

Ground Vehicle Engineering Series

SERIES EDITOR:

Professor Vladimir V. Vantsevich, Lawrence Technological University, Southfield, Michigan, USA

Ground vehicle engineering formed and shaped as an engineering discipline in the 20th century and quickly became the foundation for significant advancements and achievements, from personal transportation and agriculture machinery to planet exploration. As we move into the 21st century facing global economic challenges, there is a need to develop fundamentally novel vehicle engineering technologies and to proficiently train the future generation of engineers.



SERIES SCOPE AND PURPOSE:

The new *Ground Vehicle Engineering Series* brings together the top minds in industry and academia to produce high-quality technical books and graduate-level texts (M.Sc. and Ph.D.) on the engineering of various types of vehicles including conventional and autonomous mobile machines, terrain and highway vehicles, and ground vehicles with novel concepts of motion.

Applications covered will include—heavy-duty multi-link and pick-up trucks, farm tractors and agriculture machinery, earth-moving machines, passenger cars and SUVs, combat and tactical wheeled and track military applications, and also unmanned ground vehicles such as planet rovers, human assist robotic vehicles, as well as military and reconnaissance vehicles.

CALL FOR AUTHORS:

Chapman & Hall/CRC is actively seeking timely proposals from authors for technical books, textbooks, handbooks, and references covering conceptually new methodologies and accomplishments in—vehicle dynamics, operation performance analysis and control, and advanced vehicle and system design, experimental research and tests, and manufacture technologies.

By bringing together high-caliber professionals from academia and the industry, Chapman Hall/CRC hopes to present professors with the resources to introduce the breakthrough ideas that will help the auto industry chart a course towards a more productive future.

Please contact the Series Editor for proposal and manuscript guidelines:

Vladimir V. Vantsevich, D.Sc., Ph.D.

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Ground Vehicle Engineering Series

INAUGURAL TITLE IN THE SERIES, COMING SOON!

Driveline Systems of Ground Vehicles: Theory & Design

Alexandr F. Andreev, Viachaslau I. Kabanau, and Vladimir V. Vantsevich

Vladimir V. Vantsevich, *Scientific and Engineering Editor*

Catalog no. K10894, January 2010, c. 750 pp., ISBN: 978-1-4398-1727-8, \$179.95.00 / £114.00

ABOUT THE SERIES EDITOR:

Dr. Vladimir V. Vantsevich is a professor in Mechanical Engineering and the founding Director of the Master of Science in Mechatronic Systems Engineering Program at Lawrence Technological University, Michigan. He is also the founding Associate Director of the Automotive Engineering Institute. Prior to Lawrence Tech, Dr. Vantsevich was a professor and the head of the R&D group on Multi-Wheel Drive Vehicles that designed and developed a number of mechatronic and mechanical driveline systems for various purpose vehicles in Belarus. He earned his Ph.D. and D.Sc. degrees in Automobile and Tractor Engineering from Belarusian National Technical University and is a registered inventor of the U.S.S.R. with 30 certified inventions.

Prof. Vantsevich's research interests focus on inverse and direct dynamics, mechanical and mechatronic system modeling, design and control with applications to autonomous and conventional vehicles, and vehicle locomotion and driveline systems. He has authored four technical books and over 100 research papers on inverse vehicle dynamics, vehicle performance, energy efficiency optimization and control, and design of driveline and autonomous wheel power management systems. Prof. Vantsevich is a member of the editorial board of the *International Journal of Vehicle Autonomous Systems* and is an associate editor of the *International Journal of Vehicle Noise and Vibration*. He is also a member of the editorial board of the *Journal of Multi-body Dynamics* and the *International Journal of Advanced Mechatronics and Robotics*. Prof. Vantsevich has achieved the status of ASME Fellow and is also a member of the Association of Vehicle Autonomous Systems International, SAE, International Society for Terrain-Vehicle Systems, and the International Association for Vehicle System Dynamics.

SERIES THRUSTS:

Vehicles in Motion and Operation:

- Advanced analytical and adaptive dynamics for modeling vehicles in motion
- Inverse and direct vehicle dynamics; vehicle performance and vehicle mission task fulfillment optimization and control
- Newtonian mechanics and computational methods for vehicle dynamics analysis and open architecture software development
- Uncertain and certain impacts and dynamic behavior of vehicles; pro-active interaction with surroundings
- Dynamics and performance of a group of vehicles
- Novel concepts of vehicle energy transformation
- Energy/fuel efficiency, power/energy management, alternative propulsion systems
- Mobility and survivability of vehicles in uncertain terrain/surroundings
- Vehicle safety (passive and active)
- Vehicle turnability, stability of motion and handling; pro-active approach
- Acceleration and braking performance control
- Power distribution among the wheels, tracks, legs, and other novel locomotion systems
- Pro-active stabilization and vibration protection of vehicles

- Vehicle experimental laboratory and proving ground research and tests
- Human factor in unmanned vehicle dynamics
- Qualitative and quantitative evaluation of vehicle autonomy: vehicle dynamics and vehicle system contribution
- Operational performance and mission planning
- Driver's dynamic input/vehicle autonomous system interaction

Vehicle and System Design, Test, and Manufacture:

- Design for reliability, manufacturing, serviceability, and survivability
- Vehicle and system mechanical design for mechatronics requirements
- Advanced methodologies and computational methods for vehicle system design, CAD
- Tolerance and quality in vehicle design
- Module/reconfigurable design of vehicles and systems
- Vehicle system integration issues
- Novel materials in vehicle systems design
- Gear transmissions
- Driveline systems
- Hybrid-electric systems
- Electrical and hydraulic individual wheel drives

- Brake systems
- Intelligent suspension systems, passive and active vibration isolation/protection systems
- Stability control systems
- Conventional and active steering, alternative vehicle turn systems
- Passive and active safety systems
- Vehicle navigation and vehicle dynamics control systems
- Surrounding detection systems
- Vehicle systems for terrain (surface) mechanical properties recognition
- Vehicle mobility and survivability systems
- Intelligent tire design and adaptive geometry wheels
- Bio-inspired running gear design
- Sensors and actuators in vehicles
- Vehicle ergonomics
- Vehicle and ecology issues
- Vehicle entertainment systems
- Vehicle systems experimental research and tests

Subseries of Textbooks Proposed for M.Sc./Dipl.-Eng. and Ph.D. Programs in:

- Vehicle Mechatronic Systems Engineering
- Truck, Farm, and Construction Tractor Engineering
- Vehicles for Specific Applications