

2026 the 17th International Conference on Mechanical and Intelligent Manufacturing Technologies (ICMIMT 2026)

2026 the 8th International Conference on Innovative and Smart Materials (ICISM 2026)

Cape Town, South Africa | May 13-15, 2026
(UTC+2)

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Venue: Radisson RED Cape Town V&A Waterfront

Add.: Silo 6, Silo Square, South Arm Road, V&A Waterfront, Cape Town, 8001

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WELCOME MESSAGE

Dear all, we are delighted to welcome you to these conferences 2026 the 17th International Conference on Mechanical and Intelligent Manufacturing Technologies (ICMIMT 2026), along with the workshop 2026 8th International Conference on Innovative and Smart Materials (ICISM 2026) to be held in Cape Town, South Africa, during May 13-15, 2026. The conference is co-sponsored by India International Congress on Computational Intelligence (IICCI) and IEEE, hosted by the University of Cape Town (South Africa), with patrons from Nelson Mandela Metropolitan University (South Africa), University of Johannesburg (South Africa), and other institutions.

The primary objective of ICMIMT 2026 is to provide a platform for researchers, engineers, academicians, and industrial professionals from all over the world to present their research results and development activities in Mechanical and Intelligent Manufacturing Technologies. This conference offers a unique opportunity for delegates to exchange new ideas and experiences, establish business or research relationships, and find global partners for future collaboration.

This year's program is composed of 3 keynote speeches delivered respectively by Prof. Khaled Abou-El-Hossein from Vaal University of Technology, South Africa; Prof. Andrew Kusiak, from The University of Iowa, USA and Prof. Thorsten Becker, University of Cape Town, South Africa; 4 onsite oral sessions and 4 online oral sessions. We would like to express our gratitude to all the speakers in these conferences. Special thanks to all of our committee members, all the reviewers, the attendees for your active participation. We hope the conferences will be proved to be intellectually stimulating to us all. Finally, we wish you very successful conferences!

Conference Organizing Committee

ICMIMT 2026

Ms. Nina Lee

Email: icmimt_conf@126.com

ICISM 2026

Ms. Veronica Reed

Email: icism_conf@163.com

CONFERENCE COMMITTEE *(in no particular order)*

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V. Sivaraman, EGS Pillay Engineering College, India
Joenilo A. Duran, Technological University of the Philippines - Visayas, Philippines
Mark Christian Manuel, Mapua University, Philippines
Pierre Vella, University of Malta, Malta
Moh'd Sami Ashhab, Hashemite University, Jordan

GENERAL INFORMATION

A Conference Venue

Venue: Radisson RED Cape Town V&A Waterfront

Add.: Silo 6, Silo Square, South Arm Road, V&A Waterfront, Cape Town, 8001

Web: <https://www.radissonhotels.com/en-us/hotels/radisson-red-cape-town-va-waterfront>

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B On-site Registration

Registration desk → Inform the staff of your paper ID → Sign-in → Claim your conference kits.

C Devices Provided by the Organizer

Laptops (with MS-Office & Adobe Reader) / Projectors & Screen / Laser Sticks

D Materials Provided by the Presenter

Oral Session: Slides (pptx or pdf version). Format 16:9 is preferred.

Presentation Language: English only.

E Duration of Each Presentation

Keynote Speech: 40min, including 5 min Q&A.


Oral Session: 15min, including 3 min Q&A.

F Notice

※ Please wear your delegate badge (name tag) for all the conference activities. Lending your badge to others is not allowed.

※ Please take good care of your valuables at any time during the conferences. The conference organizer does not assume any responsibility for the loss of personal belongings of the participants during conference day.

G Zoom Meeting

 zoom	Meeting ID	Link
✧ ICMIMT Banner ✧ Zoom Background	814 4709 7119	https://us02web.zoom.us/j/81447097119

Note:

1. We recommend to install the Zoom platform beforehand. New users can login the Zoom meeting **without registration**.
2. Please set your display name before joining the online meeting. For instance,

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Delegate: Delegate_Name < Delegate__ Nina Lee >


H No-Show Policy

Papers unrepresented at the conference, without prior written approval by the Conference Technical Program Chair, will be removed from the final conference proceedings before uploading to IEEE Xplore. No refund will be approved to authors of those papers.

