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INDICATIVE LUBRICANT FILM THICKNESS FOR ONLINE CONDITION MONITORING OF ROLLING ELEMENT BEARINGS

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Abstract

The lubricant film thickness is an important parameter for condition monitoring of rolling element bearings. Hydrodynamic bearings are successfully monitored by maintaining lubricant film thickness using speed as controlling parameter. The rolling element bearings have number of balls or rollers rotating between inner and outer races of the bearing. These rolling elements are subjected to variation in load due to rotation. For this reason the lubricant film thickness between each rolling element and races change during one complete rotation of bearing. Two major methods used for measurement of lubricant film thickness while bearing is in operation are by use of Ultrasound Transducer and by use of Strain Gages. Both methods involve cutting and drilling in outer and inner races. These lubricant film thickness methods are thus expensive and non practical. A simple method for measurement of equivalent or indicative lubricant film thickness is presented through this paper. The method is inexpensive and practical and can be used for online condition monitoring of rolling element bearings.

Keywords: condition monitoring, inexpensive, lubricant film thickness, rolling element bearing