



UDC: 621

ISSN 1451-2092

University of Belgrade
Faculty of Mechanical Engineering

FME TRANSACTIONS

New Series, Volume 54, Number 1, 2026

Editor:

Boško Rašuo

University of Belgrade

Associate Editor:

Stevanović Vladimir

University of Belgrade

Editorial Board:

Avellan François

École Polytechnique Fédérale de Lausanne (EPFL), Switzerland

Avila Paulo

Polytechnic of Porto, Porto, Portugal

Cizmas Paul

Texas A&M University, College Station, USA

Dulikravic S. George

Florida International University, Miami, USA

Ehmann F. Kornel

Northwestern University, Evanston IL, USA

Fragassa Cristiano

Alma Mater Studiorum - University of Bologna, Italy

Gajić Zoran

Rutgers University, USA

Jakirlic Suad

Technische Universität Darmstadt, Germany

Jemcov Aleksandar

University of Notre Dame, South Bend IN, USA

Jovanović Jasmina

University of Belgrade

Kartnig Georg

Technische Universität Wien, Austria

Komatina Mirko

University of Belgrade

Meerkamm Harald

Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

Mester Gyula

University of Szeged, Szeged, Hungary

Minak Giangiacomo

Alma Mater Studiorum - University of Bologna, Italy

Moschetta Jean-Marc

ISAE-SUPAERO, University of Toulouse, France

Parezanović Vladimir

Khalifa University of Science and Technology, Abu Dhabi, UAE

Putnik Goran

University of Minho, Portugal

Sedmak Aleksandar

University of Belgrade

Solazzi Luigi

University of Brescia, Italy

Soutis Constantinos

The University of Manchester, Manchester, UK

Stamenović Dimitrije

Boston University, Boston, USA

Vukelic Sinisa

Columbia University, New York, USA

Technical Editor:

Sedmak Simon

University of Belgrade

Published by:

University of Belgrade

Faculty of Mechanical Engineering

The journal is covered in the Emerging Sources Citation Index (ESCI) Clarivate Analytics services.

Volume 54, No 1, 2026, pp. 1 – 197

CONTENTS

PAGE

Richárd Takács, Jiri Vacula, Johan Prinsier	1
<i>Quantitative Analysis of Water Condensation in LP-EGR Systems for Internal Combustion Engines</i>	
Bhre Wangsa Lenggana, Ubaidillah, Reza Azizul Nasa Al Hakim, Akhlis Rahman Sari Nurhidayat, Ameliyana Rizky Syamara Putri Akhmad Yani, Zakiyyan Zain Alkaf	13
<i>Analysis of Sound Performance on Tesla Valve Principle-Based Model: Experimental and Simulation Approach</i>	
Uroš Lj. Ilić, Željko V. Despotović, Mihailo P. Lazarević, Emil A. Veg	23
<i>Electromechanical Energy Conversion inside an Electromagnetic Vibratory Actuator: Modeling, Simulation, and Validation</i>	
István Sztankovics, Dragan Rodić	39
<i>Comparative Study of Rotational and Longitudinal Turning: Energy Efficiency and Surface Roughness in Machining Normalized Medium-Carbon Steel</i>	
Yash A Gujar, Srishti Tyagi, Aafrin S Mehboob, Narender Singh, Rajesh K. Saluja, Manish Naagar, Neeraj Kumar Gahlot	53
<i>Passive Flow Control of Mach 4 Mixed-Compression Intake Using Chevron Grooves</i>	
Ivan Rehei, Oleh Knysh, Vitalii Vlach, Andrii Ternovyi	70
<i>Innovative Double-Wedging Mechanism for Die-Cutting Presses: CAD/CAE-based Kinematic and Force Analysis</i>	
Shafiqur Rehman, Mohammed Abdul Baseer	84
<i>Feasibility of Converting an Existing Recreational Facility into a Net-Zero Energy Building: KFUPM Beach Case Study</i>	
Dang Phuoc Thinh, Van Thi Ngoc Han, Nguyen Nghiep Thinh, Nguyen Vu Duc Huy, Tran Quang Thuan, Huynh Nhat Duy, Phi Thanh Dat, Vo Cong Hieu, Vo Duy Cong	93
<i>Development of an Educational Robotic Platform with Dual Control Interfaces and Intelligent Computer Vision-Based Interaction</i>	