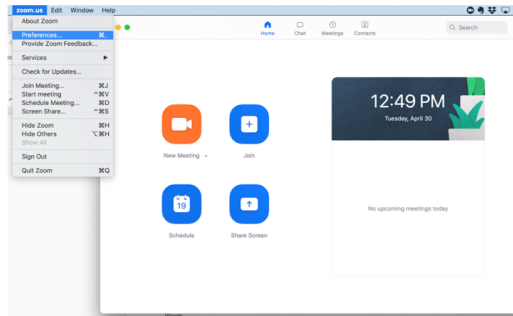
AGENDA OVERVIEW


Session Time	Wednesday, May 13, 2026 Pre-Test/Registration	Venue
14:00-17:00	On-site Registration	Lobby of Radisson RED Cape Town V&A Waterfront
09:00-11:30	Zoom Pre-test, See below:	Meeting ID: 814 4709 7119 Link: https://us02web.zoom.us/j/81447097119
09:00-09:30	TM144, TM141, TM054& TM078, TM109, TM1014, TM156, TM101, TM056	
09:30-10:00	TM135, TM1015, TM137, TM085, TM020, TM021, TM062, TM505	
10:00-10:30	TM018, TM025, TM039, TM136& TM1039, TM063, TM1010, TM1023, TM159	
10:30-11:00	TM016, TM022, TM151, TM082, TM006, TM024, TM154, TM071, TM139	
11:00-11:30	For other online participants, includes but not limited to keynote speakers, session chairs, committee members, delegates, etc.	


Presenters are required to join the rehearsal in Zoom on Wednesday, May 13, 2026. Duration: 2~3min apiece. Feel free to leave after you finish the test.

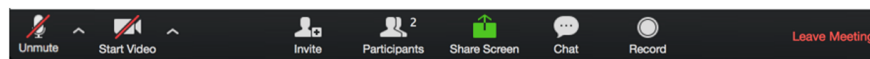
 You can join the meeting without sign-in process. Just put the meeting ID and join us.

 URL: <https://zoom.us/download>



 Each meeting has a unique 9, 10, or 11-digit number called a **meeting ID** that will be required to join a Zoom meeting.

 For any questions on the meeting day, you can text privately to "Assistant" for help.



Audio muted and video off (both indicated by a red slash).

Click to open the Participants box. This will allow you to "Raise Hand".

To share screen or contents.

Click to open the Chat box. This will allow you to chat with Hosts and Participants.

Thursday, May 14, 2026 (UTC+2)
Keynote Speech (Onsite & Online) | Venue: Dry Dock Tats <Ground floor > | Meeting ID: 814 4709 7119

Host: Prof. Duncan Mhakure, University of Cape Town, South Africa (Local Organizing Chair)

09:00-09:10 Opening Speech: Prof. Khaled Abou-El-Hossein, Vaal University of Technology, South Africa (Conference General Chair)

 09:10-09:50 Keynote Speech I: From printability to reliability: Rethinking material performance in metal Additive Manufacturing
Prof. Thorsten Becker, University of Cape Town, South Africa (*Onsite*)

 09:50-10:30 Keynote Speech II: Applications of Generative AI in Manufacturing
Prof. Andrew Kusiak, The University of Iowa, USA (*Online*)

10:30-11:00 Group Photo & Coffee Break

 11:00-11:40 Keynote Speech III: Diamond Turning for Optical Components made from Optical Aluminium Grades
Prof. Khaled Abou-El-Hossein, Vaal University of Technology, South Africa (*Onsite*)

11:40-13:00 Lunch: Ouibar Restaurant, ground floor

Thursday, May 14, 2026 (UTC+2) | Parallel Session (Onsite)

13:00-16:00	Onsite Session 1: Multi Scale Material Modeling and Performance Prediction Methods TM506-A, TM015, TM059, TM095, TM065, TM1022, TM126, TM1040, TM106, TM111-A, TM055, TM509	Dry Dock Tats <ground floor >
13:00-16:00	Onsite Session 2: Parametric Design and Performance Simulation of Mechanical Systems Based on Finite Element Method TM023, TM100-A, TM152, TM033, TM140, TM079, TM041-A, TM119, TM121, TM066-A, TM029	Silo Threads <ground floor >
15:40-16:20	Break Time	
16:00-18:45	Onsite Session 3: Intelligent Manufacturing Enabling Technology and Industry 4.0 System Integration TM094, TM042, TM019-A, TM057, TM036, TM060, TM105, TM142, TM134, TM008, TM050	Dry Dock Tats <ground floor >
	Onsite Session 4: Modeling and Energy Efficiency Performance Analysis of Power and Energy Systems for Manufacturing Industry TM108, TM120, TM083, TM502, TM084, TM503, TM004, TM1041, TM053, TM511-A, TM1042	Silo Threads <ground floor >
19:00-21:00	Dinner: Ouibar Restaurant, ground floor	

Friday, May 15, 2026 (UTC+2) (Onsite)

08:00-18:00 One Day Tour, details can be funded on page 22.

