



**5<sup>th</sup> International Conference on  
Advances in Mechanical Engineering - 2025**

# **ICAME-25 Program**

**August 26, 2025**

## **Inaugural Session**

**Chair: Dr. M. Mahabat Khan**

**Co-Chair: Dr. M. Irfan**

**Registration .....08:00 – 09:00  
(C-D Block Front)**

**Opening Ceremony.....09:00 – 09:45  
(Auditorium A2)**

**Refreshments .....09:45 – 10:00  
(River Side Cafe)**

**Department of Mechanical Engineering  
Capital University of Science and Technology  
Islamabad, Pakistan**

## Program Summary

Session Title	Session Chairs	Venue
Thermofluids	Dr. M. Irfan Dr. Naseem Ahmad	Room B2
Materials, Manufacturing and Robotics	Dr. Shummaila Rasheed Mr. M. Rizwan Siddiqui	Room B3
Sustainable Energy and Industrial Transition	Dr. Manzar Masud Mr. Tauseef Ahmed	Room B4
Engineering Management	Dr. Ghulam Asghar	Room B5
Industrial Engineering	Mr. M. Zulfiqar Mr. M. Haroon	Room B6

# Technical Session A

## Thermofluids

**Technical Session A-I ..... 10:00 – 13:00**

**(Venue: B2)**

**Session Chair: Dr. M. Irfan**

**Keynote Lecture ..... 10:00 - 10:30**

**Title:** Heat pipe technology and its low-T applications for decarbonization/ optimum insulation thickness

**Speaker:** Prof. Dr. Atilla BIYIKOĞLU has received license degree in 1989 from Mechanical Engineering Department at Gazi University, MSc. degree in 1992 from Mechanical Engineering Department at M.E.T.U., and PhD degree in 1998 from Mechanical Engineering Department of Gazi University. He has worked as Assist. Prof. between 2003 and 2007, Associate Prof. between 2007 and 2013, and after receiving the title of professor in 2013, served as Chair in Mechanical Engineering Department at Gazi University between 2013 and 2017. He is among the founders of Clean Energy Research and Application Center of Gazi University and served as a co-chair between 2018 and 2023. He served as President of Turkish Society for Thermal Sciences and Technology (TIBTD) between 2018 and 2021. He served as president of the American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE) Turkish Chapter for the term 2020-22. He still continues his duty as vice-president of ASHRAE Turkish Chapter for the term 2024-25. Additionally, he has been working in ASHRAE Region-At-Large as RAL Historian since 2018. He has studies on application of Thermodynamic Laws, entropy production, combustion, reacting flows, fuel cells, boron production, natural convection, cooling systems, waste heat recovery and coal gasification.

Paper ID	Time	Authors	Title
ICAME-25-508	10:45 – 11:05	Rahaya Tayyab, Hassaan Aziz, Muhammad Imran, Zainab Waseem, Muhammad Anwar, Talha Irfan Khan	Thermal Management of Dry Batteries for Electric Vehicles
ICAME-25-511	11:10 – 11:30	Muhammad Imran, Zainab Waseem, Rahaya Tayyab, Hassaan Aziz, Muhammad Anwar, Talha Irfan Khan	Experimental and Numerical Analysis of Hybrid Silica Sand-Basalt Rock Thermal Energy Storage for Enhanced Heat Retention and Discharge Control
ICAME-25-521	11:35 – 11:55	Mansoor Ali Zaheer, Nawaf Mehmood Malik, Muhammad Shahmeer, Mubeen Shehzad	Experimental Research on the Effect of Different Controllable Parameters on Solar Still Productivity: A Parametric Study
ICAME-25-526	12:00 – 12:20	Umair Munir, Asad Islam	Computational analysis of flow-field variation with grooved probes in a transonic axial compressor
ICAME-25-536	12:25 – 12:45	Liaqat Hussain, Muhammad Mahabat Khan, Naseem Ahmad, Kifayatullah, Taha Ahmer	Enhancing Sweeping Frequency and Jet Impingement Cooling in Fluidic Oscillators via Bleed-Feed Channel Width Variation

