



University of Belgrade Faculty of Mechanical Engineering

TRANSACTIONS

FME TRANSACTIONS

Editor:

Boško Rašuo

University of Belgrade

Associate Editor:

Stevanović Vladimir

University of Belgrade

Editorial Board:

Avellan François

Swiss Federal Institute of Technology, Zurich, Switzerland

Cizmas Paul

Texas A&M University, College Station, USA

Dulikravich S. George

Florida International University, Miami, USA

Đorđević Vladan

University of Belgrade

Ehmann F. Kornel

Northwestern University, Evanston IL, USA

Felix Hong

Wayne State University, Detroit, USA

Gabi Martin

Karlsruher Institut für Technologie (KIT), Germany

Gajić Zoran

Rutgers University, USA

Jakirlic Suad

Technische Universität Darmstadt, Germany

Jovanović Jasmina

University of Belgrade

Kartnig Georg

Technische Universität Wien, Austria

Klimenko A. Sergei

National Academy of Sciences, Kiev, Ukraine

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

Nedić Novak

University of Kragujevac

Plančak Miroslav

University of Novi Sad

Putnik Goran

University of Minho, Portugal

Radovanović Miroslav

University of Nis

Sedmak Aleksandar

University of Belgrade

Soutis Constantinos

The Unversity of Manchester, Manchester, UK

Stamenović Dimitrije

Boston University, Boston, 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. ISSN 1451-2092 UDC: 621

...

Volume 46, No 1, 2018, pp. 1 – 150	
CONTENTS	PAGE
Zorana Z. Dančuo, Boško P. Rašuo, Aleksandar Č. Bengin, Vladimir I. Zeljković	1
Flight to Mars: Envelope Simulation in a Ground Based High-performance Human Centrifuge	
Alberto Martini	10
Gravity Compensation of a 6-UPS Parallel Kinematics Machine Tool Through Elastically Balanced Constant- Force Generators	
Pavel Beňo, Jozef Krilek, Ján Kováč, Dražan Kozak, Cristiano Fragassa	17
The Analysis of the New Conception Transportation Cableway System Based on the Tractor Equipment	
I.S. Stephan Thangaiah, P. Sevvel, C. Satheesh, V. Jaiganesh	23
Investigation on the Impingement of Parameters of FSW Process on the Microstructural Evolution & Mechancial Properties of AZ80A Mg Alloy Joints	
Oday I. Abdullah, Ali M. Rasham, Hussein K. Jobair	33
The Influence of Frictional Facing Thickness on the Contact Pressure Distribution of Multi-Disc Dry Clutches	
Gordana Kastratović, Nenad Vidanović, Aleksandar Grbović, Boško Rašuo	39
Approximate Determination of Stress Intensity Factor for Multiple Surface Cracks	
Nikola Slavkovic, Zoran Dimic, Sasa Zivanovic, Milan Milutinovic	46
Kinematic Modeling of 5-axis Horizontal Milling Machine Emulated From Vertical Articulated Robot	
Rastislav R. Nigrovič, Jozef Meško, Ružica R. Nikolić, Vukić Lazić, Dušan Arsić, Branislav Hadzima	57
Comparison of the PMMA mechanical properties after cutting by the laser beam and milling	
N. Zarif Karimi, H. Heidary, J. Yousefi, S. Sadeghi, G. Minak	62
Experimental Investigation on Delamination in Nanocomposite Drilling	
Lucas Lemos da Silva, Leila Cristina Nunes Ribeiro, Galileo Santacruz, Sabrina Arcaro, Annelise Koop Alves, Carlos Pérez Bergmann	70
Glass Foams Produced from Glass and Yerba Mate (Ilex paraguarinensis) Waste	
Miloš D. Pjević, Goran M. Mladenović, Ljubodrag M. Tanović, Radovan M. Puzović	80
Contemporary Approach to the Design of Circular Form Tools for Complex-Geometry Part Manufacture	
My Chrif El boubakraoui, Seddik Bri, Jaouad Foshi	86
Dielectric Properties of SiCf/SiC Composites	
M. C. De Simone, Z. B. Rivera, D. Guida	93
Finite Element Analysis on Squeal-Noise in Railway Applications	
João Pedro Teixeira Peixoto de Queiroz, Antonio Carlos de Figueiredo Silveira, Felipe Vannucchi de Camargo, Massimo Vaccari	101
A Brief Review on Palletized Products Transportation	

(Contents continued on inside back cover)

Technology

The publication of the Vol. 46, No 1 of this Journal was fully financially supported by the Ministry of Education and Science of the Republic of Serbia. This support is gratefully acknowledged.

Printed by:

"PLANETA print", Ruzveltova 10, 11000 Belgrade

Aims and Scope:

The journal FME Transactions publishes original papers (reviewing and contributed papers, and communications) 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 and Machine Dynamics, Productional, Industrial, Agricultural, Aerospace, Processing, Railway, Biomedical and Control Engineering, Mechanization, Hydro- and Thermo-power Systems, Internal Combustion Engines and Vehicle Dynamics, Energy Resources Technology, Military Technology, Naval Architecture, and Applied and Industrial Mathematics.

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, announcements of symposia, and in special issues, proceedings of 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:

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

Normally, the length of a reviewing paper is up to 12 pages, the length of a contributed paper is up to 8 pages, while the length of a short communication should not exceed 4 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. Final acceptance of a paper for publication in the Journal is based on the decision of the Editorial Board.

Template for Manuscript:

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

Submission of Papers:

Papers intended for publication in FME Transactions should be submitted to the Editor, in the 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 46, No 1, 2018, pp. 1 – 150	
CONTENTS CONTINUED	PAGE
Shukur A. Hassan, Carlo Santulli, Mohd Yazid B. Yahya, Chong L. Gang, Mohd N. F. B. Abu Bakar	108
The Potential of Biomimetics Design in the Development of Impact Resistant Material	
Nenad Petrović, Nenad Marjanović, Nenad Kostić, Mirko Blagojević, Miloš Matejić, Sanjin Troha	117
Effects of Introducing Dynamic Constraints for Buckling to Truss Sizing Optimization Problems	
Mirko S. Maksimović, Ivana V. Vasović, Katarina S. Maksimović, Nataša Trišović, Stevan M. Maksimović	124
Residual Life Estimation of Cracked Aircraft Structural Components	
Dragiša Tolmač, Slavica Prvulović, Jasna Tolmač, Sanja Stankov	129
Analysis of the Results of Research on Spray Drying of Starch Suspension	
Sovan S. Dasgupta, John A. Rajan	133
Steady-state and Transient Responses of a Flexible Eccentric Spinning Shaft	

What Does it Mean to Own a Process: Defining Process

M. Hrabal, D. Tuček

Owner's Competencies

138