**Modeling and Analysis of Multi Cylinder Engine Piston and Piston Rings**

**Abstract**

The four stroke otto engine uses just one of the four strokes to perform work. This causes various problems: The engine runs jerkily, and this can only be prevented by a large flywheel, which needs a lot of space and weights pretty much in addition. In this thesis, thermal loads and pressures produced in the multi cylinder petrol engine Toyota 86 Car by varying compression ratios 14:1, 15:1, 18:1, 20:1 and 25:1 are calculated by mathematical correlations And also calculating the effect of these thermal loads on piston and piston rings by varying materials Cast Iron, Aluminum Alloy for piston and Cast Iron and Steel for piston rings.FEA transient thermal analysis is performed on the parametric model to validate the effect of thermal loads on piston and piston rings for different materials. The optimum value of compression ratio and the better material is determined by analysis results to improve the heat transfer rate of multi cylinder engine piston and piston rings. Dynamic analysis is done on the piston by applying the pressures developed and also static analysis by applying the maximum pressure USING CREO AND ANSYS.

Keywords: Petrol Engine, thermal loads, piston rings, dynamic analysis, static analysis.