



**UNIVERSITY of
DEBRECEN**

Faculty of Engineering
Department of Mechanical Engineering

**9th INTERNATIONAL SCIENTIFIC CONFERENCE ON
ADVANCES IN MECHANICAL ENGINEERING**

(ISCAME 2023)

9-10 November, 2023 Debrecen, Hungary

CONFERENCE PROGRAMME

organized by

Department of Mechanical Engineering

Faculty of Engineering, University of Debrecen

and

Working Commission in Mechanical Engineering

Specialized Committee in Engineering

Regional Committee in Debrecen, Hungarian Academy of Sciences



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

Chair of ISCAME 2023

Tamás MANKOVITS, University of Debrecen, Hungary

Scientific Program Committee of ISCAME 2023

Sándor BODZÁS, University of Debrecen, Hungary

Gábor BOHÁCS, Budapest University of Technology and Economics, Hungary

István BUDAI, University of Debrecen, Hungary

Levente CZÉGÉ, University of Debrecen, Hungary

Branislav DJORDEVIC, University of Belgrade, Serbia

Igor DRSTVENSEK, University of Maribor, Slovenia

János Péter ERDÉLYI, University of Miskolc, Hungary

Lajos FAZEKAS, University of Debrecen, Hungary

Sándor HAJDU, University of Debrecen, Hungary

Dávid HURI, University of Debrecen, Hungary

György JUHÁSZ, University of Debrecen, Hungary

Gábor KALÁCSKA, Hungarian University of Agricultural and Life Sciences, Hungary

Ferenc KALMÁR, University of Debrecen, Hungary

Imre KOCSIS, University of Debrecen, Hungary

Ákos LAKATOS, University of Debrecen, Hungary

Daniel LATES, Petru Maior University of Targu Mures, Romania

Stanislav LEGUTKO, Poznan University of Technology, Poland

János LÍSKA, John von Neumann University, Hungary

Zoltán MAJOR, Johannes Kepler University Linz, Austria

József MENYHÁRT, University of Debrecen, Hungary

Ljubica MILOVIC, University of Belgrade, Serbia

Imre Norbert ORBULOV, Budapest University of Technology and Economics, Hungary

Sándor PÁLINKÁS, University of Debrecen, Hungary

Tibor POÓS, Budapest University of Technology and Economics, Hungary

Milan RACKOV, University of Novi Sad, Serbia

Istvánné RÁTHY, Óbuda University, Hungary

Tamás SZABÓ, University of Miskolc, Hungary

Ferenc SZODRAI, University of Debrecen, Hungary

Edit SZŰCS, University of Debrecen, Hungary

György THALMAIER, Technical University of Cluj-Napoca, Romania

Zsolt TIBA, University of Debrecen, Hungary

László TÓTH, University of Debrecen, Hungary

Matej VESENJAK, University of Maribor, Slovenia

Zoltán WELTSCH, John von Neumann University, Hungary

László ZSIDAI, Hungarian University of Agricultural and Life Sciences, Hungary

Technical Assistance of ISCAME 2023

Szandra KALMÁRNÉ SITKU, University of Debrecen, Hungary

Lilla CSONKÁNÉ DÓRÓ, University of Debrecen, Hungary

Mihály CSÜLLÖG, University of Debrecen, Hungary



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

WELCOME MESSAGE

On behalf of the ISCAME Scientific and Organizing Committee I am pleased to welcome you to Debrecen for the 9th International Scientific Conference on Advances in Mechanical Engineering organized by the Department of Mechanical Engineering, Faculty of Engineering of the University of Debrecen.

The main goal of ISCAME is to yearly bring together engineers working on research, development and practical application in the field of mechanical engineering. Furthermore, the purpose of this Conference is to provide opportunities for scientists and engineers to meet and to discuss current research, new concepts and ideas and establish possibilities for future collaborations in all aspects of mechanical engineering.

I am pleased to inform you that **202 experts** from higher education have registered for this year's conference from altogether **12 countries**. In the framework of ISCAME **110 presentations** will be given and **49 posters** will be exhibited.

This year, the theme of the plenary lectures is artificial intelligence (AI) and material testing. Accordingly, the head of the Material and Process Analysis Laboratory of the BMW Group Plant Debrecen will give lecture about their activities and the representatives of Mathworks will introduce the AI solutions of Matlab. Furthermore, the researcher of the host Department of Mechanical Engineering will present the application of artificial intelligence and the related material testing in the context of a case study. Accompanying programs of ISCAME is a Matlab Workshop and the Exhibition of Creative Mechanical Engineers.

We invite you to be an active participant in this Conference and to contribute to any topic of your scientific interest. We hope that the 9th International Scientific Conference on Advances in Mechanical Engineering will have an important impact on the research in all topics included in its program.

It is also an honour for us to have a privilege to invite you to the 9th Mechanical Engineering Industrial Exhibition and Job Fair. The Department of Mechanical Engineering of the University of Debrecen will host – parallel to ISCAME – the event, called “Mechanical Engineering Industrial Exhibition and Job Fair” where **27 companies** will exhibit. The list of our exhibiting partners can be found at the end of the program booklet. This professional program will surely benefit the visitors who want to get up-to-date knowledge with the latest technology.

We want to express our appreciation to all members of the committees involved in the preparation of this Conference and to all the staff who are managing the different aspects of the Conference and to all the contributing authors and participants who will create the real Conference. We hope that all of you feel awarded for your participation and contribution.

