Shaft Component Generator (Version: 2023 (Build 270158030, 158C))

Project Info (iProperties)

Calculation

Material

Material		Aluminum, alloy
Modulus of Elasticity	E	73000 MPa
Modulus of Rigidity	G	26000 MPa
Density	ρ	2700 kg/m^3

Calculation Properties

Include			
Yes	Density	ρ	2700 kg/m^3
Yes	Shear Displacement Ratio	β	1.188 ul
	Number of Divisions		1000 ul
	Mode of reduced stress		HMH

Loads

Index	Location	Radial Force				Bending Moment				Continuous Load					Axial Force	Torque	Deflection				Deflection Angle
		Y	X	Size	Direction	Y	X	Size	Direction	Y	X	Size	Direction	Length			Y	X	Size	Direction	
1	5 mm															0.760 N m	-0.003 microm		0.003 microm	180.00 deg	0.00 deg
2	70 mm															-0.760 N m	-0.041 microm		0.041 microm	180.00 deg	0.00 deg

Supports

Index	Type	Location	Reaction Force					Yielding	Type	Deflection				Deflection Angle
			Y	X	Size	Direction	Axial Force			Y	X	Size	Direction	
1	Fixed	20 mm	-0.029 N		0.029 N	180.00 deg			User	-0.000 microm		0.000 microm	180.00 deg	0.00 deg
2	Free	33 mm	0.124 N		0.124 N				User	-0.000 microm		0.000 microm	180.00 deg	0.00 deg

Results

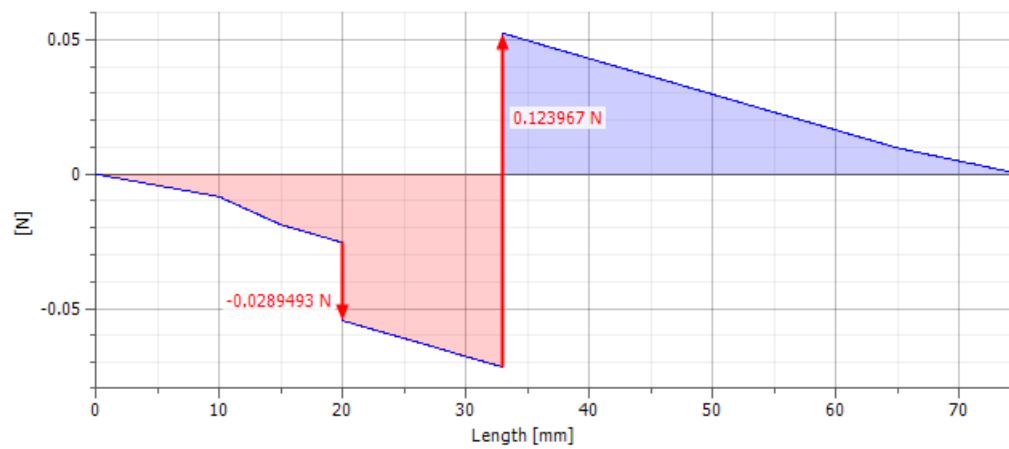| Length	L	75.000 mm
Mass	Mass	0.010 kg
Maximal Bending Stress	σ_B	0.021 MPa
Maximal Shear Stress	τ_S	0.001 MPa
Maximal Torsional Stress	τ	15.117 MPa
Maximal Tension Stress	σ_T	0.000 MPa
Maximal Reduced Stress	σ_{red}	26.183 MPa
Maximal Deflection	f_{max}	0.048 microm
Angle of Twist	φ	0.31 deg

