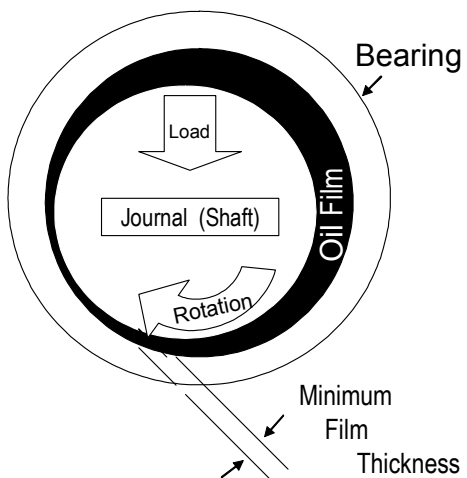
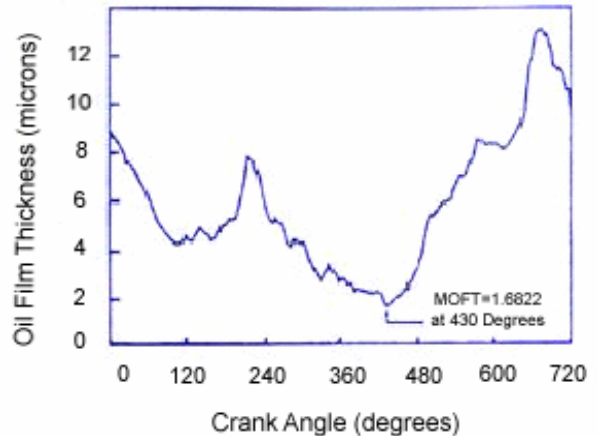


Measuring Bearing Oil Film Thickness

The relationship between high temperature engine oil viscosity and its load carrying capability is not well established. A new test method now offered at Southwest Research Institute measures the bearing oil film thickness (BOFT) of lubricants in a fired engine under various operating conditions.



paper, and the crankshaft is grounded by a sliding contact at the crank pulley, thus forming a cylindrical capacitor. The capacitance is at a minimum when the two cylinders are concentric. Eccentricity increases the measured capacitance. The ratio between the eccentric and the concentric capacitance yields the value of eccentricity. If C_r is equal to the radial bearing clearance, the e is the eccentricity, the minimum oil film thickness (MOFT) is:

$$\text{MOFT} = C_r (1 - e)$$

BOFT is determined by isolating a main bearing from the engine block and making electrical capacitance measurements between the bearing and the crankshaft. The oil surrounding the radial clearance acts as the insulator. The bearing shell is isolated from the engine block by a special nonconducting

With the trend toward lower viscosity oils for fuel economy, a significant unknown is whether all polymer-containing motor oils offer similar bearing protection. We hope to find the answer to the question with the new test method.