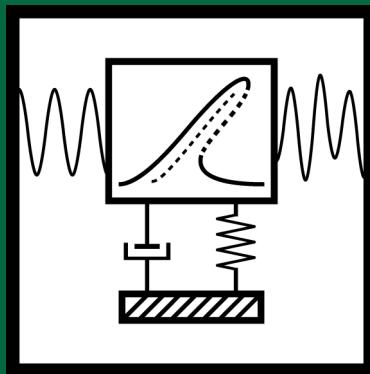


May 2020, Volume 31
ISSN Print 2345-0533
ISSN Online 2538-8479

Vibroengineering PROCEDIA



Editor in Chief

M. Ragulskis

Kaunas University of Technology, (Lithuania)

minvydas.ragulskis@ktu.lt

Editorial Board

H. Adeli	The Ohio State University, (USA)	adeli.1@osu.edu
V. Babitsky	Loughborough University, (UK)	v.i.babitsky@lboro.ac.uk
M. Bayat	Roudehen Branch, Islamic Azad University, (Iran)	mbayat14@yahoo.com
I. Blekhman	Mekhanobr – Tekhnika Corporation, (Russia)	iliya.i.blekhman@gmail.com
K. Bousson	University of Beira Interior, (Portugal)	bousson@ubi.pt
A. Bubulis	Kaunas University of Technology, (Lithuania)	algimantas.bubulis@ktu.lt
R. Burdzik	Silesian University of Technology, (Poland)	rafal.burdzik@polsl.pl
Jinde Cao	Southeast University, (China)	jdciao@seu.edu.cn
Maosen Cao	Hohai University, (China)	cmszhy@hhu.edu.cn
Lu Chen	Beihang University, (China)	luchen@buaa.edu.cn
F. Chernousko	Institute for Problems in Mechanics, (Russia)	chern@ipmnet.ru
Z. Dabrowski	Warsaw University of Technology, (Poland)	zdabrow@simr.pw.edu.pl
Y. Davydov	Institute of Machine Building Mechanics, (Russia)	l institut@bk.ru
J. Dušovník	University of Ljubljana, (Slovenia)	joze.duhovnik@lecad.uni-lj.si
S. Ersoy	Marmara University, (Turkey)	sersoy@marmara.edu.tr
A. Fedaravičius	Kaunas University of Technology, (Lithuania)	algimantas.fedaravicius@ktu.lt
R. Ganiev	Blagonravov Mechanical Engineering Research Institute, (Russia)	rganiev@nwmtc.ac.ru
W. H. Hsieh	National Formosa University, (Taiwan)	allen@nfu.edu.tw
V. Kaminskas	Vytautas Magnus University, (Lithuania)	v.kaminskas@if.vdu.lt
V. Kappatos	Center for Research and Technology Hellas, (Greece)	vkappatos@certh.gr
V. Klyuev	Association Spektr – Group, (Russia)	v.klyuev@spektr.ru
G. Kulvietis	Vilnius Gediminas Technical University, (Lithuania)	genadijus.kulvietis@vgtu.lt
V. Lyalin	Izhevsk State Technical University, (Russia)	velyalin@mail.ru
R. Maskeliūnas	Vilnius Gediminas Technical University, (Lithuania)	rimas.maskeliunas@vgtu.lt
L. E. Muñoz	Universidad de los Andes, (Colombia)	lui-muno@uniandes.edu.co
N. Nistico	University of Roma La Sapienza, (Italy)	nicola.nistico@uniroma1.it
V. Ostaševičius	Kaunas University of Technology, (Lithuania)	vytautas.ostasevicius@ktu.lt
A. Palevičius	Kaunas University of Technology, (Lithuania)	arvydas.palevicius@ktu.lt
G. Panovko	Blagonravov Mechanical Engineering Research Institute, (Russia)	gpanovko@yandex.ru
L. Qiu	Nanjing University of Aeronautics and Astronautics, (China)	lei.qiu@nuaa.edu.cn
K. Ragulskis	Lithuanian Academy of Sciences, (Lithuania)	k.ragulskis@jve.lt
S. Rakheja	Concordia University, (Canada)	subhash.rakheja@concordia.ca
V. Ranjan	Bennett University, (India)	vinayak.ranjan@bennett.edu.in
G. E. Sandoval-Romero	The National Autonomous University of Mexico, (Mexico)	eduardo.sandoval@ccadet.unam.mx
M. A. F. Sanjuan	University Rey Juan Carlos, (Spain)	miguel.sanjuan@urjc.es
E. Shahmatov	Samara State Aerospace University, (Russia)	shakhm@ssau.ru
A. El Sinawi	The Petroleum Institute, (United Arab Emirates)	aelsinawi@pi.ac.ae
G. Song	University of Houston, (USA)	gsong@uh.edu
S. Toyama	Tokyo A&T University, (Japan)	toyama@cc.tuat.ac.jp
K. Uchino	The Pennsylvania State University, (USA)	kenjiuchino@psu.edu
A. Valiulis	Vilnius Gediminas Technical University, (Lithuania)	algirdas.valiulis@vgtu.lt
P. Vasiljev	Lithuanian University of Educational Sciences, (Lithuania)	piotr.vasiljev@leu.lt
V. Veikutis	Lithuanian University of Health Sciences, (Lithuania)	vincentas.veikutis@lsmuni.lt
J. Viba	Riga Technical University, (Latvia)	janis.viba@rtu.lv
J. Wallaschek	Leibniz University Hannover, (Germany)	wallaschek@ids.uni-hannover.de
Xiao-Jun Yang	China University of Mining and Technology, (China)	dyangxiaojun@163.com

