DEFORMATION AND STRESS OF A SIMPLE CANTILEVER BEAM

THERMAL ANALYSIS: CONVECTION IN A PIN FIN

FLUID FLOW HEAT TRANSFER ANALYSIS IN A PIPE

SIMULATION OF A SHOCK TUBE AFTER THE RUPTURE OF ITS DIAPHRAGM USING ANSYS

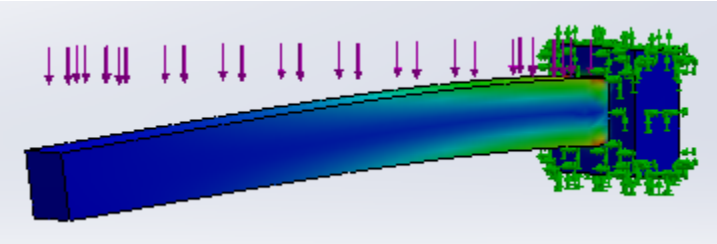
FLOW SIMULATION OF A TURBINE USING SOLIDWORKS

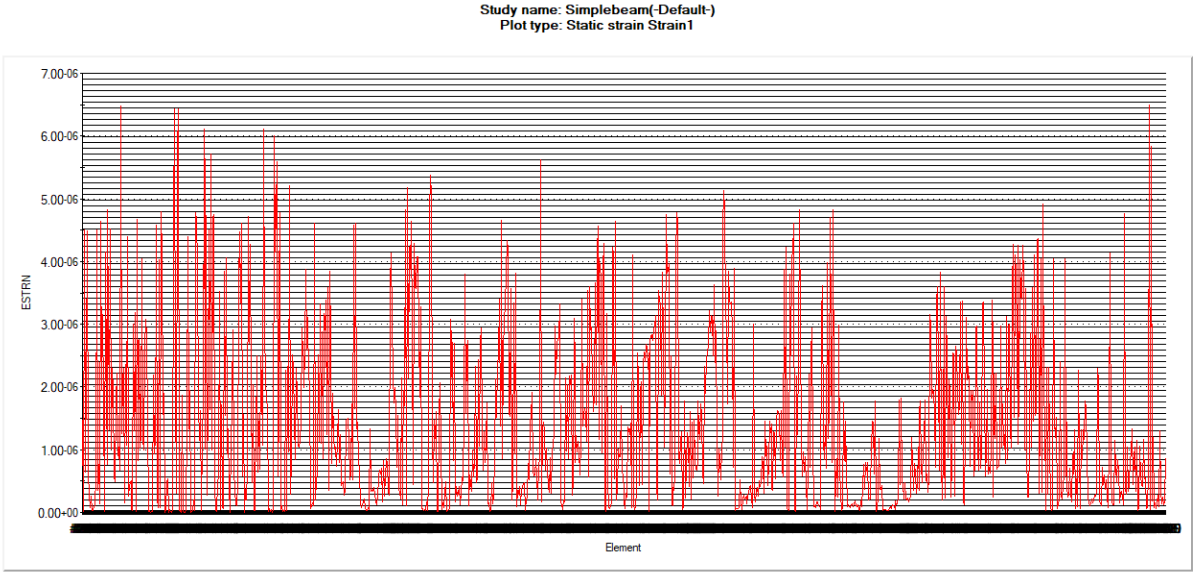
THERMAL ANALYSIS OF A FLAT PLATE SHOWING TEMPERATURE DISTRIBUTION USING ANSYS

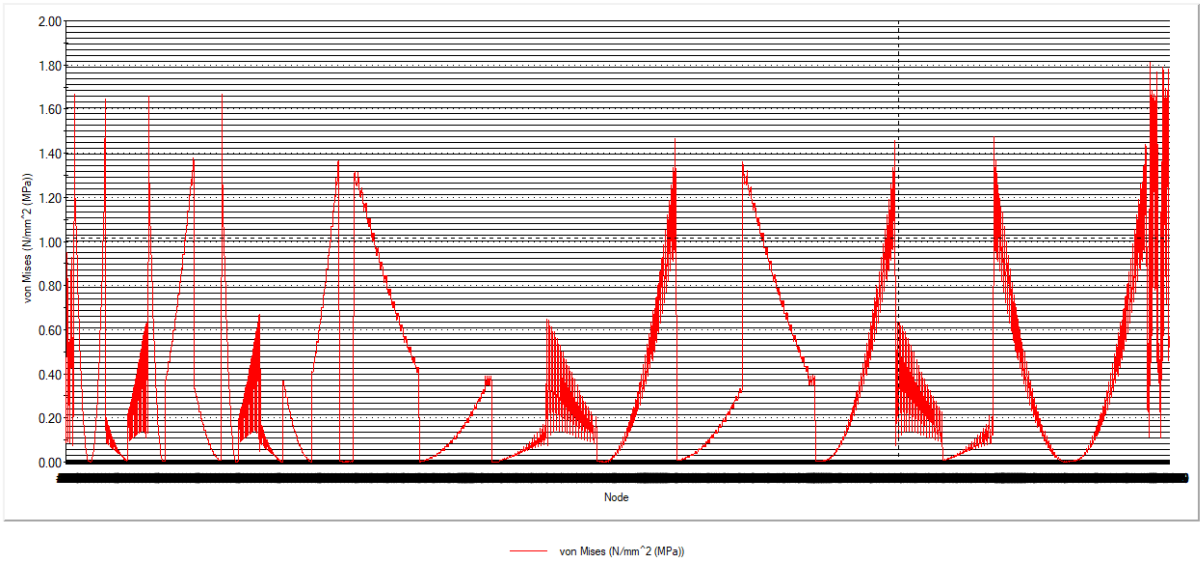
SIMULATION OF A SIMPLE TABLE TO SHOW THE FREQUENCY RESPONSE OVER 10 NODES

15TH APRIL 2022

DEFORMATION & STRESS OF A SIMPLE CANTILEVER BEAM



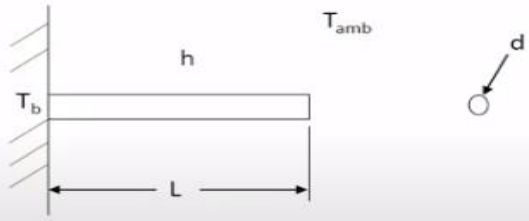


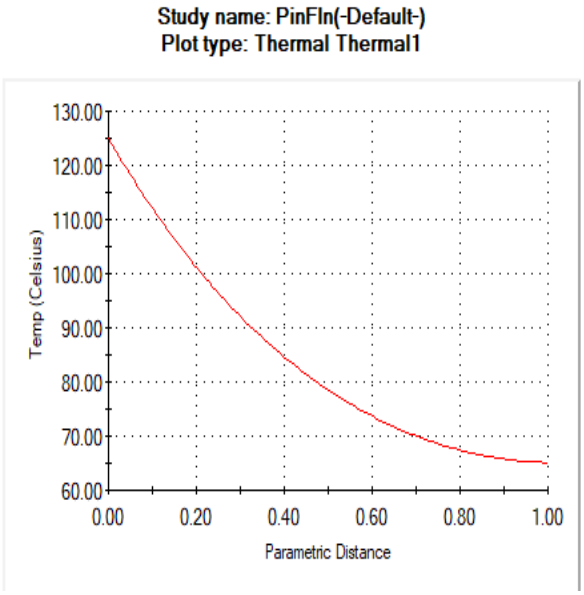


