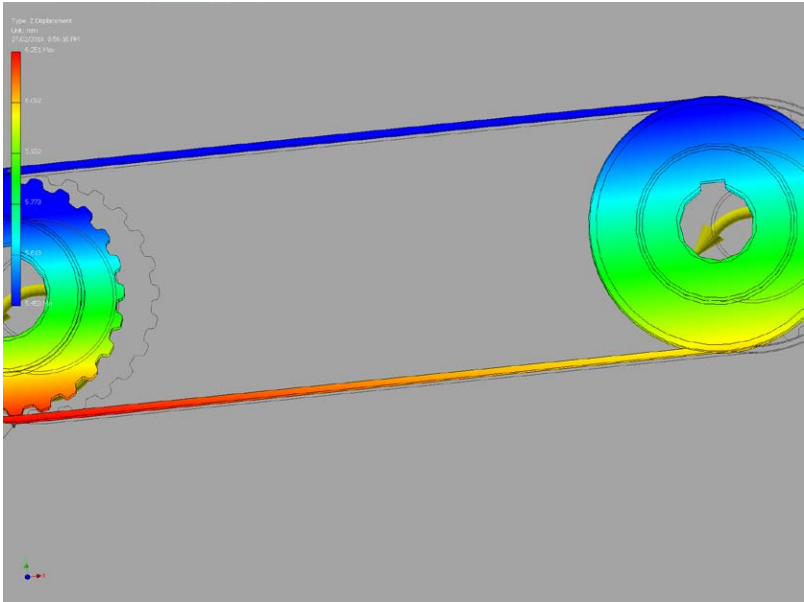


F3 1.04 Hz Y Displacement

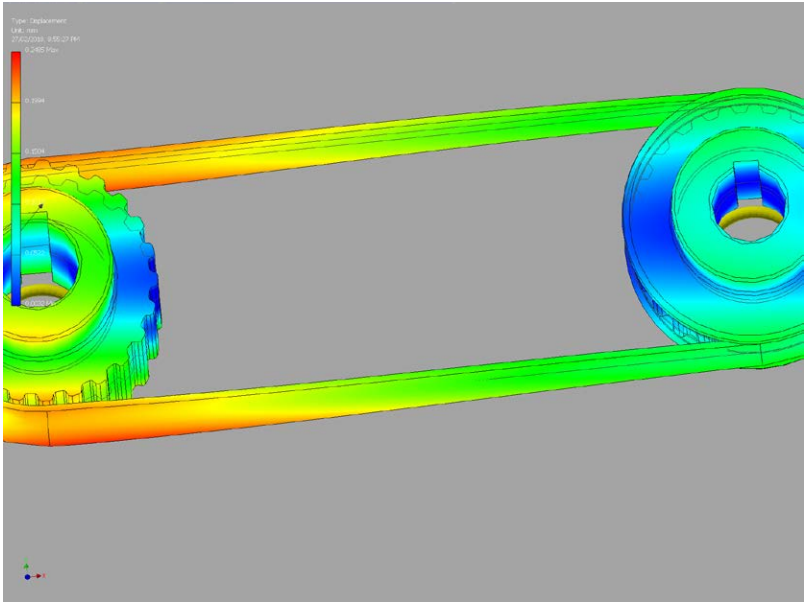
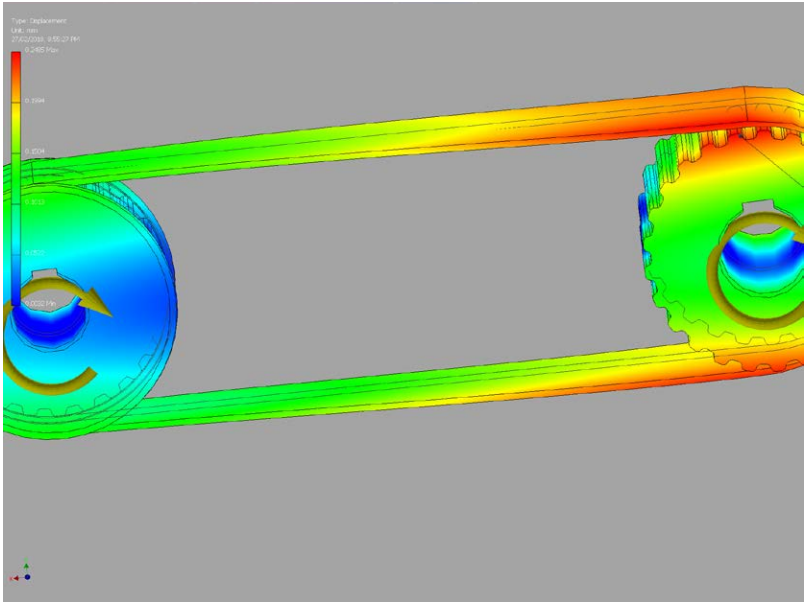


F3 1.04 Hz Z Displacement

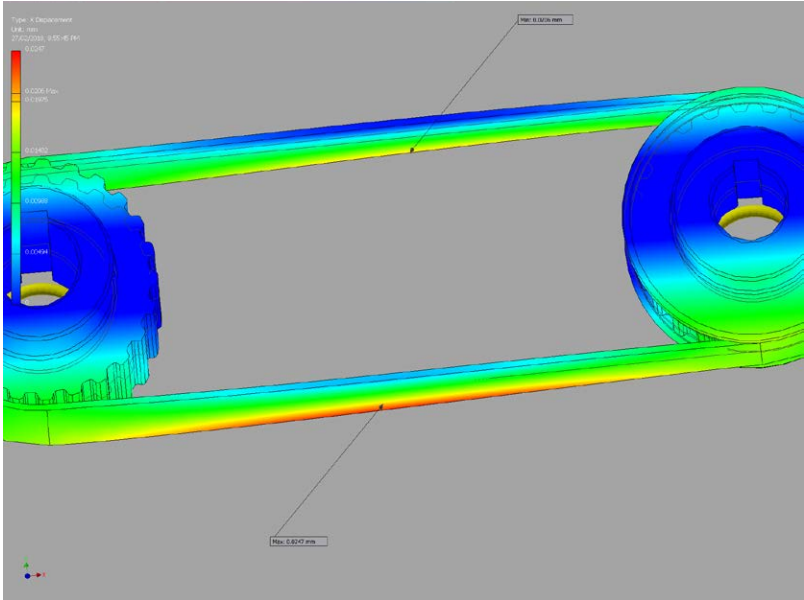
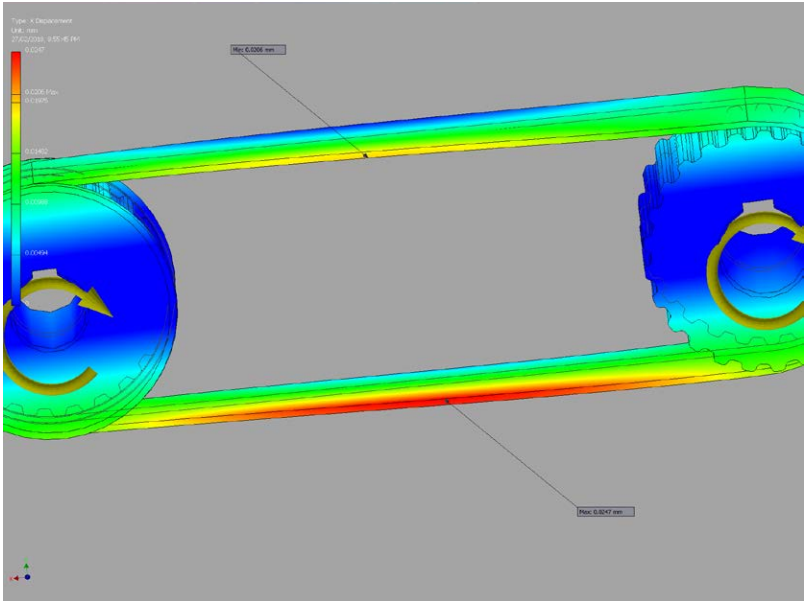




