Detailed Conference Program

Session	Title	Paper ref	Chair/Co-chair/Authors
Thursday, April, 10, 2025			
Thursday 08:30-09:45	Registration		
Thursday 09:45-10:15	Opening Ceremony		
Thursday 10:15-10:45	Coffee Break		
Thursday 10:45-12:00	Plenary Session 1		
	Calculation of complex chemical reaction equilibria: old and new approaches	PS1	*Author: Ahmed Bellagi/Chair: Hatem Mhiri*
Thursday 12:00-13:30	Lunch		
Room 1 Thursday 13:30-15:00	ACM 1: Advanced Computational Mechanics 1		*Nejib Hidouri*
	Transient-Based Characterization of Pipe Deterioration in a Single Pipeline System	ID69	*Wejden Yaakoubi, Lazhar Ayed, Caterina Capponi, Silvia Meniconi and Bruno Brunone*
	Nozzle shape Optimization of an UL-PRS Crossflow Turbine Using the Adjoint based gradient Solver	ID70	*Zaineb Touati, Khaled Souaissa, Marco Sinagra,Tullio Tucciarelli and Mouldi Chrigui*
	Performance Analysis of a Helical Savonius Hydrokinetic Turbine Using CFD Simulations	ID44	*Mariem Elakrout, Ahmed Ayadi and Abdallah Bouabidi*
Room 2 Thursday 13:30-15:00	RES 1: Renewable Energy Systems 1		*Ammar Hidroui//Souheil Elalimi*
	Optimization of food cooking time and temperature in a closed, concave, elliptical solar cooker of revolution exposed only in front of a paraboloidal reflector concentrator.	ID3	*Abdelmoumen Hidouri, Kamel Rabhi and Slimen Attyaoui*
	The Libyan Green Energy Belt: Bridging Renewable Energy and Sustainable Agriculture in Arid Climates	ID5	*Mohamed Misbah and Ahmed Sawi Sharif*
	Experimental and Numerical Study of The Aerodynamic Characteristics of Helical Darrieus Rotor	ID15	*Dorra Ghodhbani, Ahmed Ayadi and Zied Driss*
	Experimental Analysis of the Thermoelectric Performance of an Air-Based Photovoltaic-Thermal (PVT) Solar Collector On-Site	ID25	*Hatem Oueslati and Kamel Sahlaoui*
Room 3 Thursday 13:30-15:00	MSE 1: Materials Science and Engineering 1		*Imed Miraoui*
	Synthesis of metallic nanoparticle coatings on TiO2 nanotubes: physicochemical and tribological characterization	ID4	*Abid Boubakri, Firas Bensliman, Hafedh Dhiflaoui, Jabeur Ghozlani and Anouar Hajjaji*
	Thermomechanical Characterization of a Composite Material based on Plaster and Wood Powder	ID54	*Nahed Soussi, Marwa Ammar, Ameni Mokni and Hatem Mhiri*
	The Effect of Normal Load on Friction in Glass Fiber-Reinforced Polyamide 66 Composites	ID62	*Sami Missaoui, Riadh Autay and Zied Driss*
	Experimental Measurements and modeling of CO2 adsorption on various zeolites	ID26	*Hedi Jedli, Abdessalem Jbara, Mohamed Mbarek and Khalifa Slimi*
Thursday 15:00-15:45	Coffee Break, Poster Session and Video Presentation		
	Optimizing the Thermal Performance of Double Skin Façades under hot climatic condition	ID41	*Maha Fguiri, Ali Fguiri, Zouhaier Mehrez and Mohamed-Razak Jeday*
	Mechanical Properties of HfO_2 and ZrO_2 Investigated via Ab Initio Calculations Using CRYSTAL17	ID20	*Hanen Ferhi, Othmen Khaldi and Rached Ben Younes*
	Modeling using numerical and the Taguchi methods for the orthogonal cutting of AISI 4140 steel	ID11	*Boujemaa Hadj Brahim, Lotfi Dahmeni, Slimen Attyaoui and Mohamed Nasser*
	Inverse identification for multi-criteria optimization 3D elastic properties of cross-ply Elium 150®-reinforced flax fiber composites	ID84	*Ameny Ketata*
	Mathematical Modeling and Optimization of Sisal and Cactus Fiber-Reinforced Plaster Composites	ID29	*Imed Miraoui and Samir Zidi*
	Experimental Analysis of Gear Tooth Breakage Impacts on Vibration and SEIG Current Signatures in Wind Turbines	ID77	*Mohamed Belgacem, Mohamed Salah, Soufien Essahbi and Hatem Tlijani*
