



Department of Mechanical Engineering
Capital University of Science and Technology

ICAME-23 Program

August 24, 2023

Inaugural Session

Chair: Dr. M. Mahabat Khan

Co-Chair: Dr. M. Javed Hyder

Registration08:00 – 09:00
(C-D Block Front)

Opening Ceremony.....09:00 – 09:45
(Auditorium A1)

Refreshments09:45 – 10:00
(K Block GF)



Technical Session A

Technical Session A-I 10:00 – 13:00

(Venue M1)

Chair: Dr. Muhammad Irfan

Keynote Lecture 10:00 - 10:30

Title: Back to the Future: Our Industry in 2030

Speaker: *Prof. Tim Wentz is an Emeritus Professor of Construction Management at the University of Nebraska – Lincoln, where he is still active serving on various faculty endeavours, such as the Chancellor's Sustainability and Resilience Commission. Tim has served the Society in many different capacities. He started his ASHRAE career in 1976 after graduating from the University of Nebraska and worked in a grassroots capacity for many years. Tim has also been very active in the Mechanical Contractors Association of America (MCAA), where he has served as a trustee for the Mechanical Contractors Education and Research Fund (MCERF) and is currently a member of the National Education Initiative (NEI) faculty and also on the Institute for Project Management (IPM) faculty.*

Paper ID	Time	Authors	Title
ICAME-23-453	10:30 – 10:55	Abdur Rehman Mazhar, Ali Ubaid, Syed Muhammad Hamza Shah, Suhaib Masood, M Muneeb Zafar Alvi	Investigation of the simultaneous cooling and heating using a Thermoelectric Peltier
ICAME-23-456	10:55 – 11:20	Wajeaha Siddiqui	Inclined Rayleigh-Benard Convection: Role of Critical Aspect Ratio in Vertical Cavities
ICAME-23-457	11:20 – 11:45	Hammas Ullah, Faraz Shoaib, Syed Danyal Zahid, Mohammad Iymaan Mahmood, Mubashar Ali, Moazzam Ali, Hamza Abbas and Ali Turab Jafry	Design and Fabrication of Digital Microfluidic device for Lab on Chip Applications
ICAME-23-465	11:45 – 12:10	Khalid Mahmood, Abid Hussain, Muhammad Arslan and Bilal Tariq	Experimental investigation of impact of cool roof coating on bifacial and monofacial photovoltaic modules
ICAME-23-473	12:10 – 12:35	Hamza Abbas, Mubashar Ali, Nauman Naeem, Hammas Ullah, Moazzam Ali and Ali Turab Jafry	Effect of storage reservoir on fluid velocity in lateral flow paper device
ICAME-23-483	12:35 – 13:00	Muhammad Talha Bin Shoaib, Hafiz Muhammad Rizwan, Muhammad Naveed Gull, Muhammad Taha Khan, Muhammad Tahir Qureshi, Muhammad Shayan Ali Malik, Taqi Ahmad Cheema	Comparative Investigation of the Thermal Conductivity of Water Based Nanofluids with and without Combination of Alumina and Carbon Nanotubes

Note: 20 mins presentation followed by 5 mins Q & A session

Prayer Break & Lunch Break (K Block GF) 13:00 - 14:30

Technical Session A-II 14:30 – 17:00

(Venue M1)

Chair: Mr. Manzar Masud

Paper ID	Time	Authors	Title
ICAME-23-488	14:30 – 14:55	Moazzam Ali , Hammas Ullah, Mubashar Ali, Nauman Naeem, Hamza Abbas and Ali Turab Jafry	Dynamic Contact Angle Variation with Applied Voltage and Droplet Volume in Digital Microfluidics
ICAME-23-492	14:55 – 15:20	Fahad Iqbal , Muhammad Naveed Gull, Hafiz Muhammad Rizwan, Daniyal Amir, Arsalan Saleem, Sami-ul-Haq, Taqi Ahmad Cheema	Uncovering the Cooling Potential of Water Circulation on the Peltier Hot Side
ICAME-23-493	15:20 – 15:45	Ghazanfar Ali , Atif Muzaffar, Taqi Ahmad Cheema, Syed Farhad Shah	Refrigeration Potential Investigation of Half cycle refrigeration system with Liquefied petroleum gas
ICAME-23-497	15:45 – 16:10	Waqar Ali , Abid Hussain, Ahmed Usman, Khalid Mahmood, Muhammad Mubashir Iqbal, Haris Khan	Heat Transfer Enhancement in Louvered Fin Flat Tube Radiator Using Hybrid Nanofluids
ICAME-23-508	16:10 – 16:35	Saif Ullah , Muhammad Irfan, Muhammad Mahabat Khan	Enhancing Energy Efficiency: Geothermal Heat Pumps Utilizing Existing Water Boreholes in Pakistan
ICAME-23-519	16:35 – 17:00	Danish Bin Nisar , Maaz Ahmed, Ali Mohsin Hussain and Muzaffar Ali, Hafiz Sohaib Muhammad	Numerical Analysis of a Super Insulated Pipe for the Transportation of Liquid Nitrogen (LN2)