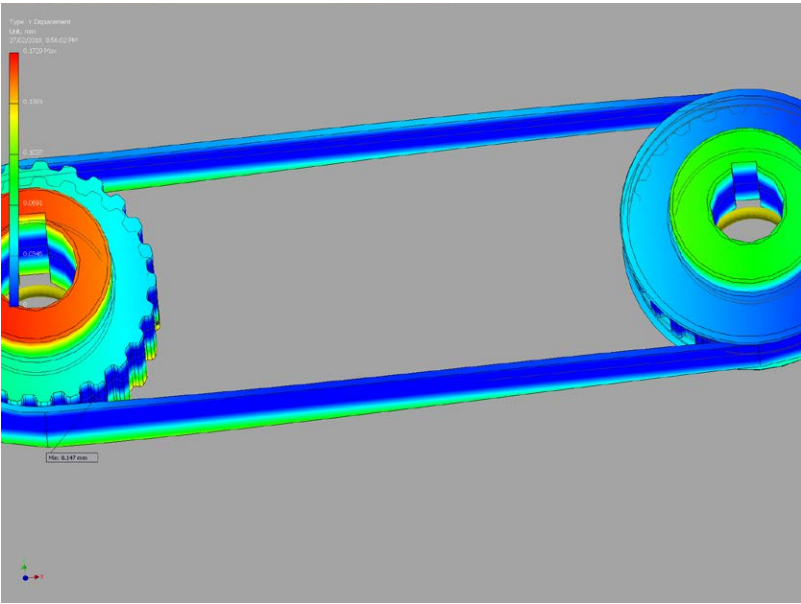
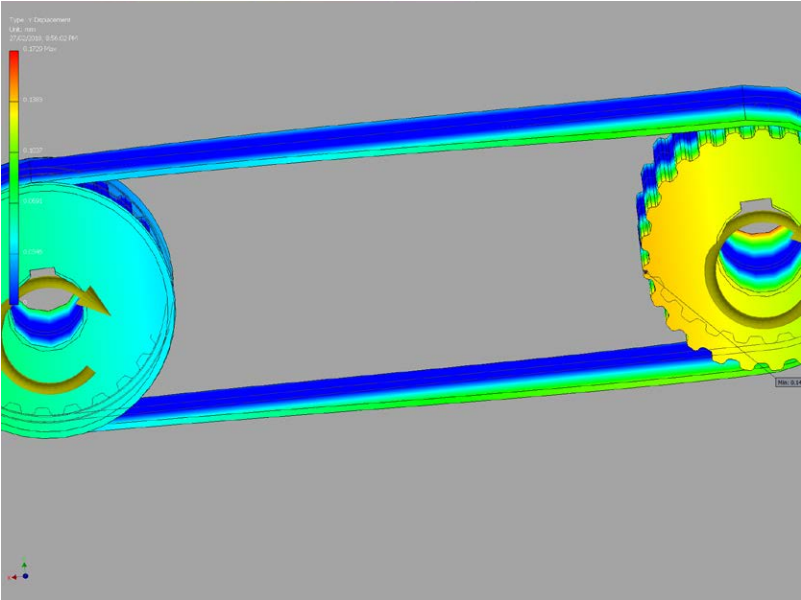
F4 1.05 Hz Displacement



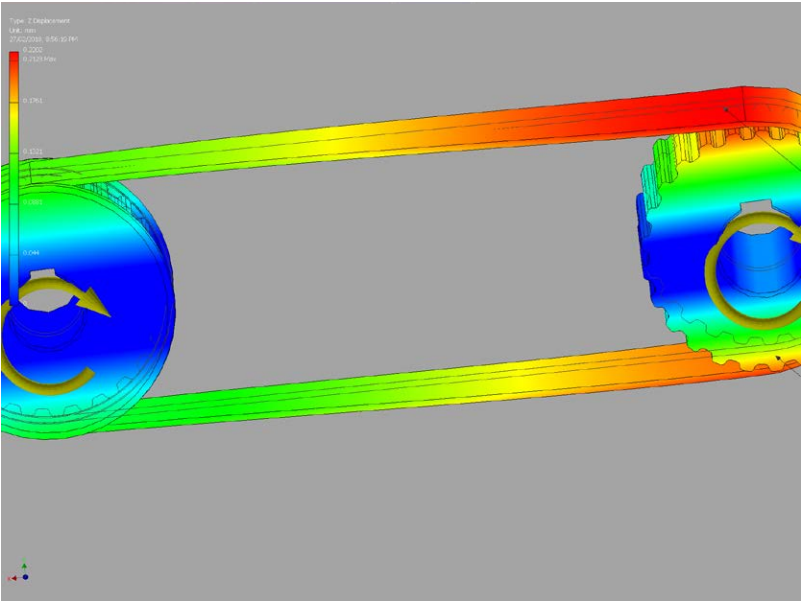
F4 1.05 Hz X Displacement

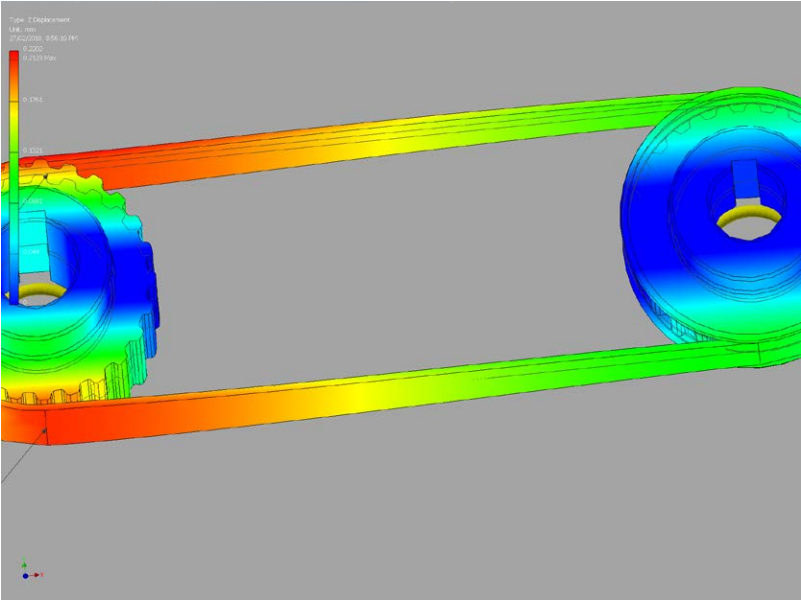


F4 1.05 Hz Y Displacement

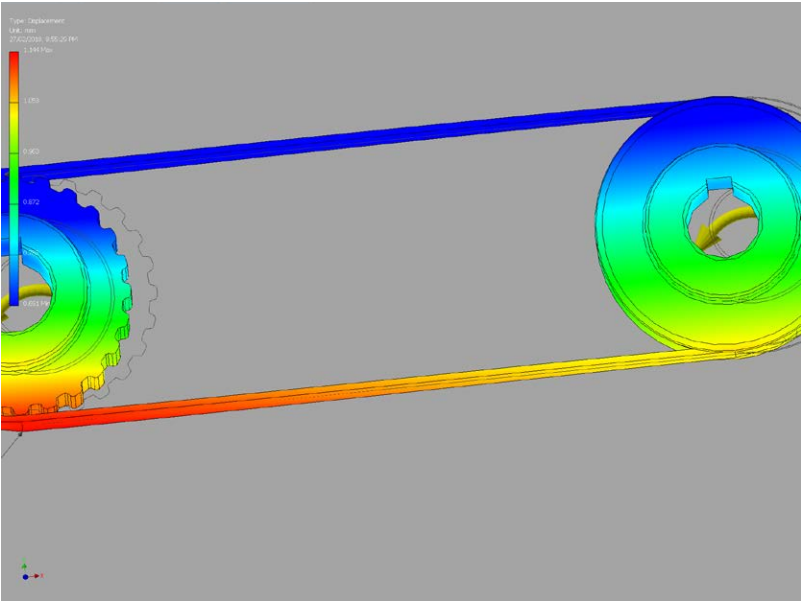
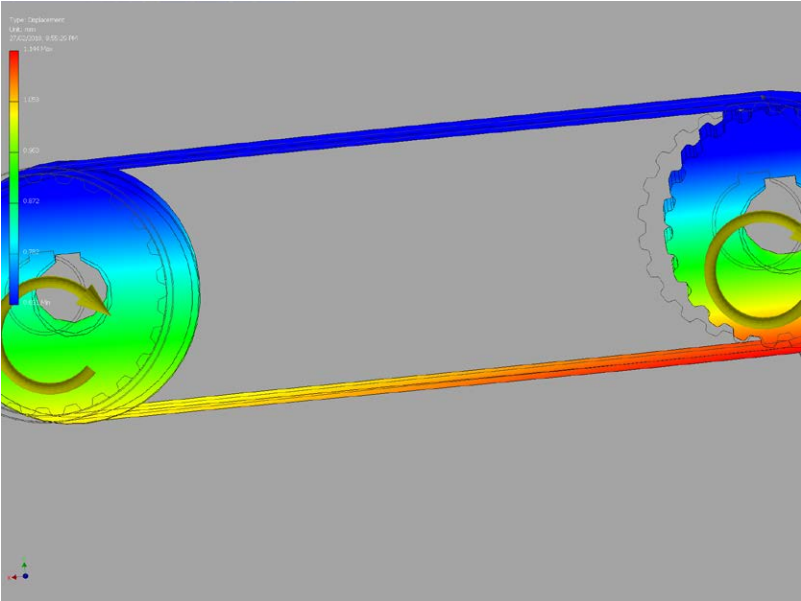