Yours Sincerely,

Tamás Mankovits
Chair of ISCAME, Head of Department
Department of Mechanical Engineering
Faculty of Engineering, University of Debrecen



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

TECHNICAL PROGRAMME

(9th ISCAME and 9th Mechanical Engineering Exhibition and Job Fair)

Thursday, 9th of November 2023 (2-4 Ótmető, Debrecen)

- 09:00 – 15:00 **Mechanical Engineering Exhibiton and Job Fair** (Aula of the Faculty of Engineering)
- 13:00 – 16:00 **ISCAME registration** (Aula of the Faculty of Engineering)
- 13:00 – 18:45 **ISCAME poster exhibition** (1st floor, Gallery of the Faculty of Engineering)
- 13:30 – 14:30 **ISCAME guided laboratory tour** (meeting at Emerson Pneumatic Laboratory, room E.0.21.)
- 14:00 – 15:00 **ISCAME Exhibition of Creative Mechanical Engineers** (Library of the Faculty of Engineering)
- 15:00 – 16:10 **ISCAME opening and plenary lectures** (4th floor, Lecture Hall 413)
- 16:30 – 19:00 **ISCAME sessions**
INDUSTRIAL PROCESSES
MODELLING AND CONTROL OF INDUSTRIAL SYSTEMS, ROBOTS AND VEHICLES
MACHINE AND PRODUCT DESIGN
MATERIALS SCIENCE AND TECHNOLOGY I.
- 19:00 – 23:00 **ISCAME banquet** (Restaurant Barabás, 11 Vár street, Debrecen) –entrance only with invitation card

Friday, 10th of November 2023 (2-4 Ótmető, Debrecen)

- 08:30 – 13:00 **ISCAME registration** (Aula of the Faculty of Engineering)
- 09:00 – 14:00 **ISCAME poster exhibition** (1st floor, Gallery of the Faculty of Engineering)
- 09:30 – 10:00 **Teaching AI with MATLAB** (4th floor, Lecture Hall 413)
- 10:00 – 11:30 **MATLAB Workshop** (1st floor, E.118) - participation only for registered members
- 09:30 – 12:15 **ISCAME sessions**
FLUID MECHANICS I.
MANUFACTURING SCIENCE I.
POLYMER ENGINEERING
MATERIALS SCIENCE AND TECHNOLOGY II.
- 11:00 – 12:00 **ISCAME poster session** (1st floor, Gallery of the Faculty of Engineering)
- 11:30 – 14:00 **lunch** (Restaurant, Faculty of Engineering)
- 12:30 – 12:45 **ISCAME group photo** (meeting at the Aula of the Faculty of Engineering)
- 13:00 – 16:15 **ISCAME sessions**
FLUID MECHANICS II.
MANUFACTURING SCIENCE II.
APPLIED AND THEORETICAL MECHANICS
ENGINEERING OPTIMIZATION
MATERIALS SCIENCE AND TECHNOLOGY III.



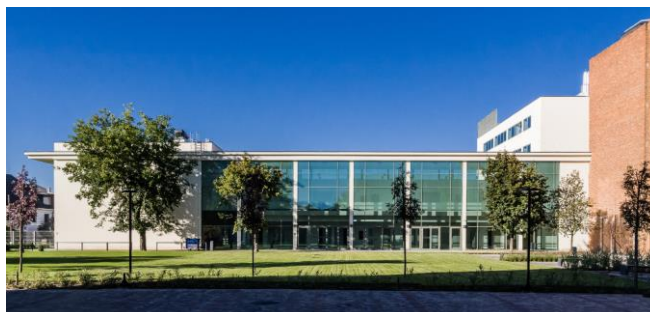
INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

DETAILED PROGRAMME OF ISCAME 2023

Thursday, 9th of November 2023 (2-4 Ótmetető, Debrecen)

- 13:00 – 16:00 **ISCAME registration** (Aula of the Faculty of Engineering)
13:00 – 18:45 **ISCAME poster exhibition** (1st floor, Gallery of the Faculty of Engineering)
13:30 – 14:30 **ISCAME guided laboratory tour** (meeting at Emerson Pneumatic Laboratory, room E.0.21.)
14:00 – 15:00 **ISCAME Exhibition of Creative Mechanical Engineers** (Library of the Faculty of Engineering)
-
- 15:00 – 16:10 **ISCAME opening and plenary lectures**
(Lecture Hall 413, 4th floor)
15:00 – 15:05 **Imre KOCSIS**, University of Debrecen, Hungary
Welcoming words
15:05 – 15:10 **Tamás MANKOVITS**, University of Debrecen, Hungary
About ISCAME 2023
15:10 - 15:30 **Larc C. HERZBACH**, BMW Group Plant Debrecen, Hungary
Material and Process Analysis Laboratory
15:30 – 15:50 **Marco ROSSI, Ákos Koppány KISS**, Mathworks & Gamax Laboratory Solutions Kft., Italy, Hungary
AI solutions to enhance research in Mechanical, Electrical and Computer Engineering
15:50 – 16:10 **Dávid HURI**, University of Debrecen, Hungary
Development of finite element simulation-based optimization of rubber bumper
-
- 16:30 – 18:30 **Session INDUSTRIAL PROCESSES**
(Machine Elements Laboratory, 1st floor, room E.121.)
Chairman: **Lajos GULYÁS**, University of Debrecen, Hungary
Secretary: **István DOMOKOS**, University of Debrecen, Hungary
- 16:30 – 16:45 **Evelin VARJU, Tibor POÓS**
Calculation algorithm of air humidification for laboratory equipment
16:45 – 17:00 **Tibor POÓS, Kristóf KATONA**
Determining the fluidization curve for zeolite at different moisture contents
17:00 – 17:15 **Ömer Faruk KARAMAN, László HÉGELY, Péter LÁNG**
Optimisation of a pressure-swing distillation process with full heat integration
17:15 – 17:30 **Tibor POÓS, Nikolett SZÁVICS**
Operational sizing of a wet scrubber
17:30 – 17:45 **Tibor POÓS, László Mihály VÉGH**
Mechanical and architectural regulations for cleanrooms with proposed solutions
17:45 – 18:00 **Bence FÁBIÁN, Oszkár GREGA, Zoltán TASZNER**
Analysis of the recyclability of secondary metallurgical slag from steel production in electric arc furnaces
18:00 – 18:15 **Abdenour BOUZIANE, Boukhoulda FAROUK, Amar TILMATINE**
Conception and realization of a vibrating machine to isolate copper from plastic obtained from wire waste
18:15 – 18:30 **Levente TUGYI, Gábor L. SZEPESI**
Determination of flash points of flammable mixtures for explosion protection
-



Faculty of Engineering, University of Debrecen



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

16:30 – 18:30 **Session MODELLING AND CONTROL OF INDUSTRIAL SYSTEMS, ROBOTS AND VEHICLES**

(Technical Mechanics Laboratory, 1st floor, room U.1.08.)

