Verification:

As we know that we got the optimum values from the response curve and not by performing the actual simulation. So, we are verifying the result points by calculating the error between the simulated result and result from the response surface.

Results from the response surface:

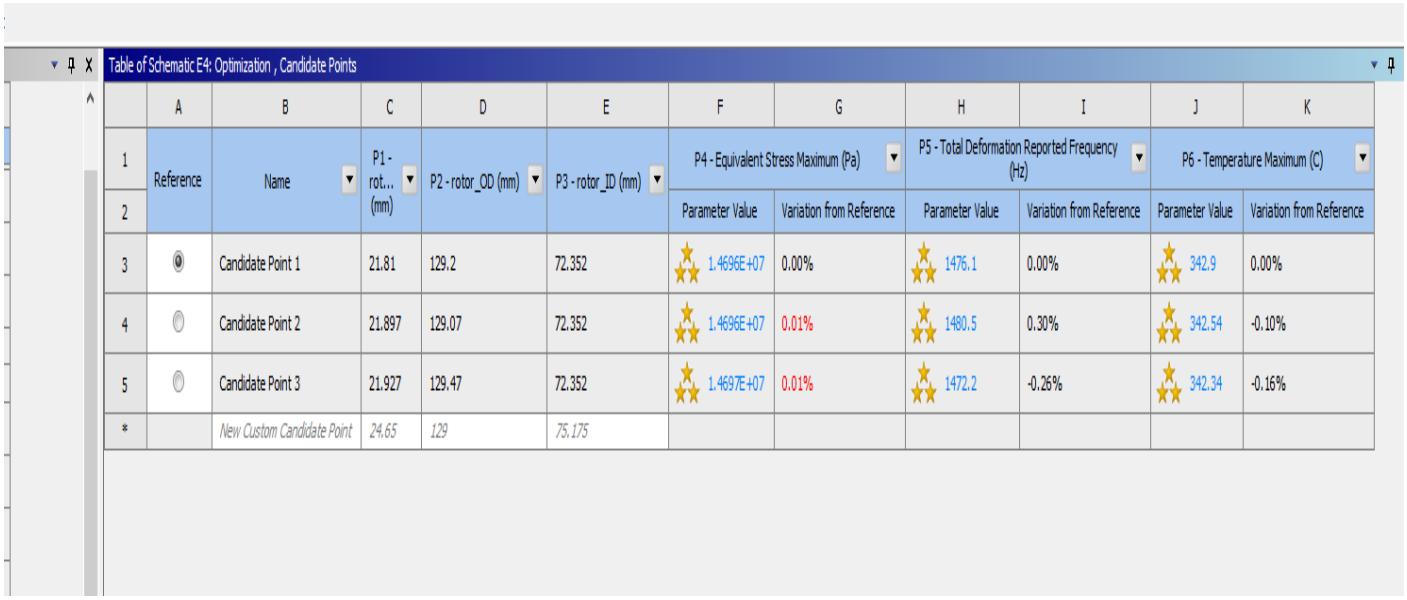
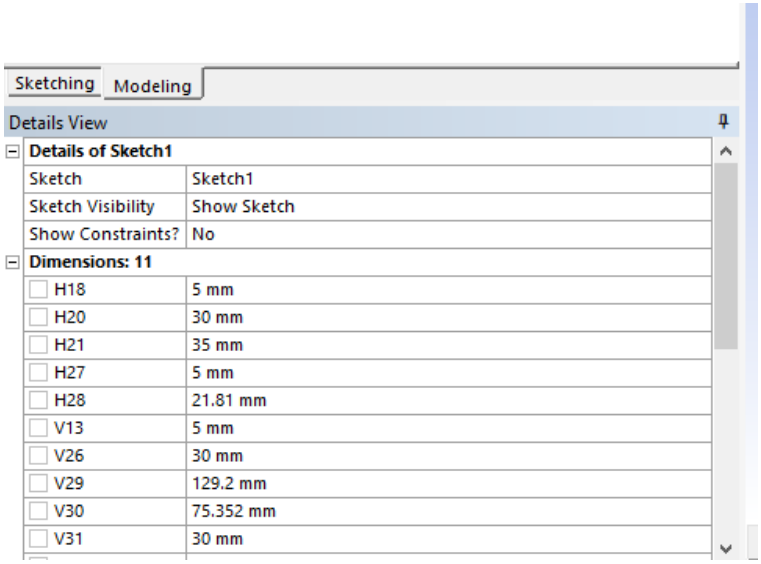