Preview
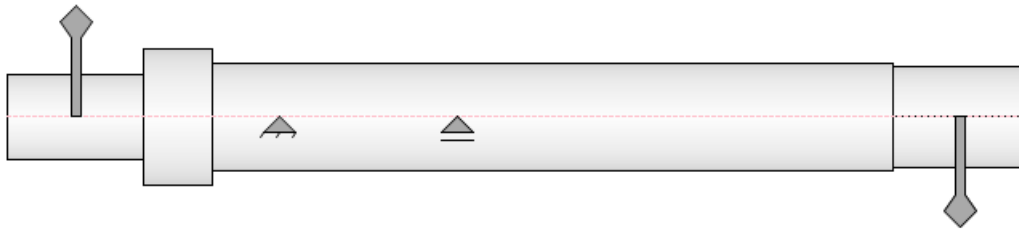
Shear Force
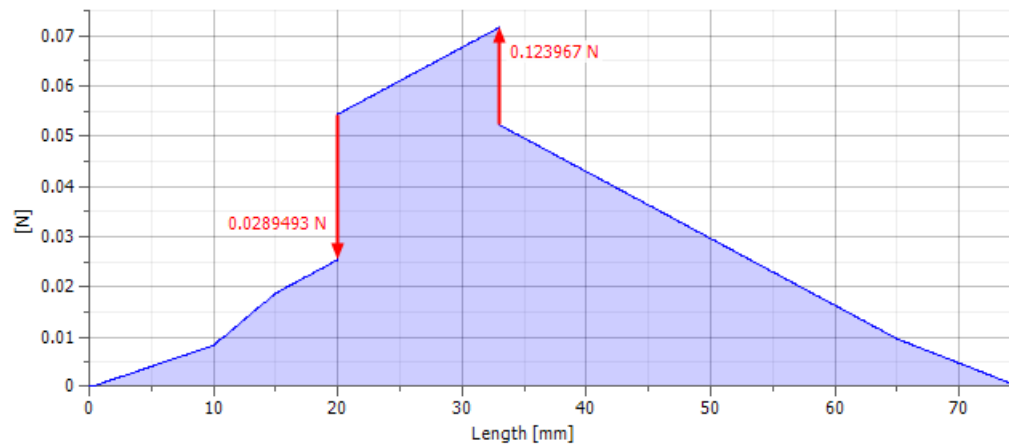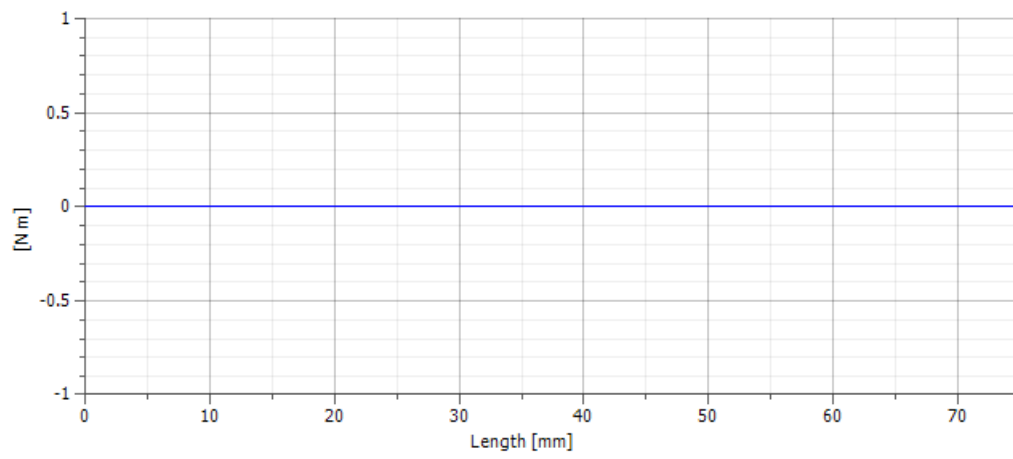