Thursday, May 14, 2026 (UTC+2) | Parallel Session (Online)

Meeting ID: 814 4709 7119

 Link: <https://us02web.zoom.us/j/81447097119>

13:00-15:15	Online Session 1: Integrated Design and Structural Parameter Optimization of Advanced Mechanical Systems TM144, TM141, TM054, TM109, TM1014, TM078, TM156, TM101, TM056
15:15-15:30	Break Time
15:30-17:30	Online Session 2: Advanced Material Processing Technology and Precision Manufacturing Process TM135, TM1015, TM137, TM085, TM020, TM021, TM062, TM505

Friday, May 15, 2026 (UTC+2) | Parallel Session (Online)

Meeting ID: 814 4709 7119

 Link: <https://us02web.zoom.us/j/81447097119>

09:00-11:00	Online Session 3: Fault Prediction, Health Management, and Online Quality Monitoring of Industrial Machinery Systems TM018, TM025, TM039, TM136, TM063, TM1010, TM1023, TM159
11:00-12:00	Break Time
12:00-14:15	Online Session 4: Production Scheduling and Collaborative Optimization in Industrial Automation Systems TM016, TM022, TM1039, TM151, TM082, TM006, TM024, TM154, TM071, TM139

INTRODUCTION OF KEYNOTE SPEAKER



Prof. Khaled Abou-El-Hossein

Vaal University of Technology, South Africa

Diamond Turning for Optical Components made from Optical Aluminium Grades

Abstract: One of the engineering areas focusing on the research and development of high-value components and manufacturing technologies is precision engineering. Precision engineering represents a variety of engineering and science disciplines ranging from areas such as mechanical, electronics and industrial engineering to chemistry, physics, optics and materials science. The presentation aims at familiarising the audience with the recent advances in ultra-high precision manufacturing technologies and their applications for the production of various critical components employed in different sectors of the industry. In this presentation, the principles of ultra-high precision manufacturing will be discussed followed by examples of their uses in various industrial applications. The status of ultra-high precision manufacturing in terms of current research issues and future trends will be discussed. In addition, research activities and projects in the area of precision manufacturing that are currently conducted at the Nelson Mandela University will be also highlighted. Finally, the author looks forward to presenting herewith comprehensive information that could be useful to the audience and easy to understand by the bigger engineering research community.

Biography: Prof Abou-El-Hossein is a distinguished academic leader who currently serves as the Dean of the Faculty of Engineering and Technology at Vaal University of Technology. With an impressive tenure of over 24 years in academia, he has made substantial contributions to the field of mechanical, mechatronics engineering, and advanced high-precision manufacturing. Having held administrative positions such as Head of Engineering Departments and Director of the School of Engineering at various prestigious universities in Malaysia and South Africa, Prof Abou-El-Hossein possesses extensive experience in academic administration. His leadership skills and expertise have played a crucial role in the development and success of engineering education at these institutions.

Prof Abou-El-Hossein's research expertise lies in the manufacturing of aerospace components, with a particular focus on high-precision optics. His profound knowledge and hands-on experience in this area have propelled advancements in manufacturing technologies, especially in the aerospace sector. Additionally, he has a keen interest in additive manufacturing, constantly exploring innovative applications and techniques within this rapidly evolving field. Furthermore, Prof Abou-El-Hossein has actively engaged in design projects involving power generation from focused sun rays, utilizing oil and water steam. His involvement in these projects highlights his interdisciplinary approach and commitment to developing sustainable and efficient energy solutions.

Throughout his career, Prof Abou-El-Hossein has been recognized for his outstanding academic achievements, research contributions, and dedication to student mentorship. He is current holding a prestigious rating from South Africa National Research Foundation. His passion for advancing engineering and technology, combined with his expertise in manufacturing, optics, additive manufacturing, and renewable energy, solidifies his standing as a respected and influential figure in the academic community.

INTRODUCTION OF KEYNOTE SPEAKER



Prof. Andrew Kusiak

The University of Iowa, USA

Applications of Generative AI in Manufacturing

Abstract: Generative Artificial Intelligence (GenAI) is revolutionizing the manufacturing landscape, reshaping design, prototyping, productivity, and process optimization. By leveraging deep learning, GenAI generates novel solutions, designs, and insights that extend beyond traditional computational methods. This presentation provides an overview of current GenAI models and algorithms within the broader context of artificial intelligence and explores strategies for effectively harnessing their capabilities in manufacturing. Applications in predictive maintenance, quality control, and supply chain optimization are highlighted, demonstrating how generative models transform raw data into actionable intelligence. Case studies showcase the integration of GenAI into digital twin development, manufacturing workflows, and automated decision-making.

Biography: Dr. Andrew Kusiak is a Professor in the Department of Industrial and Systems Engineering at The University of Iowa, Iowa City. He has chaired two departments, Industrial Engineering, and Mechanical and Industrial Engineering. His current research interests include applications of computational intelligence and big data in manufacturing, automation, renewable energy, sustainability, and healthcare. He has authored or coauthored numerous books and hundreds of technical papers published in journals sponsored by professional societies, such as the Association for the Advancement of Artificial Intelligence, American Society of Mechanical Engineers, Institute of Industrial and Systems Engineers, Institute of Electrical and Electronics Engineers, and other societies. He speaks frequently at international meetings, conducts professional seminars, and consults for industrial corporations. Dr. Kusiak has served in elected professional society positions as well as editorial boards of over fifty journals, including editor positions of five different IEEE Transactions. Professor Kusiak is a Fellow of the Institute of Industrial and Systems Engineers and the Editor-in-Chief of the Journal of Intelligent Manufacturing.

