International Conference on Applied Sciences (ICAS2017)

IOP Conference Series: Materials Science and Engineering Volume 294

Hunedoara, Romania 10 – 12 May 2017

ISBN: 978-1-5108-5567-0

ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2017) by the Institute of Physics All rights reserved. The material featured in this book is subject to IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact the Institute of Physics at the address below.

Institute of Physics Dirac House, Temple Back Bristol BS1 6BE UK

Phone: 44 1 17 929 7481 Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA

Phone: 845-758-0400 Fax: 845-758-2633

Email: curran@proceedings.com Web: www.proceedings.com

Table of contents

Volume 294

International Conference on Applied Sciences (ICAS2017)

10-12 May 2017, Hunedoara, Romania

Accepted papers received: 22 December 2017

Published online: 12 January 2018

Preface

<u>International Conference on Applied Sciences (ICAS2017)</u>

Peer review statement

Papers

Electromagnetic fields and their impacts

M A Prša and K K Kasaš-Lažetić.....1

Studies on gamma irradiated rubber materials

I B Lungu, M D Stelescu and M Cutrubinis.....15

Aspects regarding manufacturing technologies of composite materials for brake pad application

A L Craciun, T Heput and C Pinca-Bretotean....23

Mathematical and physical modeling of thermal stratification phenomena in steel ladles

V Putan, L Vilceanu, A Socalici and A Putan....32

_	. 1	4.	.1	•	0.11		1		
к	'esearch	regarding	the	vacuuming	Ot 110	าบบป	cteel	on steel	degassing
Ľ	coscarcii	regarding	uic	vacuummg	OI III	quiu	SICCI	OII Steel	degassing

M Magaon, M Radu, S Şerban and L Zgripcea.....40

Study of materials used for the thermal protection of the intake system for internal combustion engines

C Birtok-Băneasă, S Raţiu, V Puţan and A Josan....50

Methods of silver recovery from radiographs - comparative study

L R Canda, E Ardelean and T Hepuţ.....56

Methods for maintaining the continuity of power supply in hospitals

V V Mihut, M Panoiu, C Panoiu and I Baciu.....64

Internal services simulation control in 220/110kV power transformer station Mintia

D Ciulica and R Rob.....70

Optimizing the switching time for 400 kV SF6 circuit breakers

D Ciulica.....77

The numerical modelling of mixing phenomena of nanofluids in passive micromixers

R Milotin and D Lelea.....85

Comparative study of oxihydrogen injection in turbocharged compression ignition engines

L Barna and D Lelea.....93

Diagnosis diagrams for passing signals on an automatic block signaling railway section

E Spunei, I Piroi, C P Chioncel and F Piroi.....98

Truck circuits	diagnosis	for railway	lines	equipped	with an	automatic	block	signalling
system	-							

E Spunei, I Piroi, C Muscai, E Răduca and F Piroi.....106

The comfort of the passengers

R Hasa, T Liedl and J Bucha.....114

Aspects regarding the capitalization of the powdery wastes in steelmaking

E C Dragna, A Ioana and N Constantin.....121

Methods of steel manufacturing - The electric arc furnace

E C Dragna, A Ioana and N Constantin....126

Steel refining possibilities in LF

M G Dumitru, A Ioana, N Constantin, F Ciobanu and M Pollifroni.....132

Maintenance of reference standards in the field of viscosity

E A Moșulică, I Cîrneanu, N Constantin and V Rucai.....138

The use of R_z roughness parameter for evaluation of materials behavior to cavitation erosion

I Bordeasu, M O Popoviciu, C Ghera, L M Micu, L D Pirvulescu and T Bena....144

Researches on the development of new composite materials complete / partially biodegradable using natural textile fibers of new vegetable origin and those recovered from textile waste

M P Todor, C Bulei, T Heput and I Kiss.....155

Using TELOS for the planning of the information system audit

D P Drljaca and B Latinovic.....164

Hydroelectric power plant with variable flow on drinking water adduction

S I Deaconu, R Babău, G N Popa and P L Gherman....173

Particular mechanism for continuously varying the compression ratio for an internal combustion engine

S Rațiu, R Cătălinoiu, V Alexa, I Miklos and V Cioată.....181

Decoupling the structure from the ground motion during earthquakes by employing friction pendulums

G R Gillich, V Iancu, N Gillich, Z I Korka, C P Chioncel and C Hatiegan.....190

Time series prediction in the case of nonlinear loads by using ADALINE and NAR neural networks

L Ghiormez, M Panoiu, C Panoiu and O Tirian.....199

Determination of the performance of the Kaplan hydraulic turbines through simplified procedure

I Pădureanu, M Jurcu, C V Campian and C Hațiegan....208

Unbalance influence on the rotating assembly dynamics of a hydro

M Jurcu, I Pădureanu, C V Campian and C Hațiegan.....219

Possibility of using the smoothed spline functions in approximation of average course of terrain inclinations caused by underground mining exploitation conducted at medium depth

J Orwat.....229

Appraisal of application possibilities of smoothed splines to designation of the average values of terrain curvatures measured after the termination of hard coal exploitation conducted at medium depth