VP Vibroengineering PROCEDIA

Vibroengineering PROCEDIA Volume 31 contains papers presented at the 45th International Conference on VIBROENGINEERING held in Dublin, Ireland, May 7, 2020. The main theme of the Conference is “Dynamics, Noise and Vibration Engineering: Problems and Applications”.

Aims and Scope

Journal publishes original papers presenting the state of the art in vibroengineering of dynamical systems.
The list of principal topics:

- Measurements in engineering
- Mathematical models in engineering
- Acoustics, noise control and engineering applications
- Mechanical vibrations and applications
- Fault diagnosis based on vibration signal analysis
- Vibration generation and control
- Seismic engineering and applications
- Modal analysis and applications
- Vibration in transportation engineering
- Flow induced structural vibrations
- Oscillations in biomedical engineering
- Chaos, non-linear dynamics and applications
- Oscillations in electrical engineering
- Fractional dynamics and applications
- System dynamics in manufacturing system modeling
- Dynamics of smart and functionally graded materials

All published papers are peer reviewed and crosschecked by plagiarism detection tools.

More information is available online <https://www.jvejournals.com>

Vibroengineering PROCEDIA is referred in:

SCOPUS: ELSEVIER Bibliographic Database.

COMPENDEX: ELSEVIER Bibliographic Database.

EBSCO: Academic Search Complete;

Computers & Applied Sciences Complete;

Central & Eastern European Academic Source;

Current Abstracts;

TOC Premier.

GALE Cengage Learning:

Academic OneFile Custom Periodical;

Science in Context.

INSPEC: OCLC. The Database for Physics, Electronics and Computing.

SEMANTIC SCHOLAR: <https://www.semanticscholar.org>

GOOGLE SCHOLAR: <https://scholar.google.com>

CNKI SCHOLAR: <http://eng.scholar.cnki.net>

ULRICH'S PERIODICALS DIRECTORY: <https://ulrichsweb.serialssolutions.com>

CORE: <https://core.ac.uk>

cnpLINKer (CNPiEC): <http://cnplinker.cnpeak.com>

CROSSREF: <https://www.crossref.org>

Internet: <https://www.jveconferences.com>; <https://www.jvejournals.com>

E-mail: info@jveconferences.com; publish@jvejournals.com

Address: Geliu ratas 15A, LT-50282, Kaunas, Lithuania

Publisher: JVE International Ltd.