INTRODUCTION OF KEYNOTE SPEAKER



Prof. Thorsten Becker

University of Cape Town, South Africa

From printability to reliability: Rethinking material performance in metal Additive Manufacturing

Abstract: Additive manufacturing (AM) of metals has matured to routinely deliver high strength through rapid solidification and microstructural refinement; however, structural performance is governed by the interplay between strength, toughness, and reliability. Within a process–structure–property–performance framework, AM processing produces hierarchical microstructures and defect populations that disrupt conventional correlations between strength, ductility, and toughness, necessitating a complementary strength–toughness–reliability perspective. Microstructure, residual stress, and defects collectively control crack initiation, propagation, and damage tolerance, ultimately defining performance. These considerations motivate a transition from alloys optimised for printability to materials designed for reliability, as illustrated by ongoing work on titanium-, aluminium-, nickel-based superalloy-, and cobalt-based systems. In the South African context, where qualification infrastructure may be constrained, integrated, mechanics-based approaches offer a pathway to accelerate industrial adoption, positioning reliability as the defining challenge in the next phase of metal additive manufacturing.

Biography: Prof. Thorsten Becker is an Professor in the Department of Mechanical Engineering at the University of Cape Town, where he also serves as Director of the Centre for Materials Engineering. He holds a concurrent appointment as Extraordinary Professor at Stellenbosch University, and Visiting Researcher at the Nelson Mandela University. His research addresses structural integrity, focusing on fatigue, fracture, and creep. Employing advanced methodologies such as digital image and volume correlation, high-resolution microscopy, and modelling approaches, his work extracts engineering-relevant parameters vital to structural integrity assessments. An avid proponent of additive manufacturing of metals, particularly for high-temperature applications, Prof. Becker explores intrinsic process attributes and their effects on structural performance. His work is conducted in partnership with local and international research institutions and industries. He regularly contributes to professional bodies, bringing an applied focus to his theoretical investigations. Prof. Becker’s research has yielded numerous publications—many in high-impact venues—and is well cited across the fields of structural integrity and additive manufacturing.

ONSITE SESSION 1

Thursday, May 14, 2026 <13:00~16:00>

Onsite Session 1: Multi Scale Material Modeling and Performance prediction methods

Dry Dock Tats
<ground floor >

Chairperson: Dr Peter Onu, University of Johannesburg, South Africa

TM506-A 13:00~13:15	An investigation into the use of macadamia shells as a filler in composite materials to reduce agricultural waste that contributes to pollution <i>Abednigo Jabu Mbatha</i> , Vaal University of Technology, South Africa
TM015 13:15~13:30	High-performance perovskite solar cell utilizing novel cesium-copper antimony iodide absorber layer for space application <i>Susanta Kumar Tripathy</i> , National Institute of Technology Silchar, India
TM059 13:30~13:45	Environmentally Friendly Ceramic Materials for Sustainable Oil–Water Separation Membranes: A Review <i>Nthabiseng Jane Ramanamane</i> , University of South Africa, South Africa
TM095 13:45~14:00	Effect of Post-Deposition Annealing on the Performance of Ga ₂ O ₃ /Si Heterojunction Deep-UV Photodetectors <i>Atthaporn Ariyarat</i> , King Mongkut's University of Technology Thonburi, Thailand
TM065 14:00~14:15	Experimental Evaluation of a Hydrophilic Nanoparticle-Coated Ceramic Filtration Bed for Oil-Water Separation <i>Nthabiseng Jane Ramanamane</i> , University of South Africa, South Africa
TM1022 14:15~14:30	Smart Textiles as Advanced Functional Materials: Recent Developments in Fabrication, Applications, and Future Perspectives <i>Israel Tshilembakana Kazadi</i> , Vaal University of Technology, South Africa
TM126 14:30~14:45	Regional Segmentation of Parameter Space for Enhanced Surface Roughness Optimization <i>Zvikomborero Hweju</i> , Chinhoyi University of Technology, Zimbabwe
TM1040 14:45~15:00	Preliminary Analysis of the Near-Surface Nanoindentation Response of an Al-Mg Aluminum Alloy under 468 MeV Xe Irradiation <i>Vhahangwele Colleen Sigonde</i> , Vaal University of Technology, South Africa
TM106 15:00~15:15	The impact of pre-heating and post-heating on the microstructure and hardness of 5083-H111 alloy butt welded by friction stir welding <i>Sibusiso Nginda</i> , University of South Africa, South Africa
TM111-A 15:15~15:30	Origami-Inspired 3D-printed PLA-Pectin Composites <i>Khaled Alrashidi</i> , University of Birmingham, UK
TM055 15:30~15:45	Hybrid Additive–Subtractive Manufacturing: A Comprehensive Review of Precision Enhancement through Material-Process Integration and Sequential Refinement <i>Peter Onu</i> , University of Johannesburg, South Africa
TM509 15:45~16:00	Recent Developments in Advanced Fiber-Reinforced Composites for Sustainable and Energy-Efficient Transportation Systems <i>Idowu David Ibrahim</i> , Vaal University of Technology, South Africa