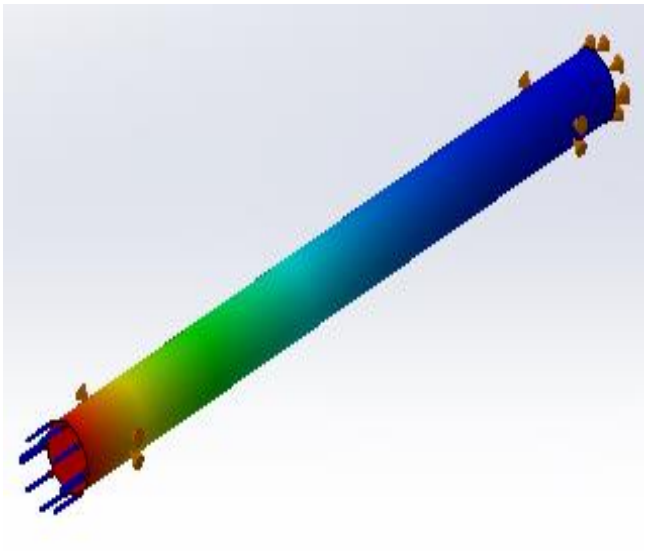
Thermal Analysis - Pin Fin Example

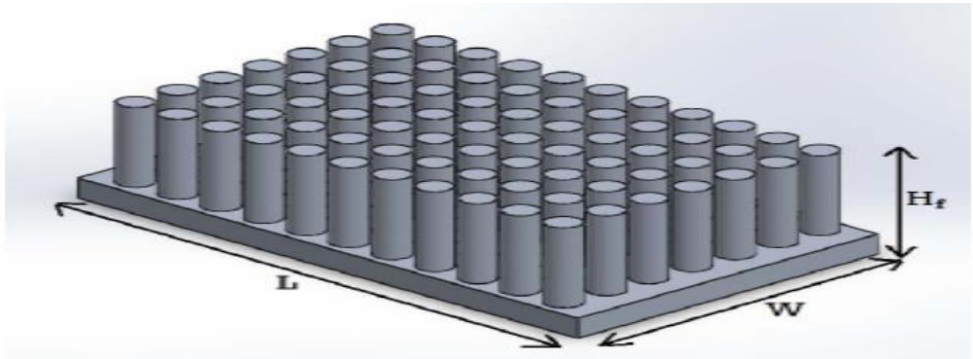
- Determine temperature distribution along the length of a pin
  - Heat transfer via conduction & convection

Base Temperature, T_b	125°C
Ambient Temperature, T_{amb}	25°C
Convection Coefficient, h	75 W/(m²K)
Pin Length, L	125 mm
Pin Diameter, d	10 mm
Pin Material	1060 Al Alloy
Pin Material Thermal Conductivity, k	200 W/(mK)









Pin Fin

FLOW SIMULATION HEAT TRANSFER

Hot and cold water mixing in a pipe(Mild steel)

Data:

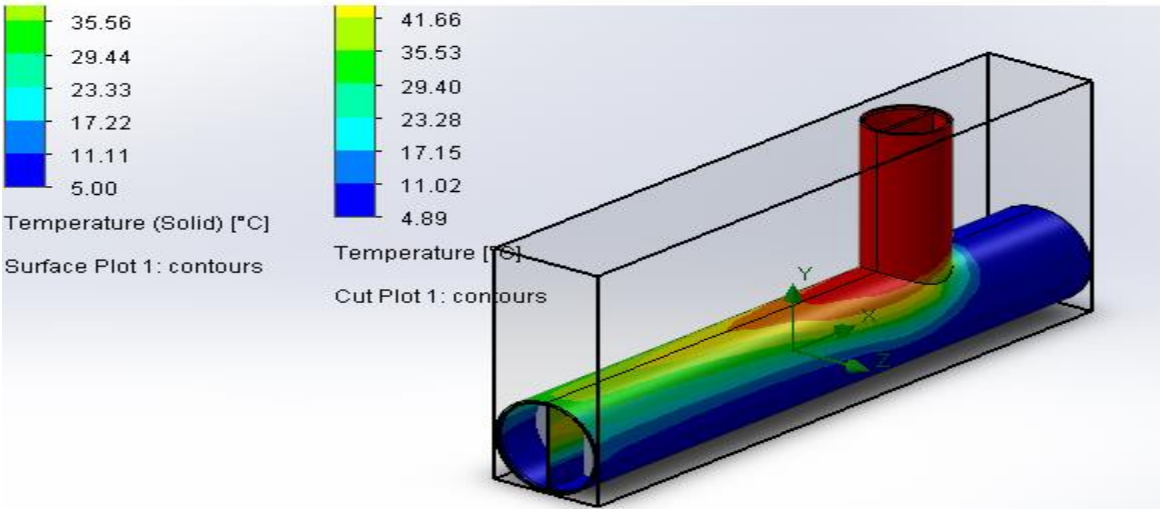
Geometry Dimension: Length of Pipe(18.5mm), Diameter of Pipe(3mm). Thin Feature(0.1m)