	A Deep Learning method for MS Lesion Quantification on MRIs	ID52	*Mouna Sahnoun, Fathi Kallel, Salma Sakka and Mariem Dammak*
	Dynamic regime study of a solar-powered phosphate drying prototype	ID68	*Wael Manai, Kamel Rabhi and Slimen Attyaoui*
	Comparative Analysis of Radial and Longitudinal Internal Fins for Enhancing the Performance of Parabolic Trough Solar Collectors	ID9	*Anissa Ghomrassi, Hatem Mhiri and Philippe Bournot*
	Estimation of the Coefficient of Convective Heat Transfer of a Wall by Inverse Approach	ID30	*Imen Lassioued, Ali Fguiri and Mohamed-Razak Jeday*
	Impact of the Surface Energy Potential and collisional transitions $\Delta k=\pm 3$ on line widths of PH_3 perturbed by Ar in the v_2 and v_4 bands	ID33	*Jamel Salem and Siwar Barhoumi*
	Simulation of PLA Biocomposite Reinforced with kenaf Fibers as a Sustainable Alternative to Aluminum for Car Body Manufacturing	ID63	*Samir Zidi and Imed Miraoui*
	Preliminary Structural Design for vibration analysis of drone's blade	ID19	*Ghazoi Hamza, Waad Chraiti, Mohamed Salah and Mohamed Haddar*
	Performances of an agricultural greenhouse using different materials	ID14	*Djemoui Lalmi, Kamel Bouarour, Abdelouahab Benseddik, Ahmed Badji, Hocine Bensaha and Hadef Redjem*
	Mixed Convection Study of Hybrid Nanofluid Flow in a Trapezoidal Cavity with a Hot Cylinder Inside	ID35	*Kamel Bouaraour, Amel Trabelsi, Djemoui Lalmi and Mohamed Salem Sidi Mohamed*
	Numerical simulation of the Erichsen test of thin DP600 steel sheets and Aluminium alloy using SolidWorks	ID79	*Said Mlik, Slimen Attyaoui and Mohamed Nasser*

	Optimizing Natural Ventilation with Double-Pass Inclined Solar Chimneys: A Sustainable Solution for Energy-Efficient Buildings	ID74	*Akermi Faouzi, Dib Amar, Aissaoui Faris, Touafek Khaled and Bouaraour Kamel*
	Influence of Grid Density on Buoyancy-Driven Flow Dynamics in a 2D Cavity: A Parametric Investigation	ID1	*Abdelhak Bahlouli and Adel Lalaoua*
	Comparative Study of Numerical Methods for Internal Flow: Implicit-Explicit Finite Differences and Latice Boltzmann Method with Varying Lattice Node Arrangements	ID2	*Abdelhak Bahlouli and Idir Lasloudji*
	Environment and economic analysis of an industrial waste heat	ID16	*Douha Alaya, Ali Fguiri and Mohamed-Razak Jeday*
	Innovative Application of TIM-PS in Natural Convection Flat Plate Solar Air Collectors for Improved Thermal Efficiency	ID45	*Marwa Ammar, Nahed Soussi, Ameni Mokni, Hatem Mhiri and Hervé Bournot*
Thursday 15:45-16:30	Plenary Session 2		
	Bio-composite materials gypsum-based reinforced with natural fibers and/or cords	PS2	*Author: Imed Miraoui/Chair:Rached Ben Younes*
Room 1 Thursday 16:30-18:00	ESB 1: Energy Storage and Batteries 1		*Paolo Principi/Aballah Bouabidi*
	Impact of Roof Shape on Thermal Comfort in Buildings with Integrated Phase Change Materials	ID47	*Mohamed Habib Haddad, Sana Dardouri and Jalila Sghaier*
	Advanced control of electrolyzers powered by hybrid photovoltaic/thermal (PV/T) system for hydrogen and domestic hot water production in residential buildings	ID48	*Mohamed Hamdi and Souheil Elalimi*
	Experimental investigation of a trays inclined solar still with enhanced condensation process	ID59	*Sahar Grine, Fatma Ouled Saad, Fatma Ezzahra Lakhel, Amira Akrouti, Jamel Madiouli and Ammar Hidouri*
	Sliding mode control-based MPPT for high-power wind energy: design and performance analysis	ID53	*Nadia Gasmi, Radhia Garraoui, Bassem Omri, Mouna Ben Hamed and Lassaad Sbita*