F4 1.05 Hz Z Displacement

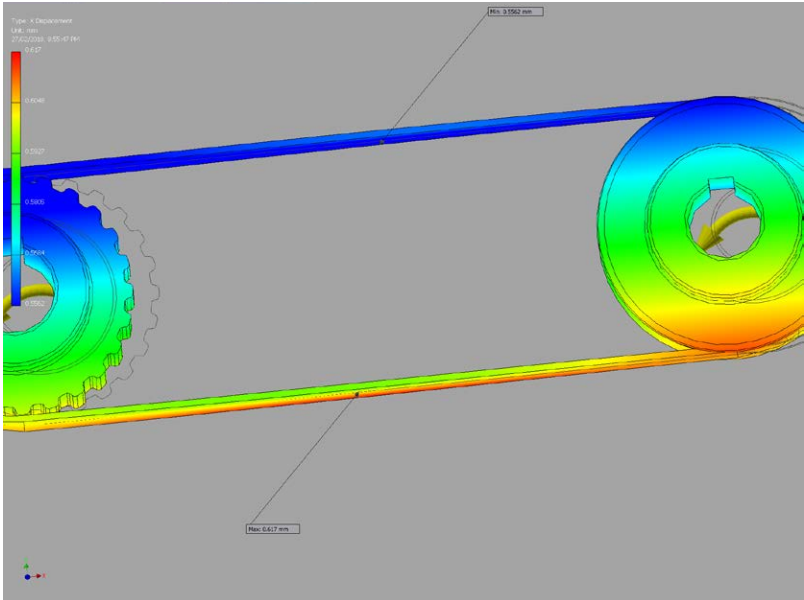
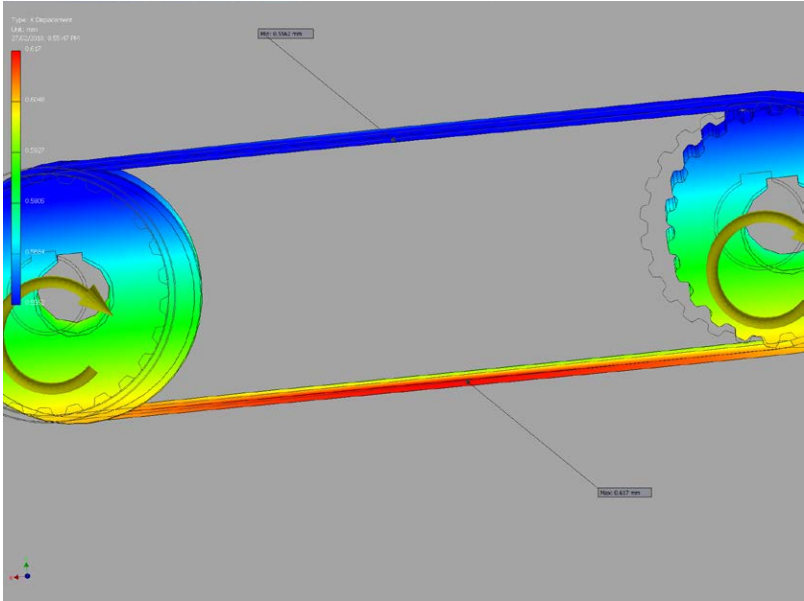