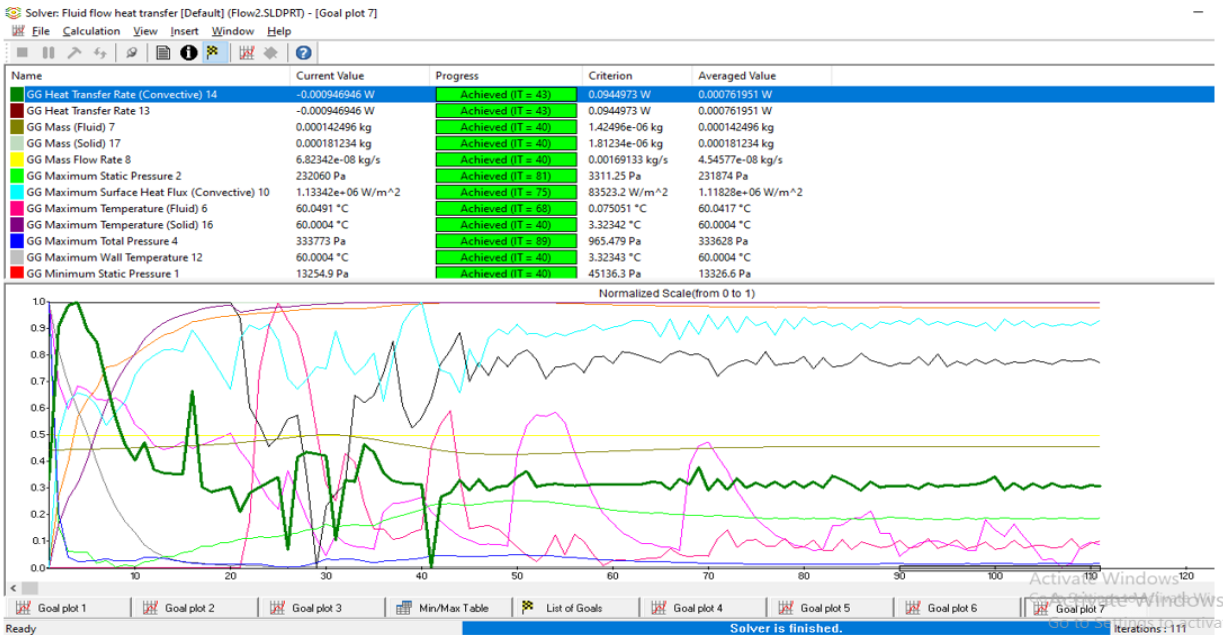
Diameter of smaller pipe(2mm)

Temperature of Hot fluid(60 degree celcius)

Temperature of cold fluid(5 degree celcius)

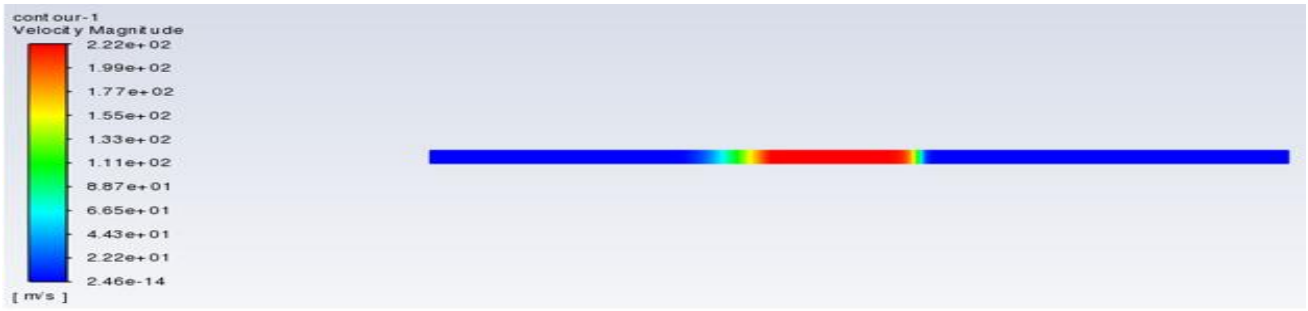
Incoming velocity of fluids(10m/s)

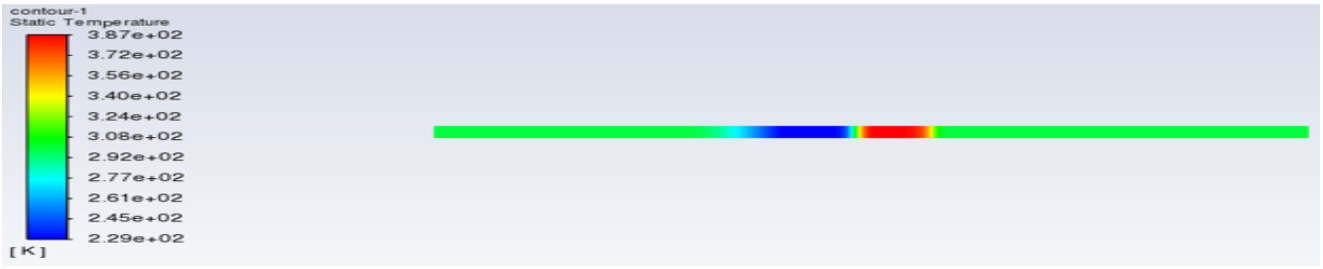


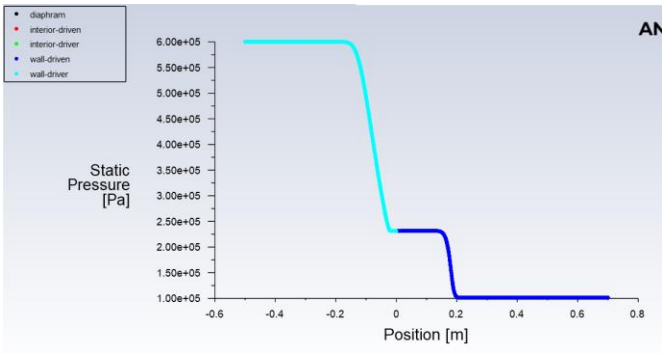


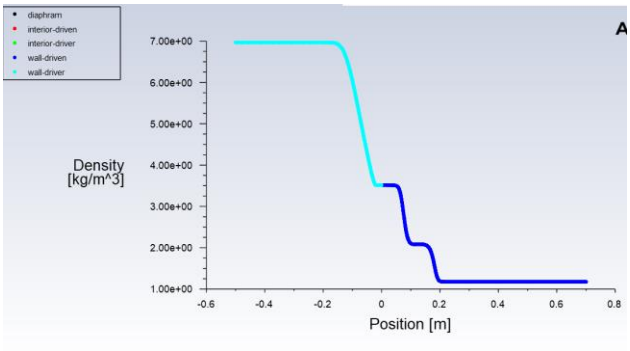
Simulation of a Shock tube after the rupture of its Diaphragm using Ansys