Chairman: **Sándor HAJDU**, University of Debrecen, Hungary

Secretary: **Dániel NEMES**, University of Debrecen, Hungary

16:30 – 16:45 **Gergely HUNYADY, Dénes FODOR**

Predictive maintenance and fault diagnostics of automotive Steer-By-Wire steering systems based on Digital Twin method

16:45 – 17:00 **Dániel NEMES, Sándor HAJDU**

Longitudinal dynamic modeling of electric vehicle by using Matlab Simulink

17:00 – 17:15 **Lóránt SZABÓ, Zoltán WELTSCH, Andrea ÁDÁMNÉ MAJOR**

Overview of datasets for offroad autonomous vehicles

17:15 – 17:30 **Tudor OARGA, Bogdán VARGA, István BARABÁS, Gabriel PRUNEAN**

Review of connected autonomous vehicles platooning: technologies, challenges, and future directions

17:30 – 17:45 **Safa Jameel AL-KAMIL, Edit LAUFER, Róbert SZABOLCSI**

Fuzzy Logic integration for enhanced mobile robot path planning and navigation

17:45 – 18:00 **Dávid BODNÁR, Károly JÁRMAI**

Natural frequency examination in industrial robot

18:00 – 18:15 **Dalal ZELLOUMA**

Fractional order - backstepping - for robust speed control of induction motor

18:15 – 18:30 **Dalal ZELLOUMA**

The application of fuzzy field-oriented control to the performance improvement of a three-phase induction motor

16:30 – 18:30 **Session MACHINE AND PRODUCT DESIGN**

(Emerson Pneumatic Laboratory, ground floor, room E.0.21.)

Chairman: **Levente CZÉGÉ**, University of Debrecen, Hungary

Secretary: **Tibor PÁLFI**, University of Debrecen, Hungary

16:30 – 16:45 **Mustafa HASAN**

Dual purpose solar collector

16:45 – 17:00 **Krisztián VIDA**

Linear units in automation

17:00 – 17:15 **Attila KISS, Zoltán WELTSCH**

Design optimization of intake manifold for dual fuel IC engine

17:15 – 17:30 **Sándor APÁTI, György HEGEDŰS**

Design of equipment suitable for jigsaw testing

17:30 – 17:45 **József KERTÉSZ, József MENYHÁRT, Zsolt BÉKÉSI, Tünde Anna KOVÁCS**

Investigation of heavy vehicle underrunning guard focusing for the energy absorbing issue

17:45 – 18:00 **Krisztián DEÁK**

Wavelet analysis for detecting machinery transient waveform

18:00 – 18:15 **Bahar MOHAMMED**

Impact and damage prediction of reinforced sandwich beams

18:15 – 18:30 **Borchala Namomsa DAREJE, Demewz DEMEKE**

Design and model of portable gantry crane machine



Main building, University of Debrecen



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

- 16:30 – 19:00 **Session MATERIALS SCIENCE AND TECHNOLOGY I.**
(Metallographic Laboratory, 1st floor, room E.120.)
Chairman: **István BUDAI**, University of Debrecen, Hungary
Secretary: **András GÁBORA**, University of Debrecen, Hungary
- 16:30 – 16:45 **Masoud OSFOURI, Andrea SIMON**
Innovative method for producing glass foam granules with intact surfaces
- 16:45 – 17:00 **Sarah Kareem Mohammed AL-SAUDI, Róbert GÉBER, Andrea SIMON**
Produce foam glass aggregate utilizing waste glass from cathode-ray tubes
- 17:00 – 17:15 **Ferenc TAJTI, Miklós BERCZELI, Zoltán WELTSCH**
Li-ion battery cell bonding technology development
- 17:15 – 17:30 **Dávid HALÁPI, László VARGA**
Segregation simulation study of metal powders in additive manufacturing technology
- 17:30 – 17:45 **Sándor Endre KOVÁCS, László VARGA**
Mechanical testing and orientation optimisation of 3D printed 17-4PH stainless steel alloy
- 17:45 – 18:00 **Csaba BREZNAY, Dávid KEMÉNY, Balázs VARBAI, Levente KATULA**
Electrochemical corrosion properties of wire and arc additively manufactured duplex stainless steel
- 18:00 – 18:15 **Ahmed SHADID, Márton Tamás BIROSZ, Béla SZEKERES, Mátyás ANDÓ**
3D printing failure detection
- 18:15 – 18:30 **Péter I. KOVÁCS, Zoltán WELTSCH, Miklós BERCZELI**
Surface treatment of aluminium with atmospheric plasma
- 18:30 – 18:45 **Gergely JUHÁSZ, Ferenc HAREANCZ, Réka Enikő FÁBIÁN, Ádám VIDA**
Production methods of high-entropy alloys
- 18:45 – 19:00 **Ferenc HAREANCZ, Gergely JUHÁSZ, Réka Enikő FÁBIÁN, Ádám VIDA**
Applicability of high-entropy alloys
-
- 19:00 – 23:00 **ISCAME banquet – by pre-registration only and entrance fee is charged**
(Restaurant Barabás, 11 Vár street, Debrecen)



A group of ISCAME Participants



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

Friday, 10th of November 2023 (2-4 Ótemető, Debrecen)

