

WAM 2024



Istanbul
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University

2. International Hybrid Conference and Exhibition **ADVANCES IN WELDING AND METAL ADDITIVE MANUFACTURING TECHNOLOGIES**



**21-22
November 2024**
Istanbul Marriott Hotel
Asia

DEADLINES
Abstract Submission
1st of August 2024
Submission of Manuscripts
1st of November 2024

Conference Chair
Prof. Dr. Mustafa KOÇAK
Vice Chair
Prof. Dr. Savaş DİLİBAL

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website



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Keynote Speakers



Prof. Dr. Stewart Williams
Cranfield University
UK

*Wire + Arc Additive
Manufacture (WAAM)
Qualification – The Last
Remaining Challenge for
Widespread Industrial
Applications?*



Prof. Dr. Ju Li
MIT
USA

*Materials Design and
Additive Manufacturing of
Metal Matrix Composites*

Invited Speakers



Assoc. Prof. Dr. Akbar Heidarzadeh
Azarbaijan Shahid Madani
University
Iran

*Insights into Grain
Structure Formation
During Friction Stir
Welding Processing of
Metals and Alloys*



Alejandro Lázaro Martínez
MELTIO
Spain

*Improving Printability of
Large Directed Energy
Deposition Components*



Dr. Ali İhsan Koruk
BOSAL Energy
Belgium

*Utilization of Additive
Manufacturing Methods in
the Energy and Emission
Sectors*



Aydın Yağmur
Additive Minds /EOS
Germany

*Impact and Potential of
In-Situ Monitoring on the
Development of Metal
Laser Powder Bed Fusion
(L-PBF) Technologies*

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Assoc. Prof. Dr. Binnur Sagbas
Yıldız Technical University
Türkiye

*Additive Manufacturing
and Biomedical
Applications*



Assoc. Prof. Dr. Can Ayas
Delft University of Technology
The Netherlands

*Design for Material
Properties of Additively
Manufactured Metals
Using Topology
Optimization*



Assoc. Prof. Dr. Danijela Rostohar
Coventry University
UK

*Tailoring Laser Properties
for Efficient Laser-Based
Manufacturing*



Deniz Demirci
Secretariat of Defence Industries
Advanced Materials and Energy
Programme Manager
Türkiye

*Defense Industry
Additive Manufacturing
Roadmap*



Assoc. Prof. Dr. Dhanesh G Mohan
University of Sunderland
UK

*Impact of Volumetric
Energy Density on
Mechanical Properties of
Magnesium Alloy via
Selective Laser Melting*



Prof. Dr. Emel Taban
Kocaeli University
Türkiye

*Purge Gas for Welding of
Stainless Steel Pipes: Must
or Luxury*



Dr. Evren Yasa
University of Sheffield
UK

*Breaking the Boundaries
of Additive
Manufacturing: Additive
Friction Stir Deposition*



Prof. Dr. Güney Güven Yapıcı
Özyeğin University
Türkiye

*Severe Plastic
Deformation for Post-
Processing of
Additive-Manufactured
Alloys*



Prof. Dr. Gürel Çam
İskenderun Technical University
Türkiye

*Recent Advances in the
Manufacturing of
Magnesium Components
Using Directed Energy
Deposition Techniques*



Dr. Huang Sheng
MIT
USA

*A Multi-Laser Approach
for In-Situ Thermo -
Mechanical Treatment of
Metals and Alloys*



Prof. Dr. Iris De Graeve
Vrije Universiteit Brussel
Belgium

*Metal Additive
Manufacturing and Its
Unique Corrosion
Mechanisms*



Dr. Jonas Zielinski
Moduleworks GmbH
Germany

*The Significant Role of
Software Development for
the Additive
Manufacturing
Technology*

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Prof. Dr. Mitsuru Ohata
Osaka University
Japan

*Local Approach for
Fracture Assessment of
Components with
Heterogeneity of
Mechanical Properties*



Prof. Dr. Mohammad Elahinia
University of Toledo
USA

*Design and Applications
on SLM-Based Additive
Manufacturing of Shape
Memory Alloys*



Murat Yücel
Roketsan
Türkiye

*Innovative Welding
Technologies for
Enhancing Liquid
Propulsion Systems*



Prof. Dr. Oğuzhan Yılmaz
Gazi University
Türkiye

*A New Method to Control
Thermal Behavior of
WAAM: Active Heating
Via Infrared Technology*



Ozan Can Ozaner
Katholieke Universiteit Leuven
Belgium

*Effect of Cooling Cycles
on Microstructure
Formation in Wire
Arc Additive
Manufacturing*



