



AUIF
Manufacturing
Engineering
University Association

MTeM 2023

The 15th INTERNATIONAL CONFERENCE
**MODERN TECHNOLOGIES
IN MANUFACTURING**

FINAL PROGRAM

Cluj-Napoca
ROMANIA
18th - 21st October 2023

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SCHEDULE OF EVENTS

WEDNESDAY October 18th		Room
18:00 – 19:00	Early registration	Univers T Hotel
19:00	Welcome drink	Restaurant Univers T Hotel
THURSDAY October 19th		Room
8:30 – 9:30	Registration	Main Hall of the University (First floor)
9:30 – 9:50	Opening Ceremony	Aula Centenar
9:50 – 10:40	Plenary Lecture - Prof. Dragoş Axinte <i>(University of Nottingham)</i>	Aula Centenar
10:40 – 11:00	Coffee break	Main Hall of the University (First floor)
11:00 – 12:00	Plenary Lectures - Dr. Zhirong Liao <i>(University of Nottingham)</i> - Prof. Ming Wang Fu <i>(Hong Kong University)</i>	Aula Centenar
12:15 – 13:30	Session I	Aula Centenar, Destaco, Bosch
13:30 – 15:15	Lunch	Restaurant
15:15 – 17:15	Session II	Aula Centenar, Destaco, Bosch
17:00 – 17:30	CEEPUS Workshop Coordinated by Prof. S. Grozav	Aula Centenar
19:00	Conference dinner	Restaurant Univers T Hotel

FRIDAY October 20th		Room
9.00 – 11.00	Session III	Aula Centenar, Destaco, Bosch
11.00 – 12.00	Round table Q&A Representatives from AM companies	Future trends and new research partnerships for inter- disciplinary and international cooperation Aula Centenar
12.00 – 12.15	Closing Ceremony	Aula Centenar
12.15 – 13.30	Lunch	Restaurant
14.00 – 17.30	Trip to lakes district and visit the hydro-power plant (Tarnița-Mărișel)*	
18.30	Trout catching for dinner (Trout farm Gilău) * optional, to be paid at registration (40 EUR)	

SATURDAY October 21st		Room
9.00 – 10.30	Visit the AMaRaP laboratories and experience the mobile 3D Printing Laboratory	AMaRaP, FabBus
10.30 – 11.00	Coffee break	
11.00 – 13.00	Paper surgery, recommendations, and case studies on how to improve the quality and visibility of the research articles proposed by young academic staff - Chaired by Prof. Dragoș Axinte	Aula Centenar

Session I

Room Aula Centenar

Additive Manufacturing and Non-Traditional Technologies I

Chairmen: Sebastian BREMEN, Alina POPAN

1. **Polyetheretherketone (PEEK) in Rapid Tooling: Advancements and Applications for Fused Filament Fabrication of Rubber Molds**
Karim Abbas, Nicolae Balc, Sebastian Bremen and Lukas Hedwig
2. **Industrial implementation of hybrid manufacturing for repair**
Adrienn Matis and Nicolae Balc
3. **Mechanical properties evaluation of the samples made by SLM, with tree-like fractals internal structure**
Anca Viorica Stanciu Birlescu, Cristian Vilau, Nicolae Balc, Ioan Voina and Christian Noesner
4. **Reduction strategies for residual stresses in the SLM of 316L in preparation for a downstream welding process**
Fabian Eichler, Nicolae Balc, Sebastian Bremen, Markus Schleser and Alexander Schwarz
5. **Experts' perspectives on the adoption of Additive Manufacturing in the industry and its interrelated implications in production structures**
Angela Luft, Balc Nicolae and Sebastian Bremen

Session I

Room Destaco

Advanced Manufacturing Technologies I

Chairmen: Ladislav MOROVIČ, Antun STOIĆ

1. **The impact and challenges of Industry 4.0 on factory design, organization and management**
Nils Luft and Kristian Arntz
2. **Application of lasers in decapsulisation processes**
Vedran Herceg, Ivan Samardžić and Antun Stoić
3. **Reverse geometric modelling as a part of reverse engineering - accuracy of fitting cylinder**
Ivan Buranský, Ladislav Morovič and Maroš Dubnička
4. **Industrial robot workspace design**
Peter Kostal and Vanessa Prajova
5. **Simulation by FEM of TIG deposition welding of multicomponent alloy on carbon steel substrate**
George Simion, Dan Birsan, Ionelia Voiculescu and Elena Scutelnicu

