



Synopsis

Tribology, the science of friction, wear and lubrication, is one of the cornerstones of engineering's quest for efficiency and conservation of resources. Tribology and dynamics of engine and powertrain: fundamentals, applications and future trends provides an authoritative and comprehensive overview of the disciplines of dynamics and tribology using a multi-physics and multi-scale approach to improve automotive engine and powertrain technology. Part one reviews the fundamental aspects of the physics of motion, particularly the multi-body approach to multi-physics, multi-scale problem solving in tribology. Fundamental issues in tribology are then described in detail, from surface phenomena in thin-film tribology, to impact dynamics, fluid film and elastohydrodynamic lubrication means of measurement and evaluation. These chapters provide an understanding of the theoretical foundation for Part II which includes many aspects of the physics of motion at a multitude of interaction scales from large displacement dynamics to noise and vibration tribology, all of which affect engines and powertrains. Many chapters are contributed by well-established practitioners disseminating their valuable knowledge and expertise on specific engine and powertrain sub-systems. These include overviews of engine and powertrain issues, engine bearings, piston systems, valve trains, transmission and many aspects of drivetrain systems. The final part of the book considers the emerging areas of microengines and gears as well as nano-scale surface engineering. With its distinguished editor and international team of academic and industry contributors, Tribology and dynamics of engine and powertrain is a standard work for automotive engineers and all those researching NVH and tribological issues in engineering. Reviews fundamental aspects of physics in motion, specifically the multi-body approach to multi-physics Describes essential issues in tribology from surface phenomena in thin film tribology to impact dynamics Examines specific engine and powertrain sub-systems including engine bearings, piston systems and valve trains

Book Information

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Customer Reviews

This fascinating and comprehensive book on current developments in the fields of tribology and multi-body dynamics related to vehicle problems will be of interest to both the industrial and academic communities., Duncan Dowson, Leeds University and Visiting Professor, Loughborough University, UKThe book covers many important practical engineering and technological issues that the industry faces in design and development today and into the future. The authors comprise experienced technologists, specialists and component engineers from industry with many years of experience in the fields of their expertise. They are joined by established academics and promising researchers to make this a rather unique and comprehensive volume., Professor Richard Parry-Jones, former Vice President of Ford Global Development and Chairman of Premier Automotive Group

Homer Rahnejat is Professor of Dynamics at the Wolfson School of Mechanical and Manufacturing Engineering, Loughborough University, UK. Professor Rahnejat has an international reputation for his research in integrated multi-body dynamics and tribology across the physics of scale, particularly in to automotive engineering.

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