Von Mises Stress

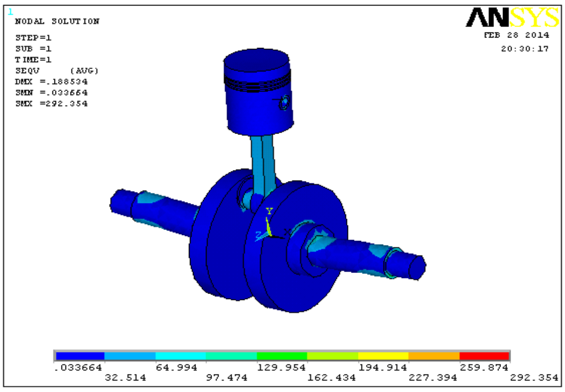

Figure 3.6: Nodal Solution

5.4 Modal Analysis

Displacement

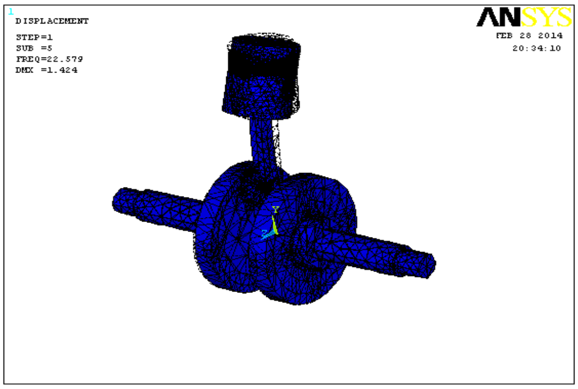

Figure 3.7: Displacement

As per the analysis images

Material	Displacement (mm)	Von Mises Stress (N/mm^2)
Piston – Cast Iron Connecting rod – Manganese Steel Crankshaft – High Carbon Steel	0.188534	292.354

6. Conclusion

In this project piston, connecting rod and crankshaft are designed & assembled the three parts. Modeling and assembly is done in Pro/Engineer. Structural, Modal analysis are done on the assembly. Analysis is done in ANSYS.

By performing structural analysis, we get displacement and stress. The stress is within the range of permissible stress values. By performing the modal analysis, we can observe different mode shapes of the assembly. By observing the stress value, we conclude that our design is safe for working condition. By comparing the stress results, using (Cast Iron for Piston, Manganese Steel for Connecting rod and High Carbon Steel for crankshaft) is the best combination for assembly.

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