



**AUIF**  
Manufacturing  
Engineering  
University Association

# MTeM 2023

The 15<sup>th</sup> INTERNATIONAL CONFERENCE  
**MODERN TECHNOLOGIES  
IN MANUFACTURING**

## FINAL PROGRAM

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Cluj-Napoca  
ROMANIA  
18<sup>th</sup> - 21<sup>st</sup> October 2023

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**N. BÂLC (RO) Chairman**

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**THE 15<sup>th</sup> INTERNATIONAL CONFERENCE  
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**SCHEDULE OF EVENTS**

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

<b>FRIDAY October 20<sup>th</sup></b>		<b>Room</b>
<b>9.00 – 11.00</b>	<b>Session III</b>	<b>Aula Centenar, Destaco, Room B105</b>
<b>11.00 – 12.00</b>	<b>Round table Q&amp;A Representatives from AM companies</b>	<b>Future trends and new research partnerships for inter- disciplinary and international cooperation</b>  <b>Aula Centenar</b>
<b>12.00 – 12.15</b>	<b>Closing Ceremony</b>	<b>Aula Centenar</b>
<b>12.15 – 13.30</b>	<b>Lunch</b>	<b>Restaurant</b>
<b>14.00 – 17.30</b>	<b>Trip to lakes district and visit the hydro-power plant (Tarnița-Mărișel)*</b>	
<b>18.30</b>	<b>Trout catching for dinner (Trout farm Gilău)</b> <i>* optional, to be paid at registration (40 EUR)</i>	

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

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 Kočiško, 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: Martin POLLÁK, 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

**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

**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 Horodinca
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

## Production Management and Marketing

Chairmen: Stanislav 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