J Orwat.....239

Antropometric parameters problem solving of shoe lasts by deforming membranes with medium weight

A V Albu, C V Anghel Drugarin, E M Barla and V Porav.....249

General aspects of speed increaser gearboxes

A Băra, D Nedelcu, C Hațiegan, A C Bejinariu and L (Filip) Nedeloni.....255

Natural frequencies of thin rectangular plates clamped on contour using the Finite Element Method

L (Barboni) Hațiegan, C Hațiegan, G R Gillich, C O Hamat, O Vasile and M D Stroia.....264

Analysis of gear reducer housing using the finite element method

I Zs Miklos, C C Miklos, C I Alic and S Ratiu.....280

Determination of the critical bending speeds of a multy-rotor shaft from the vibration signal analysis

I Crâștiu, E Nyaguly, S Deac, C Gozman-Pop, A Bârgău and L Bereteu.....289

Minimal algorithm for running an internal combustion engine

V Stoica, A Borborean, A Ciocan and C Manciu.....298

Salvia officinalis used in pharmaceutics

K L Lemle.....306

Critical	analysi	is of the	influence	of the	possibilities	of establishing	g the moulding
technol	ogy on	obtainin	g the cast	ings	_		

A Josan, C Pinca Bretotean and S Raţiu....312

The importance of correct specification of tribological parameters in dynamical systems modelling

S Alaci, F C Ciornei, I C Romanu and M C Ciornei.....320

Determination of maintainability for Dacia 1304, 1,9 D utility vehicle

A Budiul Berghian, T Vasiu and C Birtok Baneasa.....329

<u>Identification of exponent from load-deformation relation for soft materials from impact tests</u>

F C Ciornei, S Alaci, I C Romanu, M C Ciornei and G Sopon.....334

Surface treatments for aluminium alloys

M Ardelean, S Lascău, E Ardelean and A Josan....342

Power quality analysis of DC arc furnace operation using the Bowman model for electric arc

P L Gherman....353

Type practical application in spectral analysis, combining Labview and open source software

C P Chioncel and C V Anghel Drugarin....362

Gamification in the context of smart cities

M R Zica, A C Ionica and M Leba.....369

_	•	• . •			0			. •	
I)	river	monitoring	72	vstem.	tor	ลบป	omo	1Ve	satety
$\boldsymbol{\mathcal{L}}$	11101	momornia		y Stelli	101	uui	COLLIO	UV	builty

A E Lörincz, M N Risteiu, A Ionica and M Leba.....381

A small step in VLC systems – a big step in Li-Fi implementation

S M Rîurean, A A Nagy, M Leba and A C Ionica....389

Quadcopter control using a BCI

S Rosca, M Leba, A Ionica and O Gamulescu....402

A comparative study of the A* heuristic search algorithm used to solve efficiently a puzzle game

A E Iordan....417

Highlighting the harmonic regime generated by electric locomotives equipped with DC motors

I Baciu and C D Cuntan.....425

Power factor improvement in three-phase networks with unbalanced inductive loads using the Roederstein ESTAmat RPR power factor controller

C M Diniş, C D Cuntan, R O S Rob and G N Popa.....435

Automation of water supply and recirculation-filtration of water at a swimming pool using Zelio PLC

C M Diniş, G N Popa and A Iagăr.....451

Bidirectional automatic release of reserve for low voltage network made with low capacity PLCs

I Popa, G N Popa, C M Diniş and S I Deaconu.....463

	Industrial app	plication of	low voltage bi	directional au	utomatic releas	e of reserve
--	----------------	--------------	----------------	----------------	-----------------	--------------

G N Popa, C M Diniş, A Iagăr, S I Deaconu and I Popa.....477

Generate stepper motor linear speed profile in real time

M Y Stoychitch.....487

The interbelic Germans from the Banat Highland. Coal, steel, mines and forges

C Rudolf, D M Micliuc, M D Nedeloni, E Birtarescu and A Varga.....500

Industrial production of the interbelic German from the Banat Highland

C Rudolf, C Hatiegan, A Pellac, S L Bogdan, L Paduraru and A Varga.....507

Electromechanical converters for electric vehicles

T Ambros, M Burduniuc, S I Deaconu and N Rujanschi.....515

Electric machines with axial magnetic flux

I Nuca, T Ambros, M Burduniuc, S I Deaconu and A Turcanu.....523

Analysis of time in establishing synchronization radio communication system with expanded spectrum conditions for communication with mobile robots

T S Latinovic, S B Kalabic, C R Barz, P Paul Petrica and A Pop-Vădean.....531

Arguments for the need of mining education continuity and development in Romania

I Bud, S Duma, I Pasca and D Gusat.....546

The influence of cooling parameters on the speed of continuous steel casting

G O Tirian, C A Gheorghiu, T Heput and C P Chioncel.....554

O 1'		. 1	4.1	* . *		1 1	C	4
('ooling	water flow	control	realized	with s	vstems	hased	On 111773	mechanism m
Cooming	Water How	COIILIOI	Tourizou	WILLI D	ybtellib	ousea	OII IULL	i ilicciiuliibili

