

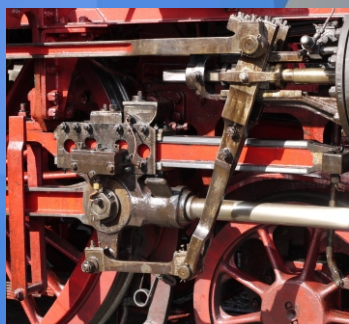
INTERNATIONAL SCIENTIFIC JOURNAL

INDUSTRY 4.0

ISSN (PRINT) 2543-8582

ISSN (WEB) 2534-997X

YEAR II ISSUE 5/2017



①



②



③



④



PUBLISHED BY
SCIENTIFIC TECHNICAL UNION OF MECHANICAL ENGINEERING
BULGARIA

INTERNATIONAL SCIENTIFIC JOURNAL

INDUSTRY 4.0

YEAR II, ISSUE 5 / 2017

ISSN PRINT 2543-8582, ISSN WEB2534-997X

PUBLISHER

SCIENTIFIC TECHNICAL UNION OF MECHANICAL ENGINEERING "INDUSTRY 4.0"

108, Rakovski Str., 1000 Sofia, Bulgaria

tel. (+359 2) 987 72 90,

tel./fax (+359 2) 986 22 40,

office@stumejournals.com

WWW.STUMEJOURNALS.COM

EDITOR IN CHIEF

Prof. D.Sc. Georgi Popov, DHC, Technical University of Sofia, BG

Prof. Dr. Dr. Jivka Ovtcharova, DHC, Karlsruhe University of Technology, DE

EDITORIAL BOARD

Acad. Igor Bychkov, RU

Cor. member Alexey Beliy, BY

Cor. member Svetozar Margenov, BG

Prof. Alexander Afanasyev, RU

Prof. Alexander Guts, RU

Prof. Andrzej Golabczak, PL

Prof. Andrey Firsov, RU

Prof. Bobek Shuklev, MK

Prof. Boris Gordon, EE

Prof. Branko Sirok, SI

Prof. Claudio Melchiorri, IT

Prof. Cveta Martinovska, MK

Prof. Dale Dzemydiene, LT

Prof. Dimitar Yonchev, BG

Prof. Dimitrios Vlachos, GR

Prof. Galina Nikolcheva, BG

Prof. Gerard Lyons, IE

Prof. Henrik Carlsen, DK

Prof. Idilia Bachkova, BG

Prof. Idit Avrahami, IL

Prof. Iurii Bazhal, UA

Prof. Jürgen Köbler, DE

Prof. Jiri Maryska, CZ

Prof. Katia Vutova, BG

Prof. Lappalainen Kauko, FI

Dr. Liviu Jalba, RO

Prof. Luigi del Re, AT

Prof. Majid Zamani, DE

Prof. Martin Eigner, DE

Prof. Michael Valasek, CZ

Prof. Milija Suknovic, RS

Prof. Miodrag Dashic, RS

Prof. Mladen Velev, BG

Prof. Murat Alanyali, TR

Prof. Nina Bijedic, BA

Prof. Ninoslav Marina, MK

Prof. Olga Zaborovskaia, RU

Prof. Pavel Kovach, RS

Prof. Petar Kolev, BG

Prof. Peter Korondi, HU

Prof. Peter Sincak, SK

Prof. Petra Bittrich, GE

Prof. Dr. Predrag Dasic, RS

Prof. Radu Dogaru, RO

Prof. Raicho Ilarionov, BG

Prof. Raul Turmanidze, GE

Prof. René Beigang, DE

Prof. Rozeta Miho, AL

Prof. Sasho Guergov, BG

Prof. Seniye Ümit Oktay Firat, TR

Prof. Sreten Savicevic, ME

Prof. Stefan Stefanov, BG

Prof. Svetan Ratchev, UK

Prof. Sveto Svetkovski, MK

Prof. Tomislav Šarić, HR

Prof. Vasile Cartofeanu, MD

Prof. Vidosav Majstorovic, RS

Prof. Vjaceslavs Bobrovs, LV

Prof. Inocentiu Maniu, RO

Dipl.-Kfm. Michael Grethler, DE