Session I

Room Bosch

CAD / CAM /CAE I

Chairmen: Marek KOČIŠKO, Dan LEORDEAN

1. **Processing the Point Cloud Stream from Helios2 Time-of-Flight Camera**
Adrián Vodilka, Marek Kočiško and Martin Pollák
2. **Finite element analysis of incremental forming process and experimental validation**
Mihai-Octavian Popp, Gabriela-Petruța Rusu, Mihaela Oleksik and Valentin Ștefan Oleksik
3. **Theoretical optimization of an industrial vacuum tank for the separation of light and heavy particles**
David Maticu and Dan Leordean
4. **Finite element modeling of ultrasonic energy concentrators used in mechanical processing**
Constantin Radu, Paulina Spanu and Ana-Maria Bogatu
5. **Research on the design for protecting the Arduino-Mega microcontroller used at aquatic exploration**
Mircea Ionut Geler and Dan Leordean

Session II

Room Aula Centenar

Additive Manufacturing and Non-Traditional Technologies II

Chairmen: Matteo PERINI, Catalin Gheorghe AMZA

1. **Simulation project design of the robotic 3D printing process**
Martin Pollák, Karol Goryl, Marek Kočíško, Adrián Vodilka and Jozef Dobránsky
2. **Highly sustainable Additive Manufacturing Inconel 718 powder from recycled sources**
Matteo Vanazzi, Mattia Cabrioli, Luisa Elena Mondora, Alex Giorgini, Matteo Perini and Sasan Amirabdollahian
3. **Optimization and 3D printing of a flight control system for Moth hydrofoiling boat**
Matteo Perini, Ciro Malacarne, Sasan Amirabdollahian, Matteo Vanazzi and Mattia Cabrioli
4. **Nuclear Microreactor containment vessel concept using computer aided design for additive manufacturing**
Constantin Alex Sumanariu and Catalin Gheorghe Amza
5. **Advancements in 3D printing techniques for low-speed aerodynamics in vehicle ventilation – Part 1**
Titus Joldos, Lucian Fechete Tutunaru, Matei Georgescu and Florin Bode
6. **Advancements in 3D printing techniques for low-speed aerodynamics in vehicle ventilation – Part 2**
Titus Joldos, Lucian Fechete Tutunaru, Matei Georgescu and Florin Bode
7. **Comparison of the quality of 3D printing by robotic arm and conventional 3D printers**
Martin Csekei, Ján Šido, Peter Nižňan, Roman Ružarovský and Dávid Michal

Session II

Room Destaco

Quality Engineering

Chairmen: Jozef DOBRÁNSKY, Domnita FRATILA

- 1. Visual representation of alarms and errors in operator interfaces**
Ján Šido, Martin Csekei, Roman Ružarovský and Peter Nižnan
- 2. Implementation of the CAQ quality management system in the production of a component in the automotive industry**
Jozef Dobránsky, Damián Peti and Martin Pollák
- 3. Measurement system analysis in the surface treatment of a part for the automotive industry**
Jozef Dobránsky, Damián Peti and Stanislav Miščík
- 4. Approach on the prevention and methods of eliminating defects occurring in the selective coating process using a 1K material**
Gergo-Norbert Boczor and Domnita Fratila
- 5. A process capability study on the drilling operation of a seat track used in aerospace industry**
Aurel Mihail Titu and Alina Bianca Pop
- 6. CMM tertial datum evaluation to improve CNC parameter setup**
Petru Emanoil Serban and Lucian Grama
- 7. Interconnectivity between CNC and CMM for serial production, current technolgy available and new directions for development**
Petru Emanoil Serban and Lucian Grama

Session II

Room Bosch

CAD / CAM /CAE II

Chairmen: Nicolae COFARU, Alexandru POPAN

1. **A systematic literature review on automatic computer aided process planning**
Sergiu Rosianu and Gheorghe Oancea
2. **Research on improving the functional characteristics of the double bass bow**
Balázs Dee and Dan Leordean
3. **Research on the influence of the ventilation slots and the thermal study of the brake disc**
Cosmin Preda, Robert-Marian Bleotu and Radu-Eugen Breaz
4. **Exploring Frontal Impact Behavior and Absorbed Energy of a Novel Car Bumper Beam Construction Solution**
Robert-Marian Bleotu, Cosmin Preda and Valentin Ștefan Oleksik
5. **Rotating frame design for photovoltaic panels**
Emilia Sabau, Alex Timbus, Cristina Borzan and Adrian Popescu
6. **Parametrized CAD modelling of the pathological human lower limb affected by axial deviations in stationary position and during the gait cycle**
Andrei Brănescu, Nicolae Cofaru, Ileana Cofaru and Eugen Avrigean
7. **A CAD-CAE Modelling of the Biomechanics of the Biplanar Medial Opening Wedge High Tibial Osteotomy**
Nicolae Cofaru, Ileana Cofaru, Andrei Brănescu and Eugen Avrigean
8. **Design of mechanism of ankle joint for prosthetic leg**
Peter Nižňan, Peter Košťál, Martin Csekei and Ján Šido

