Proceedings

Michael Bargende · Hans-Christian Reuss
Jochen Wiedemann *Hrsg.*

14. Internationales Stuttgarter Symposium

Automobil- und Motorentechnik

FKFS

Springer Vieweg

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Ein stetig steigender Fundus an Informationen ist heute notwendig, um die immer komplexer werdende Technik heutiger Kraftfahrzeuge zu verstehen. Funktionen, Arbeitsweise, Komponenten und Systeme entwickeln sich rasant. In immer schnelleren Zyklen verbreitet sich aktuelles Wissen gerade aus Konferenzen, Tagungen und Symposien in die Fachwelt. Den raschen Zugriff auf diese Informationen bietet diese Reihe Proceedings, die sich zur Aufgabe gestellt hat, das zum Verständnis topaktueller Technik rund um das Automobil erforderliche spezielle Wissen in der Systematik der Konferenzen und Tagungen zusammen zu stellen und als Buch in Springer.com wie auch elektronisch in SpringerLink und Springer für Professionals bereit zu stellen.

Die Reihe wendet sich an Fahrzeug- und Motoreningenieure sowie Studierende, die aktuelles Fachwissen im Zusammenhang mit Fragestellungen ihres Arbeitsfeldes suchen. Professoren und Dozenten an Universitäten und Hochschulen mit Schwerpunkt Kraftfahrzeug- und Motorentechnik finden hier die Zusammenstellung von Veranstaltungen, die sie selber nicht besuchen konnten. Gutachtern, Forschern und Entwicklungsingenieuren in der Automobil- und Zulieferindustrie sowie Dienstleistern können die Proceedings wertvolle Antworten auf topaktuelle Fragen geben.

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Band 1

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ISBN 978-3-658-05129-7 ISBN 978-3-658-05130-3 (eBook)
DOI 10.1007/978-3-658-05130-3

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

Springer Vieweg

Gedruckt auf säurefreiem und chlorfrei gebleichtem Papier.

Springer Vieweg ist eine Marke von Springer DE. Springer DE ist Teil der Fachverlagsgruppe Springer Science+Business Media
www.springer-vieweg.de

WELCOME

Within the field of mobility, an independent turnaround in the energy policy is taking place. Environmental protection and the conservation of dwindling resources are important driving forces of this development, which represents major technological challenges for companies and research institutes. For this purpose, new technologies must be developed and existing ones improved. Accordingly, the Research Institute of Automotive Engineering and Vehicle Engines in Stuttgart is placing the14th Stuttgart International Symposium on Automotive and Engine Technology under the motto »Renewable energies and future mobility concepts«. I was very happy to assume patronage of the event.

With over 800 professional attendees, more than 110 lectures and an accompanying exhibition, the Stuttgart Symposium is considered as one of the most important discussion boards for the range of automotive and engine development in Europe. It is an excellent platform for the representatives of industry and research to discuss new ideas and to present the performance of the industry in Baden-Wuerttemberg.

With this year's focus on the main topic the symposium will go far beyond the development of vehicles and engines. It includes both the integration of diverse transport modes and systems as well as energy efficiency control of various types of motor vehicles.

Another important objective of the Baden-Wuerttemberg state government is the resource-conserving energy production. In the field of transport alternative forms of propulsion must be developed with future technologies and corresponding IT solutions, which enable an intelligent integration and application for all road users and participants.

It is about nothing less than the future of mobility! Speed, flexibility and environmental friendliness will be the main criteria. The well working cooperation between science and industry in Baden-Wuerttemberg is a key prerequisite for the development of modern mobility concepts.

My thanks go to the event organizers and promoters, whom I would like to congratulate for the extensive and exciting program of the 14th Stuttgart International Symposium of automotive and engine technology. To all indoor exhibitors, as well as visitors, I wish inspiring and productive discussions.

Winfried Kretschmann
Prime Minister
of the State of Baden-Wuerttemberg

RESEARCH AND DEVELOPMENT
IN AUTOMOTIVE AND ENGINE TECHNOLOGY

The automotive industry is globally facing a number of challenges: The legal limitation of CO_2 emissions, the finite nature of reserves of fossil fuels and the increasing traffic congestion in urban areas and megacities are important issues. The need for affordable mobility systems which are resource-efficient as well as sustainable and climate neutral, but which also meet high safety standards and high levels of social and political acceptance, is increasingly clear. The automotive industry is therefore intensively working on alternative vehicle and mobility concepts. Additionally, previous research approaches are joined more and more by concepts from the fields of electricity and electronics, mechatronics, information technology and computer science. To promote research in the various areas it is important to share and unify the research results from academia and industry.

The

14th Stuttgart International Symposium Automotive and Engine Technology

18th and19th March 2014

provides an important platform for the automotive industry. The program of the symposium was expanded from four to six parallel sessions in order to meet the increased topics as well as the very high number of excellent submissions of papers. Due to the resulting variety of topics that will be presented by leading experts in more than 110 lectures, we hope to have arranged an interesting program for you. The lecture related discussions and the accompanying exhibition offer an opportunity for further professional exchange.

We look forward to welcoming you in Stuttgart, the birthplace of the automobile and wish you enjoyable and informative days at the14th Stuttgart International Symposium.

Prof. Dr.-Ing. Michael Bargende
Prof. Dr.-Ing. Hans-Christian Reuss
Prof. Dr.-Ing. Jochen Wiedemann

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