VP Vibroengineering PROCEDIA

MAY 2020, VOLUME 31, PAGES (1-139), ISSN PRINT 2345-0533, ISSN ONLINE 2538-8479

Contents

MECHANICAL VIBRATIONS AND APPLICATIONS

DYNAMIC RESPONSE OF AUXETIC STRUCTURES MATTHIEU PROFFIT, JOHN KENNEDY	1
HYSTeresis BEHAVIOUR OF DIFFERENT MAGNETORHEOLOGICAL ELASTOMER MODELS: MODELLING AND SIMULATION THAER M. I. SYAM, ASAN G. A. MUTHALIF	7

FAULT DIAGNOSIS BASED ON VIBRATION SIGNAL ANALYSIS

OPTIMIZATION AUTOMATING MONITORING BASED ON CLASSIFICATION FOR ROLLING BEARING H. HOTAIT, X. CHIEMENTIN, L. RASOLOFONDRAIBE	15
ANALYSIS OF TRAVELING WAVE BASED FAULT LOCATION METHOD FOR DISTRIBUTION NETWORK WITH IMAGE PROCESSING BIGUANG KONG, BAIYANG LIU, XIAOXIN LIU, BICAI PU, JIANHUI FENG, XIANGJUN ZENG	21

A VALIDATION OF THE STRESS POWER SPECTRAL DENSITY METHOD WITH ZERO-ORDER MOMENT N. N. ZHUANG, H. B. CHEN, Y. Y. WANG	27
--	----

SEISMIC ENGINEERING AND APPLICATIONS

NUMERICAL ANALYSIS OF THE STAND-OFF DISTANCE ON ANTI-BLAST ABILITY OF THE CYLINDRICAL SHELL STRUCTURE WITH PREFORMED HOLES CHONG JI, YUXIANG SUN, FUYIN GAO, XIAOLIANG HUANG, CHANGXIAO ZHAO	33
STUDY ON THE INFLUENCE OF THE PREFORMED HOLE SIZE CHARACTERISTICS ON THE DYNAMIC RESPONSE OF THE CYLINDRICAL SHELL UNDER BLAST LOADING FUYIN GAO, CHONG JI, YUXIANG SUN, XIAOLIANG HUANG, CHANGXIAO ZHAO	40

MODAL ANALYSIS AND APPLICATIONS

- METHODS TO ENHANCE THE AUTOMATION OF OPERATIONAL MODAL ANALYSIS** **46**
MARCEL WIEMANN, LUKAS BONEKEMPER, PETER KRAEMER

VIBRATION IN TRANSPORTATION ENGINEERING

- EXPERIMENTAL MODAL ANALYSIS AND OPTIMAL DESIGN OF CAB'S ISOLATION SYSTEM FOR A SINGLE DRUM VIBRATORY ROLLER** **52**
LE VAN QUYNH, ZHANG JIANRUN, NGUYEN VAN LIEM, BUI VAN CUONG, LE XUAN LONG, DO THANH PHUONG
- MAGNETIC FIELD SHIELDING IN ELECTRIC VEHICLES BY VIBRATION ENERGY HARVESTING DAMPERS** **57**
GEORGE NERUBENKO, GRIGORY PANOVKO, ALEXANDER SHOKHIN
- THE RESEARCH OF THE INFLUENCE OF VISCOUS INTERACTION BETWEEN WAGON AND CONTAINER ON THE DYNAMIC LOAD DURING TRANSPORTATION BY RAIL FERRY** **62**
ALYONA LOVSKA, OLEKSIJ FOMIN, VÁCLAV PÍŠTĚK, PAVEL KUČERA
- COMPUTATIONAL MODELLING OF DYNAMIC LOADS OF A CONTAINER UNDER VISCOUS INTERACTION WITH A FLAT WAGON IN SEA TRANSPORT** **68**
ALYONA LOVSKA, OLEKSIJ FOMIN, VÁCLAV PÍŠTĚK, PAVEL KUČERA
- OPTIMAL DESIGN PARAMETERS OF DRUM'S ISOLATION SYSTEM FOR A DOUBLE-DRUM VIBRATORY ROLLER** **74**
LE VAN QUYNH, VI THI PHUONG THAO, TRUONG TU PHONG