Shear Force, YZ Plane
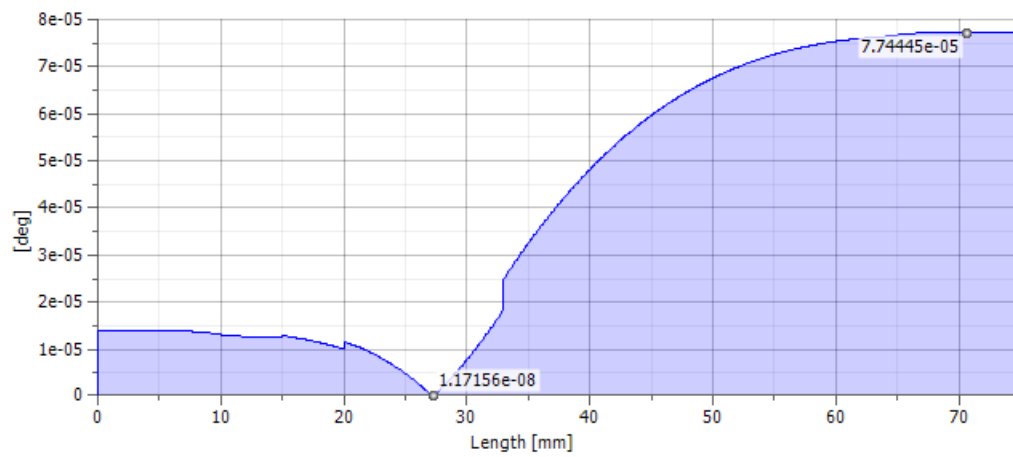

Shear Force, XZ Plane
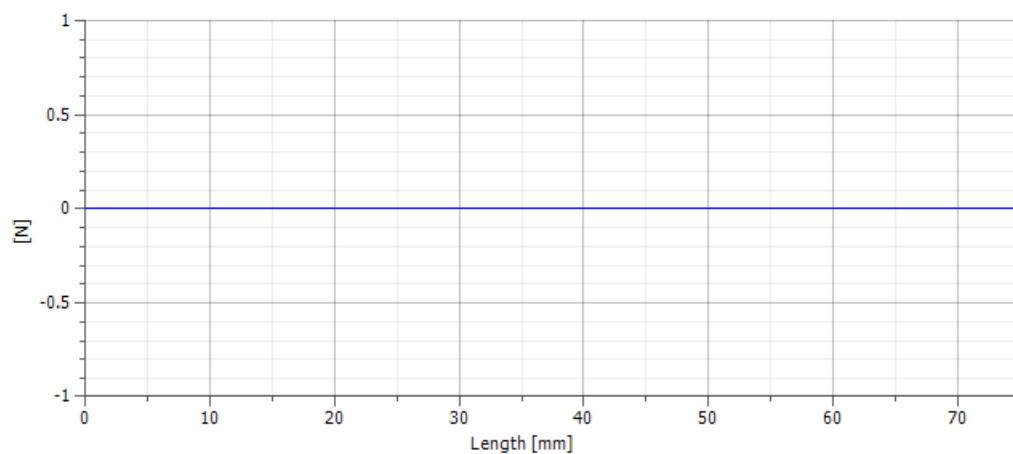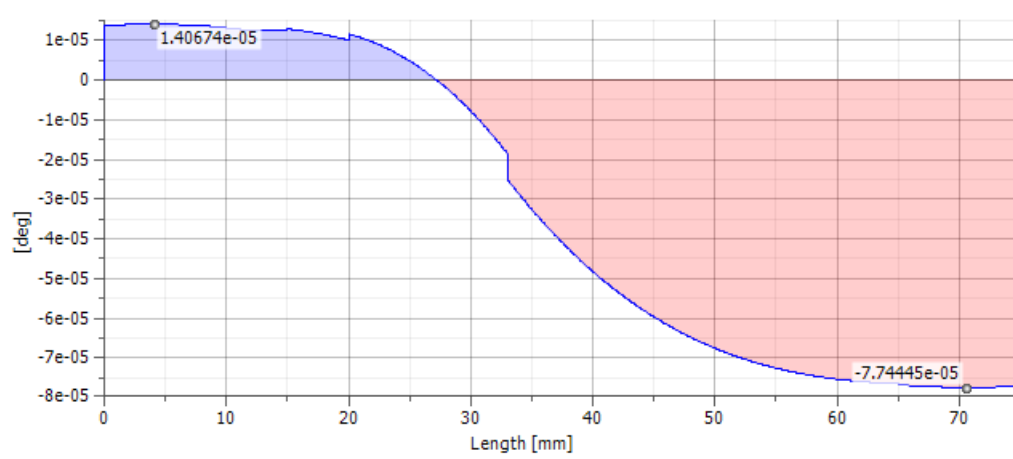