**Note:** 15 mins presentation followed by 5 mins Q & A session

**Prayer & Lunch Break (River Side Cafe) ..... 13:00 - 14:30**

# Technical Session A

## Thermofluids

**Technical Session A-II ..... 14:30 – 17:00**

**(Venue: B2)**

**Session Chair: Dr. Naseem Ahmad**

Paper ID	Time	Authors	Title
ICAME-25-542	14:30 – 14:50	Yasir Ismail Saad, Muzaffar Ali, Javed Akhtar, Muhammad Usman, Muhammad Taha Manzoor, Muslum Arici, <b>Muhammad Aqil Khan</b>	Transient Analysis of Solar Driven Hydrogen Generation System Using Industrial Waste Water
ICAME-25-547	14:55 – 15:15	Huzafa Bin Rasheed, Haris Sheh Zad, Muhammad Sohail Malik, Muhammad Arif, <b>Shahzaib Khan Hashmi</b> , Muhammad Irfan	Structural Design and Development of a Small-Scale Vertical Axis Wind Turbine for Urban Household Power Generation
ICAME-25-566	15:20 – 15:40	<b>Mohsin Ali</b> , Muzaffar Ali, Najam Ul Hassan Shah, Guiqiang Li, Andrea Ferrantelli	Improved Thermal and Power Management of Modified solar PV system integrated with Phase Change Material Through Transient Charging and Discharging Cycles
ICAME-25-567	15:45 – 16:05	<b>Abdullah Rahman</b> , Nawaf Mehmood Malik, Obaid Ullah Khan, Muhammad Irfan	Enhancing Parabolic Trough Collector Efficiency Through Surface Treatment: A Comparative Experimental Analysis
ICAME-25-568	16:10 – 16:30	Faisal Al-Hashemi, Omar Al-Dhafari, Mohammed Al-Rasbi, <b>Musaab Zarog</b>	Low-frequency Piezoelectric Energy harvester

**Note: 15 mins presentation followed by 5 mins Q & A session**

**Closing Ceremony ..... 17:00 - 17:30**  
**(Auditorium A2)**

**Networking and Refreshments..... 17:30 - 18:00**  
**(River Side Cafe)**

# Technical Session B

Materials, Manufacturing and Robotics

**Technical Session B-I ..... 10:00 – 13:00**

**(Venue: B3)**

**Session Chair: Dr. Shummaila Rasheed**

**Keynote Lecture ..... 10:00 - 10:30**

**Title: Machining, Manufacturing and Automation**

**Speaker:** Assoc. Prof. Dr. Sergiu-Dan Stan (PhD from 2007) is member of IEEE (Senior member IEEE), ASME (American Society of Mechanical Engineers), IFToMM (International Federation for the Promotion of Mechanism and Machine Science). Member of the Mechatronics and Machine Dynamics of Technical University of Cluj-Napoca. In the last 23 years, he was director or member of many national and European projects in the field of mechatronics/robotics, energy, VR, industrial applications and worked with many foreign universities. He is currently the Director of the Advanced Mechatronics Laboratory involving more researchers and projects.

Paper ID	Time	Authors	Title
ICAME-25-504	10:45 – 11:05	Ehtazaz Amir, Wasim Ahmad, Saif ullah	Optimization of Transportation Cost in Reverse Logistics of Electrical Appliances for Sustainability
ICAME-25-505	11:10 – 11:30	Ajmal Khan, Wasim Ahmad, Salman Hussain	Design and Fabrication of Wall Climbing Robot using Magnetic Adhesion
ICAME-25-572	11:35 – 11:55	Keenjhar Ayoob, Tayyab Zafar, Amir Hamza	Active Transfer Learning Gaussian Process for Reliable Trajectory Prediction of the UR5 Robotic Manipulator
ICAME-25-534	12:00 – 12:20	Ali Bin Naveed, Aamir Mubashar, Muhammad Khizer Ali Khan, Ammar Tariq, Kamran A. Khan	High-Fidelity Versus Reduced-Order Numerical Models for Sound Transmission Loss Prediction of Acoustic Metamaterials
ICAME-25-535	12:25 – 12:45	Zaheer Ahmad, Muhammad Uzair, Afrasyab Khan, Muhammad Huzaifa, Syed Hamza Khurshid	Proportional Analysis and Microstructural Characterization of Threading Dies Manufactured Using Conventional and EDM Machining Methods