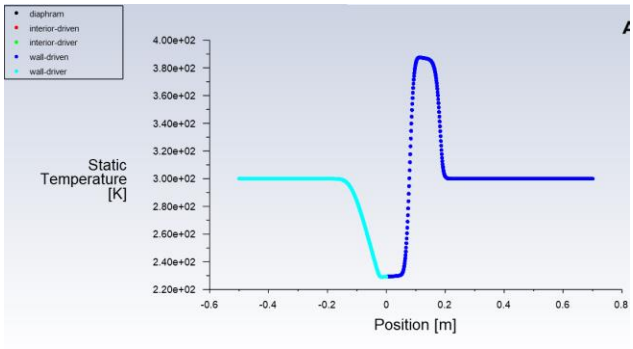
Contour Plots, XY Plots of a Shock tube Problem Using Ansys

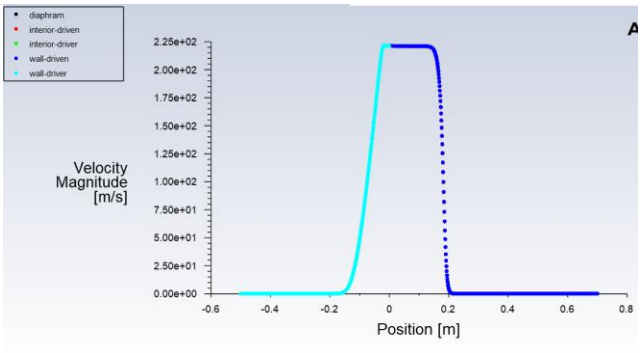




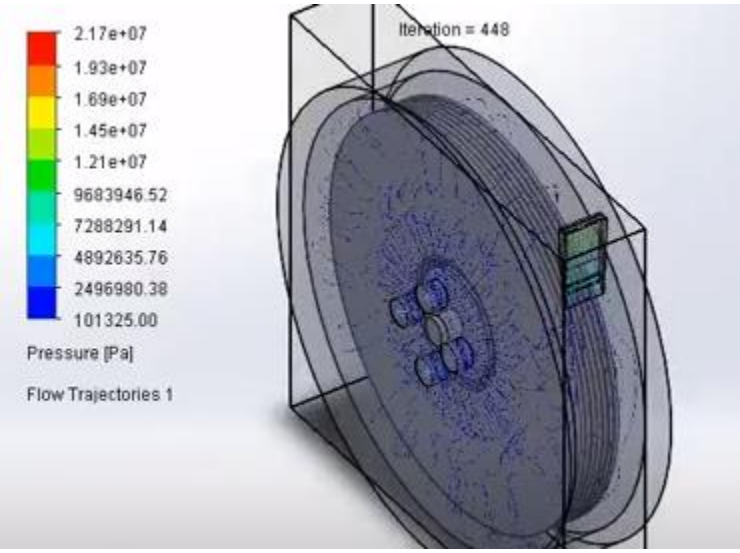




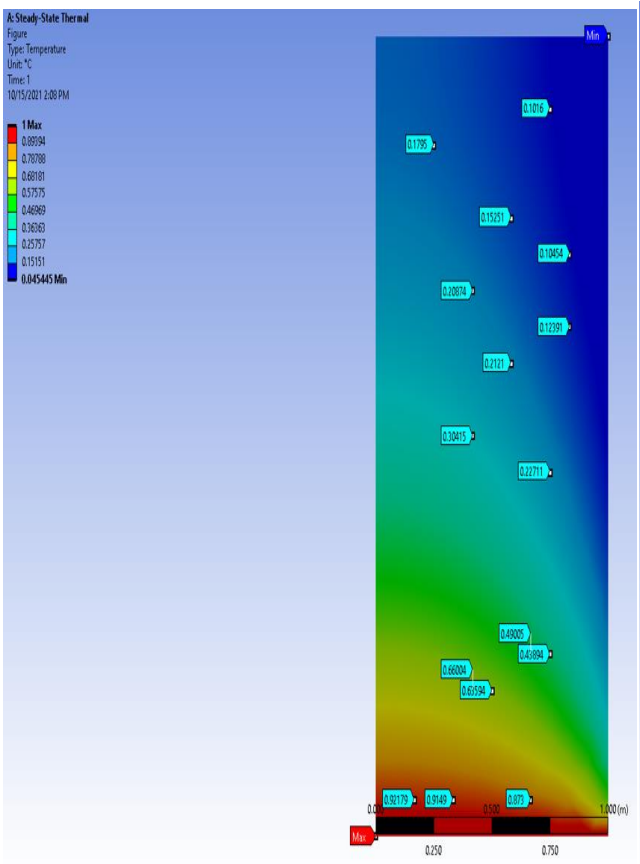


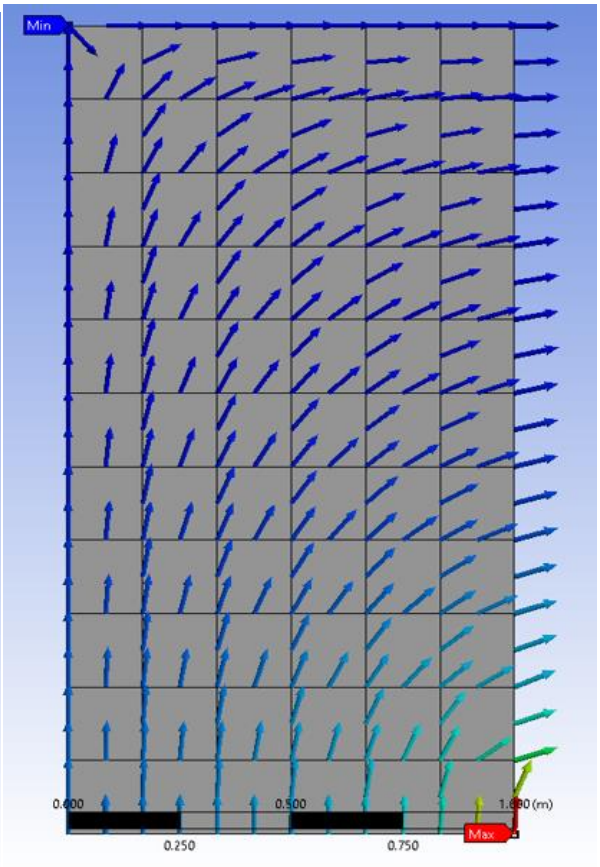


