

The Effect of Bearing Surface Finish on the Engine's Lubrication System Performance

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Abstract : Engine design has evolved to suit new industry standards of smaller compact designs that operate at high temperatures and even higher stress loads. Research has proven that the interaction of the bearing surface and the lubrication film is affected by the bearing's surface texture, geometry, and dimensional tolerances. The challenge now for the automotive manufacturing industry is to understand which processes can be applied on bearing surfaces to reduce the 65% energy loss in engines, 15% of which is caused by friction. This paper will discuss a post grinding process known as microfinishing which optimises the characteristics of a manufactured surface such as roughness, profile, and waviness. Microfinishing is becoming an increasing trend within the automotive industry and has so far been applied on high performance and mass production crank or cam bearing surfaces in bid of friction reduction and extended engine service life. In the near future, microfinishing will be applied to more engine components because of the stringent environmental regulations demands on fuel consumption, reliability, power, and service life of engine components.

Keywords : bearings, tribology, friction reduction, energy efficiency

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