**Note: 15 mins presentation followed by 5 mins Q & A session**

**Prayer & Lunch Break (River Side Cafe) ..... 13:00 - 14:30**

# Technical Session B

Materials, Manufacturing and Robotics

**Technical Session B-II ..... 14:30 – 17:00**

**(Venue: B3)**

**Session Chair: Mr. M. Rizwan Siddiqui**

Paper ID	Time	Authors	Title
ICAME-25-545	14:30 – 14:50	Haris Sheh Zad, Abasin Ulasyar, <b>Adil Zohaib</b> , Sohail Khalid	Adaptive Observer based Robust Control of Mismatched Buck DC–DC Converters for Renewable Energy Applications
ICAME-25-548	14:55 – 15:15	<b>Abdul Rafay</b> , Owais ur Rehman Shah, Naseem Ahmad	Characterization of Pressureless Sintering of ZTA Ceramic
ICAME-25-552	15:20 – 15:40	<b>Muhammad Asim</b> , Shahid Ikramullah Butt, Muhammad Rizwan ul Haq, Dil Jan	Optimization of 3D Printing Parameters for Enhanced Mechanical Strength Using Taguchi Method
ICAME-25-553	15:45 – 16:05	Haris Sheh Zad, <b>Adil Zohaib</b> , Abasin Ulasyar, Sohail Khalid	An Improved Adaptive Sliding Mode Controller with Dynamic Surface Extension for Uncertain Robotic Manipulators
ICAME-25-570	16:10 – 16:30	<b>Sana Ullah</b> , Riccardo Nobile, Gennaro Scarselli, Angelo De Fenza, Mario De Stefano Fumo	Multiscale modelling of C/SiC Ceramic Matrix Composites (CMC)
ICAME-25-531	16:35 – 16:55	<b>Gulfam Ul Rehman</b> , Muhammad Rizwan ul Haq, Manzar Masud, Syed Husain Imran Jaffery, Muhammad Salman Khan, Shahid Ikramullah Butt	Statistical analysis of burr width and height in conventional speed micro-milling of Titanium Alloy (Ti–6Al–4V) by varying cutting parameters under different lubrication methods: Dry, MQL and Wet

*Note: 15 mins presentation followed by 5 mins Q & A session*

**Closing Ceremony ..... 17:00 - 17:30**  
**(Auditorium A2)**

**Networking and Refreshments..... 17:30 - 18:00**  
**(River Side Cafe)**

# Technical Session C

Sustainable Energy and Industrial Transition

**Technical Session C-I ..... 10:00 – 13:00**

**(Venue: B4)**

**Session Chair: Dr. Manzar Masud**

**Keynote Lecture ..... 10:00 - 10:30**

**Title: Recent Developments in Renewable Energy Engineering**

**Speaker:** Dr. Hassan Ali is currently working as Associate Professor at University of Birmingham, Dubai. He is program director of Renewable Energy Engineering M.Sc. Program and is developing this program at the interface of technology, policy and finance. He has over 16 years of experience in teaching, research, management. He has the experience of initiating engineering programmes, and worked at mid/senior management roles that provided him the opportunity to have holistic insights and oversights of program leadership. Dr Ali carries global context as well as significant understanding of UAE higher education market as he has been responsible for programme development, community engagement, curriculum development and lead research/dissertation projects

Paper ID	Time	Authors	Title
ICAME-25-506	10:45 – 11:05	Muhammad Sohail Iqbal, Salman Hussain, Wasim Ahmad	Need Assessment for Implementation of Digital Transformation Practices Through the Capacity Building
ICAME-25-510	11:10 – 11:30	Usman Aftab, Farrokh Jaleel, Mughees Aslam, Muhammad Haroon, Javed Ahmed Khan tipu, Rafiq Mansoor	Exploring Causes of Waste in Highway Projects Relating to the Role of Project Managers in Pakistan
ICAME-25-532	11:35 – 11:55	Nida Saleh, Qamar Mahboob, Sanan Tahir, Zhiwen Wang, Zidong Tan, Daijun Cheng, XueFeng Luo	Assessment of Passenger Obstruction related Risk Factors in Urban Metro Rail Transit System and their Countermeasures
ICAME-25-554	12:00 – 12:20	Ebadat Ur Rehman, Laiba Sajid, Zainab Naeem	Assessment of Drought Vulnerability in Faisalabad through Remote Sensing and GIS
ICAME-25-557	12:25 – 12:45	Arfa Ijaz, Saleha Qureshi, Ubaid ur Rehman Zia, Sarim Zia, Saad Ali Ahmed Malik, Muhammad Zulfiqar	Green Hydrogen as a Decarbonization Pathway for Steel Industry in Pakistan