ONSITE SESSION 2

Thursday, May 14, 2026 <13:00~15:45>

Onsite Session 2: Parametric Design and Performance Simulation of Mechanical Systems Based on Finite Element Method

Chairperson: Assoc. Prof. Atthaphon Ariyarat, Suranaree University of Technology, Thailand

Silo Threads
<ground floor >

TM023 13:00~13:15	Shaft torsional monitoring using Optical Sensor Lonwabo Somphali , University of Johannesburg, South Africa
TM100-A 13:15~13:30	Design Optimization of Rear Bicycle Wheels Through Parametric Numerical Simulation António Bastos Pereira , University of Aveiro, Portugal
TM152 13:30~13:45	Analysis and evaluation of endodontic instrument wear Marek Roszak , Silesian University of Technology, Poland
TM033 13:45~14:00	Machine Learning-Driven Finite Element Analysis for Structural Assessment of Agricultural Drone Arms Atthaphon Ariyarat , Suranaree University of Technology, Thailand
TM140 14:00~14:15	Prediction of Stress Redistribution and Plastic Zone Evolution in Rotating Flywheels Using Analytical Tresca Plasticity Mode Kgotso Koketso Leema , Vaal University of Technology, South Africa
TM079 14:15~14:30	Numerical analysis of magnetohydrodynamic effects of aerodynamics on a submerged blunt object in liquid Gallium Phillip Mnisi , University of Johannesburg, South Africa
TM041-A 14:30~14:45	Development of a Novel Computational Approach for Aerodynamic Design of Low-Speed Fixed-Wing UAVs Auraluck Pichitkul , Suranaree University of Technology, Thailand
TM119 14:45~15:00	Design and Development of a Multi-Functional Robotic Sea Navigation, Monitoring, and Intervention System Devkumarsing Callychurn , University of Mauritius, Mauritius
TM121 15:00~15:15	Comparative Multi-Model Framework for Parameter Importance Assessment in CNC Machining Zvikomborero Hweju , Chinhoyi University of Technology, Zimbabwe
TM066-A 15:15~15:30	Application Of 3D Bioprinting In The Construction Of In Vitro Models And The Repair Of Defective Tissues Mingjun Xie , The First Affiliated Hospital Zhejiang University School of Medicine, China
TM029 15:30-15:45	Autofrettage in Thick-Walled Pressure Vessels: Advanced Numerical Modelling and Critical Review Pretty Phumla Maphosa , Vaal University of Technology, South Africa; Mangosuthu University of Technology, South Africa

ONSITE SESSION 3

Thursday, May 14, 2026 <16:00~18:45>

Onsite Session 3: Intelligent Manufacturing Enabling Technology and Industry 4.0 System Integration

Chairperson: Assoc. Prof. Marek Roszak, Silesian University of Technology, Poland

Dry Dock Tats
<ground floor >

TM094 16:00~16:15	Industry 4.0 technologies for predictive maintenance in manufacturing firms: A systematic literature review Refentse Lydia Selepe , Tshwane University of Technology, South Africa
TM042 16:15~16:30	An AI-Driven Upskilling Framework for Fourth Industrial Revolution Smart Manufacturing in the South African Foundry Sector Victor Mofokeng , University of Johannesburg, South Africa
TM019-A 16:30~16:45	Physics-informed machine learning for inverse problems in intelligent manufacturing Yanglong Lu , The Hong Kong University of Science and Technology, China
TM057 16:45~17:00	Experimental Validation of an Adaptive Microcontroller-Based Automated Power Factor Correction System Kgabo Kokhutja , University of South Africa, South Africa
TM036 17:00~17:15	A Framework for Evaluating Vision-Language Models on Spatial Tasks in Production System Planning Tobias Delago , Technical University of Munich & BMW Group, Germany
TM060 17:15~17:30	An Intelligent Design-for-Manufacturability Framework for Plastic Components Using CAD Feature Recognition Dinesh Babu Ras Sivaselvan , Rivian Automotive LLC., Inc786 Las Palmas Dr., Irvine, CA 92602, USA
TM105 17:30~17:45	An Adaptive Control and Elite-Driven Swarm Algorithm for Engineering Optimization Problems Kedar Nath Das , National Institute of Technology Silchar, Assam, India
TM142 17:45~18:00	The Evolution of Nanotechnology in the Era of Industry 4.0: A Review of the Manufacturing Sector Refentse Lydia Selepe , Tshwane University of Technology, South Africa
TM134 18:00~18:15	A Risk-Based Digital Monitoring Framework for Circular Manufacturing Performance Assessment in Mauritian Industrial Systems Devkumarsing Callychurn , University of Mauritius, Mauritius
TM008 18:15~18:30	Intelligent Optimisation Design in Industrial Design and Manufacturing: A Systematic Review Tosho Abdulahi AbdulRahman , Kwara State Polytechnic, Ilorin-Nigeria
TM050 18:30~18:45	Cellular IoT as the Engine for Intelligent Manufacturing Integration: From Strategy to Synergy Peter Onu , University of Johannesburg, South Africa