(Contents continued on inside back cover)



Clarivate
Analytics
Web of Science™

Aims and Scope:

The journal FME Transactions publishes original scientific, double-blind peer-review papers (reviewing and contributed papers) from all fields of Mechanical Engineering, which is, as a branch of Engineering, considered in the journal in its broadest possible sense. Thus, the articles are welcome from Applied Mechanics, Fluids Engineering, Thermodynamics, Heat, and Mass Transfer, Robotics, Material Science, Tribology, Combustion, Mechanical Design, Machine Dynamics, Production, Industrial, Agricultural, Aerospace, Processing, Railway, Biomedical and Control Engineering, Mechanization, Hydro- and Thermopower Systems, Internal Combustion Engines and Vehicle Dynamics, Energy Resources Technology, Military Technology, Naval Architecture, Applied and Industrial Mathematics, etc.

Theoretical, experimental, and computational analyses of various problems of Mechanical Engineering are equally welcome and acceptable for publication. In addition, there will be published book reviews and, in special issues, selected papers from symposia organized by the Faculty of Mechanical Engineering in Belgrade.

Reviewing papers will be published by invitation only. One volume consists of four numbers.

Instructions for Authors:

An FME Transaction manuscript should be written clearly and concisely in correct English, with assumptions clearly identified, with precise logic, with relevance to the practice described, and with actual accomplishments of the work plainly stated and honestly appraised.

Usually, the length of a reviewing paper is up to 25 pages, and the length of a contributed article is up to 15 pages. All papers are subject to a reviewing process. During the process, the names of referees will be kept confidential to authors, and also the names of authors will remain anonymous to referees. As a rule, the reviewing process should be accomplished in 2-3 months. The final acceptance of a paper for publication in the journal is based on the decision of the Editorial Board.

Template for Manuscript:

<https://www.mas.bg.ac.rs/istrazivanje/fme/start>

Submission of Papers:

Papers intended for publication in FME Transactions should be submitted to the Editor, in electronic form, to the following address:

fme-transactions@mas.bg.ac.rs

or:

Prof. Bosko Rasuo, Editor
brasuo@mas.bg.ac.rs
Faculty of Mechanical Engineering
Kraljice Marije 16,
11120 Belgrade 35
Serbia

On line service:

<http://www.mas.bg.ac.rs/transactions>

Volume 54, No 1, 2026, pp. 1 – 197

CONTENTS CONTINUED

	PAGE
Moqdad J. Dakhil, Basem Al-Zubaidy, Ruaa H. Kadhim, Zainab Al-Khafaji <i>Effect of Selective Laser Melting Parameters on the Friction and Wear Performance of Ti-6Al-4V Alloy</i>	107
Ammar Amouri, Omar Rahma, Design <i>Modeling, and Validation of a Self-Balancing Cable-Driven Continuum Robot Using Internal Force Equilibrium</i>	117
Latif Bukari Rashid, Shahzada Zaman Shuja, Shafiqur Rehman <i>Direct Solar Radiation Prediction using Multi-Model Evaluation with Trigonometric Cyclic Process</i>	128
Ha Quang Thinh Ngo, Thanh Phuong Nguyen <i>A Comparative Study of 2D and 3D LiDAR Technologies in the Industrial Applications of Autonomous Navigation</i>	146
Manh Hoc Ha, Binh Thanh Tran, Nguyen Khanh Le, Minh Quang Pham, Quan Thien Phan Nghiem, Thong Duc Hong <i>Numerical Analysis Performance, Combustion, and Emissions of a Stationary Diesel Engine Operating on Ammonia-diesel Blends</i>	159
Olakunle Olukayode, Joshua B. Ojerinde, Titus O. Ajewole, Wasiu O. Adedeji, Onisokumen J. Imbre <i>Design of a PET Plastic-Loop Robotic Gripper with a Soft-Rigid Palm for Adaptive and Enveloping Grasping</i>	174
Mehmet Bozca, Tatjana Lazović, Miloš Sedak, Sándor Bodzás <i>Numerical Analysis of Scuffing Risk in Involute Spur Gears Based on the Integral Temperature Criterion</i>	184



Clarivate
Analytics
Web of Science™