**Note: 15 mins presentation followed by 5 mins Q & A session**

**Prayer & Lunch Break (River Side Cafe) ..... 13:00 - 14:30**

# Technical Session C

**Sustainable Energy and Industrial Transition**

**Technical Session C-II ..... 14:30 – 17:00**

**(Venue: B4)**

**Session Chair: Mr. Tauseef Ahmed**

Paper ID	Time	Authors	Title
ICAME-25-558	14:30 – 14:50	Saad Ali Ahmed Malik, Saleha Qureshi, Arfa Ijaz, Muhammad Zulfiqar	Monitoring, Verification, and Trade Exposure: Evaluating Cross Border Adjustment Mechanism (CBAM) Compliance in Pakistan's Steel Sector
ICAME-25-562	14:55 – 15:15	Sarim Zia, Saleha Qureshi, Muhammad Zulfiqar, Arfa Ijaz	Assessing the Feasibility of Electric Vehicle Adoption in Pakistan Affordability, Preferences, and Market Readiness
ICAME-25-563	15:20 – 15:40	Ayesha Naeem, Sadia Satti, Ubaid ur Rehman Zia	Gender-Responsive SEZs for Inclusive Industrialization under CPEC 2.0
ICAME-25-564	15:45 – 16:05	Ayesha Naeem, Arfa Ijaz, Ubaid ur Rehman Zia, Sarim Zia	Enabling Solar PV Localization in Pakistan through Strategic Pathways under China-Pakistan Industrial Cooperation
ICAME-25-569	16:10 – 16:30	Ubaid ur Rehman Zia, Saleha Qureshi, Hina Younis, Adal Farooq	Role of Fuel Switching in Decarbonization of Pakistan's Cement Industry
ICAME-25-571	16:35 – 16:55	Saleha Qureshi, Saad Ali Ahmed Malik, Ubaid-Ur Rehman Zia, Muhammad Zulfiqar	Climate-Smart Housing in Pakistan: Exploring Climate-Resilient Solutions for Urban Development

**Note: 15 mins presentation followed by 5 mins Q & A session**

**Closing Ceremony ..... 17:00 - 17:30**  
**(Auditorium A2)**

**Networking and Refreshments..... 17:30 - 18:00**  
**(River Side Cafe)**



# Technical Session D

## International Session – 1: Engineering Management

**Technical Session D-I ..... 10:00 – 13:00**

**(Venue: B5)**

**Session Chair: Dr. Ghulam Asghar**

**Keynote Lecture ..... 10:00 - 10:30**

**Title: Back to the Future - Our Industry in 2030**

**Speaker:** Prof. Tim Wentz graduated from the University of Nebraska with a Bachelor of Science degree in Mechanical Engineering and a Master's degree in Business Administration. He is a registered professional engineer in Nebraska. Additionally, he holds both Master Heating Contractor and Master Plumbing Contractor licenses, is a LEED® - Accredited Professional (AP-BD&C)) and holds an ASHRAE certification as a High-performance Building Design Professional (HBDP). Prof. Wentz served on the Construction Management faculty in the College of Engineering, University of Nebraska, Lincoln, Nebraska for 25 years until being named an Emeritus Professor in 2018. He is also a very active volunteer within ASHRAE, where he has served as the Nebraska Chapter President for 1997-1998. He also served as Director and Regional Chair for Region IX of ASHRAE and was inducted into the Region IX Hall of Honor in 2005. ASHRAE also elected Tim a Fellow of the Society in 2005. Tim served as Society President in 2016-2017 and launched the Society theme for that year 'Adapt Today to Shape Tomorrow'.

Paper ID	Time	Authors	Title
ICAME-25-513	10:45 – 11:05	Yi Zhang, Jianlong Wang, Weifang Sun, Jabir Mumtaz	Research on Bearing Fault Diagnosis Method Based on Multiscale Convolution and Attention Mechanism in Strong Noise Environment
ICAME-25-518	11:05 – 11:25	Siliang Wang, Jianlong Wang, Haonan Ren	Research on Fault Diagnosis of Gear Transmission Systems Based on Dynamic Transmission Error
ICAME-25-528	11:25 – 11:45	Tonghan Zhu , Yarong Chen, Jabir Mumtaz	A Dual-List Feature-Driven Heuristic for the Batch Processing Machine Scheduling Problem
ICAME-25-529	11:45 – 12:05	Ziyang Ji, Yarong Chen ,Lixuan Pan, Mudassar Rauf	A study on multi-objective unrelated parallel machine scheduling using an improved spider monkey optimization algorithm
ICAME-25-530	12:05 – 12:25	Longfei Lian, Haosen Zhang, Yarong Chen	An Improved Artificial Bee Colony Algorithm for Unrelated Parallel Batch Processing Machine Scheduling Problem
ICAME-25-540	12:25 – 12:45	Ziyi Shang , Yarong Chen, Jabir Mumtaz	An Improved Fruit Fly Optimization Algorithm for Multi-Objective Scheduling in Hybrid Flow Shops