Flow Simulation of a Turbine using Solidworks

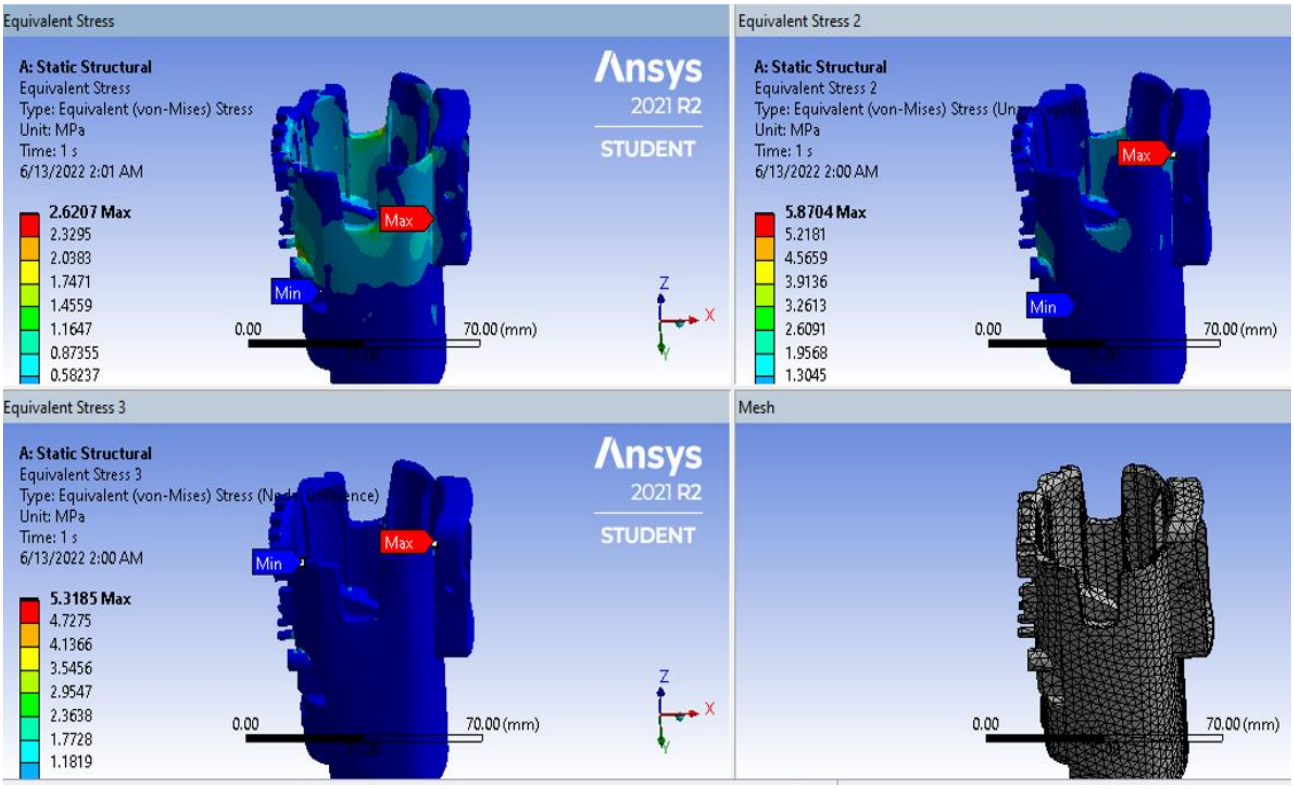


Thermal Analysis of a Flat plate showing temperature distribution using Ansys





STATIC STRUCTURAL ANALYSIS IN ANSYS



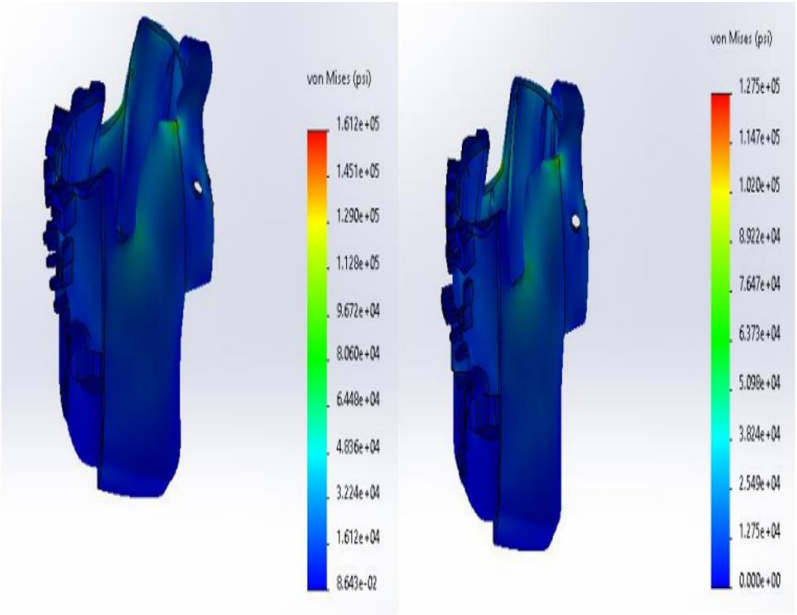
STATIC STRUCTURAL ANALYSIS IN SOLIDWORKS