Room 2 Thursday 16:30-18:00	RAAI 1: Robotics, Automation and AI 1		*Malek Belouda/Hatem Oueslati*
	A comparative analysis of innovative control techniques for PEMFCS: Hybrid adaptive PI sliding mode and perturb & observe strategies	ID56	*Radhia Garraoui, Bassem Omri, Mouna Ben Hamed and Lassaad Sbita*
	Artificial Intelligence and Dynamic Vehicle Scheduling: PPO-Driven Optimization	ID83	*Nouha Alyaoui, Om Kolthoum Elhajjej, Wafa Akermi and Karim Chabir*
	ANN-Driven Trajectory Optimization and Collision Avoidance for Robotic Manipulators in Cluttered Workspaces	ID21	*Hani Nasri, Hatem Tlijani and Khaled Nouri*
	Prediction of Brake Power in Pelton Turbine Using Machine Learning Algorithms	ID71	*Lachhel Belhassen, Ichraf Hammadi, Lazhar Ayed and Abdallah Bouabidi*
Room 3 Thursday 16:30-18:00	EEC 1: Energy Efficiency and Conservation 1		*Zied Driss/Mohamed Ammar Abbassi*
	Impact of Climatic Conditions on the Thermal Performance of Solar Air Dryer: A Numerical Study	ID51	*Mouna Belhadj Ltaief, Walid Ben Amara and Abdallah Bouabidi*
	AI-powered Energy Efficiency: Prediction and Anomaly Detection	ID42	*Moujahed Maha, Hamdi Mohamed, El Ouederni Ridha and ElAlimi Souheil*
	Combustion and Performance Analysis of a Diesel Engine Operating with Hydrogen-Enriched CNG in Dual-Fuel Mode	ID57	*Rafaa Saaidia, Mideni Krotli, Imed Miraoui and Abdallah Bouabidi*
	Performance enhancement of a Building Integrated Photovoltaic system using wavy fins with slots	ID50	*Monia Chaabane, Salma Benzarti and Hatem Mhiri*
Friday, April, 11, 2025			
Friday 08:15-09:00	Plenary Session 3		
	Computational Fluid Dynamics (CFD) in Energy Systems: Innovations, Challenges, and Future Applications	PS3	*Author: Mouldi Chrigui/Chair: Aref Maalej*
Room 1 Friday 09:00-10:30	BBM1: Biomechanics, Bioengineering and Manufacturing 1		*Anas Bouguecha/Ahmed Sawi Sharif*
	Prediction and Optimization of Mechanical Performance of short Alfa Fiber-Reinforced Polypropylene Biocomposites for Automotive Applications: A Taguchi Design Approach	ID32	*Iskander Jellid, Rawdha Kessentini, Olga Klinkova, Anas Bouguecha, Imad Tawfiq and Mohamed Haddar*
	Thermomechanical Behavior of Phosphogypsum Composites Reinforced with Olive and Eucalyptus Wood Chips	ID58	*Rafaa Saaidia, Houcem ltaeif, Abdallah Bouabidi, Lazhar ayed and Imed Miraoui*
	Chip Breaker Geometry Effect on Cutting Forces in Orthogonal Cutting	ID24	*Hassen Khlifi, Wahid Tarhouni, Lefi Abdellaoui and Wassila Bouzid*
	Modeling of Mass and Heat Transfer in a Granular Medium: Case of Convective Drying of Agri-Food Products	ID22	*Hasna Arfaoui, Hatem Oueslati and Sami Kooli*
	Segmentation of Initial Mechanical Events in the Bileaflet ON-X Heart Valve Using Structured HMM and Impulse-Guided Viterbi Decoding	ID86	*Radhia Akermi and Rached Ben Younes*
Room 2 Friday 09:00-10:30	SGEM 1: Smart Grids and Energy Management 1		*Hatem Mhiri/Abdallah Bouabidi*
	Fault Detection and Classification in Photovoltaic Systems Using AI and Machine Learning Techniques	ID65	*Sarah Jaffali, Aicha Abid and Mouna Ben Hamed*
	Optimization of Production Scheduling in Factories Using Genetic Algorithms and Petri Nets	ID60	*Sameh Affi, Atef Khdher and Khaoula Bouazzi*
	A review of cybersecurity measures for an enhanced IoT-based PV Pumping System	ID76	*Malek Belouda, Tlili Messai, Chayma Azouz and Mami Abdelkader*
	The influence of the integration of digital technology on CO2 emissions and energy in the European Countries	ID23	*Hasna Khemili*