FLOW INDUCED STRUCTURAL VIBRATIONS

- 3D PRINTED STRUCTURED POROUS TREATMENTS FOR FLOW CONTROL WITH APPLICATIONS FOR NOISE AND VIBRATION CONTROL** **80**
PRANJAL BATHLA, JOHN KENNEDY

BIOMECHANICS AND BIOMEDICAL ENGINEERING

- SIMULATION OF ENDOLYMPH FLOW FOR RESPONSE OF CUPULA** **86**
ANUDEEP JOSHI, DARSHAN BABU, AKHILESH HARI PRAKASH, CHANDRASHEKARA C V
- DYNAMIC ANALYSIS OF A DISCRETIZED AIRCRAFT WITH AN INTEGRATED BIO-DYNAMIC PILOT MODEL USING SIMULINK AND MSC ADAMS** **91**
ADARSHA BALILA, B N ANKUSH, C HARI GOWTHAM, CHANDRASHEKARA C V

DYNAMICS AND OSCILLATIONS IN ELECTRICAL AND ELECTRONICS ENGINEERING

- MODELING AND SIMULATION OF INTERMITTENT ARC EFFECTS ON TRAVELING WAVE BASED FAULT LOCATION TECHNIQUES FOR DISTRIBUTION NETWORK** **97**
XIAOXIN LIU, BIGUANG KONG, KUN YU, BICAI PU, BAIYANG LIU, JIANHUI FENG

ACOUSTICS, NOISE CONTROL AND ENGINEERING APPLICATIONS	
SOUND ABSORPTION BY TEXTILE RESONATORS	103
KARSTEN NEUWERK, MICHAEL HAUPT, GÖTZ T. GRESSER	
RESEARCH ON THE OPTIMIZATION METHOD OF SELECTING HEARING PROTECTORS IN POWER STATION	109
QUANQUAN GONG, LIanke XIE, DANDAN DOU, GUOYING ZHANG, KUN WANG, JIAMEI ZHAO	
MATERIALS AND MEASUREMENTS IN ENGINEERING	
RESEARCH ON IMAGE PROCESSING ALGORITHM OF IMMUNE COLLOIDAL GOLD TEST PAPER DETECTION	116
GUANG YANG, TIEFENG WANG, PENG ZHANG	
MATHEMATICAL MODELS IN ENGINEERING	
EVALUATION OF CRITICAL PATH OF CONSTRUCTION PROJECTS BY USING THE NEW BWABAC METHOD UNDER UNCERTAINTY	122
KEIVAN NOSHADPOOR	
SYSTEM DYNAMICS IN MANUFACTURING SYSTEM MODELING	
STATISTICAL ANALYSIS OF TURBO GENERATOR SETS FAILURE CAUSES	129
ALEXANDER BABIN, ROMAN POLYAKOV, LEONID SAVIN, VALENTIN TYURIN	
DYNAMICS OF SMART AND FUNCTIONALLY GRADED MATERIALS	
STRESS ANALYSIS OF PLATE WITH OPPOSITE SEMICIRCULAR NOTCHES AND ADHESIVELY BONDED PIEZOELECTRIC ACTUATORS	134
AHMED ABUZAID, MEFTAH HRAIRI, HASHIM KABREIN	