- 08:30 – 13:00 **ISCAME registration** (Aula of the Faculty of Engineering)
- 09:00 – 14:00 **ISCAME poster exhibition** (1st floor, Gallery of the Faculty of Engineering)
- 09:30 – 10:00 **Teaching AI with MATLAB** (4th floor, Lecture Hall 413)
Presenter: **Ákos Koppány KISS**, Gamax Laboratory Solutions Kft., Hungary
- 10:00 – 11:30 **MATLAB Workshop** (1st floor, E.118) - participation only for registered members
Workshop leader: **Ákos Koppány KISS**, Gamax Laboratory Solutions Kft., Hungary
-
- 09:30 – 11:15 **Session FLUID MECHANICS I.**
(Emerson Pneumatic Laboratory, ground floor, room E.0.21.)
- Chairman: **Ákos LAKATOS**, University of Debrecen, Hungary
Secretary: **Rashwan ALKENTAR**, University of Debrecen, Hungary
- 09:30 - 09:45 **Zainab ALI, Gabriella VADÁSZNÉ BOGNÁR**
Investigation of the impact of surface roughness on the vehicle's resistance
- 09:45 - 10:00 **Ferenc KUBICSEK, Ferenc HEGEDŰS**
Bubbles and producing ammonia
- 10:00 – 10:15 **Péter KALMÁR, Kálmán KLAPCSIK**
Investigation of the acoustically excited bubble's nonlinear shape deformation in a massive parameter range with GPU applications
- 10:15 – 10:30 **Barhm MOHAMAD**
Performance of nanofluids on heat transfer in a flat plate water solar collector
- 10:30 – 10:45 **Dávid András HORVÁTH, Tamás KALMÁR-NAGY**
Semi-empirical method to approximate the Poincaré-Lyapunov constant for the delayed-Liénard equation
- 10:45 – 11:00 **Lajos IMRE, Cosmin CHIOREAN**
Particular aspects regarding the radiative heat transfer in thermal analysis of steel-concrete composite structural elements
- 11:00 – 11:15 **Saqib MURTAZA, Poom KUMAN**
Fractal-Fractional Analysis and numerical simulation for the heat transfer of ZnO+Al₂O₃+TiO₂/DW based ternary hybrid nanofluid
-
- 09:30 – 11:15 **Session MANUFACTURING SCIENCE I.**
(Technical Mechanics Laboratory, 1st floor, room U.1.08.)
- Chairman: **Géza HAIDEGGER, SZTAKI** - Institute for Computer Science and Control, Hungary
Secretary: **Zoltán Gergő GÉRESI**, University of Debrecen, Hungary
- 09:30 - 09:45 **Marwen HABBACHI, Attila BAKSA**
Optimization of springback and thinning during deep drawing process
- 09:45 - 10:00 **Géza HAIDEGGER, Krisztina BÁRDOS, József VÁNCZA**
Getting prepared to understand and also to jointly prepare the harmonized foresight on the future of manufacturing in Europe
- 10:00 – 10:15 **Luboslav STRAKA**
Efficiency of the machining process in wire EDM of hard metals
- 10:15 – 10:30 **Luboslav STRAKA, Juraj HAJDUK**
Possibilities of preventing roundness errors of the machined surface in WEDM
- 10:30 – 10:45 **Szabolcs Balázs TÓTH, István BUDAI**
Simulation of industrial processes using digital lean tools
- 10:45 – 11:00 **Ali HABEEB, Assel HAMAD**
Experimental and theoretical investigation of the influence of the punch roughness degree and the coefficient of friction
- 11:00 – 11:15 **Doaa Monther SADIQ, Iman J. ABED**
Formability and surface quality of medical grade titanium in incremental sheet forming



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

- 09:30 – 11:30 **Session POLYMER ENGINEERING**
(Metallographic Laboratory, 1st floor, room E.120.)
Chairman: **Gábor BELLÉR**, University of Debrecen, Hungary
Secretary: **Márton HOMOLYA**, University of Debrecen, Hungary
- 09:30 - 09:45 **Noémi LÁSZLÓ, Péter FICZERE**
The issues of surface roughness measurement in case of plastic vehicle parts produced by FFF additive manufacturing
- 09:45 - 10:00 **István NEMES-KÁROLY, Gábor SZEBÉNYI**
3D scanning of medical implant inserts
- 10:00 – 10:15 **Yitbarek Firew MINALE, Kálmán MAROSSY, Andrea MAJOR, Annamária POLYÁKNÉ KOVÁCS**
Investigating the mechanical properties of PVC based ternary blends
- 10:15 – 10:30 **Szabolcs KRIZSMA, András SUPLICZ**
Comprehensive measurement and simulation of prototype injection moulds
- 10:30 – 10:45 **Avodeji AKERELE, Kinga TAMÁSI, Awogbemi OMOJOLA**
Study on the mechanical properties of natural rubber mixtures plasticized with selected plant oil
- 10:45 – 11:00 **Ákos GÖRBE, István HALÁSZ-KUTASI, Tamás BÁRÁNY**
Thermoplastic elastomers from recycled ground tyre rubber
- 11:00 – 11:15 **Djebbara BENZERGA, Abdelkader HADDI**
Effects of external defects on the behavior and damage of PHED tubes
- 11:15 – 11:30 **Monther ALMASHAL, Mundher Alsaadi DOOKHI**
Free vibration of composite rectangular plates with internal crack
-
- 09:30 – 11:45 **Session MATERIALS SCIENCE AND TECHNOLOGY II.**
(SMARTMAT Material Technology Laboratory, 4th floor, room E.414.)
Chairman: **István BUDAI**, University of Debrecen, Hungary
Secretary: **Márton LÉVAI**, University of Debrecen, Hungary
- 09:30 - 09:45 **Zoltán WELTSCH**
Development of bonding technology for composite materials with high energy density surface treatments
- 09:45 - 10:00 **István BUDAI, András SZOBOSZLAI**
Continuous ultrasonic foaming for floating dosage forms
- 10:00 – 10:15 **Branko SKORIC, Pál TEREK, Lazar KOVACEVIC, Vladimir TEREK, Zoran BOBIC**
Surface modification with ions to improve properties of tools
- 10:15 – 10:30 **Gábor GYARMATI, Ádám PÁLÓCZI, Dorottya SOMFAI, Tibor FERENCZI, Zoltán KÉRI**
Analysis of different commercial solid fluxes used for the melt treatment of casting aluminum alloys
- 10:30 – 10:45 **György THALMAIER, Mircea NASUI, Niculina A. SECHEL, Csilla KÁDÁR, Ioan VIDA-SIMTI**
Cold sintering of Zinc powders for the manufacturing of porous Zinc materials
- 10:45 – 11:00 **Levente BOGOLY, Tamás MENDE, György FEGYVERNEKI, Gábor GYARMATI**
The influence of different grain refining fluxes and master alloy addition on the melt quality of an aluminum casting alloy
- 11:00 – 11:15 **Aidi MOUSSA, Yamina HARNANE, Bordja LYES**
Integrating phase change materials and nanoparticles for advancing building energy efficiency
- 11:15 – 11:30 **AfraH AWAD**
Nanoparticles application in solar energy
- 11:30 – 11:45 **Saida BOUYEGH, Samira TLILI**
Improvement of biodegradable magnesium-based alloys properties by Ca-P based bioceramics biomimetic deposition
-
- 11:00 – 12:00 **poster session** (1st floor, Gallery of the Faculty of Engineering)
11:30 – 14:00 **lunch** (Restaurant, Faculty of Engineering)
12:30 – 12:45 **ISCAME group photo** (meeting at the Aula of the Faculty of Engineering)