Room 3 Friday 09:00-10:30	SDV 1: Structural Dynamics and Vibrations 1		*Zoubeir Bouaziz/Lazhar Ayed*
	Early Detection of Rotor Bar Breakage in Induction Machines Using Infrared Thermography and Thermal Image Processing	ID80	*Rabii Hajji, Mohamed Salah, Ghazoi Hamza and Hatem Tlijani*
	Investigation of the structural, vibrational and dielectric properties of the half-doped spinel chromite Ni0.5Cd0.5Cr2O4	ID34	*Kais Omri and Jabeur Khlifi*
	Study of structural, elastic, optical, dielectric and magnetic properties of sol-gel synthesized Li0.2Co0.3Zn0.3Fe2.2O4 ferrite for optoelectronic and electrical applications	ID17	*Fakher Hcini, Sobhi Hcini and Mohamed Lamjed Bouazizi*
	Numerical Modeling and Structural Analysis of High-Pressure Hydrogen Storage Tanks for Industrial Applications	ID81	*Leila Khalfa, Fatma Majdoub, Mohamed Elbouzidi and Zied Driss*
Friday 10:30-11:00	Coffee Break		

Room 1 Friday 11:00-12:30	TEHT 1: Thermal Energy and Heat Transfer 1		*Mohamed Jomaa Safi/Ali Fguiri*
	Mixed convection of CNTs nanoliquid through a channel with periodic heated cavities	ID18	*Mohamed Ghazali Belhaj and Mohamed Ammar Abbassi*
	Second law analysis of magneto-hydrodynamics (MHD) natural convection heat transfer	ID75	*Mohamed Ammar Abbassi and Bouchmel Mliki*
	MHD natural convection of nanofluid due to an inner rotating cylinder in a 2D cavity with a non-Newtonian	ID10	*Baraa Mnasri and Mohamed Ammar Abbassi*
Room 2 Friday 11:00-12:30	ACM 2: Advanced Computational Mechanics 2		*Mouldi Chrigui*
	Numerical Simulation of Vacuum-Assisted Resin Infusion: Process Analysis	ID27	*Houssem Cherif, Saouab Abdelghani, Khawla Essassi, Abdelkhalak El Hami, Anas Bouguecha and Mohamed Haddar*
	State estimation of Fractional Order Systems: Application to a Spring-Mass-Damper	ID72	*Salsabil Khchim, Anissa Benaicha and Atef Khedher*
	Assessment of a CFD Model for Organic Waste Pyrolysis in a Bubbling Fluidized Bed	ID66	*Souad Aboudaoud, Souad Abderafi and Mohamed Ammar Abbassi*
	The effects of the thermodynamic behavior of air in the surge tank on the water hammer wave	ID12	*Chourouk Mabrouki, Lazhar Ayed and Sami Elaoud*
Room 3 Friday 11:00-12:30	RES 2: Renewable Energy Systems 2		*Ahmed Sawi Sharif/Nejib Hidouri*
	Experimental and numerical analysis of solar water heater with and without Phase Change Materials	ID61	*Sami Missaoui, Eya Missaoui and Zied Driss*
	An innovative solar heating device for a standalone solar dryer powered by solar energy	ID64	*Sara Baddadi and Salwa Bouadila*
	Study of the Performance of a Capillary Exchanger Coupled with a Hybrid PV/T system	ID78	*Mariem Zaghdoudi and Majdi Lahzami*
Friday 12:30-14:15	Lunch		
Friday 14:15-15:15	Plenary Session 4		
	Power energy and green hydrogen production using ceramic electrochemical technology: Issues, challenges and developments at CNR-ITAE	PS4	*Author: Massimiliano Lo Faro/Chair:Ahmed Bellaji*
Friday 15:15-15:45	Expert intervention		
	AI-Driven Innovation: From Industrial Predictive Maintenance to Renewable Energy Advancements	EI1	*Author: Marcos Vinicios Barp/Chair:Mouldi Chrigui*
Friday 15:45-18:45	Excursion to the archeological sites and to the Oasis of Gafsa		
Saturday, April, 12, 2025			
Saturday 08:15-09:00	Plenary Session 5		
	Thermal Storage: the case of Solar Pond	PS5	*Author: Mohamed Jomaa Safi/Chair: Abdelmajid Jemni*
Room 1 Saturday 09:00-09:45	ESB 2: Energy Storage and Batteries 2		*Ammar Hidouri*
	Thermal Effects of PCM Melting Process in Salt Gradient Solar Ponds: an Experimental and Numerical Approach	ID13	*Daniele Colarossi, Yassmine Rghif, Belkacem Zeghmati and Paolo Principi*