Boundary Conditions:

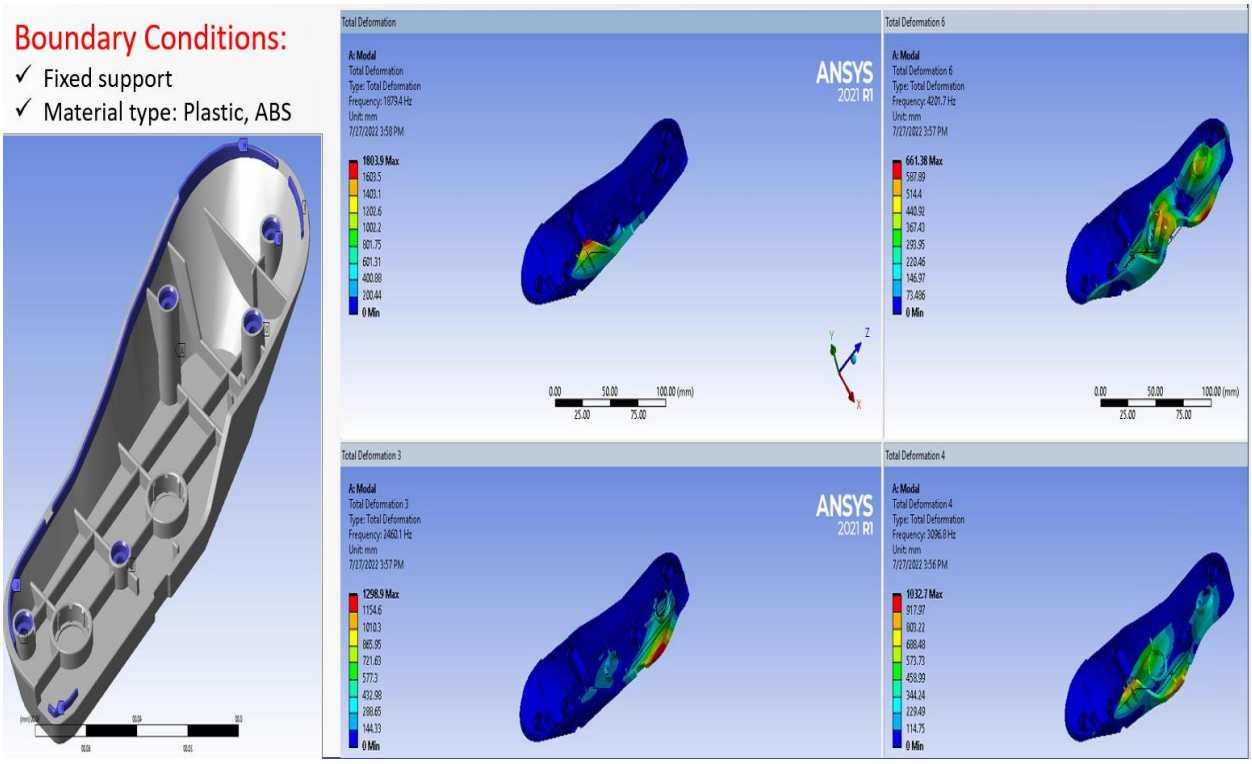
- ✓ Fixed base support
- ✓ Applied 20 ft-lbs in three components (x,y,z)
- ✓ Material type: Plastic, ABS

Results

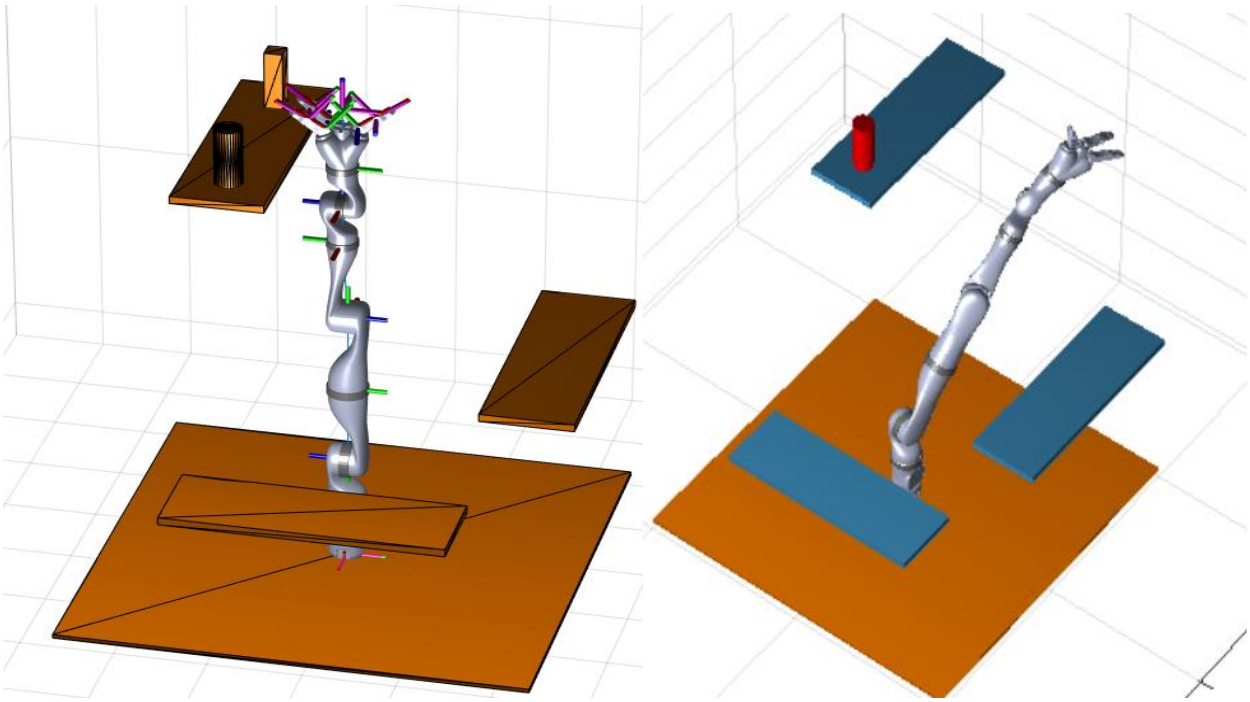
AVO47_513_001 showed better results as it has a lower Von Mises stress