Bending Moment
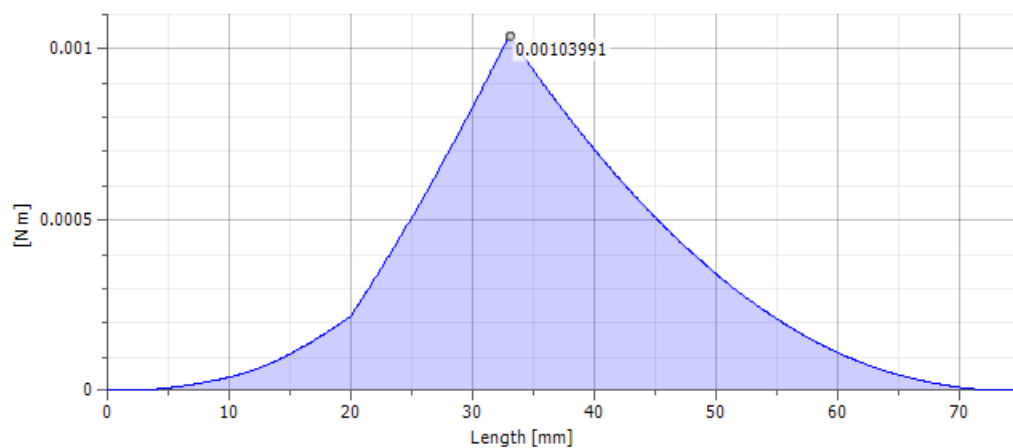
Bending Moment, YZ Plane
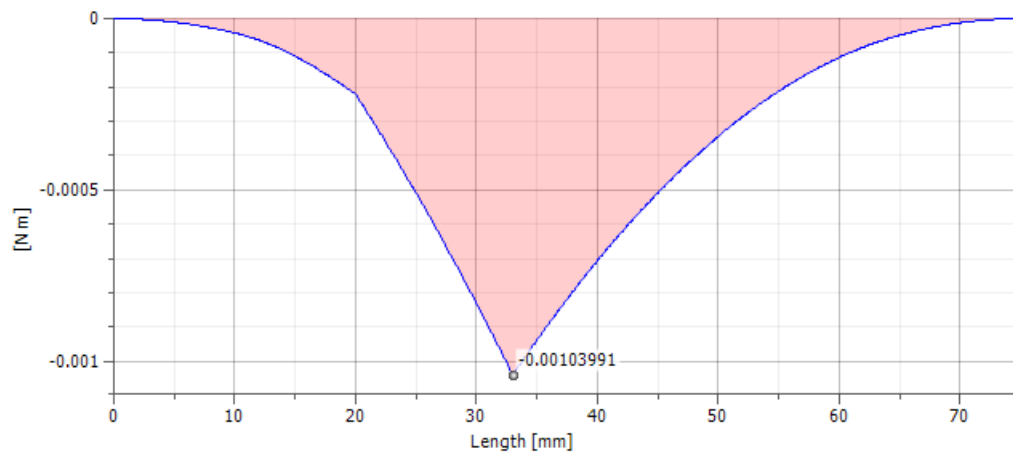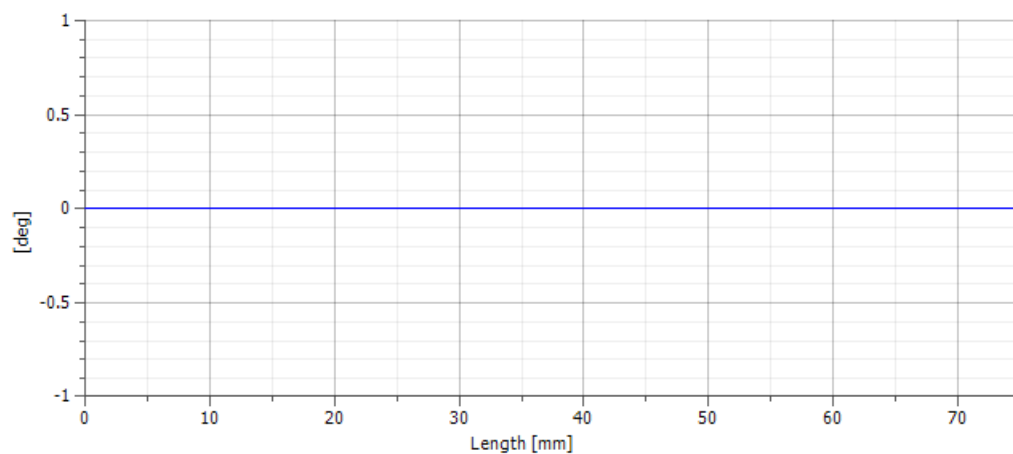