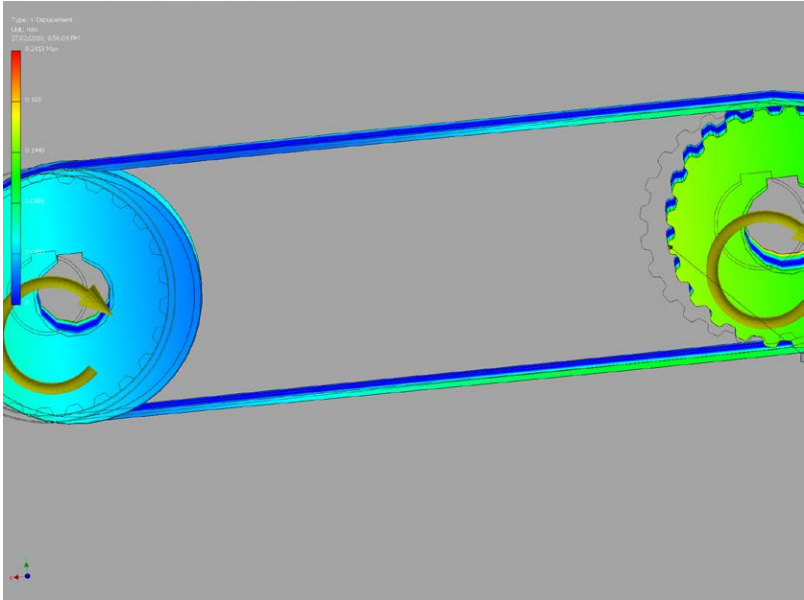
F5 1.13 Hz Displacement

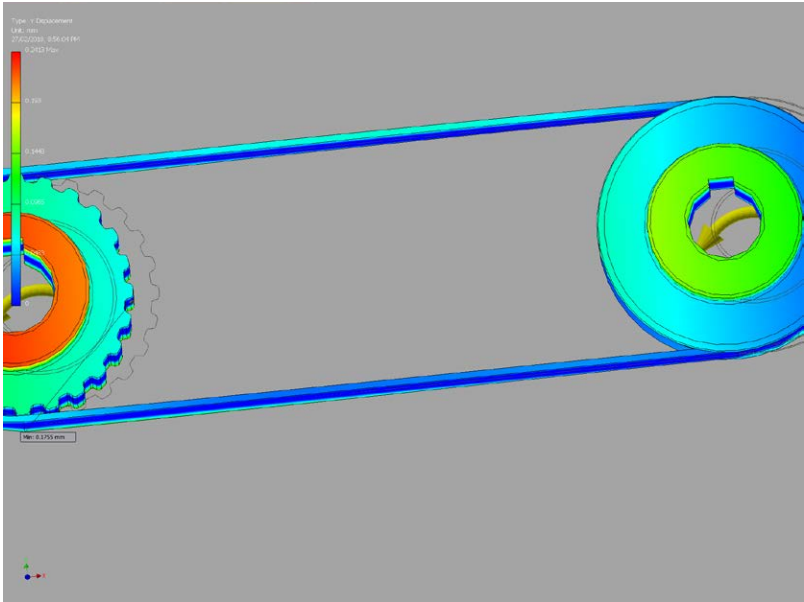


F5 1.13 Hz X Displacement

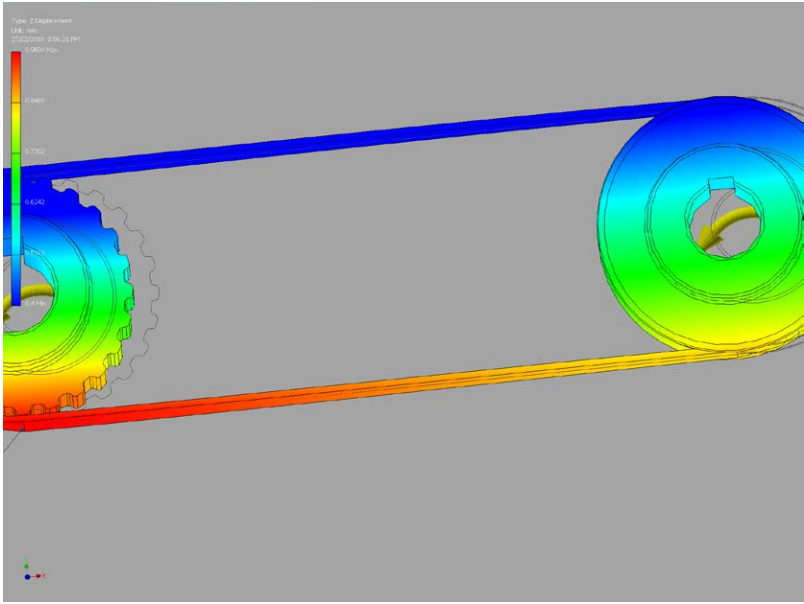
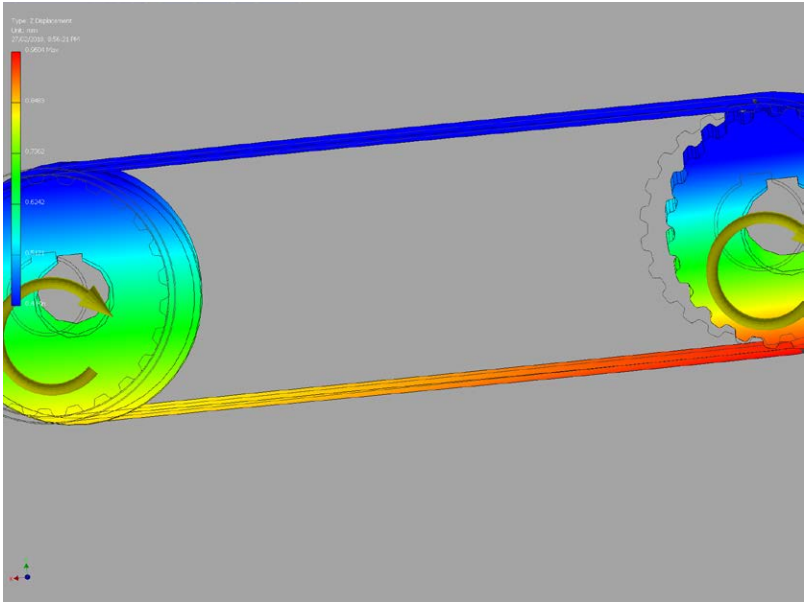


F5 1.13 Hz Y Displacement

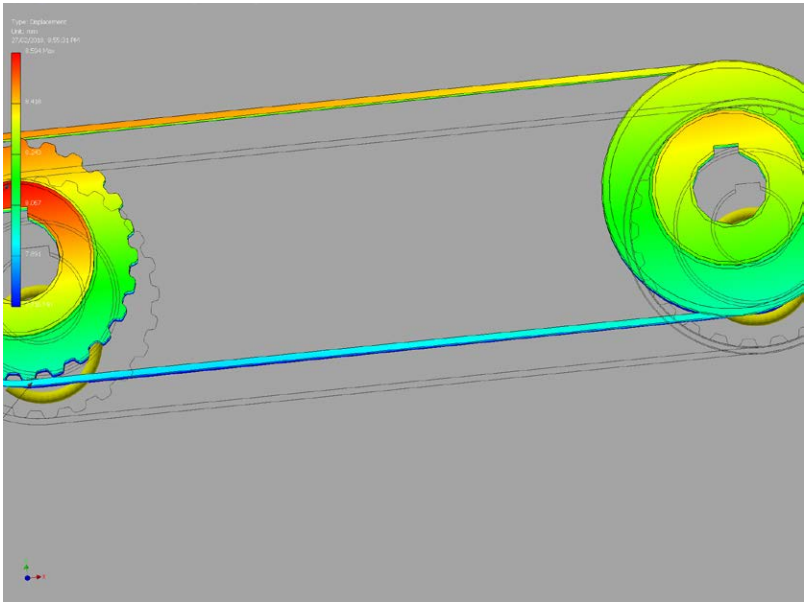
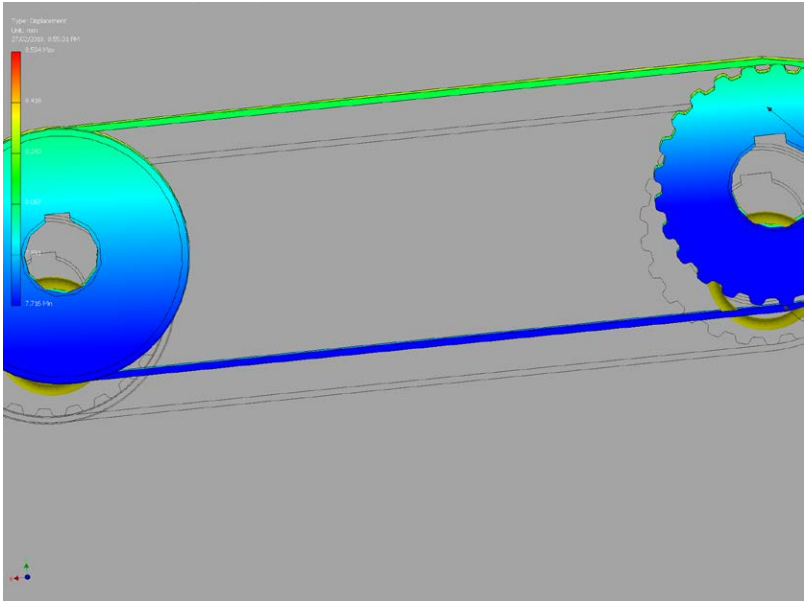




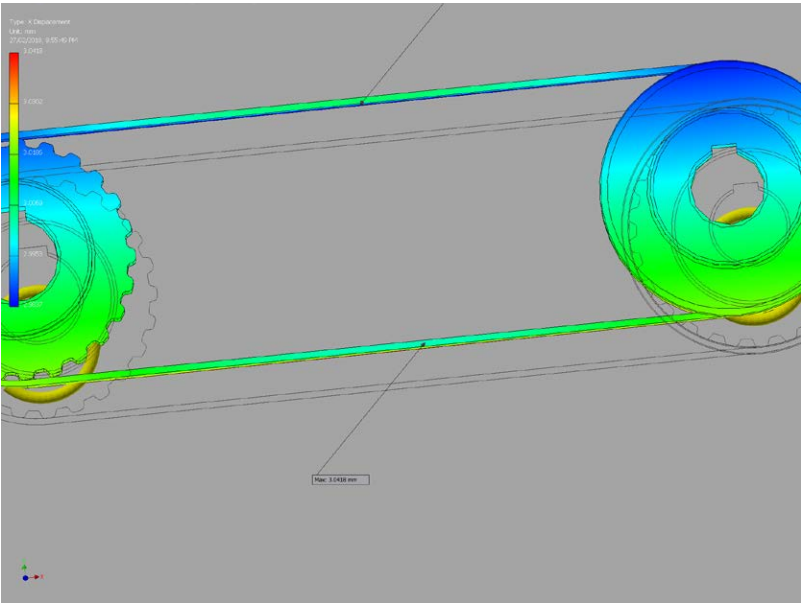
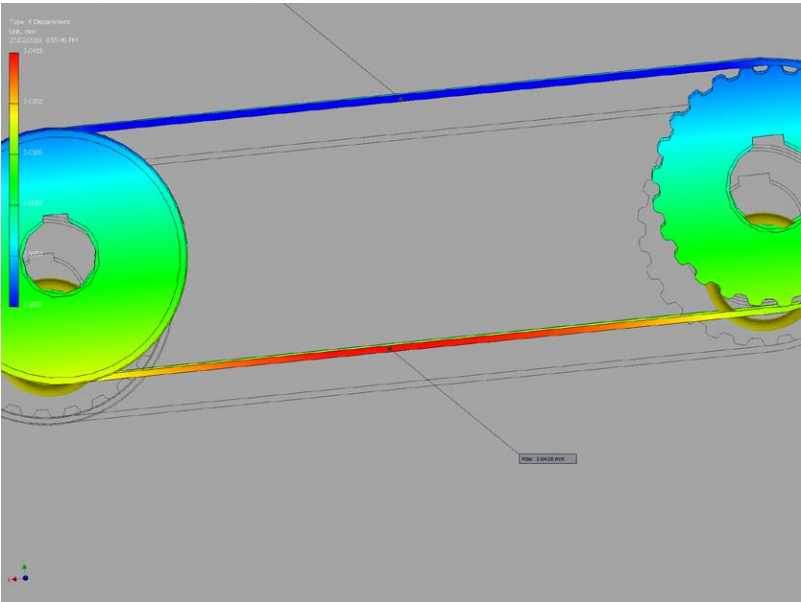
F5 1.13 Hz Z Displacement