Pedro Catarino
EWF
Portugal

*Additive Manufacturing
Designers: A Comparison
Between IAMQS
Professional Profiles and
Relevant ISO Standards*



Prof. Dr. Peter Mayr
Technical University of Munich
Germany

*Towards a Digital Twin for
Laser Metal Deposition*



Prof. Dr. Pingsha Dong
University of Michigan
USA

*Fitness-for-Purpose Based
Acceptance Criteria for
Distributed Discontinuities
in Metallic AM
Components*



Rafael Nunes
Belgian Welding Institute
Belgium

*Challenges in Welding of
Additively Manufactured
(WAAM and PBF LB)
Aluminium Alloy
Components*



Dr. Remzi Ecmel Ece
Turkish Aerospace Industries
Türkiye

*Recent Developments on
Aerospace Applications of
DED Technologies*



Sebastian Recke
GEFERTEC GmbH
Germany

*Titanium Titans – The
Remarkable World of
Aircraft Manufacturing
and the WAAM Evolution*



Prof. Dr. Sergio Amancio
Graz University of Technology
Austria
IIW 2024 Halil Kaya Gedik Award
Winner

*Solid-State Joining of
Additive Manufactured
Metals for Lightweight
Applications*

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Prof. Dr. Sergio Cicero González
University of Cantabria
Spain

*Fracture Toughness
Characterization of Welds
by Using Mini-CT
Specimens:
FRACTESUS Project
Findings*



Sertaç Altınok
Turkish Aerospace Industries
Türkiye

*Development of
Fast-Paced Modular
Microsatellite Production
by Additive
Manufacturing*



Prof. Dr. Shahram Sheikhi
Hamburg Technology University
Germany

*Innovative Control of
Robots for Manual
Welding
Application*



Assoc. Prof. Dr. Simge Gençalp
Manisa Celal Bayar University
Türkiye

*Enhancing Material
Performance: Evaluating
Shot Peening and Laser
Peening Processes for
Industrial Applications*



Dr. Simon Jahn
IFW Jena
Germany

*Potentials of Handheld
Laser Beam Welding*



Dr. Tomoyuki Ueyama
OTC Daihen
Japan

*Factors Affecting Arc
Stability in Tandem Pulsed
GMA Welding Process*



Assoc. Prof. Dr. Ulaş Yaman
Middle East Technical University
Türkiye

*Non-Destructive
Evaluation Approaches
for Wire Arc Additive
Manufacturing*



Dr. Üstün Duman
Meta
USA

*Material Selection &
Development, and Metal
Additive Manufacturing
Process for AR/MR/VR
Products*



Yin Jin Janin
TWI
UK

*Mechanical Properties of Wire
Plus Arc Additive Manufac-
tured Steel, Stainless Steel
and Nickel-Based Superalloys
and Potential Challenges in
Defect Assessment*



Prof. Dr. Zuheir Barsoum
KTH Royal Institute of Technology
Sweeden

*Digitized Quality Inspection in
Welding Production Role and
Significance of the Software for
the Development of
Additive Manufacturing
Technology*

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Oral and Poster Presentations

***Investigation on the Similar and Dissimilar Weld Joints Between WAAM Parts and Rolled
Stainless Steel Plate using SS308 Wire***

***Abdullah Baran Aytekin, Nur İsmet, Hüseyin Yavaş, Rabia Yağmur Aksoy, Serhat Yakar, Mustafa
Koçak***
Istanbul Gedik University - Türkiye
Gedik Welding - Türkiye

***Microstructure, Mechanical Properties, and High-Temperature Oxidation Performance of Wire
Arc Additively Manufactured Inconel 625 Alloy***

***Abolfazl Safarzadeh, Mahmood Sharifitabar, Mahdi Shafiee Afarani, Samira Khorshahian,
Neelesh Kumar Jain, Pravin Kumar***
University of Sistan and Baluchestan - Iran
Partogaran Sanat Khayyam Welding Research Company - Iran
Indian Institute of Technology - India

***Advanced in Situ Deformation Monitoring in Wire Arc Additive Manufacturing Via Digital Image
Correlation***

Amir Kordijazi, Asheesh Lanba, Savas Dilibal, Doruk Gurkan
University of Southern Maine - USA
Istanbul Gedik University - Türkiye

***The Influence of Heat Input and Cooling Time on the Residual Stress During Wire Arc Additive
Manufacturing***

Atilla Savaş
İstanbul Piri Reis University - Türkiye

***Metallic Additive Manufacturing: Opportunities and Challenges for Passive Microwave
Components in Telecommunications and Defense***