Table of Schematic E4: Optimization , Candidate Points

	A	B	C	D	E	F	G	H	I	J	K
1	Reference	Name	P1 - rot... (mm)	P2 - rotor_OD (mm)	P3 - rotor_ID (mm)	P4 - Equivalent Stress Maximum (Pa)		P5 - Total Deformation Reported Frequency (Hz)		P6 - Temperature Maximum (C)	
2						Parameter Value	Variation from Reference	Parameter Value	Variation from Reference	Parameter Value	Variation from Reference
3	◉	Candidate Point 1	21.81	129.2	72.352	1.4696E+07	0.00%	1476.1	0.00%	342.9	0.00%
4	○	Candidate Point 2	21.897	129.07	72.352	1.4696E+07	0.01%	1480.5	0.30%	342.54	-0.10%
5	○	Candidate Point 3	21.927	129.47	72.352	1.4697E+07	0.01%	1472.2	-0.26%	342.34	-0.16%
*		*New Custom Candidate Point*	*24.65*	*129*	*75.175*						

Verifying Point1:

Changing the dimensions of the geometry as per the point 1

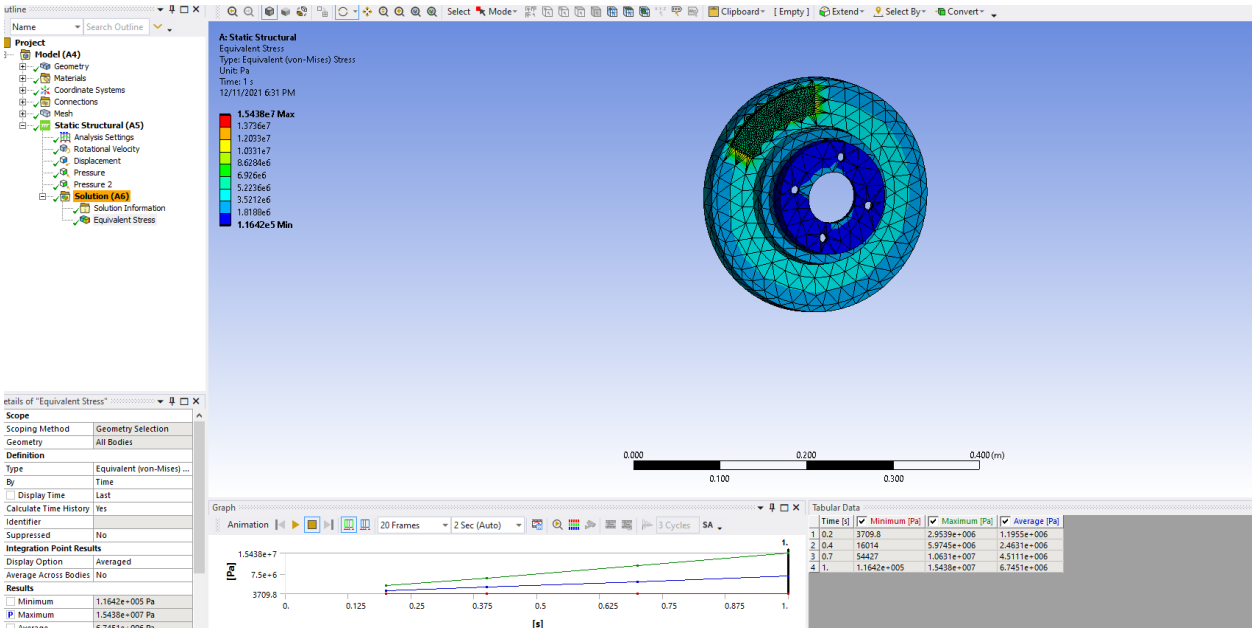


Sketching | Modeling

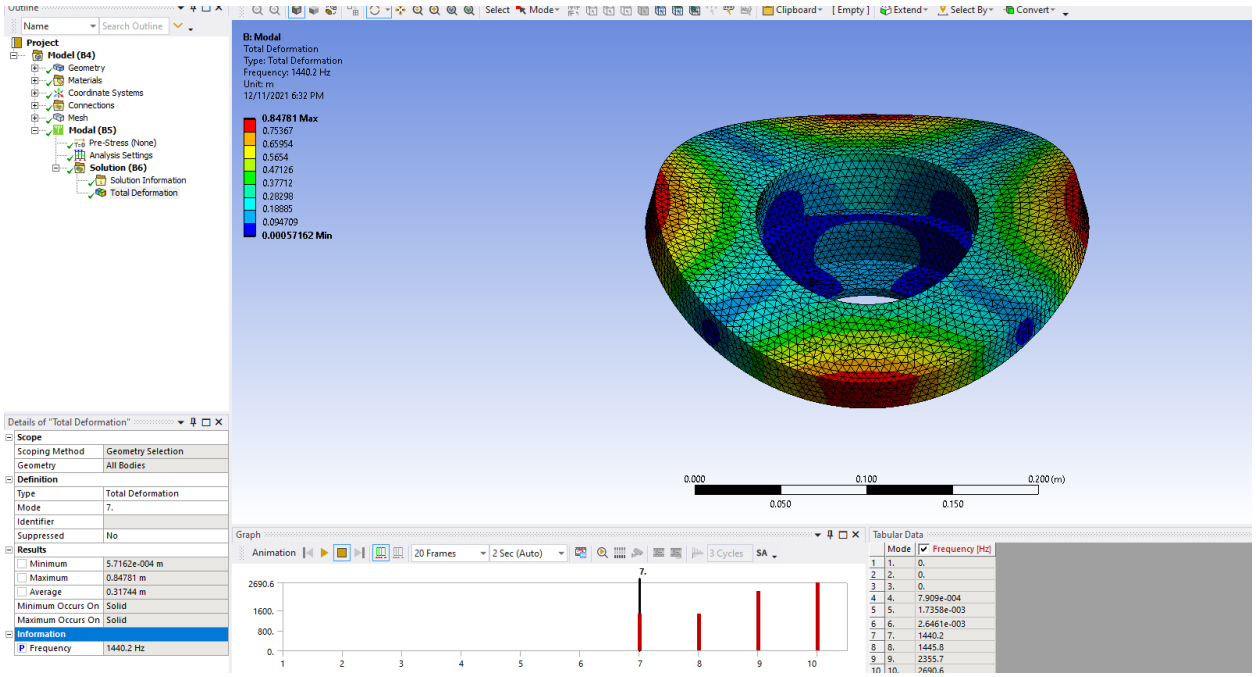
Details View

Details of Sketch1	
Sketch	Sketch1
Sketch Visibility	Show Sketch
Show Constraints?	No
Dimensions: 11	
H18	5 mm
H20	30 mm
H21	35 mm
H27	5 mm
H28	21.81 mm
V13	5 mm
V26	30 mm
V29	129.2 mm
V30	75.352 mm
V31	30 mm

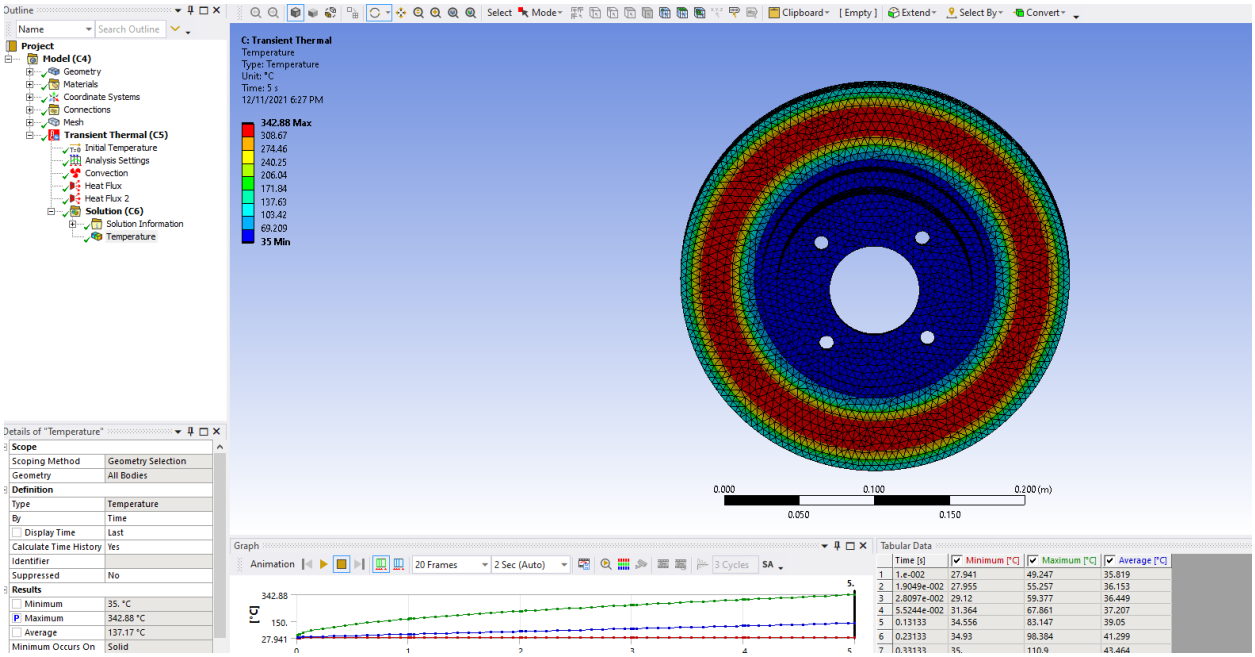
Static Structural Results for Point 1:



Modal Analysis Results for Point1:



Thermal Analysis Results for Point1:

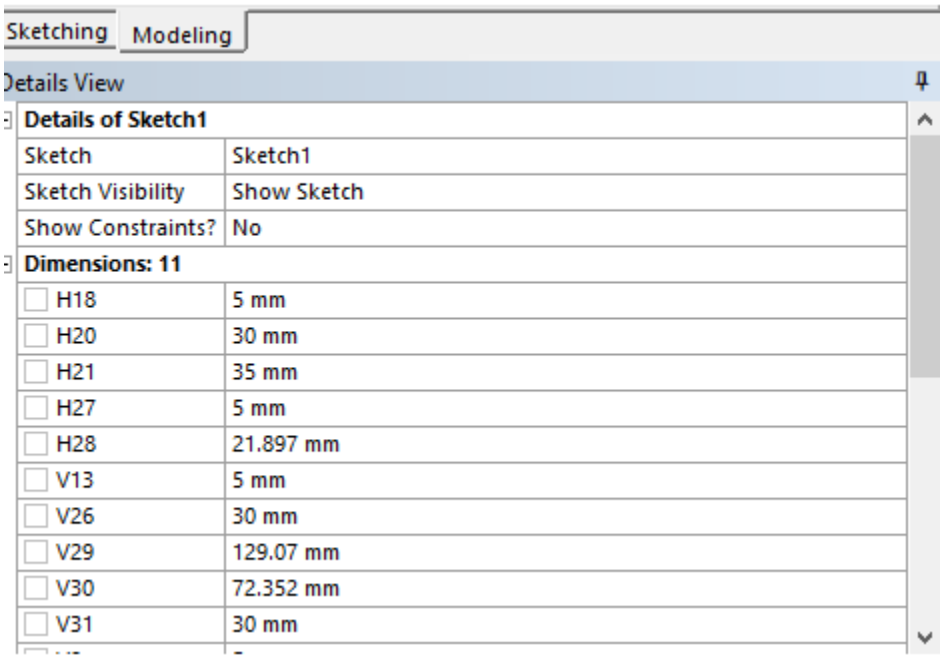


	Disc Thickness	Outer Diameter	Inner Diameter	Von Mises Stress (10^7)Pa	Frequency (Hz)	Temperature (deg C)
Point1	21.81	129.2	75.352	1.4696	1476.1	342.9
Verification				1.5438	1440.2	342.88
% Error				4.81	-2.49	-0.01

As we can observe that for point 1 both values are almost the same.

Verifying Point2:

Changing the dimensions of the geometry as per the point 2

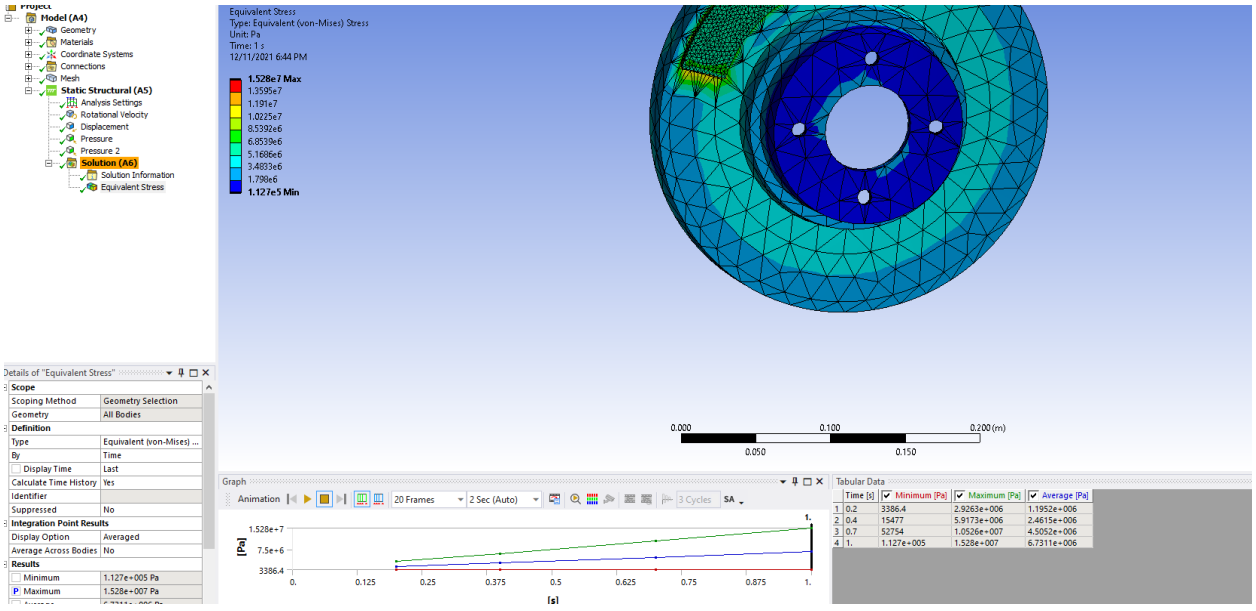


Sketching | Modeling

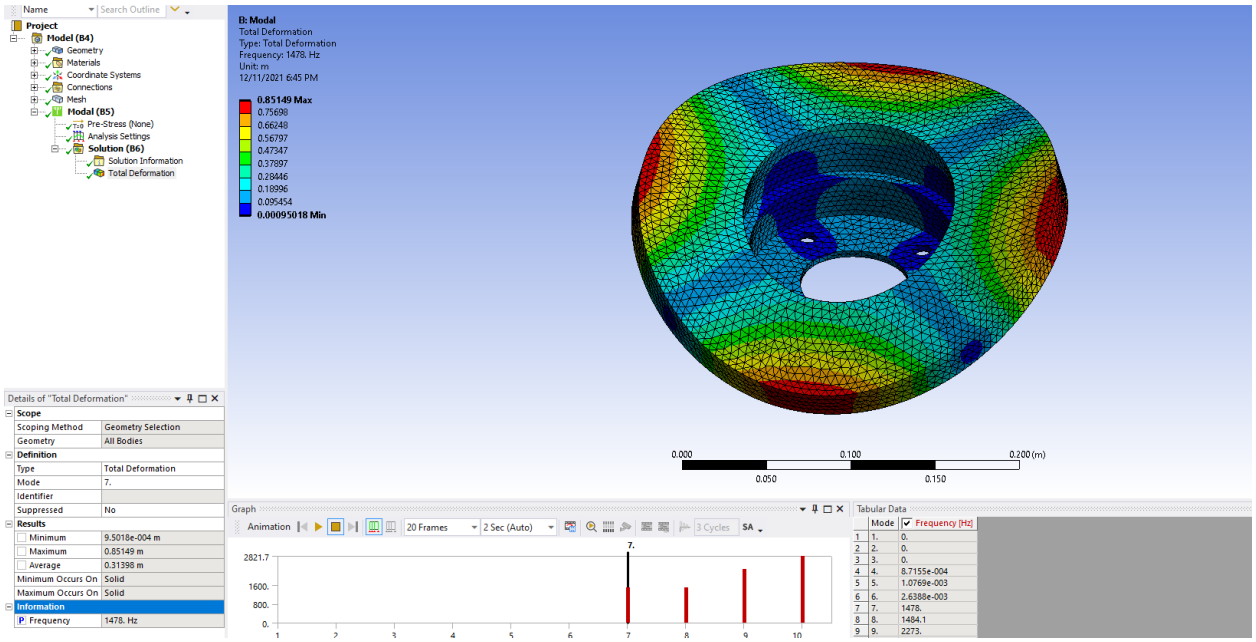
Details View

Details of Sketch1	
Sketch	Sketch1
Sketch Visibility	Show Sketch
Show Constraints?	No
Dimensions: 11	
H18	5 mm
H20	30 mm
H21	35 mm
H27	5 mm
H28	21.897 mm
V13	5 mm
V26	30 mm
V29	129.07 mm
V30	72.352 mm
V31	30 mm