Note: 20 mins presentation followed by 5 mins Q & A session

**Closing Ceremony 17:00 - 17:30
(Auditorium A1)**

Networking and Refreshments (K Block GF) 17:30 - 18:00

Technical Session B

Technical Session B-I 10:00 – 13:00

(Venue M2)

Chair: Mr. Saif Ullah

Keynote Lecture I 10:00 - 10:30

Title: An advance water treatment system operated with solar energy

Speaker: Dr. Muhammad Wakil Shahzad is an Associate Professor and Head of Subject in the Mechanical and Construction Engineering Department, at Northumbria University (NU), Newcastle Upon Tyne, United Kingdom. He is an expert in renewable energy storage and its applications for water treatment, hybrid desalination processes, heating/cooling, solar to alternative fuels, and life cycle cost analysis. He has won many international awards for his innovative desalination cycle including Global Innovation Award 2020 and listed among Top 2% researchers in energy 2021/2022.

Paper ID	Time	Authors	Title
ICAME-23-466	10:30 – 10:55	Riaz Ahmed, Abdul Basit, Qamar ud Din Abid, Muhammad Haroon, Fasihullah Kakar, Najeeb Ullah and Danish Ahmed Khan	Techno-economic investigation of standalone Photovoltaic energy systems for rural areas of Quetta
ICAME-23-467	10:55 – 11:20	Nadeem Aslam , Muhammad Haroon, Shummaila Rasheed, Fazal-e-Umer and Mohsin Iftikhar	Thermal analysis of atmospheric balloon using different coating materials
ICAME-23-472	11:20 – 11:45	Ubaid ur Rehman , Muhammad Ashiq, Muhammad Ahmad Rafi, Usama Malik, Waqas Javid, Mehmood ul Hassan Amjad	Investigating Energy-Saving Strategies: A Numerical Study of Translucent Insulation and Phase Change Materials in Windows
ICAME-23-477	11:45 – 12:10	Faisal Iqbal , Muhammad Asif	Reduction of Specific Energy Consumption in Desalination through Hybrid Desalination Techniques
ICAME-23-499	12:10 – 12:35	Muhammad Mobeen, Saqib Jaweed, Ahmad Abdullah , Shummaila Rasheed and Manzar Masud	Parametric Optimization of Gravitational Water Vortex Turbine for Enhanced Torque Generation
ICAME-23-500	12:35 – 13:00	Habeeb Ur Rehman, Hafeez Ullah, Zakarya, Fasihulla Kakar, Qamar ud Din Abid , Muhammad Haroon, Muhammad Arsalan Munawar and Muhammad Aqil Khan	Techno-economic viability analysis of Wind Powered Power Plant in Panjgur, Balochistan

Note: 20 mins presentation followed by 5 mins Q & A session

Prayer Break & Lunch Break (K Block GF) 13:00 - 14:30

Technical Session B-II 14:30 – 17:00

(Venue M2)

