

## Abstract

Torsional vibrations are produced due to fluctuating torque acting on machine elements. The problem of torsional vibration of the crankshaft of high speed diesel engine has become critical with increase in excitation forces due to high combustion pressure. This result in high torsional vibration amplitudes and hence high stress. The demand of modern engine design, in particular quest for high standard of refinement requires more in depth analysis then hitherto. Hence FEM has been only versatile approach for such analysis. The project aims at complete FEM analysis of a crankshaft for torsional vibrations, stresses. For this a 3-D solid parametric model of a specific engine crankshaft is generated in PRO-E. It is analyzed for natural frequency by meshing in HYPERMESH by TETRA element. The ANSYS is used for solving the problem. The problem is also solved by holzer method. The results obtained are compared. The complete simulation of actual boundary conditions is done for bearing support, reaction etc. These forces are applied at crankpins with consideration of firing orders and phase difference in a parabolic distribution manner. The response is obtained for displacement and fillet stresses.