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

- 13:00 – 14:45 **Session FLUID MECHANICS II.**
(Emerson Pneumatic Laboratory, ground floor, room E.0.21.)
Chairman: **Ferenc SZODRAI**, University of Debrecen, Hungary
Secretary: **Márton HOMOLYA**, University of Debrecen, Hungary
- 13:00 – 13:15 **Dávid NEMES, Béla FODOR, Nóra SZÜCS**
Computational Fluid Dynamics simulation of the cooling of a vehicle alternator's stator winding
- 13:15 – 13:30 **Aimen TANOUGAST, Krisztián HRICZÓ**
Numerical modeling of turbulence flow employing vortex generators and comparing various corrugation channel types
- 13:30 – 13:45 **Ferenc SZODRAI**
Novel approaches of indoor flow assessments
- 13:45 – 14:00 **Issa OMLE, Sándor Endre KOVÁCS**
Evaluation of new and traditional numerical methods for long-term simulations of heat transfer in walls with thermal bridges
- 14:00 – 14:15 **Krisztián KISS-NAGY, Győző SIMONGÁTI, Péter FICZERE**
Investigation of 3D printed underwater thruster propellers using CFD and structural simulations
- 14:15 – 14:30 **Ammar SALIBY, Béla KOVÁCS**
Phase change material melting modeling using Ansys Fluent
- 14:30 – 14:45 **Kheireddine ARRIF, Rodouane LAOUAAR**
Modeling the interaction of air and aluminum at the free surface in high-pressure die casting using CFD
-
- 13:00 – 14:45 **Session MANUFACTURING SCIENCE II.**
(Machine Elements Laboratory, 1st floor, room E.121.)
Chairman: **Sándor BODZÁS**, University of Debrecen, Hungary
Secretary: **András GÁBORA**, University of Debrecen, Hungary
- 13:00 – 13:15 **Sándor BODZÁS**
Analysis of horizontal and vertical grinding technologies
- 13:15 – 13:30 **Mohamed Monirul Islam RAHAT, Sándor BODZÁS**
Geometric design, modelling, finite element analysis of bevel gear with a spiral tooth direction
- 13:30 – 13:45 **Sama Khaled Abdalla ABDELFAHAT, Sándor BODZÁS**
Analysis of spur gear design parameters and surface finish for robotic application
- 13:45 – 14:00 **Sofiya MAMMADBAYLI, Sándor BODZÁS**
Optimizing the geometric design of a helical gear through simulation and surface roughness measurement analysis
- 14:00 – 14:15 **Shahbaz RAHMAN, Sándor BODZÁS**
Additive manufacturing of a flat form tool
- 14:15 – 14:30 **Mohammed Oasim Kareem YASI,**
Manufacturing of 17-4PH SLM parts with different scanning angles and sample orientations
- 14:30 – 14:45 **Michael Maiko MATONYA, István BUDAI**
Object-Centric Process Mining for Inspection and Maintenance Error Detection in Sustainable Manufacturing
-