**Note: 15 mins presentation followed by 5 mins Q & A session**

**Prayer & Lunch Break (River Side Cafe) ..... 13:00 - 14:30**

# Technical Session E

## International Session – 2: Industrial Engineering

**Technical Session E-I ..... 10:00 – 13:00**

**(Venue: B6)**

**Session Chair: Mr. M. Zulfiqar**

**Keynote Lecture ..... 10:00 - 10:30**

**Title: Back to the Future - Our Industry in 2030**

**Speaker:** Prof. Tim Wentz graduated from the University of Nebraska with a Bachelor of Science degree in Mechanical Engineering and a Master's degree in Business Administration. He is a registered professional engineer in Nebraska. Additionally, he holds both Master Heating Contractor and Master Plumbing Contractor licenses, is a LEED® - Accredited Professional (AP-BD&C)) and holds an ASHRAE certification as a High-performance Building Design Professional (HBDP). Prof. Wentz served on the Construction Management faculty in the College of Engineering, University of Nebraska, Lincoln, Nebraska for 25 years until being named an Emeritus Professor in 2018. He is also a very active volunteer within ASHRAE, where he has served as the Nebraska Chapter President for 1997-1998. He also served as Director and Regional Chair for Region IX of ASHRAE and was inducted into the Region IX Hall of Honor in 2005. ASHRAE also elected Tim a Fellow of the Society in 2005. Tim served as Society President in 2016-2017 and launched the Society theme for that year 'Adapt Today to Shape Tomorrow'.

Paper ID	Time	Authors	Title
ICAME-25-509	10:45 – 11:05	Hamda Aldoukhi, Mohammad Shamsuzzaman	Identifying And Prioritizing the Challenges Affecting the Implementation of Industry 4.0 Technologies in The Agricultural Sector: A Study in the UAE
ICAME-25-514	11:10 – 11:30	Ky-Thanh Ho, Duc-Duy Nguyen	Properties of Cu-Al <sub>2</sub> O <sub>3</sub> nanocomposite materials synthesized by mechano-chemical process
ICAME-25-515	11:35 – 11:55	Shailendra Pawanr, Kapil Gupta	Preliminary Investigation of Tool Wear when Machining Super Duplex Stainless Steel using Coated Inserts under Dry Environment
ICAME-25-522	12:00 – 12:20	Hessa Alshamsi, Mohammad Shamsuzzaman	Analyzing barriers to Implementing Industry 4.0 Technologies in the Building Permit System: A Case study of Sharjah
ICAME-25-527	12:25 – 12:45	Deyire Yusuf Umar, Afrasyab Khan, Yonghan Ahn	Developing a Multi-Criteria Decision Making (MCDM) Approach for Selecting Educational Collaborative Robots (CoBots) in West African countries

**Note: 15 mins presentation followed by 5 mins Q & A session**

**Prayer & Lunch Break (River Side Cafe) ..... 13:00 - 14:30**

# Technical Session E

International Session – 2: Industrial Engineering

**Technical Session E-II ..... 14:30 – 17:00**

**(Venue: B6)**

**Session Chair     Mr. M. Haroon**

Paper ID	Time	Authors	Title
ICAME-25-543	14:30 – 14:50	<b>Mohamed Rahmoun</b> , Bilal El hadoui, Taoufik Makayssi, Mohamed Lamsaadi	Impact of Lewis number on natural convection with double diffusion in a square cavity filled with non-Newtonian fluid with viscosity varying with temperature
ICAME-25-555	14:55 – 15:15	<b>Jawed Ahmed Jamali</b> , Ying He	Phase-Field Simulation of Bubble Evolution and Heat Transfer in Microchannel under Subcooled and Saturated Flow Boiling
ICAME-25-560	15:20 – 15:45	<b>Luqman Muhammed Audu</b> , Asor levi Mathew, Braimah Dirisu, Ososomi Sunday, Momoh Emmanuel O.	Standardizing Indigenous Beverage Production: A Comparative Evaluation of Automated and Traditional Zobo Processing Methods Based on NAFDAC Nutritional Compliance

**Note: 15 mins presentation followed by 5 mins Q & A session**

**Closing Ceremony ..... 17:00 - 17:30**  
**(Auditorium A2)**

**Networking and Refreshments..... 17:30 - 18:00**  
**(River Side Cafe)**