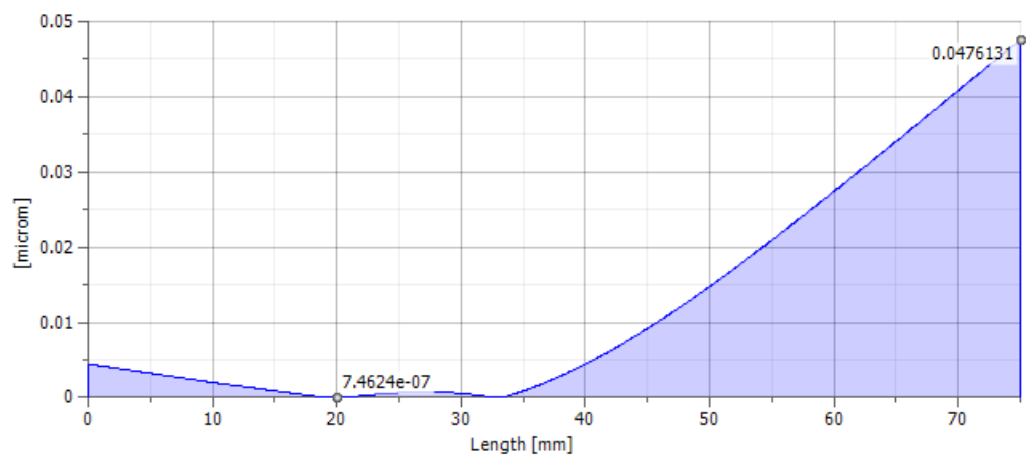**Bending Moment, XZ Plane**

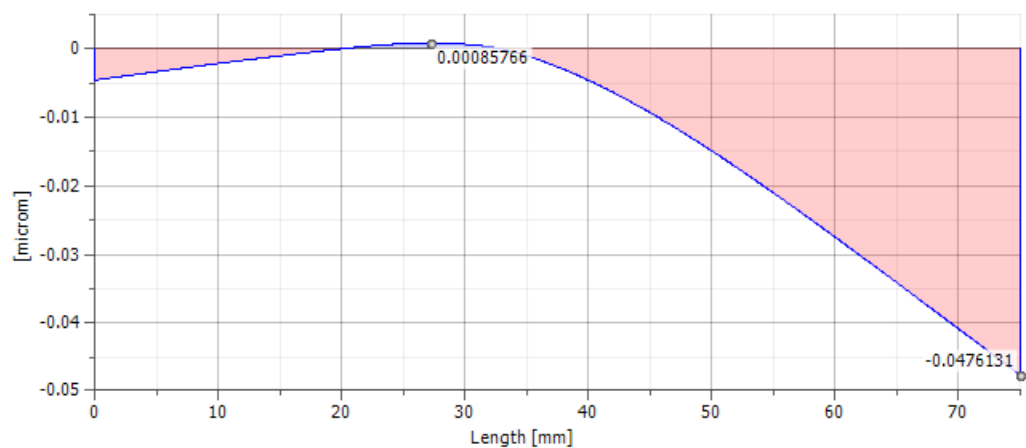**Deflection Angle**

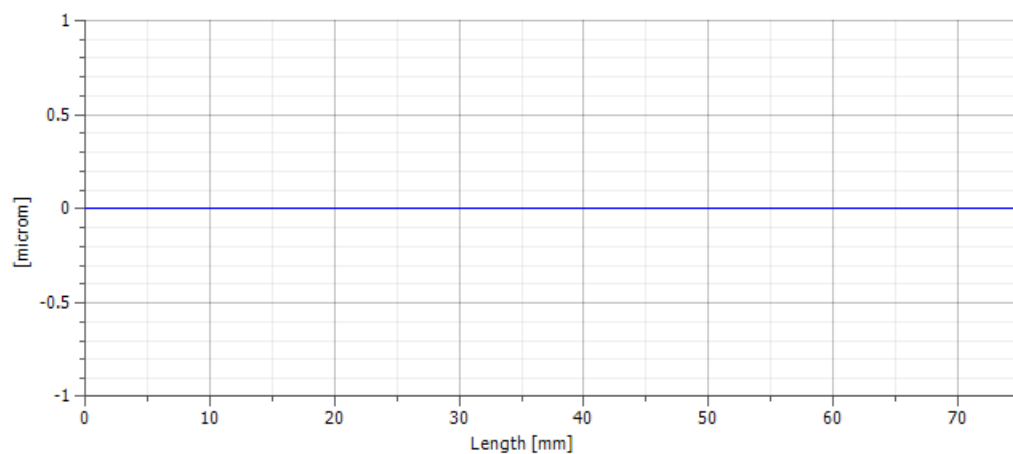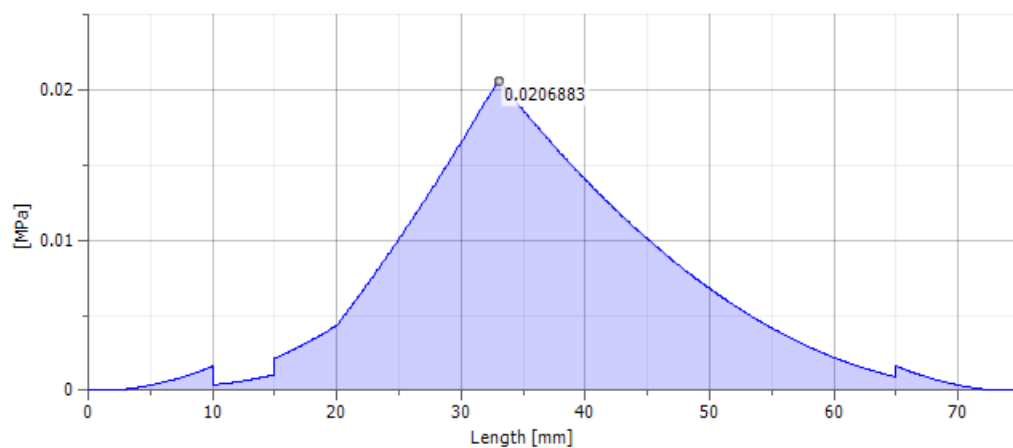**Deflection Angle, YZ Plane**