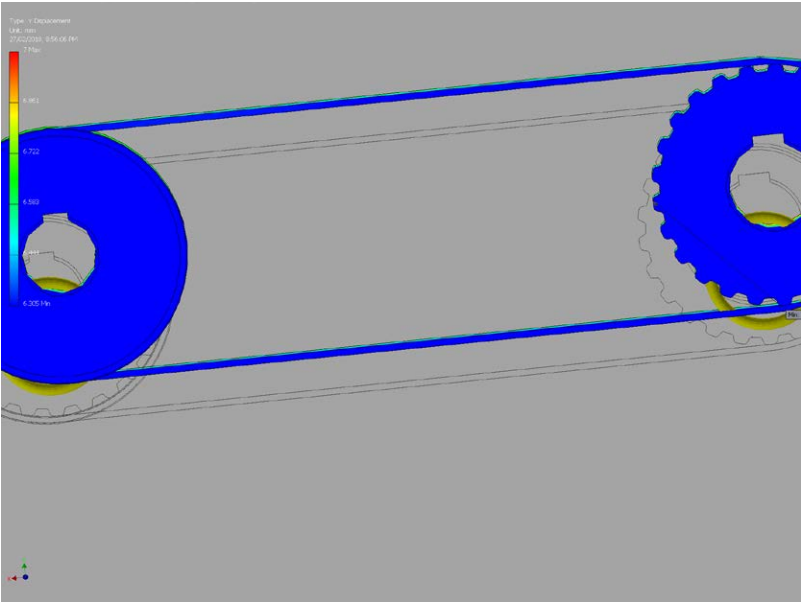
F6 1.25 Hz Displacement

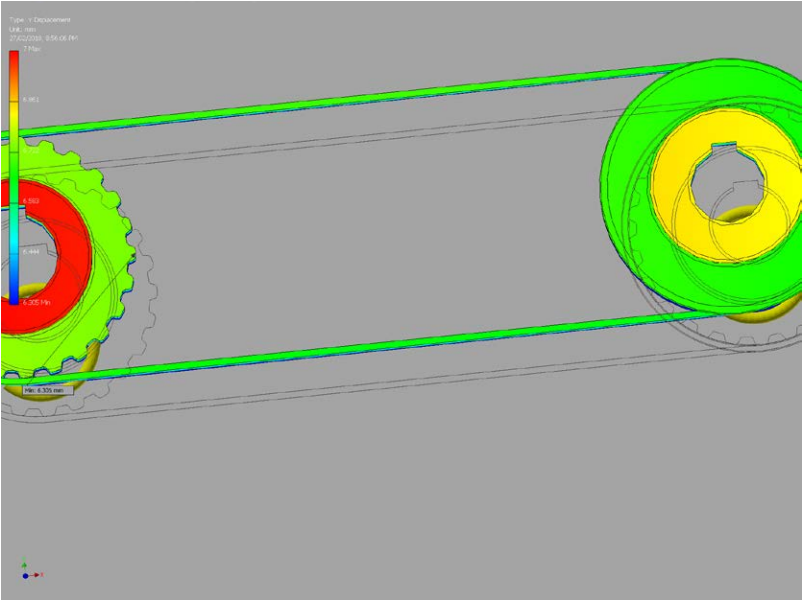


F6 1.25 Hz X Displacement

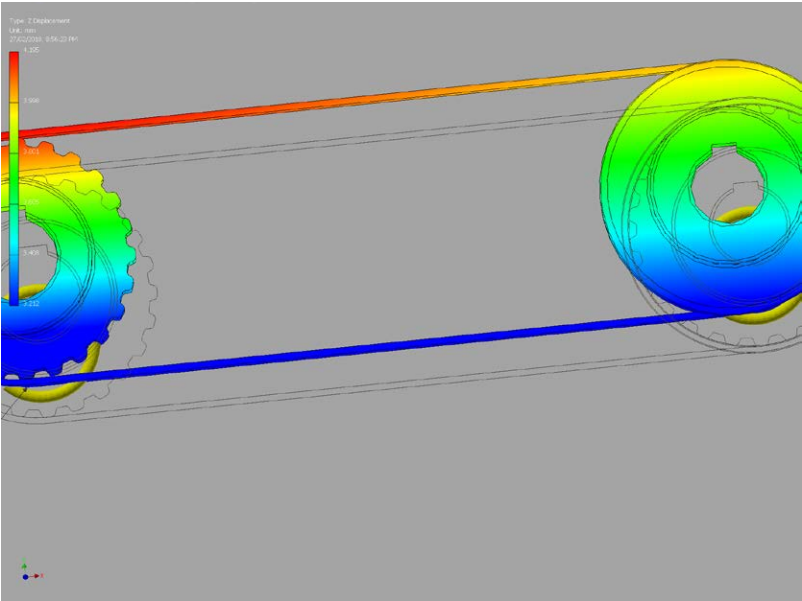
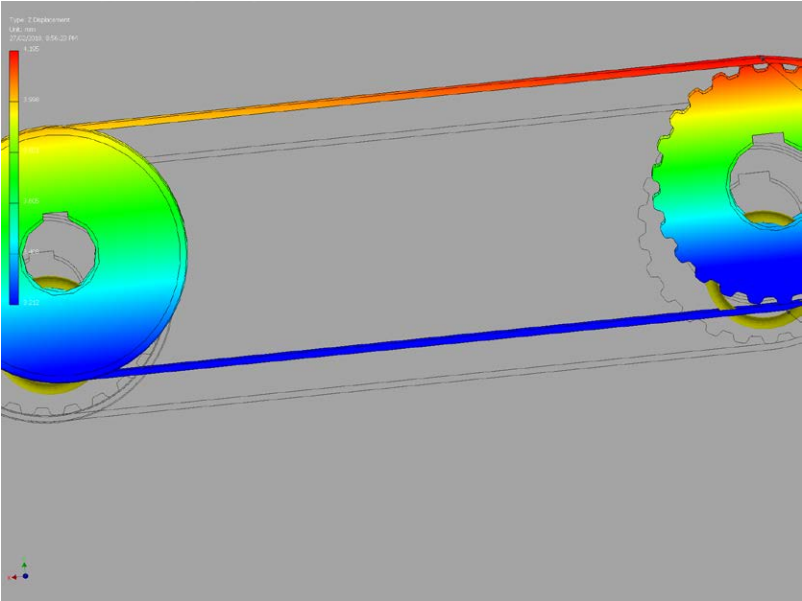