	Dater Approach for the Modeling and Analysis of a PV Cell-Battery System modeled by Hybrid Petri Nets	ID37	*Khouloud Soltani, Hajer Mlayeh and Atef Khedher*
	Investigation of Heat Transfer Mechanisms in a Composite Wall Incorporating BioPCM Materials	ID36	*Khmais Hidouri, Sana Dardouri and Jalila Sghaier*
Room 2 Saturday 09:00-09:45	RAAI 2: Robotics, Automation and AI 2		*Mohamed Salah*
	Dynamic Modeling and PID Control of a UAV: Stability and Performance Analysis	ID6	*Chabir Amal, Abid Aicha and Ben Hamed Mouna*
	Optimizing Handover Decisions in 5G Vehicular Networks Using Deep Q-Networks	ID7	*Amina Gharsallah, Faouzi Zarai and Mahmoud Neji*
	Artificial intelligence application in electric vehicle battery charging	ID40	*Mabrouka Romdhane, Maria Amaidi, Mohamed Naoui and Ali Mansouri*
Saturday 09:45-10:30	Plenary Session 6		
	The Biomechanics of the Bone Remodeling after Hip Arthroplasty	PS6	*Author: Anas Bouguecha/Mohamed A. Abbassi*
Saturday 10:30-11:00	Coffee Break		
Room 1 Saturday 11:00-12:30	MSE 2: Materials Science and Engineering 2		*Anas Boughecha/Ali Fguiri*
	Experimental Investigation of PLA Rigidity in Fused Deposition Modeling	ID43	*Manel Dhouioui, Boutheina Ben Fraj, Wissem Zghal, Hamdi Hentati and Mohamed Haddar*
	Characterization of Viscoelastic Behavior in creep and Evolution of the Shapery Model for Mirror Resin	ID49	*Mohsen Dardouri, Ali Fellah, Fethi Gmir and Abdessattar Aloui*
	Study of the influence of ball-end milling process parameters on the roughness of slightly inclined surfaces	ID39	*Lotfi Dahmani, Boujemaa Hadj Brahim, Slimen Attyaoui and Mohamed Nasser*
	Effect of fiber length and fiber load on the stiffness of Juncus acutus/LDPE composites	ID73	*M. Essaleh, A. Khanfir, M. Yengui, M. Khlif, A. Bouguecha and M. Haddar*
Room 2 Saturday 11:00-12:30	EEC 2: Energy Efficiency and Conservation 2		*Imed Miraoui/Slimen Attyaoui*
	New numerical study for predicting the behavior of an energy system Based on the Galerkin method	ID46	*Marwa Ben Boubaker and Rached Ben Younes*
	Performance Enhancement of Air-Coal Ash Fluidized Bed Reactor in Bubbling Regime	ID67	*Souad Aboudaoud, Sara Touzani, Souad Abderafi, Abdelkhalek Cheddadi and Mohamed Ammar Abbassi*
	Numerical Simulation of Iron Particle Injection into a Spherical Reactor	ID38	*Kodes Hamda, Khaled Souaissa, Léo Courty and Mouldi Chrigui*
	Adaptation of a Solar Tomato Dryer to Other Products	ID85	*A. Zriba, R. Ben Abid and M. S. Guellouz*
	Strategic Carbon Footprint Evaluation and Emission Reduction Approaches for the Mdhilla Industrial Site: Insights from the Tunisian Chemical Industry	ID82	*Oussama Hajji, Sana Dardouri, Nejib Hidouri and Jalila Sghaier*
Room 3 Saturday	SGEM 2: Smart Grids and Energy Management 2		*Kamel Bouaraour/ Ahmed Sawi Sharif*
	PEG-Based Shape-Stabilized PCM with a Natural and Sustainable	ID8	*Amira Akrouti, Sahar Grine, Abdelwaheb Trigui and*

11:00-12:30	Resource: Thermal Properties and Applications		*Ammar Hidouri*
	Comparative Analysis of ANN-Based and P&O MPPT Algorithms for Photovoltaic Systems	ID28	*Imed Fazaa, Taoufik Brahim, Riadh Abdelati and Abdelmajid Jemni*
	Scheduling support system based on the Yamazumi chart and Activity-on-Arrow (AoA) technique for optimizing manufacturing process	ID31	*Ines Ajmi, Imed Miraoui and Jihene Almastouri*
	Industrial Anomaly Detection in Metal Components Using Autoencoder-Based Inspection Systems	ID55	*Oussama Boufares and Imed Miraoui*
Saturday 12:30-13:00	Closing Ceremony		