ONSITE SESSION 4

Saturday, May 14, 2026 <16:00~18:45>

Onsite Session 4: Modeling and Energy Efficiency Performance Analysis of Power and Energy Systems for Manufacturing Industry

Chairperson: Assoc. Prof. Susanta Kumar Tripathy, National Institute of Technology Silchar, India

Silo Threads
<ground floor >

TM108 16:00~16:15	Towards Sustainable and Intelligent Manufacturing: A Review of Renewable Energy Integration and Smart Grid Technologies Xolani Yokwana , University of South Africa, South Africa
TM120 16:15~16:30	Hybrid Renewable Energy Systems for Industrial Parks: Opportunities and Challenges in Sustainable Manufacturing Xolani Yokwana , University of South Africa, South Africa
TM083 16:30~16:45	Optimization of a mini hydroelectric generation system Motsi Matlakala , University of Johannesburg, South Africa
TM502 16:45~17:00	Quantum-Inspired Multi-Scale Simulation of CRISPR Interference Detected by NV-Center T1 Relaxometry Don Roosan , Merrimack College, USA
TM084 17:00~17:15	Optimization of a Passive Condensation System for Water Recovery in Humid ClimatesMotsi Matlakala , University of Johannesburg, South Africa
TM503 17:15~17:30	Quantum-Enhanced SNAP Potential for Nickel: Integrating Variational Quantum Circuits in Molecular Dynamics Don Roosan , Merrimack College, USA
TM004 17:30~17:45	Virtual Reality Applications for Safety Use of Machineries in the Mining Sectors: A Review of Techniques and Publication Trends Alfred Thaga Kgopa , University of South Africa, South Africa
TM1041 17:45~18:00	An Optimisation Approach to Hybrid Machine Learning for Edge Computing-Based Real-Time Water Leak Detection Giresse M. Komba , Computer Engineering, South Africa
TM053 18:00~18:15	Adoption Factors and Sustainability Implications of AI-Driven Agricultural Waste-to-Value Manufacturing: A TOE-Based Systematic Review Innocentia Mokwana , University of South Africa, South Africa
TM511-A 18:15~18:30	Material-Driven Design and Control Optimization of Flywheel Energy Storage Systems for Sustainable Solar PV Smoothing Willy Stephane Ngaha , Vaal University of Technology, South Africa
TM1042 18:30~18:45	Recycling of Absorbent Hygiene Products (AHP): An Engineering Case Study of a Sequential Pilot-Scale Processing Line Piotr Sakiewicz , Silesian University of Technology, Poland

ONLINE SESSION 1

Thursday, May 14, 2026 <13:00~15:15>

Online Session 1: Integrated Design and Structural Parameter

Optimization of Advanced Mechanical Systems

Meeting ID: [814 4709 7119](https://www.zoom.us/j/81447097119)

Chairperson: Prof. Olawale Samuel Fatoba, University of Johannesburg, South Africa

TM144 13:00~13:15	Structural Design and Performance Experimental Study of a New High-Temperature, High-Pressure Recoverable Packer Wrench Shenghong Wang , CNOOC Oilfield Services Co., Ltd. Tianjin Branch, China
TM141 13:15~13:30	DESIGN, FABRICATION AND PERFORMANCE EVALUATION OF CONTINUOUS KAPOK FIBER EXTRACTOR MACHINE USING SCREW LIKE ARRANGEMENT OF NYLON BEATERS Aldrin S. Fernando , Technological University of the Philippines Visayas, Philippines
TM054 13:30~13:45	Easy Inertial Measurement Unit (EIMU): A Cost-Effective IMU Solution for Real-Time Orientation and Acceleration Estimation in Robotic State Estimation and ROS2 System Peter Onu & Samuel Agba , University of Johannesburg, South Africa
TM109 13:45~14:00	"DESIGN, FABRICATION AND PERFORMANCE EVALUATION OF A MECHANIZED HIGH-CAPACITY COMPACT MUNG BEAN THRESHER WITH DUAL STAGE SIFTING MECHANISM Joenilo A. Duran, PME , Technological University of the Philippines - Visayas, Philippines
TM1014 14:00~14:15	A Study on Wear Evaluation of Light Rail Transit Wheels and Alloyed Wheel-Rail TBA
TM078 14:15~14:30	Easy PID Motor Controller (EPMC): A Cost-Effective Closed-Loop PID Motor Controller with Integrated Encoder Processing and ROS2 Support for Mobile Robotics Peter Onu & Samuel Agba , University of Johannesburg, South Africa
TM156 14:30~14:45	Post Processing Techniques to Enhance Mechanical Properties of 3D Printed Tough 1500 Risen Materials use for Prototyping an Existing Steel Rain-Gauge Design Tshepo Gaonnwe , University of South Africa, South Africa
TM101 14:45~15:00	Thermal Analysis of X-Band Communication and Earth Observation Payloads for Orbital Satellite Missions Majed A. Alharbi , King Abdulaziz City for Science and Technology (KACST), Saudi Arabia
TM056 15:00~15:15	Thermal Performance Analysis of Satellite Solar Panels in Low Earth Orbit Majed A. Alharbi , King Abdulaziz City for Science and Technology (KACST), Saudi Arabia