Bülent Alicioğlu
Asartech - Türkiye

Sandwich Welding Design: Improving Ballistic Resistance of High Hardness Armor Steels

Ceren Çelik, Uğur Gürol
İstanbul Gedik University - Türkiye
Foseco - Türkiye

Potential of Process Gases for the WAAM to Increase Quality and Productivity

Çerkez Kaya
Air Liquide Deutschland GmbH - Germany

High-Speed Laser-Directed Energy Deposition of Ti/Al Multi-Material Component

Dongsheng Wu, Hisaya Komen, Manabu Tanaka, Junhao Sun, Zhuguo Li
Osaka University - Japan
Shanghai Jiao Tong University - China

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Advanced Process Modeling and Simulation of Multi-Material Directed Energy Deposition
Emre Osmanoglu, Peter Mayr
Technical University of Munich

Investigation on the Similar and Dissimilar Weld Joints Between WAAM Parts and Armour Steel Plate using Elcor ER110 Metal Cored Wire
Fatih Kaymak, Ozan Çoban, Uğur Gürol, Mustafa Koçak
Istanbul Gedik University - Türkiye

Engineering Assessment Procedure of the Local Thin Areas (LTA) in Welded Pipelines
Fikri Başar Yalçiner, Mustafa Kocak
NMDC Group - Abu Dhabi
Istanbul Gedik University - Türkiye

Defect Assessment for Welded Structures Using BS 7910 /FITNET and API 579 Procedures: Practical Examples
Fikri Başar Yalçiner, Mustafa Koçak
NMDC Group - Abu Dhabi
Istanbul Gedik University - Türkiye

Microstructural and Mechanical Characterizations of in 718 Nickel-Based Superalloy Fabricated Via Laser-Based Additive Manufacturing
Hassan Ghorbani
University Of Tehran - Iran

Investigation on the Similar and Dissimilar Weld Joints Between WAAM Parts and Rolled Steel Plate using SG3 Solid Wire
Hüseyin Yavaş, Nur İsmet, Rabia Yağmur Aksoy, Abdullah Baran Aytekin, Serhat Yakar, Mustafa Koçak
Istanbul Gedik University - Türkiye
Gedik Welding - Türkiye

Enhancing Texture in High Entropy Alloys with Nb: In-Situ Synthesis and Microstructural Insights Via Laser Powder Bed Fusion
Isaque Alan de Brito Moura, G. G. Ribamar, J. Shen, W. Zhang, T. S. Nunes, F. Zhang, J. P. Oliveira
Universidade NOVA de Lisboa - Portugal
Engineering and Technology Institute Groningen - The Netherlands
Military Institute of Engineering - Brazil
National Institute of Standards and Technology - USA

Welding and Characterization of P355GH Steel Used in Pressure Vessels
İsmail Oğuzhan Ayhan, Hakan Ateş
Gazi University - Türkiye

WAAM of Multi-Material and Functionally Graded Structures and in-Situ Alloy Development Using Multi-Wire Mixing
Jialuo Ding
Waam3D - UK

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*Investigating Topology Optimization and Additive Manufacturing
Processes of Engine Bracket*

Kazim Ozek, Binnur Sagbas

*BMC POWER Engine and Control Technologies - Türkiye
Yildiz Technical University - Türkiye*

*Investigating Slag Accumulation in Wire Arc Additive Manufacturing of High Strength Low Alloy
Steel*

*Malan Jayawickrama, Mattias Igestrand, Nicolas Coniglio, Paul Kah
University West - Sweden*

Arts Et Métiers Institute Of Technology - France

*Determination of Solid Particle Erosion Wear Behaviour of Aircraft Turbine Blades Specific to
Additive Manufacturing Orientation Effects*

Mehmet Esat Aydın, Musa Demirci, Mehmet Bağcı

*Konya Technical University - Türkiye
KTO Karatay University - Türkiye*

Thermal Modeling of Tungsten Inert Gas Wire Arc Additive Manufacturing of Ti-6Al-4V Alloy

*Mustafa Çağrı Özkader, Öncü Akyıldız, Cengiz Baykasoğlu
Hitit University - Türkiye*

Welding and Characterisation of Armour Steels

*Müesser Göçmen, Çeren Çelik, Ozan Çoban, Uğur Gürol, Mustafa Koçak
Istanbul Gedik University - Türkiye*

*Investigation on the Similar and Dissimilar Weld Joints Between WAAM Parts and Rolled Steel
Plate using Elcor M70 Metal Cored Wire*

