TAPER ROLLER BEARINGS LUBRICATED WITH BIO-GREASES

B. M. Graça[1], A .J. V. Campos[2], J. H. O.Seabra[3]

[1]Investigador, Unidade de Tribologia, Vibrações e Manutenção Industrial, INEGI
[2]Prof. Adjunto, Departamento de Engenharia Mecânica, Instituto Superior de Engenharia do Porto
[3]Prof. Associado, Departamento de Engenharia Mecânica e Gestão Industrial, FEUP



ABSTRACT

Taper roller bearings were tested under the same operating conditions, varying the initial amount of grease used to lubricate the bearing. Two biodegradable greases and one reference mineral grease were used to study the influence of grease amount on bearing internal friction, wear and grease degradation. The operating bearing temperatures were monitored (grease, raceways, housing and environment) during each test to evaluate the power loss performance of the grease. At the end of each test the used grease was collected for post-testing analysis using oil analysis techniques (Ferrometry and Analytical Ferrography). Optical Microscopy, Scanning Electron Microscopy (SEM) and Energy Dispersive X-ray (EDX) techniques were used to complement the analysis of the wear particles, to examine the bearing surface morphology and identify their metallurgical composition.