ONLINE SESSION 2

Thursday, May 14, 2026 <15:30~17:30>

Online Session 2: Advanced Material Processing Technology and Precision Manufacturing Process

Meeting ID: [814 4709 7119](https://www.zoom.us/j/81447097119)

Chairperson: Asst. Prof. Anas Alburayt, King Abdulaziz City for Science and Technology (KACST), Saudi Arabia

TM135 15:30~15:45	Tensile Behavior of Stainless Steel Built by Two Distinct Laser Additive Manufacturing Methods Amany Khaled Sayed , Memorial University of Newfoundland, Canada
TM1015 15:45~16:00	Manufacturing Challenges and Mechanical Reliability of Polymer Electrolyte Fuel Cells: A Review TBA , University of Johannesburg, South Africa
TM137 16:00~16:15	Prediction Method and Verification of Machining Accuracy of CNC Broach Grinding Machine Based on Geometric Error Analysis of Key Components Huo Leilei , Beijing University of Technology, Beijing, China
TM085 16:15~16:30	Optimization of Hydrocyclone Operating Parameters for Coal Ultrafines Processing: A Taguchi Approach Thabo Nelson Mathonsi , University of Johannesburg, South Africa
TM020 16:30~16:45	Coated measuring artefact for measurement noise metrological characteristic determination Anas Alburayt , King Abdulaziz City for Science and Technology (KACST), Saudi Arabia
TM021 16:45~17:00	Increase of OEE in the Flexible Packaging Industry through Planned Maintenance and Standardized Work Supported by Digital Centerline and Andon Systems Daniel Espinoza , UPC, Perú; Pilot University of Colombia, Colombia
TM062 17:00~17:15	A Safety-Oriented Design of a Thermal Oil Burner Management System for Industrial Applications Vincent Tshabalala , University of South Africa, South Africa
TM505 17:17~17:30	Heat-Treated Duplex Stainless Steel as a Processing-Tunable Material for Localized Corrosion Control in Tar-Sand Environments Oladeji O Ige , Durban University of Technology, South Africa

ONLINE SESSION 3

Friday, May 15, 2026 <09:00~11:00>

Online Session 3: Fault Prediction, Health Management, and Online Quality Monitoring of Industrial Machinery Systems

Meeting ID: [814 4709 7119](https://www.zoom.us/j/81447097119)

Chairperson: Dr Yash Shah, Phinia INC, United States

TM018 09:00~09:15	Machine Learning Model Development for Predictive Maintenance in Industrial Robotics Phathutshedzo Benedict Mathivha , University of Johannesburg, South Africa
TM025 09:15~09:30	Optimizing Equipment Availability in Textile Manufacturing Through Training, Planned Maintenance, SMED and Machine Learning Johana Cubas-Juscamaíta , UPC, Perú; Pilot University of Colombia, Colombia
TM039 09:30~09:45	Standardization and TPM 4.0 with IoT as drivers of efficiency in textile production Hernán Jesús Tolentino Quesada , Universidad Peruana de Ciencias Aplicadas, Perú
TM136 09:45~10:00	One-Class Anomaly Detection for Zero-Label Fuel Injector Fault Screening at New Product Introduction Yash Shah , Phinia INC, United States
TM063 10:00~10:15	GearFaultNet: Fault Detection in Rotating Gear Systems Using Vibrational Data Shukur Huseynov , School of Mechanical Engineering, Dalian University of Technology, China
TM1010 10:15~10:30	IMPROVING EQUIPMENT RELIABILITY USING TECHNOLOGY FOR INTRASTRUCTURE INTEGRITY MONITORING TBA , University of South Africa Unisa, South Africa
TM1023 10:00~10:45	Predictive Risk Management Models for Lean Manufacturing Systems Sebastian Maliyakal Francis , Aumovio, Texas, USA
TM159 10:45~11:00	Vibration-Based Detection of Gear Cracking in Coupled Spur Gear and Cardan Shaft System Using Time–Frequency Analysis Yakeu Happi Kemajou Herbert , Vaal University of Technology, South Africa