Chair: Mr. Muhammad Haroon

Paper ID	Time	Authors	Title
ICAME-23-510	14:30 – 14:55	Arhaam Mubarak , and M. Javed Hyder	Experimental and Computational Analysis of 14 Gauge Rooftop Solar PV Mounting Structure Against Wind in Pakistan
ICAME-23-511	14:55 – 15:20	Rizwan Siddiqui, Mian Ashfaq Ali, Waqar Arshad, Muhammad Shaban, Muhammad Usman , and Muhammad Zulfiqar	Tribological Testing and Analysis of Surface-Textured Metal Surfaces
ICAME-23-512	15:20 – 15:45	Bilal Hussain , Huzaifa Waseem Malik, Fakhar Ul Hasnain and Muhammad Irfan	Phase Change Material for Cooling of Solar Panels – An Experimental Study
ICAME-23-513	15:45 – 16:10	Sarmad Ali , Muhammad Mahabat Khan	Experimental Investigation of Battery Thermal Management system of Lithium-Ion Cells Using PCM
ICAME-23-514	16:10 – 16:35	M. Javed Hyder, Muhammad Junaaid Khan, Muhammad Abdullah Khan and Salman Saeed	Design and Development of Solar Dehydrator for Fruits
ICAME-23-516	16:35 – 17:00	Asim Ali , Muhammad Zohaib Azam, Muhammad Faiq, and Ghulam Asghar	Design modification and prototype development of cross-flow turbine for low/zero head water stream

Note: 20 mins presentation followed by 5 mins Q & A session

**Closing Ceremony 17:00 - 17:30
(Auditorium A1)**

Networking and Refreshments (K Block GF) 17:30 - 18:00

Technical Session C

Technical Session C-I 10:00 – 13:00

(Venue M3)

Chair: Dr. Salman Sagheer Warsi

Keynote Lecture 10:00 - 10:30

Title: Digitalization, Knowledge Workers and Future of Work: A post Covid-19 perspective

Speaker: Dr. Muhammad Saleem Sumbal is currently working as Research Assistant Professor at The Hong Kong Polytechnic University, Hong Kong (QS ranking: 65). Previously, he worked at NUST Business School, National University of Sciences and Technology (NUST), Pakistan and at Royal Bank of Scotland, UK. He completed his PhD, on prestigious Hong Kong Fellowship Scheme, from The Hong Kong Polytechnic University and MSc in Computer Vision and Robotics on prestigious Erasmus Mundus Fellowship from Heriot Watt University, UK, University of Girona, Spain and University of Burgundy, France.

Paper ID	Time	Authors	Title
ICAME-23-455	10:30 – 10:55	Abdul Haseeb Hassan Khan	Enhancing the Performance of Perovskite Solar Cell through MoS ₂ Interface Layer.
ICAME-23-463	10:55 – 11:20	Uzair Khan, Wasim Ahmad, Ahmad Sajjad, Muhammad Jawad	Preliminary Maturity Level Assessment of Industry 4.0 in Context of Pakistani Industries
ICAME-23-468	11:20 – 11:45	Nadeem Aslam, Muhammad Haroon, Muhammad Arsalan Munawar, Shumaila Rasheed and Manzar Masud	Investigation of progressive delamination growth characterization in composite materials
ICAME-23-475	11:45 – 12:10	Asif Imran, Muhammad Waqas Hanif, Muhammad Sajid, Shahab Salim, Feroz Haider and Muhammad Azeem	Tool wear parameter optimization in machining the Metal Matrix Composite (Al6061-SiC) prepared by squeeze casting method
ICAME-23-476	12:10 – 12:35	Sania, Adnan Daud Khan and Muhammad Noman	Improving the efficiency of carbon-based perovskite solar cells by the passivation of electrons transport layer
ICAME-23-485	12:35 – 13:00	Abdul Basit, Aimal Daud Khan and Adnan Daud Khan	Carbon Based Perovskite Solar Cell constructed by screen-printed under ambient condition

Note: 20 mins presentation followed by 5 mins Q & A session

Prayer Break & Lunch Break (K Block GF) 13:00 - 14:30

Technical Session C-II 14:30 – 17:00

(Venue M3)

