



UDC: 621

ISSN 1451-2092

University of Belgrade
Faculty of Mechanical Engineering

FME TRANSACTIONS

New Series, Volume 52, Number 4, 2024

Editor:
Boško Rašuo

University of Belgrade

Associate Editor:
Stevanović Vladimir

University of Belgrade

Editorial Board:
Avellan François

École Polytechnique Fédérale de Lausanne (EPFL), Switzerland

Cizmas Paul

Texas A&M University, College Station, USA

Dulikravich 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

Radovanović Miroslav

University of Nis

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 52, No 4, 2024, pp. 517 – 688
CONTENTS

	PAGE
Ali M. H. Al-Obaidy, Ekhlash M. Fayyadh, Amer M. Al-Dabagh <i>Experimental Investigation of Pool Boiling Performance on Hybrid Surfaces</i>	517
San L. Tolentino, Jorge Mírez, Omar González <i>Evaluation of Turbulence Models for Incompressible Flow in a Venturi Tube</i>	534
Thong Duc Hong, Hieu Xuan Vo, Truyen Hung Luong, Minh Quang Pham, Son Hoang Do <i>Effect of Ignition Timing and Combustion Duration on the Performance Characteristics of a Diesel Engine Using Vibe 2-Zone Model</i>	544
Miodrag D. Milenković-Babić, Dušan A. Ivković, Branislav G. Ostojić, Biljana Z. Dovatov, Milenko S. Trifković, Vuk D. Antonić <i>Flying Wing Conceptual Design and Flight Testing</i>	556
Huifeng Wang, Stefanija Klaric, Sara Havrišan <i>Preliminary Study of Bead-On-Plate Welding Bead Geometry for 316L Stainless Steel Using GMAW</i>	563
R. Pramod, Veeresh Kumar G.B., Basavarajappa S. <i>Investigation of the Effect of Drilling Induced Delamination and Tool Wear on Residual Strength in Polymer Nanocomposites</i>	573
Paweł Karolczak, Maciej Kowalski <i>Evaluation of the Applicability of Fractal Analysis to Describe the Surface of Aluminium Composites after Drilling</i>	590
Minh Quang Pham, Thang Viet Vu, Lam Quang Tran, Huong Huu Nguyen, Thong Duc Hong <i>Study on Kinetics and Dynamics of the Scraping-pressing Mechanism of the Compactor Garbage Truck</i>	603

(Contents continued on inside back cover)



Clarivate Analytics

Web of Science™

The Ministry of Education and Science of the Republic of Serbia financially supported the publication of Volume 52, No 4 of this Journal. This support is gratefully acknowledged.

Printed by:
"PLANETA print", Ruzveltova 10, 11000 Belgrade

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>

ISSN 1451-2092

UDC: 621

Volume 52, No 4, 2024, pp. 517 – 688

CONTENTS CONTINUED

	PAGE
Anas Chtioui, Aissa Oubalouch, Ahmed Mouchtachi	616
<i>Investigation of Cutting Responses During High-speed Machining of Ti6Al4V Alloy: Finite Element Analysis</i>	
Djamel Bekhouche, Ali Bouchoucha, Hamid Zaidi	628
<i>Optimization of Friction and Electrical Resistance Performance in Graphite-Copper Electrical Contacts Using Taguchi-based Grey Relational Analysis</i>	
Hambal Tella, Mohamed A. Mohandes, B. Liu, Ali Al-Shaikhi, Shafiqur Rehman	639
<i>A Novel Cost-Function for Transformer-based YOLO Algorithm to Detect Photovoltaic Panel Defects</i>	
Azzam Homeida, Omar Algrouni, Shafiqur Rehman, Zeeshan Anwar	647
<i>Techno-economic Analysis of a Wind/ Solar PV Hybrid Power System to Provide Electricity for Green Hydrogen Production</i>	
Junhao Huang, Ferenc Safranyik, JánosTóth, István Keppler	659
<i>Shear Test as Calibration Experiment for DEM Simulations: Sphero-polygonal Particle Model</i>	
Phan Xuan Trung, Dang Anh Duy	671
<i>Design and Develop a Robot Arm to Automatically Feed Workpieces for Laser Engraving Machines</i>	
Helder A. G. Pinto, Francisco J. G. da Silva, Rafael R. Lucas, Rita C.M. Sales-Contini	681
<i>Die Casting Thermal Diffusion Study Using the Rao and Schumacher Theory</i>	



**Clarivate
Analytics**

Web of Science™