☐ F6 1.25 Hz Y Displacement

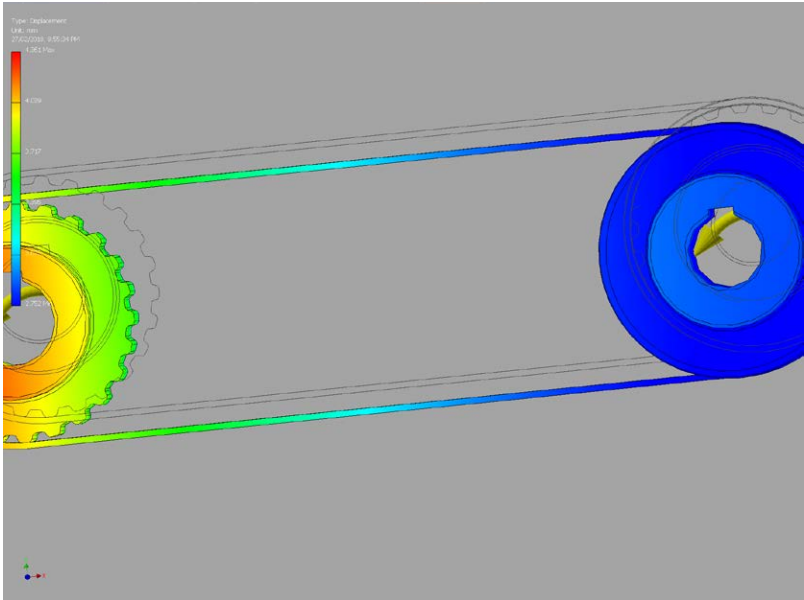
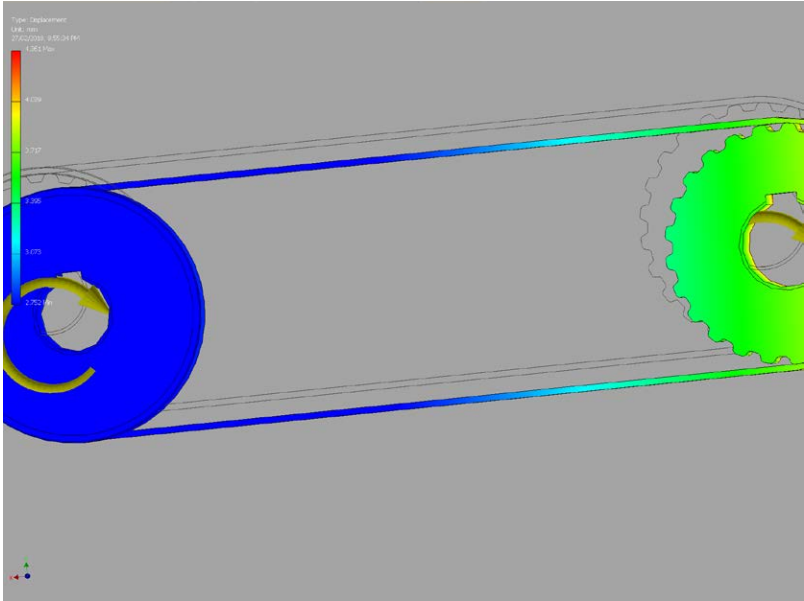




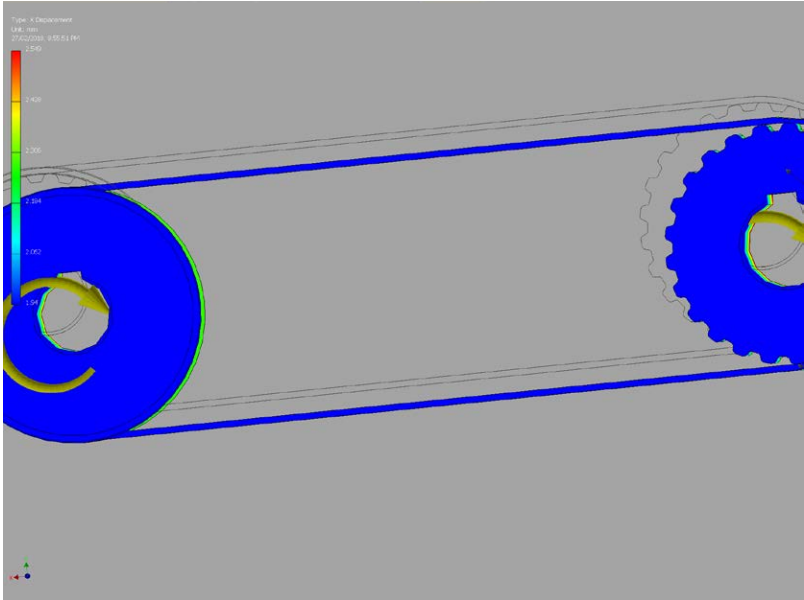
F6 1.25 Hz Z Displacement

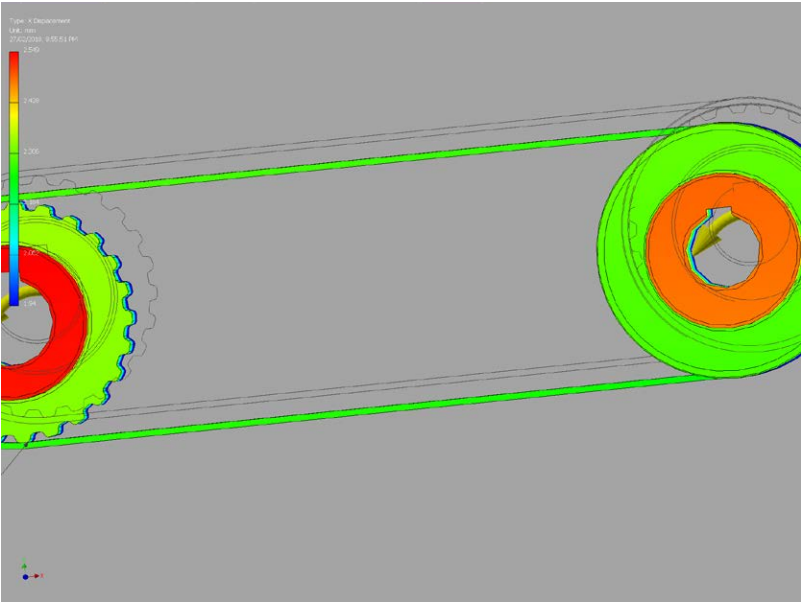


F7 1.43 Hz Displacement

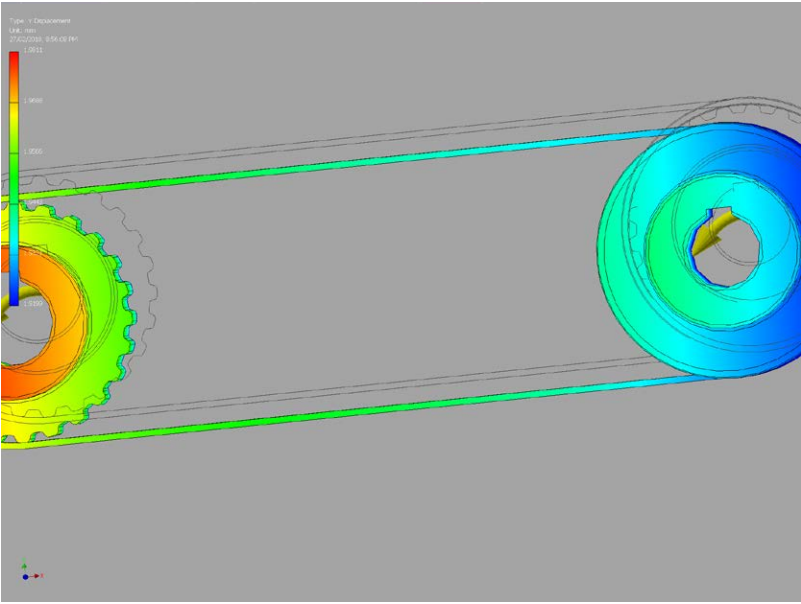
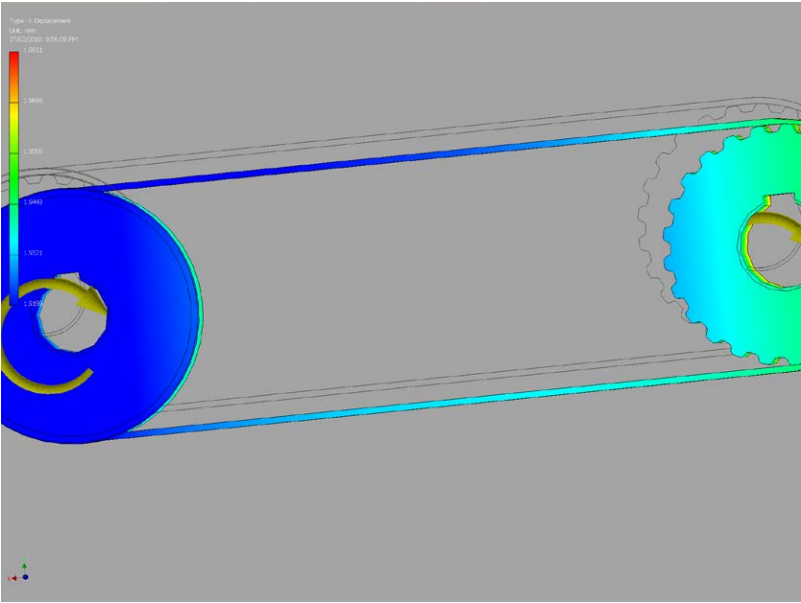