Deflection Angle, XZ Plane

Deflection

7.4624e-07

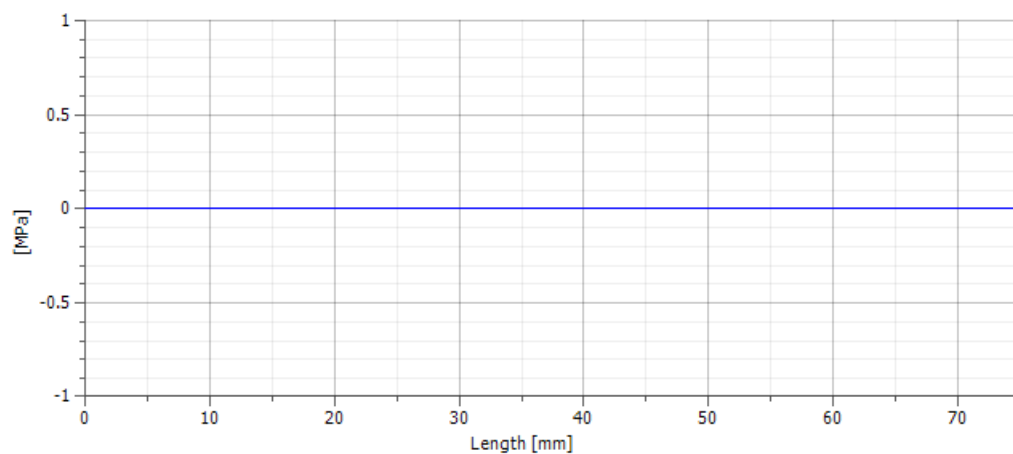**Deflection, YZ Plane**

0.00085766

Deflection, XZ Plane

Bending Stress
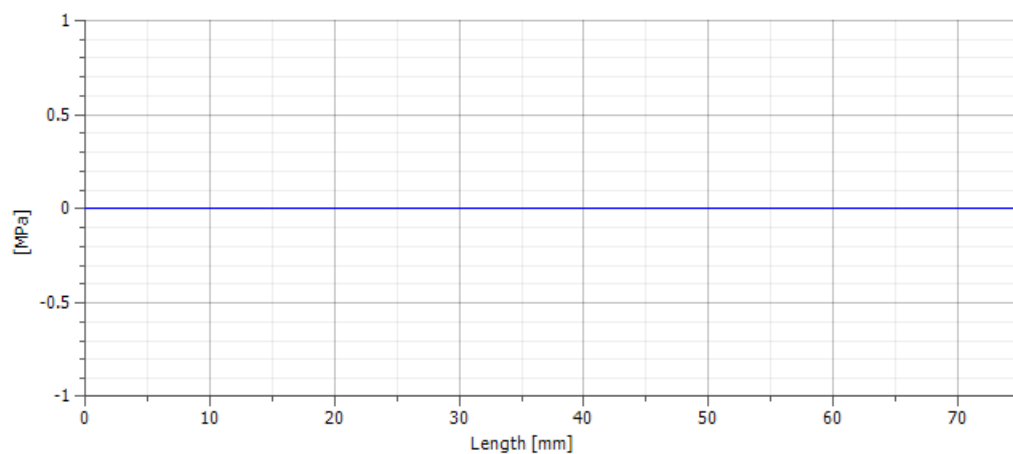

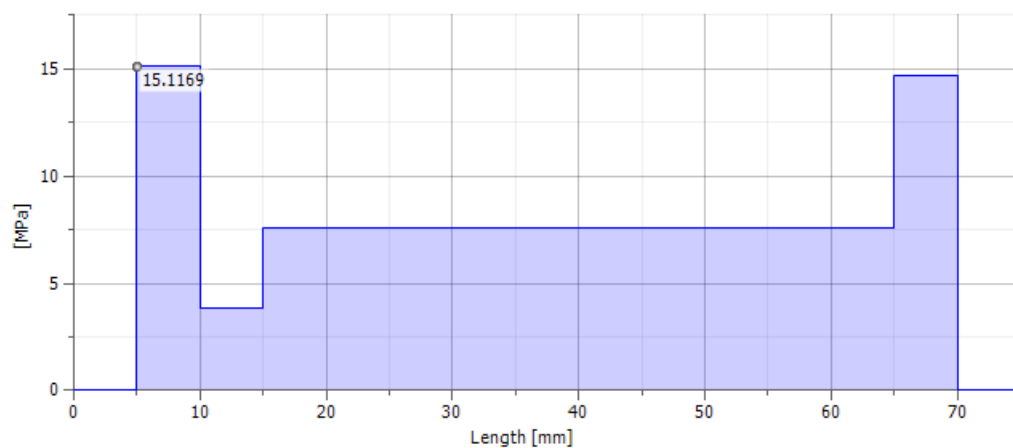**Bending Stress, YZ Plane**
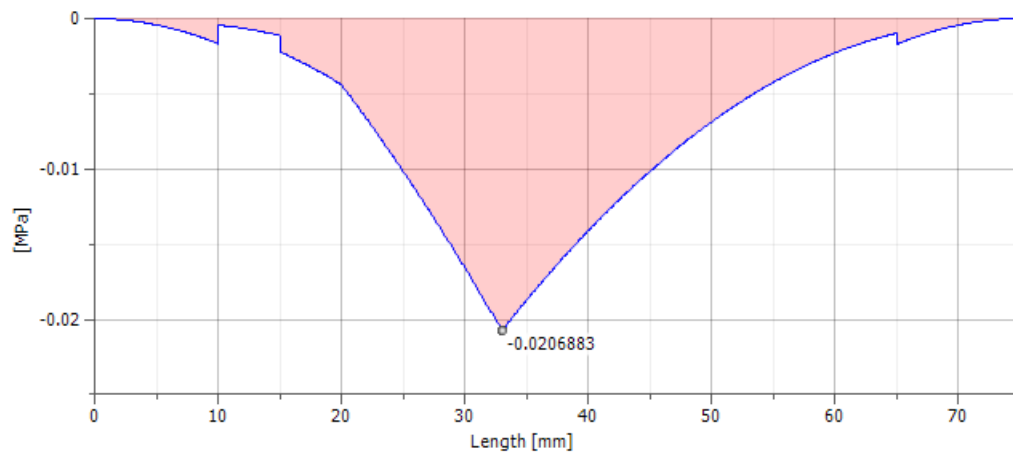
Bending Stress, XZ Plane