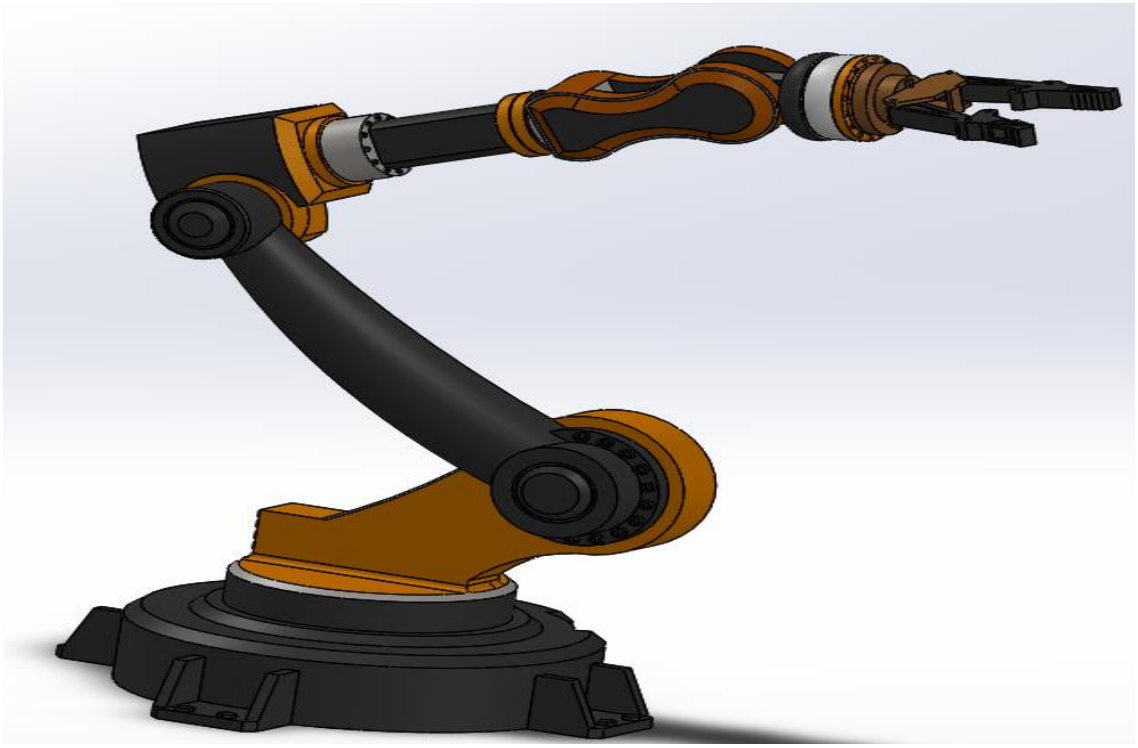
MODAL ANALYSIS IN ANSYS

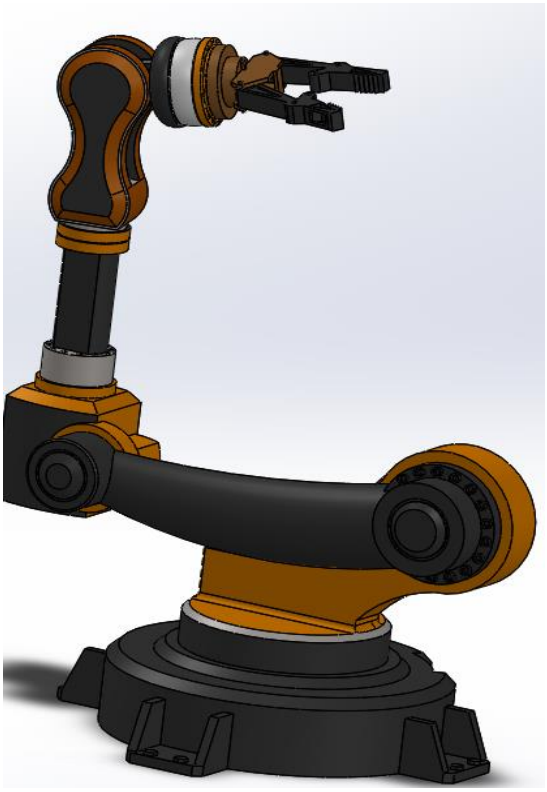


PATH PLANNING & TRAJECTORY OF A ROBOTIC MANIPULATOR



ROBOTIC MANIPULATOR





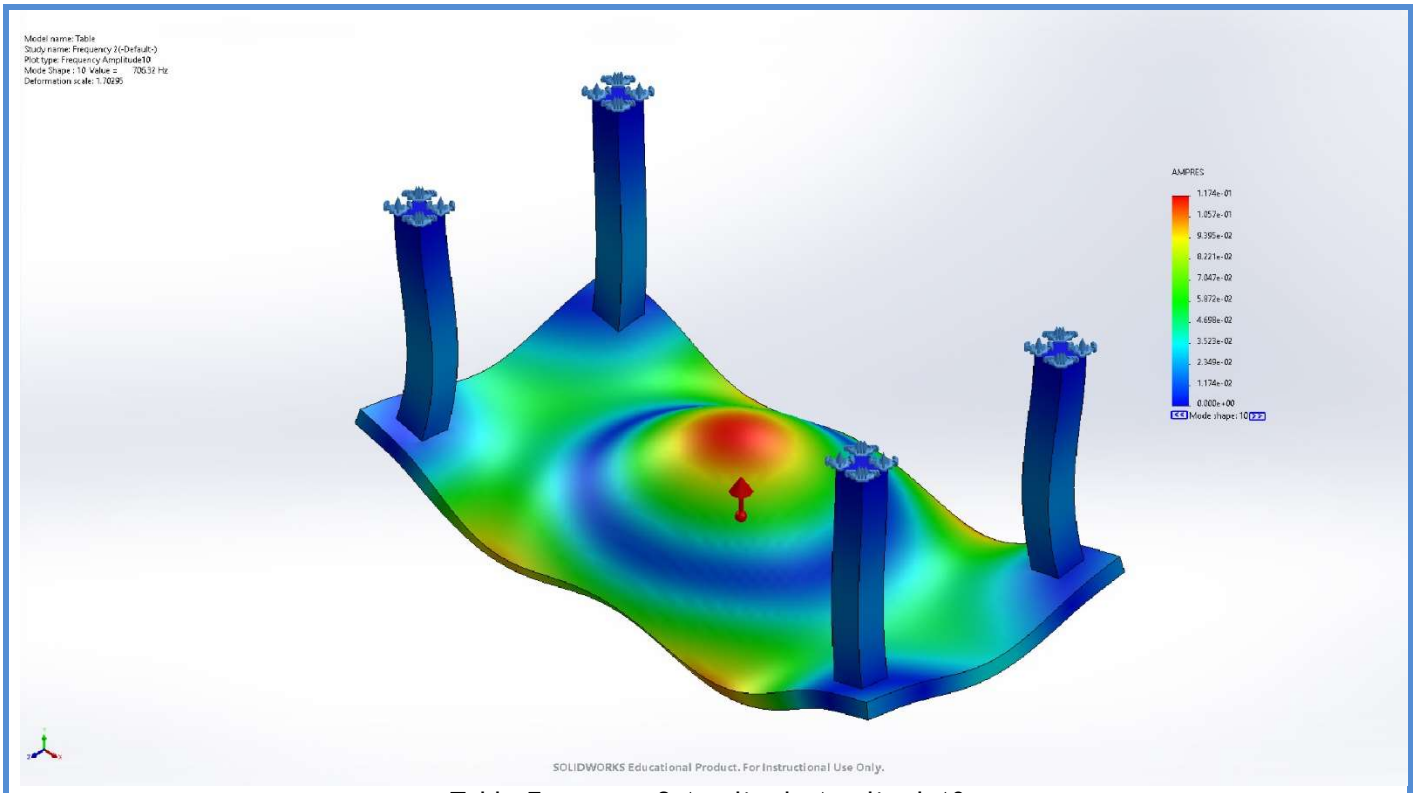


Table-Frequency 2-Amplitude-Amplitude10

Name	Type
Frequency Response Graph1	Frequency Response

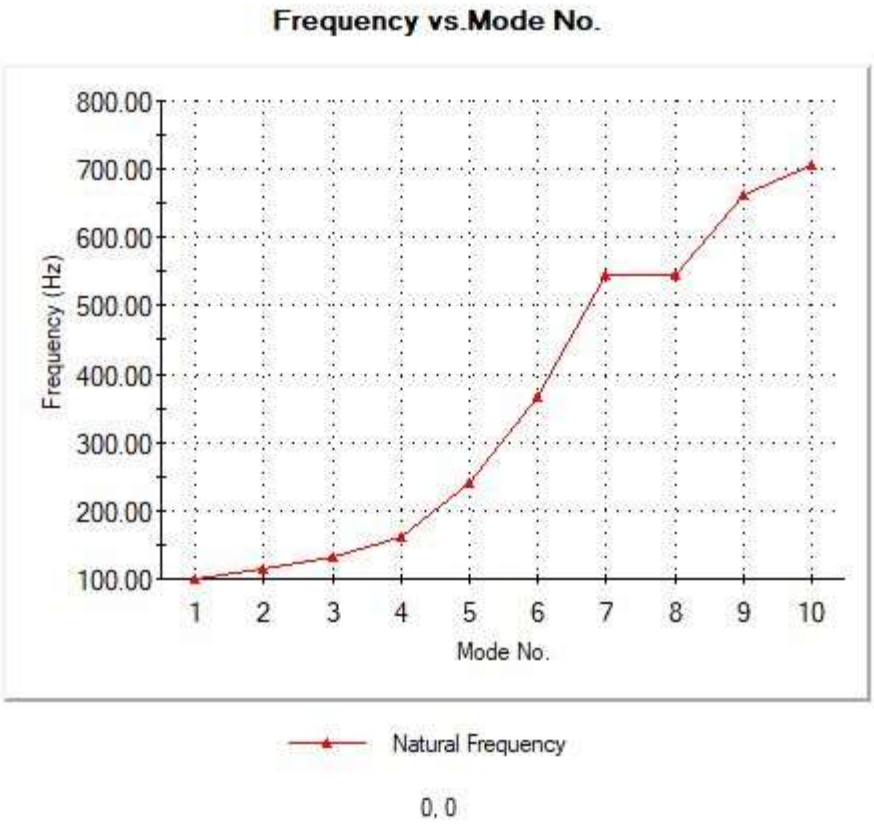


Table-Frequency 2-Frequency Response Graph-Frequency Response Graph1

Mode List

Frequency Number	Rad/sec	Hertz	Seconds
1	632	100.59	0.0099417
2	714.6	113.73	0.0087926
3	833.44	132.65	0.0075389
4	1,023.7	162.93	0.0061375
5	1,508.6	240.11	0.0041648
6	2,305.2	366.89	0.0027256
7	3,432.5	546.29	0.0018305
8	3,433.9	546.51	0.0018298
9	4,156.5	661.53	0.0015116
10	4,438	706.32	0.0014158

Mass Participation (Normalized)

Mode Number	Frequency(Hertz)	X direction	Y direction	Z direction
1	100.59	0.87279	0.00016608	7.61e-10
2	113.73	3.0276e-10	3.1136e-05	0.89987
3	132.65	0.00032187	0.50312	4.2535e-05
4	162.93	2.7588e-05	1.1385e-07	0.00016552
5	240.11	1.5695e-08	1.2527e-07	0.00045345
6	366.89	0.025956	3.7277e-07	5.2217e-10
7	546.29	8.6009e-06	0.0045839	4.9489e-10
8	546.51	3.7203e-08	0.074283	2.4503e-06
9	661.53	0.0021424	0.00025443	5.2224e-11
10	706.32	1.9538e-06	0.081722	5.2484e-06
		Sum X = 0.90125	Sum Y = 0.66416	Sum Z = 0.90054

Conclusion