G O Tirian, C A Gheorghiu, T Heput and C P Chioncel.....562

Directions for material recovery of used tires and their use in the production of new products intended for the industry of civil construction and pavements

C Bulei, M P Todor, T Heput and I Kiss.....569

IPS technologies in sales improvement in companies in Banja Luka, Bosnia and Herzegovina

Lj Micic and D Preradovic.....578

Contributions to optimization of storage and transporting industrial goods

T Babanatsas, R M Babanatis Merce, D O Glăvan and A Glăvan.....588

Modelling in 3D the olive trees cultures in order to establish the forces (interval) needed for automatic harvesting

T Babanatsas, D O Glăvan, R M Babanatis Merce and S A Maris.....596

Comparative study of tool machinery sliding systems; comparison between plane and cylindrical basic shapes

D O Glăvan, T Babanatsas, R M Babanatis Merce and A Glăvan.....604

Study on the influence of supplying compressed air channels and evicting channels on pneumatical oscillation systems for vibromooshing

D O Glăvan, I Radu, T Babanatsas, R M Babanatis Merce, I Kiss and M C Gaspar.....612

Wind turbine remote control using Android devices

C L Rat and M Panoiu.....620

|--|

C L Rat, O Prostean and I Filip.....630

Study of the influence of the cutting temperature on the magnitude of the contact forces in the machining fixtures

V G Cioată, I Kiss, V Alexa, S A Rațiu and M Racov.....640

Adaptive neuro fuzzy system for modelling and prediction of distance pantograph catenary in railway transportation

M Panoiu, C Panoiu and I L Lihaciu.....649

Study of a phase-to-ground fault on a 400 kV overhead transmission line

A Iagăr, G N Popa and C M Diniş.....659

Study regarding the influence of environmental temperature and irradiation conditions on the performance of a photovoltaic solar module

C Hațiegan, N Gillich, C Popescu, E Răduca, L Cîndea, M F Predus and I M Terfăloagă.....672

Experimental measurements concerning the stator insulation partial discharge level of a hydro-generator of high power

C Hațiegan, E Răduca, C Popescu, C O Hamat, A Băra, D Anghel and D A Pîrşan.....680

Statistical research using the multiple regression analysis in areas of the cast hipereutectoid steel rolls manufacturing

I Kiss, V Alexa, S Serban, M Rackov and M Čavić.....691

Statistical experiments using the multiple regression research for prediction of proper hardness in areas of phosphorus cast—iron brake shoes manufacturing

I Kiss, V G Cioată, S A Ratiu, M Rackov and M Penčić.....703

Social humanoid robot SARA: development	of the	wrist mec	hanism
---	--------	-----------	--------

M Penčić, M Rackov, M Čavić, I Kiss and V G Cioată.....713

Instantaneous flywheel torque of IC engine grey-box identification

A Milašinović, D Knežević, Z Milovanović and J Škundrić.....723

Experimental model of a wind energy conversion system

C Vasar, C L Rat and O Prostean.....735

Issues regarding the usage of MPPT techniques in micro grid systems

I Szeidert, I Filip, F Dragan and A Gal.....747

The behaviour of a vehicle's suspension system on dynamic testing conditions

L Mihon, N Lontiş and S Deac.....755

<u>Determination of the unsulfonated color concentration from D&C Yellow No. 10 by the derivative spectrophotometry</u>

A D Berdie and S Jitian.....763

Security of bottle to fill in a high pressure air

M Todic, T Latinovic, V Golubovic-Bugarski and A Majstorovic.....774

Order management empowering entrepreneurial partnerships in the context of new technologies

M Tămășilă, G Proștean and A Diaconescu.....779

Analysis of whole-body vibration on rheological models for tissues

A Neamtu, D Simoiu, E Nyaguly, I Crastiu and L Bereteu.....789

<u>Determination of elastic mechanical characteristics of surface coatings from analysis of signals obtained by impulse excitation</u>

E Nyaguly, I Craștiu, S Deac, C Gozman-Pop, G Drăgănescu and L Bereteu.....797

A comparison between using distance sensors for measuring the pantograph vertically movement

R Rob, C Panoiu, S Rusu-Anghel and M Panoiu.....807

Modeling and simulation of cars in frontal collision

S C Deac, A Perescu, D Simoiu, E Nyaguly, I Crâștiu and L Bereteu.....815

Determination of the wind power systems load to achieve operation in the maximum energy area

C P Chioncel, G O Tirian, E Spunei and N Gillich.....827

An evolutionary sensor approach for self-organizing production chains

M Mocan, E V Gillich, I C Mituletu and Z I Korka.....835

A few categories of electromagnetic field problems treated through Fuzzy Logic

M S Lolea and S Dzitac.....843

Adjustment of gripping force by optical systems

C K Jalba and C Barz.....852

Innovation-Prototype. Making hydraulic and/or pneumatic plates using 3D printing technology

V Alexa, S A Raviu, I Kiss, V G Cioată and M Rackov.....862