Shear Stress
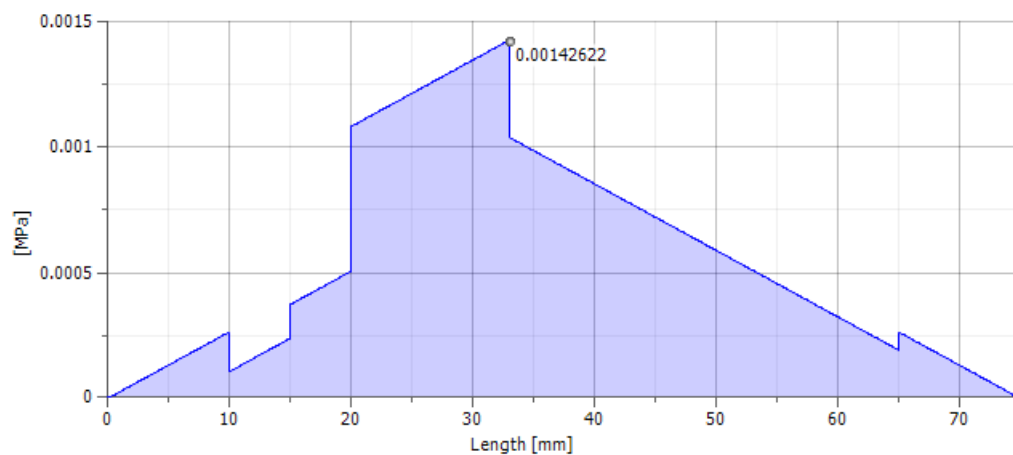
Shear Stress, YZ Plane
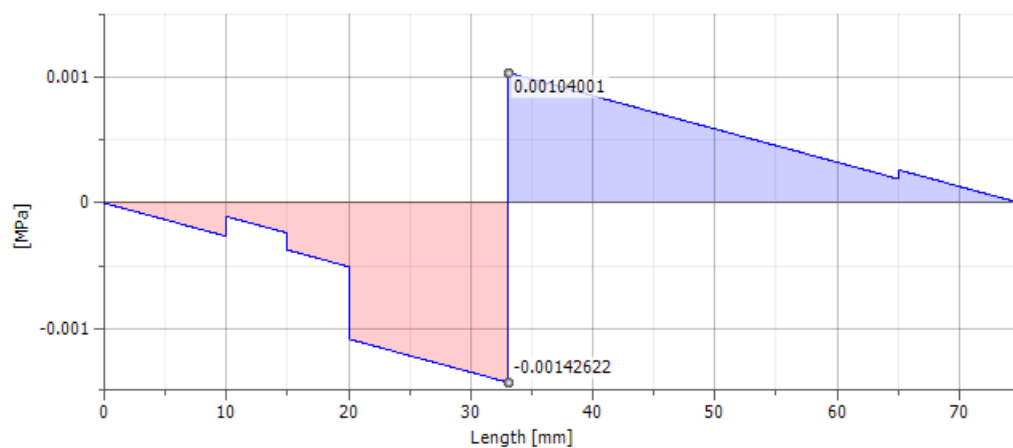
Shear Stress, XZ Plane

