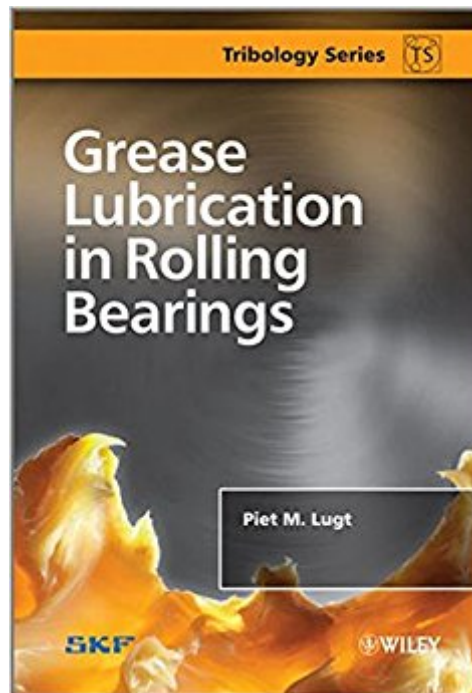




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# Grease Lubrication In Rolling Bearings



## Synopsis

The definitive book on the science of grease lubrication for roller and needle bearings in industrial and vehicle engineering. Grease Lubrication in Rolling Bearings provides an overview of the existing knowledge on the various aspects of grease lubrication (including lubrication systems) and the state of the art models that exist today. The book reviews the physical and chemical aspects of grease lubrication, primarily directed towards lubrication of rolling bearings. The first part of the book covers grease composition, properties and rheology, including thermal and dynamics properties. Later chapters cover the dynamics of greased bearings, including grease life, bearing life, reliability and testing. The final chapter covers lubrications systems – the systems that deliver grease to the components requiring lubrication. Grease Lubrication in Rolling Bearings: Describes the underlying physical and chemical properties of grease. Discusses the effect of load, speed, temperature, bearing geometry, bearing materials and grease type on bearing wear. Covers both bearing and grease performance, including thermo-mechanical ageing and testing methodologies. It is intended for researchers and engineers in the petro-chemical and bearing industry, industries related to this (e.g. wind turbine industry, automotive industry) and for application engineers. It will also be of interest for teaching in post-graduate courses.

## Book Information

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The primary challenges facing grease lubrication research today are three-fold. The first challenge is to develop greases that will provide longer life and/or are able to operate under more severe

conditions (extreme low and high temperature and speed). The second challenge is the development of predictive tools, such as numerical models or expert systems. The third challenge is to design bearing systems that increase grease life. All of these aspects require a fundamental understanding of the lubrication mechanisms of greases. **Grease Lubrication in Rolling Bearings** provides an overview of the existing knowledge on the various aspects of grease lubrication (including lubrication systems) and the state of the art models that exist today. This book reviews the physical and chemical aspects of grease lubrication, primarily directed toward lubrication of rolling bearings. The first part of the book covers grease composition, properties and rheology, including thermal and dynamic properties. Later chapters cover the dynamics of greased bearings, grease flow, oil bleeding, film thickness, aging, grease life, bearing life, reliability, seals, condition monitoring and testing. The final chapter covers lubrication systems – the systems that deliver grease to the bearings. Key features: Describes the underlying physical and chemical properties of grease. Discusses the effect of load, speed, temperature, bearing geometry, bearing materials and grease type on the reliability of grease lubricated rolling bearings. Covers both bearing and grease performance, including thermo-mechanical ageing and testing methodologies. Explains the basics of estimating a Weibull life distribution from (grease) life tests. Presents state of the art theories and models **Grease Lubrication in Rolling Bearings** is the definitive book on the science of grease lubrication for ball and roller bearings in industrial and vehicle engineering. It is an invaluable reference for researchers and engineers in the petro-chemical and bearing industry, related industries (e.g. wind turbine industry, automotive industry) and application engineers. It will also be of interest for teaching in postgraduate courses.

Piet M. LugtSKF, The Netherlands

Excelente book.

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