

Tribological Investigation of Piston Ring Liner Assembly

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Abstract : An engine performance can be increased by minimizing losses. There are various losses observed in the engines. i.e. thermal loss, heat loss and mechanical losses. Mechanical losses are in the tune of 15 to 20 % of the overall losses. Piston ring assembly contributes the highest friction in the mechanical frictional losses. The variation of piston speed in stroke length the friction force development is not uniform. In present work, comparison has been made between theoretical and experimental friction force under different operating conditions. The experiments are performed using variable operating parameters such as load, speed, temperature and lubricants. It is found that reducing trend of friction force and friction coefficient is in good nature with mixed lubrication regime of the Stribeck curve. Overall outcome from the laboratory test performance of segmented piston ring assembly using multi-grade oil offers reasonably good results at room and elevated temperatures.

Keywords : friction force, friction coefficient, piston rings, Stribeck curve

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