Chair: Mr. Hassan Shah

Paper ID	Time	Authors	Title
ICAME-23-490	14:30 – 14:55	Abdul Rehman, Salman Khan , Arsalan Sohail, Abdullah, Hafiz Saud, Hassan Ali, Fahad Zahid, and Muhammad Qasim Zafar	Development of Re-entrant 3D Printed Auxetic Structures for High Energy Absorption
ICAME-23-495	14:55 – 15:20	Ghulam Ameer Mukhtar , Sana Shehzadi, Abdullah, Jam Muhammad Talha Laar, Syed Ali Taqi, Rana Muhammad Usman, Fakhar ul Hasnain	Cost estimation and parametric optimization for dissimilar metals TIG welding joints using linear regression algorithm
ICAME-23-496	15:20 – 15:45	Tahiyah Rashid , Saleem Ullah, Umair Habib, Nusrat Rehman, Usamah Rashid Qureshi, Farzana Jafar	Optimizing Waste Collection and Transportation in Islamabad: Efficient Vehicle Routing for Sustainable Waste Management
ICAME-23-498	15:45 – 16:10	Muhammad Waseem , Salman Hussain, Muhammad Waqas Hanif and Muhammad Jawad	Investigating the effects of process parameters in reducing the defects during drilling of carbon fibre reinforced plastic (CFRP) and Aluminium stack
ICAME-23-506	16:10 – 16:35	Muhammad Sohail Hameed , Aneela Wakeel, Riffat Asim Pasha, Barkatullah and Umair Ali	Analysis of Mechanical Strength of Indium Doped SAC 105 Lead Free Solder Alloy

Note: 20 mins presentation followed by 5 mins Q & A session

**Closing Ceremony 17:00 - 17:30
(Auditorium A1)**

Networking and Refreshments (K Block GF) 17:30 - 18:00

Technical Session D

Technical Session D-I 10:00 – 13:00

(Venue M4)

Chair: Dr. Ghulam Asghar

Keynote Lecture 10:00 - 10:30

Title: Current trends in Biomedical Engineering

Speaker: *Dr. Senol Piskin* is currently serving at Istinye University, Istanbul, Turkey, and he is holder of a Marie Sklodowska-Curie Fellowship. During his Ph.D. he modelled the cardiovascular system in several physical aspects and his thesis has been selected as one of the best Academic Thesis Applied in Industry by the Technology Development Foundation of Turkey (TTGV). He has modelled palliative surgeries in collaboration with cardiovascular surgeons, cardiologists, and radiologists. With this project, he has been awarded the grand prize in the “New Ideas, New Businesses” innovation and entrepreneurship competition organized by Middle East Technical University, Turkey.

Paper ID	Time	Authors	Title
ICAME-23-452	10:30 – 10:55	Nauman Khan , Muhammad Rehan Khan, Sati Ullah, Tariq Talha, Muhammad Ali Khan, and Zubair Sajid	Numerical Study of Gas-Sand Two-Phase Flow Erosion in Standard 90° Elbow
ICAME-23-454	10:55 – 11:20	Abdul Shakoor , Azhar Ul Haq and Taosif Iqbal	Development and Evaluation of a High-Frequency Toroidal Transformer for Solid-State Transformer Applications
ICAME-23-462	11:20 – 11:45	Abid Raza, Naveed Mazhar, Fahad Mumtaz Malik, Rameez Khan, Arslan Khan and Hameed Ullah	Output Feedback Control of Two-Time-Scale Permanent Magnet DC Motor using High Gain Observers
ICAME-23-469	11:45 – 12:10	Usman Aftab , Farrokh Jaleel, Rafiq Mansoor, Muhammad Haroon and Mughees Aslam	Obstructions in BIM Implementation for Developing Countries – A Mini-Review
ICAME-23-470	12:10 – 12:35	Kamal Mazhar Malik , Muhammad Jawad Khan, Karam Dad Kallu, Yasar Ayaz	Real-Time Vehicle Lateral Dynamics Estimation using State Observer and Adaptive Filter
ICAME-23-474	12:35 – 13:00	Ahmad Naveed, Muhammad Adnan, Zakariya Ijaz , Muhammad Nasir, Shahreen Afzal, Muhammad Danial Javed, Muhammad Hassan	Comparison of Commercial Cars on basis of Aerodynamic Shapes and Drag Coefficients

Note: 20 mins presentation followed by 5 mins Q & A session

Prayer Break & Lunch Break (K Block GF) 13:00 - 14:30

Technical Session D-II 14:30 – 17:00

(Venue M4)