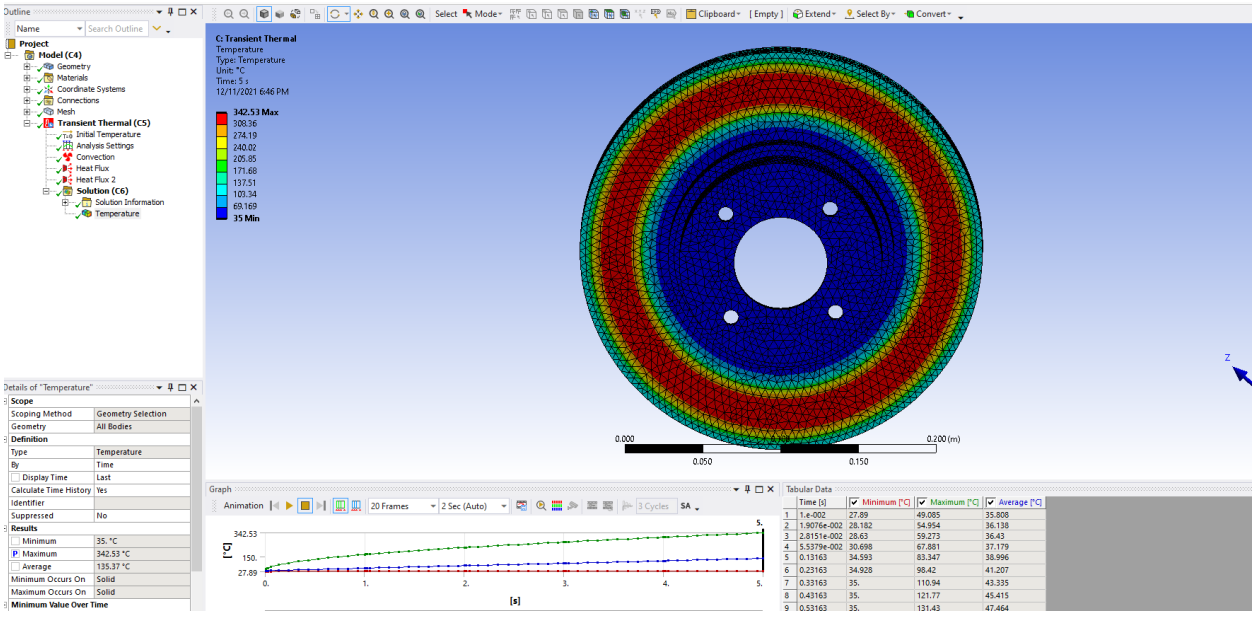
Static Structural Results for Point 2:



Modal Analysis Results for Point 2:



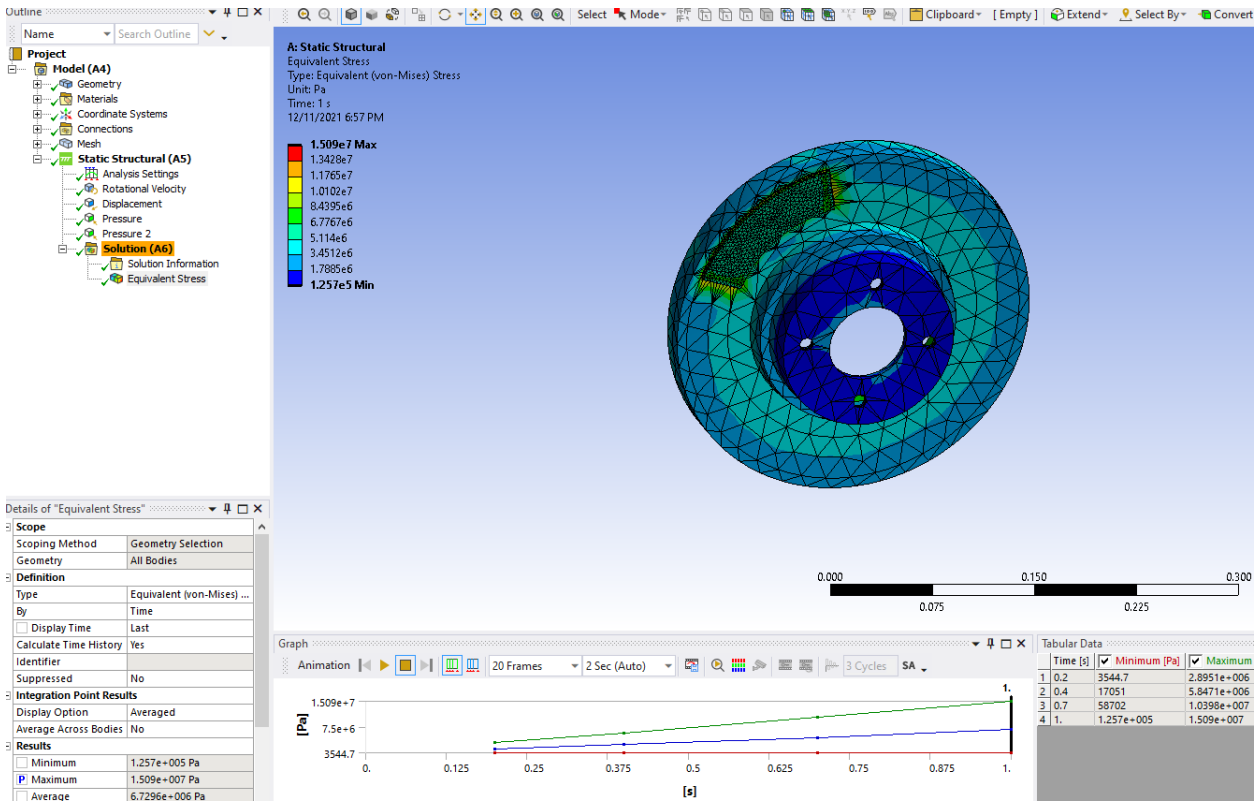
Thermal Analysis Results for Point2:



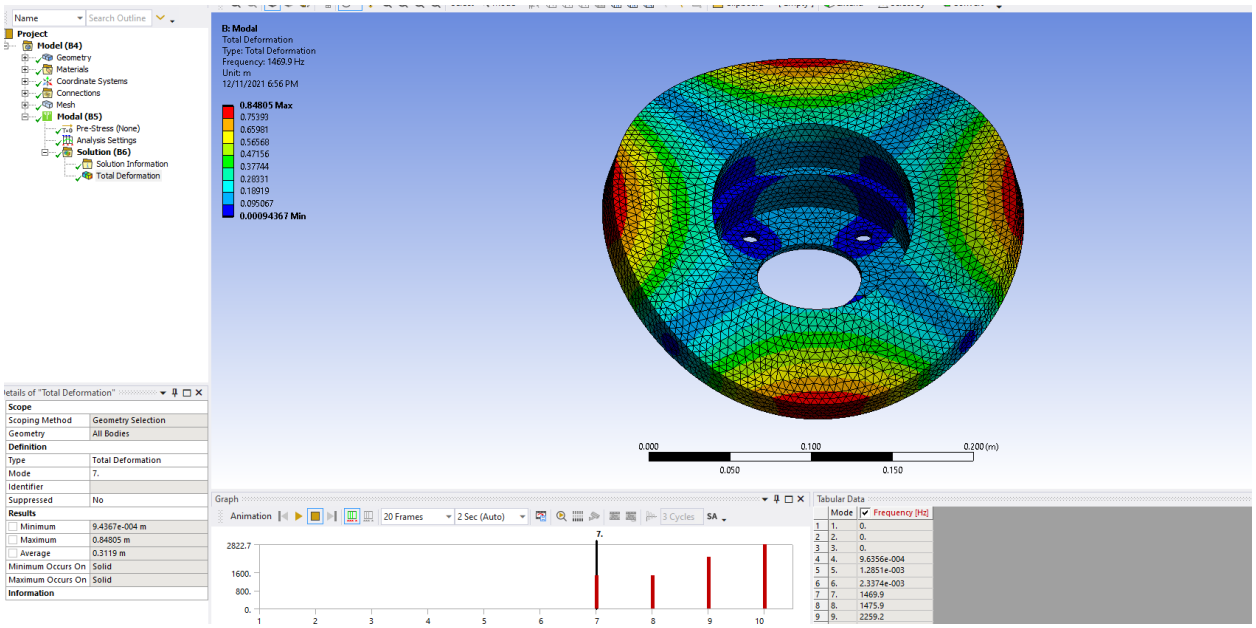
	Disc Thickness	Outer Diameter	Inner Diameter	Von Mises Stress (10^7)Pa	Frequency (Hz)	Temperature (deg C)
Point2	21.897	129.07	72.352	1.4696	1480.5	342.54
Verification				1.528	1478	342.53
% Error				**3.82**	**-0.17**	**0.00**

As we can observe that for point 2 both values are almost the same.