Session III

Room Aula Centenar

Material Removal Processes

Chairmen: Eugen PAMINTAS, Adrian TRIF

1. **Cutting forces, chip formation and temperature for two-dimensional finite element simulation of milling process**
Martin Necpal, Tomáš Vopát and Marek Vozár
2. **How the prescribed tolerances of the profiled lathe knife influence the machining accuracy of the part**
Eugen Pamintas and Felicia Veronica Banciu
3. **Comparative examinations of material characteristics of model single-tooth hob milling tools**
Ivan Sovilj-Nikić, Bogdan Sovilj, Peter Panjan, Dušan Ješić and Sandra Sovilj-Nikic
4. **Experimental research on milling of the polyetheretherketones (TECAPEEK natural)-whit ball-nose end mill**
Sandor Ravai-Nagy, Ioan Pasca and Vlad Diciuc
5. **The influence of chip transport direction on thread tapping of PEHD1000 and M980 plastic materials**
Sandor Ravai Nagy, Alina Bianca Pop and Ioan Pasca
6. **Determination of cutting tools profile used for processing the non-involute part profiles using GEO GEBRA software**
Ion Grozav and Felicia Veronica Banciu

Session III

Room Destaco

Advanced Manufacturing Technologies II

Chairmen: Taner TUNC, Cornel CIUPAN

1. **Designing a line for the continuous thermoforming of boards made of composite materials**
Cornel Ciupan and Mihai Ciupan
2. **Research on measurement of elastic roller deformations in roller bearings by image correlation method**
Dragos-Florin Chitariu, Mehmet Ilhan, Cătălin-Gabriel Dumitras, Florin-Daniel Edutanu, Fanica-Valeriu Hrib and Mihaita Horodincu
3. **Wire arc additive manufacturing compared to conventional subtractive manufacturing**
Radu Petruse, Andrei-Dorin Trifu and Ioan Bondrea
4. **Fuzzy sets approach for determining failure risk indicators**
Florin Blaga, Alin-Florin Pop, Cosmin Gherghea, Constantin Bungau, Voichița Hule and Claudiu Indre
5. **Effects of process parameters on the quality off non-planar 5-axis printing of free form surfaces**
Mohamad Sheikhi, Eugen Gutiu, Catalin Moldovan and Lutfi Taner Tunc
6. **Improving the injection characteristics of fuel nozzles**
Dorinel Popa and Cristin-Olimpiu Morariu
7. **Composite sandwich structures – an overview**
Mihai Parparita, Paul Bere and Katarzyna Biruk-Urban

Session III

Room Bosch

Production Management and Marketing

Chairmen: Stanislaw LEGUTKO, Radu Constantin VLAD

- 1. The use of principles from axiomatic design in the management of a new product development project**
Oana Dodun, Mihaela Nicolau, Gheorghe Nagit, Marius Andrei Mihalache, Adelina Hrituc and Laurentiu Slatineanu
- 2. Identifying and developing an innovative research design theme when working in a student team**
Carmen Panaite, Oana Dodun, Laurentiu Slatineanu and Edward Rackosi
- 3. Solving the lot streaming and scheduling problems: a case study from the automotive industry**
Radu Constantin Vlad
- 4. Developing a methodology around building co-created products and products with personality**
Teodora Iustina Tudor and Nicolae Ionescu
- 5. Review of critical skills analysis in NC programming education**
Miriam Matúšová
- 6. Renewing SME – manufacturing companies towards circular business models**
Heikki Ruohomaa and Vesa Salminen
- 7. Software system for selecting the composite material used to manufacture upholstered furniture**
Emilia Ciupan and Mihai Ciupan
- 8. Economic calculation of CO2 emissions from vehicles in the context of the sustainable development of the road transport system**
Gheorghe Neamtu, Cristian Doicin, Aurel Titu and Andreea Ungureanu