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Congratulations to Piet Lugt

ELGI 2013 Best Paper Award
25th AGM Amsterdam Netherlands

The ELGI Best Paper Award committee is pleased to announce that this year's award for the best paper will be presented to Mr Piet Lugt (SKF Engineering & Research Centre Nieuwegein The Netherlands
"The lubrication mechanisms in grease lubricated rolling bearings"

Piet Lugt studied mechanical engineering and tribology at the University of Twente in The Netherlands (MSc. 1988, PhD. 1992). He worked at the Technical University of Delft in Chemistry and Vehicle Dynamics until 1995 when he joined SKF Engineering and Research Centre where he has fulfilled several positions in Tribology and Lubrication, presently as a Senior Scientist. He has been a visiting Professor at Luleå Technical University, Sweden, "from 2005-2008 and is a (part-time) professor at the University of Twente in "Tribology-Based Maintenance" since 2011 He has written the book "Grease Lubrication in Rolling Bearings".

Synopsis

Lubricating a rolling bearing with grease rather than oil has clearly advantages. However, the grease specification process is much more difficult than that for oil. The grease should usually fulfil requirements on sufficient bearing service life/low friction and sometimes those related to the use of a lubrication system and/or proper sealing. For sufficient bearing service life the grease should be designed/selected such that it sustains the various phases during the long life operation of the bearing.

Initially, the grease flows and the behaviour is governed by its rheological properties. In this phase the so called `reservoirs' are formed and the bearing contacts are fully flooded, leading to thick lubricating films. Later, starvation may occur, which again leads to thinner films where the film thickness is given by a feed and loss balance of lubricant towards/away from the contacts. Feed by oil bleeding and shear, loss primarily by side flow and oxidation. Occasional replenishment could take place given by local heat development caused by occasional boundary lubrication events. During the operation of the bearing both physical and chemical deterioration of the grease occurs, which will slowly reduce the lubrication properties of the grease. Ultimately the grease can no longer lubricate the bearing. At that time it has reached its end of life. The various phases will be described together with references to state-of-the-art models to describe the physical and chemical processes that play a role in predicting grease life and selecting/developing grease for extending grease life or relubrication intervals.