City Centre, Debrecen



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

- 13:00 – 15:15 **Session APPLIED AND THEORETICAL MECHANICS**
(Technical Mechanics Laboratory, 1st floor, room U.1.08.)
Chairman: **Gusztáv Áron SZÍKI**, University of Debrecen, Hungary
Secretary: **Sándor ANDRÁSKÓ**, University of Debrecen, Hungary
- 13:00 – 13:15 **István ECSEDI, Attila BAKSA, Ákos József LENGYEL, Dávid GÖNCZI**
Uniform torsion of bar having cross section bounded by two hyperbola arcs
- 13:15 – 13:30 **Pavle LJUBOJEVIC, Aleksandar COCIC, Tatjana LAZOVIC**
Impact of ball bearing geometry and operational load on the volume of the lubricant in the bearing's loaded zone
- 13:30 – 13:45 **Gusztáv Áron SZÍKI, Attila SZÁNTÓ, Éva ÁDÁMKÓ, György JUHÁSZ**
Simultaneous measurement of the moment of inertia and friction torque of electric motors applying additional inertia
- 13:45 – 14:00 **Nóra SZÚCS**
Investigation of notch effect by finite element analysis
- 14:00 – 14:15 **Boniface ROWLAND PAMPHIL, Sándor BODZÁS**
Geometric modelling and finite element analysis of a sprinkler
- 14:15 – 14:30 **Ferroudja NEZLIOUI**
The impact of injection timing on the combustion process, performance, and characteristics of a diesel engine
- 14:30 – 14:45 **Billel HAMZA, Amir SLAMENE**
Exploring the geometric effects of overlapping lengths
- 14:45 – 15:00 **Sotehi FAYCAL, Djebbara BENZERGA**
Analysis of the cracking in the vicinity of pipe junction
- 15:00 – 15:15 **M'hamdia RACHID, Sebaïbi Nor EL HOUDA**
Physical parameters effect in bonded composite repairs
-
- 13:00 – 14:45 **Session ENGINEERING OPTIMIZATION**
(Engineering Diagnostics Laboratory, ground floor, room E.0.12)
Chairman: **Dávid HURI**, University of Debrecen, Hungary
Secretary: **Dániel NEMES**, University of Debrecen, Hungary
- 13:00 – 13:15 **Anhao CHEN, Chang LIU**
Evaluation and comparison of machine learning algorithms for American sign language recognition
- 13:15 – 13:30 **Andor NÉMETHY, Dávid HURI, Tamás MANKOVITS**
Integrating metaheuristic optimization into numerical simulation
- 13:30 – 13:45 **Rashwan ALKENTAR, Tamás MANKOVITS**
Patient specific hip implant topology optimization with lattice structures
- 13:45 – 14:00 **Todor MITKOV, Tihomir DOVRAMADIJEV**
Advancements and technological optimization in yacht design osmosis treatment and rehabilitation
- 14:00 – 14:15 **Petra MOLNÁR-MAJOR, Krisztián BÓNA**
Shopfloor-level material flow analysis to determine the readiness of a company for Industry 4.0
- 14:15 – 14:30 **Emőke IMRE, Delphin Kabey MWINKEN, Daniel BARRETO, James LEAK, Maria DATCHEVA, Wiebke BAILLE, Shuyin FENG, Vijay P. SING**
Model parameters of granular matter - approximate interpolation in terms of grading curves
- 14:30 – 14:45 **Dina KADHIM, Jamela Saadi AZIZ, Hawraa Khaleel IBRAHIM**
The Utilization of Comsol Multiphysics and exchanger design rating software for designing and analyzing of air cooler
-



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

- 13:00 – 16:30 **Session MATERIALS SCIENCE AND TECHNOLOGY III.**
(Metallographic Laboratory, 1st floor, room E.120.)
- Chairman: **Sándor PÁLINKÁS**, University of Debrecen, Hungary
Secretary: **Gábor BALOGH**, University of Debrecen, Hungary
- 13:00 – 13:15 **István CSARNOVICS**
What is Raman spectroscopy good for? From the perspective of research, development and innovation
- 13:15 – 13:30 **Lajos HARASZTOSI**
Material characterisation based on Magnetic Barkhausen-noise measurement technics
- 13:30 – 13:45 **Béla KONDÁS, Valéria MERTINGER**
Investigation of strain aging with non conventional testing methodes
- 13:45 – 14:00 **Ana PETROVIC, Nikola MOMCILOVIC, Mihajlo ARANDELOVIC**
Mechanical properties of welded joint regions effects on structural integrity assessment, a case study
- 14:00 – 14:15 **Enikő Réka FÁBIÁN, Sándor TAKÁCS**
Changes in lath martensite steels during laser beam welding
- 14:15 – 14:30 **Gergő VÉCSEI**
Hydrogen diffusion through polymer-metaloxide hybrid membranes subjected to mechanical stress
- 14:30 – 14:45 **Fadhil Mohanad KHAIRI, Péter BAUMLI**
Study a liquids wettability behavior on metal surfaces by experimental analysis
- 14:45 – 15:00 **Fadhil Mohanad KHAIRI**
Comparative analysis of two carbide types under the impact of oil wettability variation
- 15:00 – 15:15 **Hawraa WALEED, Firas Farhan SAYYID, Ali Mundher MUSTAFA**
Effect of corrosion-inhibition whey protein on the performance of carbon steels in acidic medium
- 15:15 – 15:30 **Nabil BELOUFA, Ould Moussa MAWLOUD**
Structural, electronic and optical properties of the Half-Heusler MgYGa alloy via DFT calculations
- 15:30 – 15:45 **Safia KHELFI, Lakhdar HACHANI, Abdul ABDELHAKEM, Abdul NOURI**
Numerical parametric study on the effect of EMS on the segregation behavior during the solidification of Sn-10wt.%Pb alloy
- 15:45 – 16:00 **Mohammed Seyf Eddine BOUGOFFA, Sayhia BENCHAA**
Tribological behavior of Ni-Cr (10 at%)-B (5-15 at%)-Si (5-20 at%) alloys
- 16:15 – 16:30 **Abdelwahab ZERROUKI, Housseem FIALA, Riad BRAHAMI**
Study of structures behavior manufactured by 3D printing
-

ISCAME posters (1st floor, Gallery of the Faculty of Engineering)

Hammoudi ABDERAZEK, Aissa LAOUISSI, Mourad NOUIOUA, Ivana ATANASOVSKA
An efficient hybrid metaheuristic algorithm ReDE-NM for solving industrial optimization problems

Tamara ÁBRI, Tamás József SZABÓ
Moisture content and measurement methods of polymers

Yazid AIT FERHAT
Study of the influence of heat treatments on the mechanical behavior of plates welded by FSW

Mahmood ALHAFADHI, Fadhil Mohanad KHAIRI, Alsigar MASAR
Modeling and measuring residual stresses in a thick-walled pipe structure welded with arc technique: A comparative study