F7 1.43 Hz X Displacement

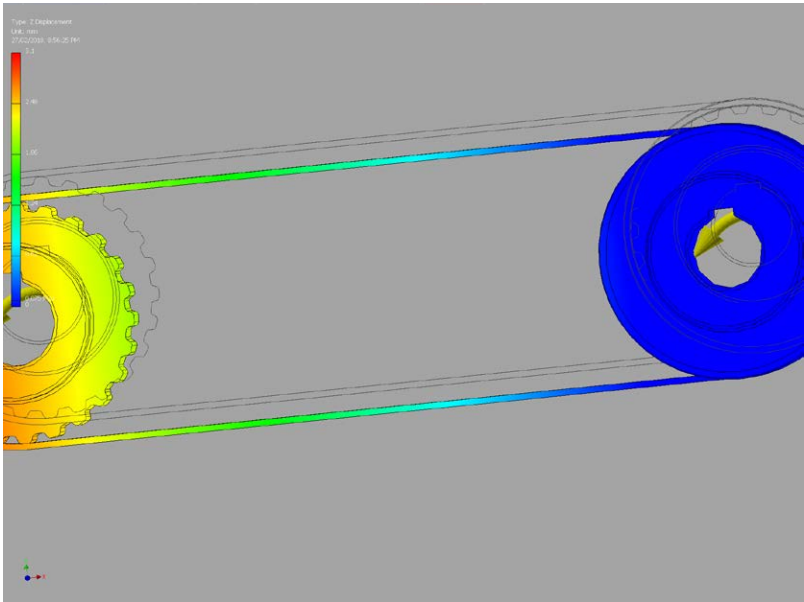
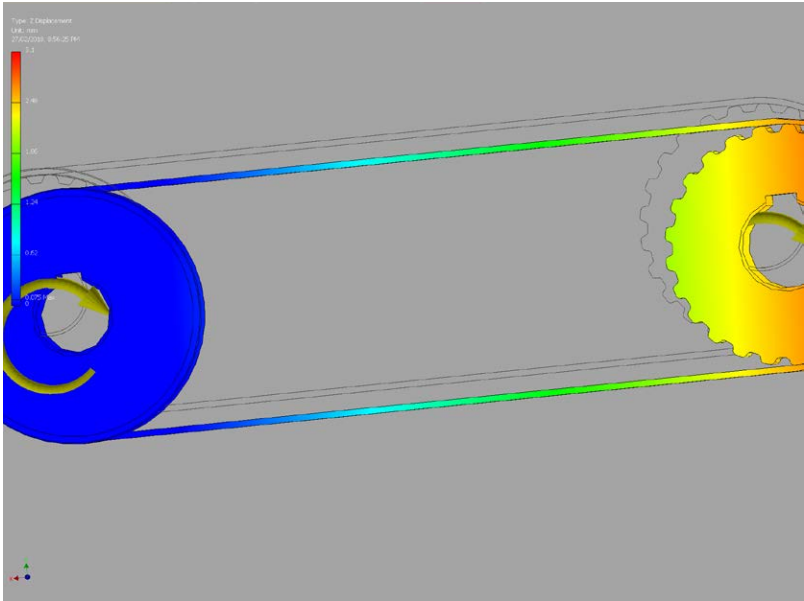




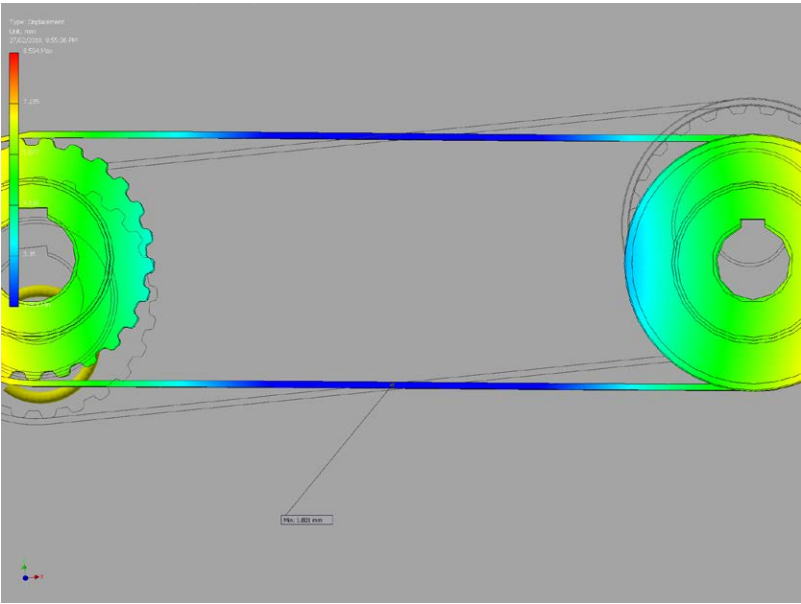
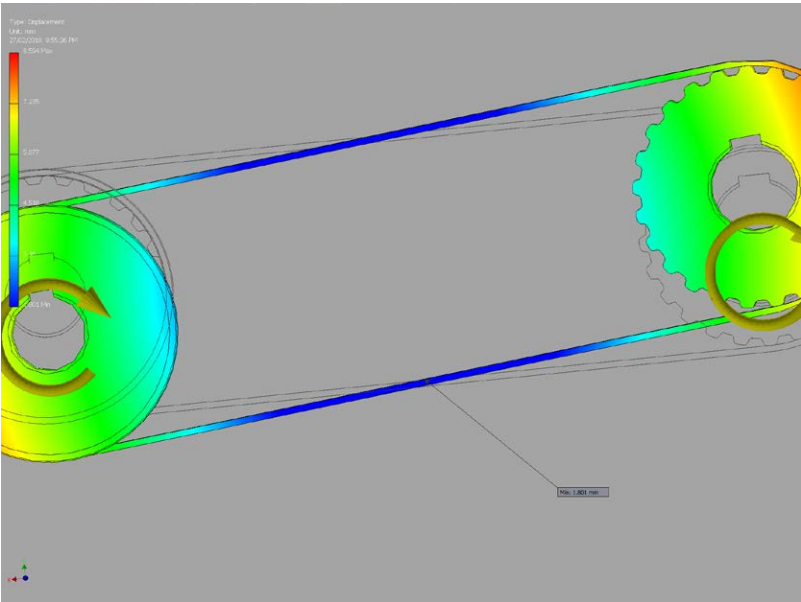
F7 1.43 Hz Y Displacement