*Nur İsmet, Rabia Yağmur Aksoy, Hüseyin Yavaş, Abdullah Baran Aytekin, Serhat Yakar, Mustafa
Koçak*

*Istanbul Gedik University - Türkiye
Gedik Welding - Türkiye*

*Investigation on the Similar and Dissimilar Weld Joints Between WAAM Parts and Rolled High
Strength Steel Plate using Elcor ER110 Metal Cored Wire*

*Rabia Yağmur Aksoy, Nur İsmet, Hüseyin Yavaş, Abdullah Baran Aytekin, Serhat Yakar, Mustafa
Koçak*

*Istanbul Gedik University - Türkiye
Gedik Welding - Türkiye*

Effect of Filler Metals on Strength and Toughness of High Hardness Armor Steel

*Recep Murat Kurt, Uğur Gürol, Mustafa Tümer, Mustafa Koçak
Foseco - Türkiye*

*Kocaeli University - Türkiye
Istanbul Gedik University - Türkiye*

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A Method for Detecting the Bead Geometry of Thin-Wall Structural Aviation Components in Wire Arc Additive Manufacturing (WAAM)
Rostislav Palivoda
Transport and Telecommunication Institute - Latvia

Overview of Laser Shock Peening Processing for Improvements of Metal Additive Manufactured Part at Hilase Centre
Sanin Zulić
Hilase Center - Czechia

Development of a 4-Axis CNC Rotary Friction Welding Machine
Sinan Dizge
Dizge Mekatronik-Türkiye

Understanding the Thermally-Induced Martensitic Transformation in Nitinol Manufactured Via Electron Beam Powder Bed Fusion
Tymur Sabirov, Savaş Dilibal, Asheesh Lanba, Gözde Peduk
University of Southern Maine - USA
Istanbul Gedik University - Türkiye

Application of Resistance Spot Welding in Cold-Formed Steel Structures
Viorel Ungureanu, Ioan Both, Iosif Hulka, Alin Popescu, Silviu Saraolu, Antonio-Andrei Cristian
Politehnica University Timisoara, Anotech Steelworks Ltd. - Romania

Crack Growth Resistance Research on Selective Laser Melting Manufactured Ti-6Al-4V Components: Effects of Post Heat Treatment and Build Orientation
Yun Hu, Mingyu Ling, Kamran Nikbin, Jiangjing Xi
Nanchang University - China
Imperial College London - UK
Coventry University - UK

Mechanical and Microstructural Homogeneity of Printed ER70 S-1 Cylindrical Components Using CMT-Powered WAAM
Yusuf O. Busari, Ajibike Joan Farounbi, Sarah Nadiyah Mohd Ghazali, Yupiter HP Manurung, Y.L. Shuaib-Babata, Kabir S. Ajao, Muhd Faiz Mat, Ibrahim Hassan Kobe, Martin Leitner
Universiti Teknologi MARA (UiTM) Shah Alam - Malaysia
University of Ilorin - Nigeria
Alabama Agricultural and Mechanical Engineering University - USA
Universiti Tun Hussein Onn Malaysia - Malaysia
Graz University of Technology - Austria

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TOPICS

- *Advanced arc welding technologies including twin-arc and tandem processes*
- *Laser beam and hybrid welding technologies & applications*
- *Wire-feed or powder electron beam welding*
- *Flux cored wire and seamless flux cored wire technologies and their use*
- *All metal alloys welding, testing and analysis of their welds*
- *Industrial applications, inspections and tests*
- *Surface modification of additive manufacturing parts*
- *High strength and armoured steel welds, their properties (incl. ballistic properties)*
- *Underwater and wet welding technologies and their consumables*
- *Design and simulation aspects of the metal additive manufacturing (MAM) materials*
- *Testing of MAM materials, distortion prevention and residual stresses of MAM parts*
- *Fatigue and fracture toughness aspects of MAM and bi-metallic WAAM parts*
- *Programming and software developments in robotic MAM & WAAM applications*
- *Predictive theoretical and computational approaches for additive manufacturing*
- *Testing, NDT methods and defect assessment of MAM & WAAM parts*
- *Developments on Education-Training-Certification of welding and MAM & WAAM personnel*

CONFERENCE PROCEEDINGS AND PUBLICATIONS

- *All presented papers will be published in a WAM 2024 Proceedings in digital form.*
- *Selected papers will be published as a “WAM 2024 Special Issue” of the Journal of the IIW “Welding in the World” after peer review process.*
- *Manuscripts of max. 15 pages (A4) will be requested before 01 Nov. 2024.*

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