Mahmood ALHAFADHI, Fadhil Mohanad KHAIRI, Alsigar MASAR
Developing optimal automatic cycles for circular grinding through the integration of Digital Twin technologies

Ali AL-MOSAWI, Shaymaa Abbas ABDULSADA
Study the internal corrosion of petroleum pipes

Hasan AL-SHUBBER, Mohammed ALMOSAWI, Azher AL-MOUSSAWI
Assessing the economic viability of combined gas power plants: A comparative study across Iraq, Turkey and the global market

Kaoutar BABOURI
Constitutive analysis and processing maps for hot working of Ni-Nb alloys



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

Gabriel BATIN, Beyza KASAL

The influence of the superficial plastic deformation by rolling on double layer sintered materials based on NC100.24 and Astaloy

Khemissi BELALMI, Larbi BELAGRAA, Bachir TAALLAH

Characterization and modeling of a sustainable mortar based on slag additions

Yassine BELHAOUI, Mounir METHIA

Surface effect in the mechanical crack

Mokhtar BELKACEM, Mohammed Mokhtar BOUZIANE, Ahmed BENSARI, Ammar ABOUB

Effect of the natural aging on mechanical behaviour of the polyester/alfa composites

Mohammed BENAÏSSA, Tarik OUAHRANI, Didier SÉBILLEAU, Amine Madouri

Using Bayesian optimization for charge-mixing can reduce density functional theory simulation time

Djamel BEZZERGA, Mohamed SAHNOUN

New ferroelectric semi-metallic BInSe₂ monolayer

Viktor BORDÁS, Annamária POLYÁKNÉ KOVÁCS, Tamás József SZABÓ

Analysis of parameters affecting fire protect in PUR foam systems

Mohamed BOUAMAMA, Azzeddine BELAZIZ, Abbes ELMEICHE, Abdelhak ELHANNANI

Investigation into the hardness and surface roughness of weld Joints during friction stir welding of alloy

Mohammed Seyf Eddine BOUGOFFA, Sayhia BENCHAA

Study on the effect of microstructure on wear behavior of Ni-Cr-B-Si alloys

Issam BOUSBA, Omar REFFAS, Yacine KARMI, Haithem BOUMEDIRI, Nadir BENAMIRA

Reliability analysis of complex electrical systems by Bayesian networks

Azzeddine BOUZAOUIT, Mounir GAHGAH, Lias RAHAI

Analysis of the evolution of pressure losses in a high pressure hydraulic system

Abdenour BOUZIANE, Boukhoulda FAROUK, Amar TILMATINE

Conception and realization of a vibrating machine to isolate copper from plastic obtained from wire waste

Assil CHAOUI, Sihem BOUZID, Hocine CHAOUI

Optimization of heat exchanger performance: Evaluating ellipsoidal tube configurations and baffle variations

István DOMOKOS, Sándor PÁLINKÁS

Application of laser remelting technology in case of cultivator tine

Djamel EMBAREK, Djamel CHAOUCH

Experimental characterization of the mechanical behavior of 42CrMo4 steel

Péter FICZERE, Noémi LÁSZLÓ

Investigation of surface roughness determination problems in additive manufacturing technologies

Marko GAVRILOVIC, Radoslav RADULOVIC, Milica MILIC, Natasa TRISOVIC

Optimal number of cells in a numerical grid for fluid flow around the body

Imaz HAJIALILOU, Róbert GÉBER, Annamária POLYÁKNÉ KOVÁCS

Tensile strength investigation of Polyamide 6.12 reinforced by glass fiber 30%

Alexandra HAMZA, István KOCSERHA

The effect of inorganic based plasticizers on clay bodies

Alexandra HAMZA, István KOCSERHA

Reduction of energy requirements for the extrusion of clay masses with additives

Dhay Abd Al HASAN, Sahib Shihab AHMED

Effect of microchannel geometry on thermal performance of microchannel heatsinks: A CFD study

Krisztián HORVÁTH, Ambrus ZELEI

Literature review of vibroacoustic simulation in vehicle power transmission systems for the reduction of radiated noise

Olivera JEREMIC, Nataša TRISOVIC, Wei LI, Tatjana LAZOVIC, Ana PETROVIC

Sensitivity analysis in dynamic systems: exploring Insights



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

Aissa LAOUISSI, Hamoudi ABDERAZEK, Elhadj RAOUACHE, Yazid CHETBANI

A comparative study of the predictive capabilities of SVM and RSM for estimating heat treatment parameters

Daniel LATES, Gabriel GHEORGHER

Optimizing the clamping components of a vibrating system on a plow

Tatjana LAZOVIC, Ivana ATANASOVSKA

A new concept of n-dimensional machine design

Yanzhe LING, Chang LIU

Evaluation of machine learning algorithms for facial recognition and its applications

Pavle LJUBOJEVIC, Aleksandar MARINKOVIC, Tatjana LAZOVIC

Testing surface properties of 3D printed metals

Milica MILIC, Radoslav RADULOVIC, Natasa TRISOVIC, Marko GAVRILOVIC

Fracture analysis of composite beam element, a case study

Lounas OUALID, Malek AMMAR

Treatment of polluting oil drilling waste, proposal of a green economy process, drill cuttings case

Annamária POLYÁKNÉ KOVÁCS, Tamás József SZABÓ, Mariann SZABÓNÉ KOLLÁR, Viktor BORDÁS, Yitbarek Firew MINALE

Investigation of the effect of UV in the case of PLA composites filled with natural fillers

Annamária POLYÁKNÉ KOVÁCS, Tamás József SZABÓ, Mariann SZABÓNÉ KOLLÁR, Viktor BORDÁS, Yitbarek Firew MINALE

Analysis of the effect of injection molding temperature on mechanical properties in the case of PBT

Annamária POLYÁKNÉ KOVÁCS, Tamás József SZABÓ, Mariann SZABÓNÉ KOLLÁR, Viktor BORDÁS, Yitbarek Firew MINALE