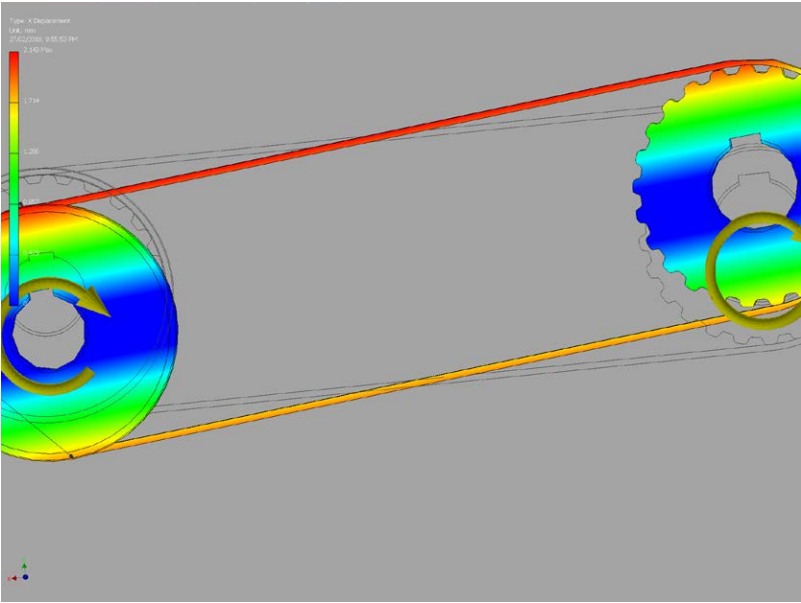
F7 1.43 Hz Z Displacement

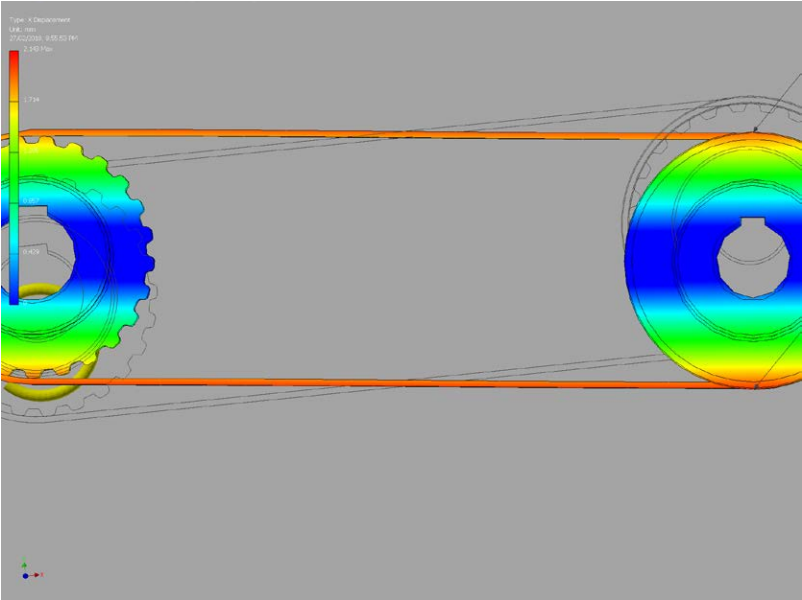


F8 2.67 Hz Displacement

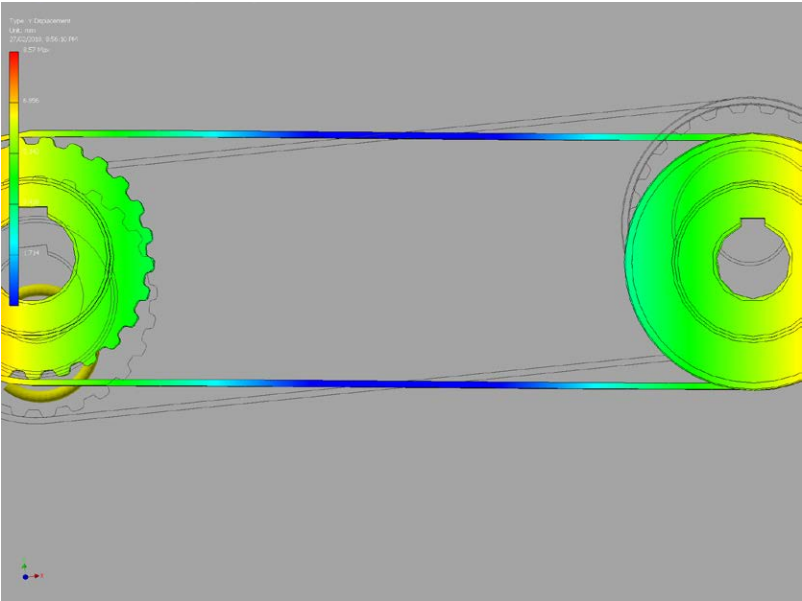
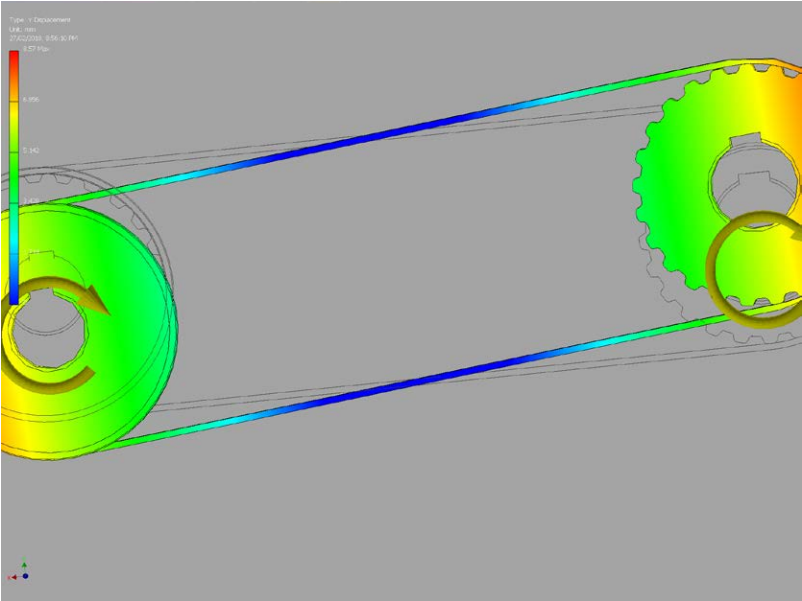


F8 2.67 Hz X Displacement

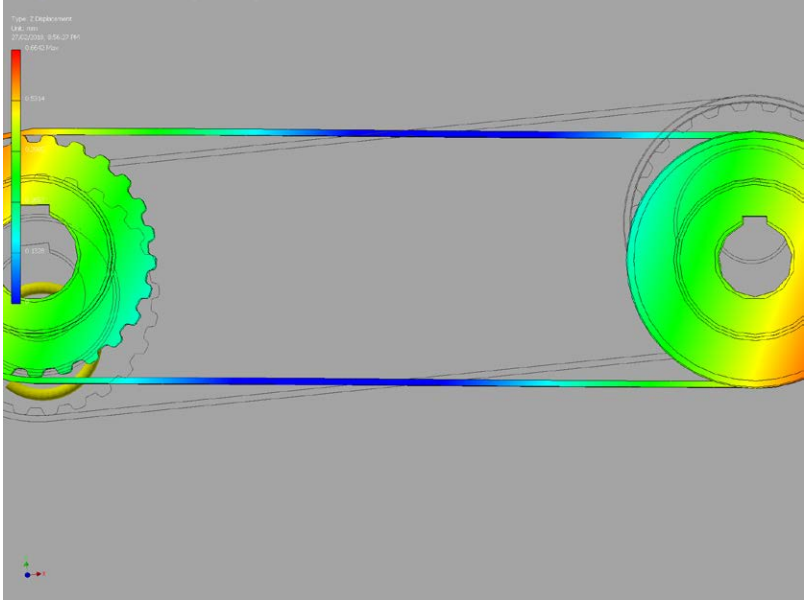
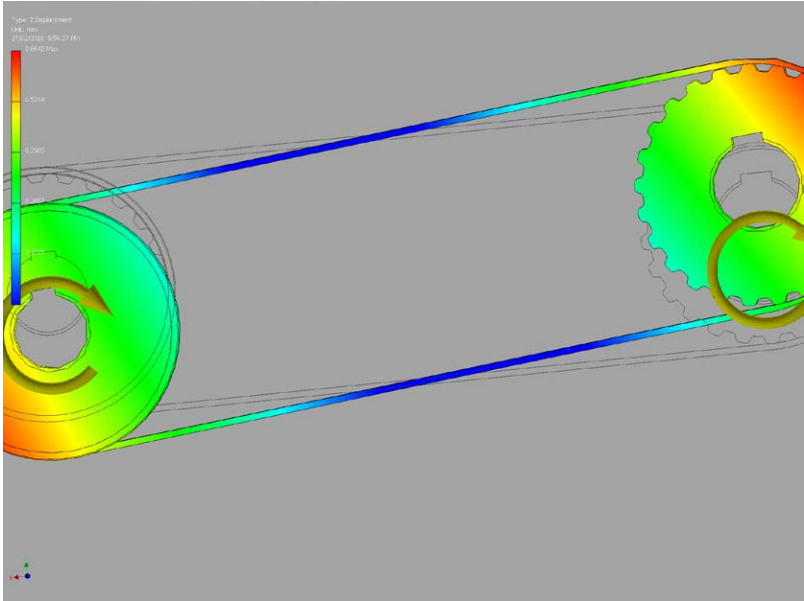




F8 2.67 Hz Y Displacement



F8 2.67 Hz Z Displacement



C:\Users\CyprianWadzanai\Documents\Sync pulley assembly.iam