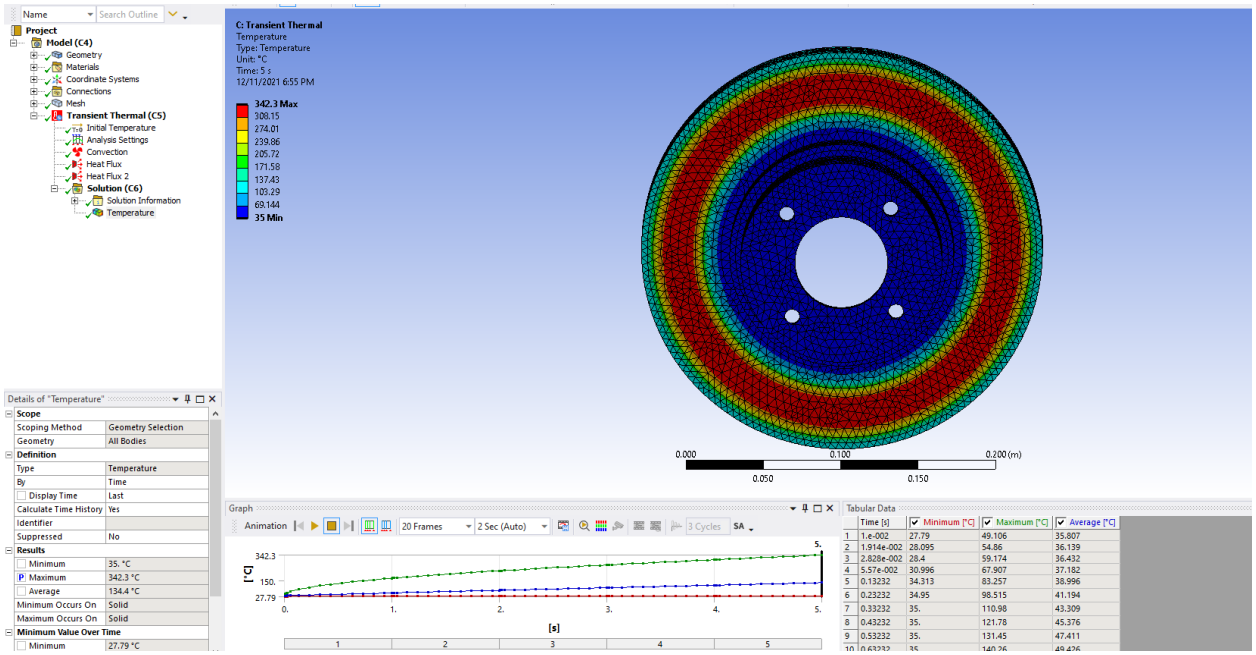
Static Structural Results for Point 3:



Modal Analysis Results for Point 3:



Thermal Analysis Results for Point3:



	Disc Thickness	Outer Diameter	Inner Diameter	Von Mises Stress (10^7)Pa	Frequency (Hz)	Temperature (deg C)
Point1	21.927	129.47	72.352	1.4697	1472.2	342.34
Verification				1.509	1469.9	342.3
% Error				**2.6**	**-0.2**	**0.0**

As we can observe that for point 3 both values are almost the same.

Final Verification Table:

	Disc Thickness	Outer Diameter	Inner Diameter	Von Mises Stress (10^7)Pa	Frequency(Hz)	Temperature (deg C)
Point1	21.81	129.2	75.352	1.4696	1476.1	342.9
Verification				1.5438	1440.2	342.88
% Error				**4.81**	**-2.49**	**-0.01**
Point2	21.897	129.07	72.352	1.4696	1480.5	342.54
Verification				1.528	1478	342.53
% Error				**3.82**	**-0.17**	**0.00**
Point3	21.927	129.47	72.352	1.4697	1472.2	342.34
Verification				1.509	1469.9	342.3
% Error				**2.6**	**-0.2**	**0.0**
			Avg Error	**3.74**	**-0.94**	**-0.01**

Therefore, the average error for von mises stress is 3.74%, natural frequency is 0.94% and Max Temperature is 0.01%.