Torsional Stress

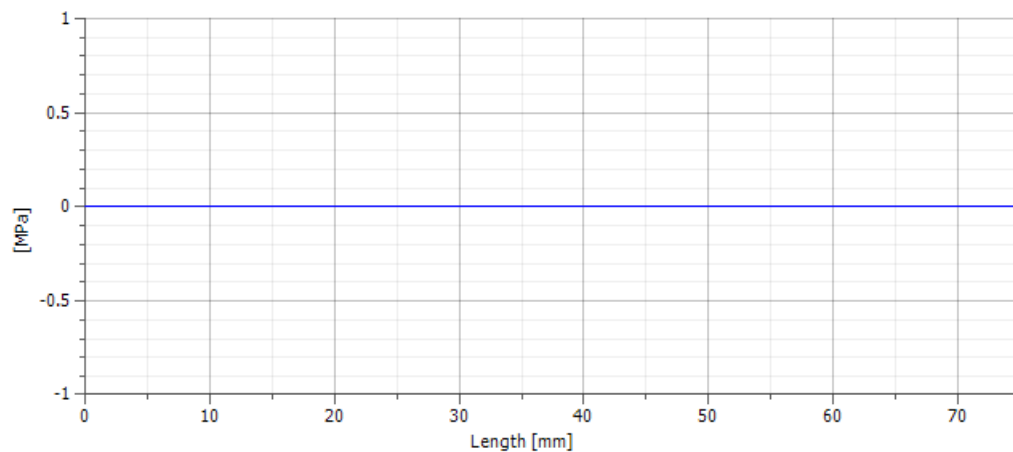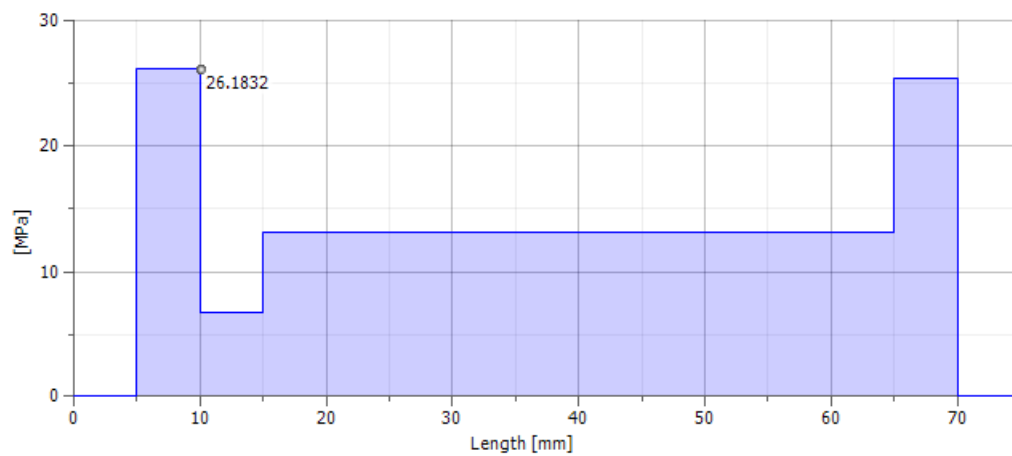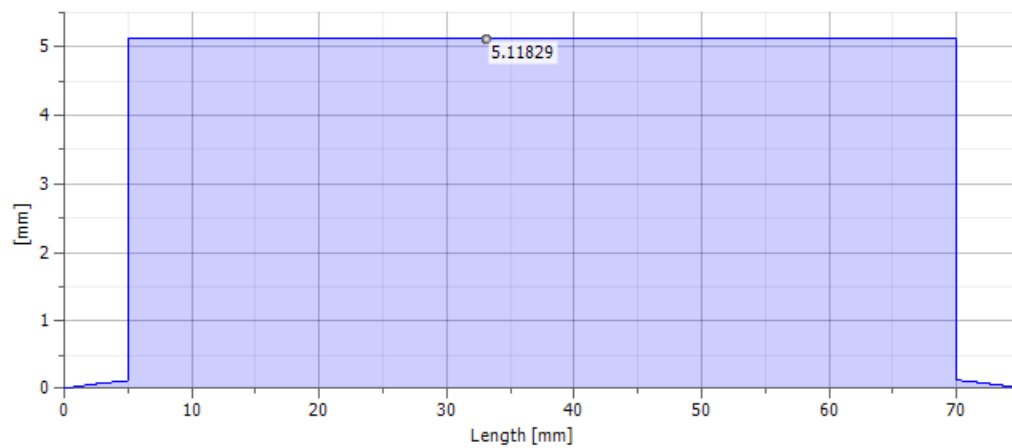**Tension Stress**

Reduced Stress

Ideal Diameter

Summary of Messages

1:38:50 AM Calculation: Calculated.