

CONTENTS

August 2009

FOREWORD	Responding to Customers' Needs 1 Senior Executive Director N. HISADA
CONTRIBUTION	Study of Tribology over the Past Twenty Years –Fundamentals and Applications– 2 Department of Mechanical Engineering, College of Engineering, Nihon University Professor Koji KATO
SURVEY	Prospects for "Interesting" Development Procedures –Risks and Benefits of Simulation-Riddled Designing– 13 S. NAKANO
TECHNICAL PAPERS	Development of Differential Gear Type Active-Front-Steering System 19 K. YAMANAKA A. ISHIHARA Estimation of Rack Swing Torque for Rack and Pinion Steering Gear 23 T. KOBAYASHI H. SHIBATA
REVIEW	The Making of the Full Toroidal Variator 31 R. FUCHS T. TAMURA N. MCCULLOUGH K. MATSUMOTO
TECHNICAL REPORTS	Plasma Anodic Oxidation Technology and Coating Properties 37 M. SUZUKI T. MIO T. SAITO Material Analysis Technology R&D Efforts 41 H. KUWABARA Application Technology regarding High-Powered Electric Power Steering System 47 T. TAKAHASHI H. SUZUKI T. NAKAYAMA K. FUJIYAMA S. YAMAGUCHI M. YAMASHITA T. GOTO T. SAITO Establishment of Technology for Identification of Electromagnetic Noise Sources in Electric Power Steering Systems 53 T. MIZUNO Mathematical Model for Characteristics of Oil Pump Driven by Electric Motor 57 Y. INAGUMA Combined Analysis of Temperature, Rigidity and Vibration in Shaft System 63 K. HASEGAWA T. SHIMOMURA R&D Efforts Regarding Lightweight, High-Rigidity Hub Units 67 T. YOKOTA T. ONIZUKA New-Concept Machine for Parts Mass-Production Featuring Super Process Integration 72 Y. WAKAZONO H. OTA N. ONO T. FURUHATA T. NAGAHAMA