ONLINE SESSION 4

Friday, May 15, 2026 <12:00~14:30>

Online Session 4: Production Scheduling and Collaborative Optimization in Industrial Automation Systems

Meeting ID: [814 4709 7119](https://www.zoom.us/j/81447097119)

Chairperson: Prof. Joenilo A. Duran, Technological University of the Philippines - Visayas, Philippines

TM016 12:00~12:15	Improving Order Picking Service Levels in Pharmaceutical Warehouses through SLP, Slotting and IoT-Enabled WMS Jose Rivadeneira-Coronado , Universidad Peruana de Ciencias Aplicadas, Industrial Engineering Program, Peru
TM022 12:15~12:30	Enhancing Demand Fulfillment in Metal-Mechanical MSEs Using DDMRP and Holt-Winters with ML Residual Correction Camila Gadea , UPC, Perú; Pilot University of Colombia, Colombia
TM1039 12:30~12:45	Test Fluid Lifecycle Management in High-Pressure Injector Bench Operations Yash Shah , Phinia INC, United States
TM151 12:45~13:00	Hybrid Machine Learning and Lean-S&OP Framework for Logistics Performance Improvement in Peruvian Manufacturing SMEs TBA , UPC, Perú; Pilot University of Colombia, Colombia
TM082 13:00~13:15	OPTIMIZING TRAIN PROCESSING EFFICIENCY USING PPC ALIGNED WITH 4IR TECHNOLOGIES TBA , University of South Africa Unisa, South Africa
TM006 13:15~13:30	Integration of Jidoka and TPM with Industry 4.0 Technologies to Improve Efficiency in the Peruvian Textile Ivonne Coterá , Pilot University of Colombia, Colombia; UPC, Perú
TM024 13:30~13:45	SMED 4.0 and TPM Integration for OEE Improvement in Label Printing: A Simulation-Based Validation Study Rosario Muñante , UPC, Perú; Pilot University of Colombia, Colombia
TM154 13:45~14:00	Design and Performance Modeling of a Multi-Magnet Linear Electromagnetic Generator for Wave-Powered Marine Buoys in Kuwaiti Waters Hayder Salem , Australian University Kuwait, Kuwait
TM071 14:00~14:15	Design and Implementation of a Pixhawk-Based Quadcopter UAV for Different Applications Betuel Matosse , University of South Africa, South Africa
TM139 14:15~14:30	A Simulation-Based Design for a Warehouse 4.0 Packing Facility in Automotive Logistics Herman Messie , Tshwane University of Technology, South Africa

One Day Tour

Tentative Itinerary

07:30: Start from Radisson RED Cape Town V&A Waterfront

8:30: Iziko Bo Kaap Museum

9:00 | Table Mountain (60mins)

10:00 | Campus Bay (20mins)

10:20 | Chapman's Peak Drive (40mins)

11:00: Cape of Good Hope (60mins)

13:30: Boulders Beach (60mins)

14:30: Fish Hoek Beach (60mins)

16:00: Muizenberg Beach (60mins)

NOTE:

* The fee includes pick-up and lunch, tickets for scenic spots are not included.

Registration closes at **May 9, 2026** (JST, UTC+2h)

Registration fee: **200 USD** per person

※Itinerary Pace: This tour features a compact schedule designed to cover key attractions. Travel times are approximate and subject to change depending on traffic conditions.

※Please take good care of your valuables at any time during the tour. The conference organizer does not assume any responsibility for the loss of personal belongings of the participants during the tour.

※The tour is not included in the regular registration of author, presenter, delegate. To join the tour, please pay via the following link and send the proof of payment to the conference secretary for confirmation. Thank you.

<https://confsys.iconf.org/awxpay>

Tour Registration

Full Name:	
Sex: M / F	Date of Birth: DD/MM/YY
E-mail:	
Whatsapp No. (if you have)	
Please fill in the E-mail and Confirmation Number after paying	
E-mail:	Order Number:



Table Mountain

Table Mountain is one of South Africa's most iconic landmarks, towering over Cape Town at 1,085 meters (3,558 feet) above sea level. Known for its flat, table-like summit, the mountain forms part of the Table Mountain National Park and is a UNESCO World Heritage Site.



Cape of Good Hope

The Cape of Good Hope is one of South Africa's most iconic landmarks, located at the southwestern tip of the Cape Peninsula. This dramatic headland forms part of the Table Mountain National Park and is renowned for its spectacular ocean views, rugged cliffs, and rich biodiversity.



Camps Bay

Camps Bay is one of Cape Town's most glamorous coastal suburbs, known for its pristine white-sand beach, turquoise waters, and dramatic mountain backdrop.



Muizenberg Beach

Muizenberg Beach is one of Cape Town's most iconic beaches, famous for its colorful beach huts, gentle waves, and laid-back vibe.



Chapman's Peak Drive

Chapman's Peak Drive – One of the World's Most Scenic Coastal Roads



Boulders Beach

Boulders Beach - Home to Africa's Adorable Penguins