Chair: Mr. Muhammad Rizwan Siddiqui

Paper ID	Time	Authors	Title
ICAME-23-480	14:30 – 14:55	Zainab Ali and Jahan Zeb Gul	Shape Memory-Based Smart Extra Ocular Muscles for Ophthalmological Studies
ICAME-23-501	14:55 – 15:20	Muhammad Haroon and Abubakr Ayub	Role of the Pakistan cement industry towards the achievement of net zero goal by mid-century; A review from waste heat recovery perspective
ICAME-23-502	15:20 – 15:45	Kashif Usman , Muhammad Kashif, Muhammad Haroon, Muhammad Ahmed, Haseeb Ahmad and Al-Bara Shalaby	Design of chassis dynamometer facility for European type approval of new passenger vehicles manufactured in Pakistan
ICAME-23-503	15:45 – 16:10	Shummaila Rasheed, Muhammad Haroon, Muhammad Irfan, Zayyan Ibrar , Usama Bin Ramazan and Danish Hanif	A first step towards the performance enhancement of I.C Engines using Desmodromic valve system
ICAME-23-509	16:10 – 16:35	Duaa Ayesha , Tayyaba Iqbal, and Ghulam Asghar	Integration of cyber-security locks with SCADA software for smart surveillance management

Note: 20 mins presentation followed by 5 mins Q & A session

**Closing Ceremony 17:00 - 17:30
(Auditorium A1)**

Networking and Refreshments (K Block GF) 17:30 - 18:00

Technical Session E

Technical Session E-I 10:30 – 13:00

(Venue M5)

Chair: Mr. Tauseef Ahmed

Paper ID	Time	Authors	Title
ICAME-23-464	10 :30 – 10:55	Syed Mujahid Abbas , Haider Ali, Syed Aqib Ali Naqvi, Mohsin Iqbal, Hafiz Hamza Jabbar, Muhammad Azeem and Manzar Masud	A Novel Low-Cost Machine for Evaluating Helmet Performance in Bike Accident Scenarios
ICAME-23-478	10:55 – 11:20	Jinhao Du , Jabir Mumtaz and Jingyan Zhong	Improved Spider Monkey Optimization Algorithm for Hybrid Flow Shop Scheduling Problem with Lot Streaming
ICAME-23-479	11:20 – 11:45	Junjie Zhang , Yarong Chen, Jabir Mumtaz and Shengwei Zhou	Neuro Evolution of Augmenting Topologies for dynamic scheduling of hybrid flow shop problem
ICAME-23-481	11:45 – 12:10	Yinghao Meng , Zihao Xu, Faqun Qi and Zhen Yin	Intelligent RGV scheduling model considering advanced movement under repeated single-cycle jobs.
ICAME-23-482	12:10 – 12:35	Xue Zhao , Yarong Chen, Mudassar Rauf and Chen Wang	Differential evolution algorithm for parallel batch processing machine scheduling problem with multiple jobs

Note: 20 mins presentation followed by 5 mins Q & A session

Prayer Break & Lunch Break (K Block GF) 13:00 - 14:30

Technical Session E-II 14:30 – 17:00

(Venue M5)

Chair: Mr. Muhammad Zulfiqar

Paper ID	Time	Authors	Title
ICAME-23-484	14:30 – 14:55	Gaofei Wang , Yarong Chen, Jabir Mumtaz and Lixia Zhu	A study of mixed-flow human-machine collaborative disassembly line balancing problem based on improved artificial fish swarm algorithm
ICAME-23-486	14:55 – 15:20	Longlong Xu , Jian Guo, and Lixia Zhu	Ant Colony Optimization Algorithm for Hybrid Flow Shop Scheduling Problem with Integrated Consideration of Fixture Resources
ICAME-23-491	15:20 – 15:45	Ke Ke , Yarong Chen, Jabir Mumtaz and Shenquan Huang	Unrelated parallel batch machine scheduling using a modified ABC algorithm
ICAME-23-494	15:45 – 16:10	Liuyan Zhong , Yarong Chen and Jabir Mumtaz	A Flexible Job Shop Scheduling Method Based on Multi-Fidelity Optimization
ICAME-23-505	16:10 – 16:35	Ky-Thanh Ho , Ngoc-Tuan La, Ngoc-Hung Chu, Nhu-Huynh Vu and Tat-Loi Mai	Applying ultrasonic-assisted incremental sheet forming to Al 5052 aluminum alloy

Note: 20 mins presentation followed by 5 mins Q & A session

**Closing Ceremony 17:00 - 17:30
(Auditorium A1)**

Networking and Refreshments (K Block GF) 17:30 - 18:00