Analysis of the effect of injection molding temperature on mechanical properties in the case of PET (polyethyleneterephthalate)

Annamária POLYÁKNÉ KOVÁCS, Tamás József SZABÓ, Mariann SZABÓNÉ KOLLÁR

Investigation of the tribological properties of aliphatic polyketone

Elhadj RAOUACHE, Amal BENFRDJ

Simulation rotary friction welding of similar and dissimilar materials

Elhadj RAOUACHE, Fares KHALFALLAH

Effect of rotation speed on thermal behavior and tensile strength of friction welded AISI 316L and copper joints

Bouraghda SKANDER, Sadouni RADWANE

An optimal sliding mode control for harmonic currents mitigation in grid system connected with a wind turbine

Qin Yang TAN

Real-time facial recognition based on the LBPH algorithm

Natasa TRISOVIC, Wei LI, Tatjana LAZOVIC, Marko GAVRILOVIC, Radoslav RADULOVIC, Milica MILIC

The modern approach to optimizing mechanical systems

Zaga TRISOVIC, Tatjana LAZOVIC, Ana Virginia SOCALICI, Zorana JELI, Tomislav TRISOVIC

Innovations in water treatment

Belkheir ZIANI, Mohammed RAHOU

Modeling the path of the cutting tool for the 5-axis CNC machine



Laboratories supported by companies, Department of Mechanical Engineering, Faculty of Engineering



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

INFORMATION TO CHAIRMEN, TO PRESENTERS AND TO VISITORS

Chairmen, Presenters and on-line registered Visitors are invited for lunch and coffee, but it is connected to registration at the registration desk at the Aula in the building of the Faculty of Engineering on the Conference days.

To Presenters:

- The official language of ISCAME is English;
- Show up to the session 10 minutes before the session begins;
- Each oral presentation will take 15 minutes including discussion;
- The files required for the presentation (PowerPoint or PDF) must be uploaded and tested in the computer placed in the room before the respective presentation session.

To Poster Presenters:

- The official language of ISCAME is English;
- The Poster Exhibition will be opened on Thursday 9 November, 13:00 and can be visited until 10 November, 14:00. It means from Thursday 13:00 onwards posters can be put on display (Location: Faculty of Engineering, 1st floor, Gallery).
- Poster sessions are scheduled on 10 November, from 11:00-12:00. At this time anyone interested should be received in front of the posters;
- Posters will be displayed on vertical boards with maximum dimensions of 1000mm (width) x 2000mm (height), the recommended poster size is standard A0 with page orientation portrait.

To Chairmen:

- During the presentations enforce time limits strictly so that no author monopolizes someone else's time;
- One presentations are complete the remainder of the time can be used for informal discussion with the audience and session participants. It is your job to field questions from the audience.

In any case please contact:

ISCAME Secretary

Szandra KALMÁRNÉ SITKU, administrator

Phone: +3652415155/77860

Mobile: +36704098909

E-mail: iscame@eng.unideb.hu

Department of Mechanical Engineering

Faculty of Engineering

University of Debrecen

2-4 Óttemető, Debrecen, H-4028, Hungary

Website: www.mecheng.unideb.hu



Plastic and Rubber Testing Laboratory, Department of Mechanical Engineering, Faculty of Engineering



INTERNATIONAL SCIENTIFIC CONFERENCE ON ADVANCES IN MECHANICAL ENGINEERING

9-10 November 2023, Debrecen, Hungary

LIST OF THE EXHIBITING COMPANIES 9th Mechanical Engineering Industrial Exhibition, Debrecen

CLAAS Hungária Kft.	www.claas.hu/	Törökszentmiklós
Coloplast Hungary Kft.	www.coloplast.hu	Nyírbátor
ContiTech Magyarország Kft.	www.continental.com	Nyíregyháza
Diehl Aviation Hungary Kft.	www.diehl.com/aviation-hungary	Debrecen
Emerson Automation FCP Kft.	www.pneumatika.hu/	Eger
Enterprise Group, OpenOnline Kft.	www.enterprisegroup.hu	Budapest
Eurosolid Zrt.	www.eurosolid.hu/	Budapest
Gamax Laboratory Solutions Kft.	www.gamaxlabsol.com/	Budapest
Haas Factory Outlet - Hungary	www.haascnc.com/hu.html	Leoben
Henkel Magyarország Operations Kft.	www.henkel.hu/	Budapest
HOYA Szemüveglencse Gyártó Magyarország Zrt.	ww.hoya.com	Mátészalka
KITE Zrt.	www.kite.hu	Nádudvar
Krones Hungary Kft.	www.krones.com/hu-hu	Debrecen
KUKA Hungária Kft.	www.kuka.com/hu-hu	Taksony
Manz Hungary Kft.	www.manz.com/en/	Debrecen
Michelin Hungária Abroncsgyártó Kft.	www.michelin.hu	Nyíregyháza
Oerlikon Eldim (HU) Kft.	www.oerlikon.com	Debrecen
Petrolszolg Karbantartó és Szolgáltató Kft.	www.petrolszolg.hu/hu/	Százhalombatta
Power Belt Kft.	www.powerbelt.hu	Budapest
Robert Bosch Automotive Steering Kft.	https://www.bosch.hu	Maklár
Schaeffler Debrecen Kft.	www.schaeffler.hu/hu/	Debrecen
SPM Budapest Kft.	www.spminstrument.com	Budapest
Tecnica Ungheria Kft.	www.tecnicagroup.com	Nagykálló
thyssenkrupp Components Technology Hungary Kft.	www.thyssenkrupp.hu	Debrecen
Unilever Magyarország Kft.	www.unilever.hu	Nyírbátor
Vitesco Technologies Hungary Kft.	www.vitesco-technologies.com	Debrecen
ZF Hungária Kft.	www.zf.com/hu	Eger



Mechanical Engineering Industrial Exhibition and Job Fair