Association Tunisienne de L'Energie Durable & Systèmes Intelligents

Springer

2026 INTERNATIONAL CONFERENCE ON

CONTROL, ENERGY AND SMART SYSTEMS

CESS 2026

OCTOBER 28–30, 2026

HAMMAMET · TUNISIA

CONFERENCE PROGRAM



Université de Tunis 1960

جامعة تونس المنار UNIVERSITÉ DE TUNIS EL MANAR

جامعة قفصة Université de Gafsa

ensit Ecole Nationale Supérieure d'Ingénieurs de Tunis

LISIER LR16ES03

LARA Laboratoire de Recherche en Automatique

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Welcome Message

Dear colleagues and friends,

On behalf of the Organizing Committee, it is our great pleasure to welcome you to the **2026 International Conference on Control, Energy and Smart Systems (CESS 2026)**, held from October 28 to 30, 2026, at the Alhambra Thalasso Hotel in Yasmine Hammamet, Tunisia, in a hybrid format allowing both in-person and online participation. CESS 2026 is organized by the **Tunisian Association for Sustainable Energy and Intelligent Systems (ATES)**.

CESS 2026 brings together researchers, engineers, students and industrial partners working on automatic control, robotics, artificial intelligence, power electronics, electrical drives, renewable energy and smart energy systems. The technical program includes two keynote lectures and 63 papers organized in 15 technical sessions (13 in-person sessions and 2 virtual session), running in up to three parallel rooms. The accepted papers will be published by Springer in the CESS 2026 proceedings, in the *Advances in Intelligent Systems and Computing* (AISC) series.

We are deeply grateful to our partners and sponsors for their technical and financial support: the University of Tunis (UT), the University of Tunis El Manar (UTM), the University of Gafsa (UG), the École Nationale Supérieure d'Ingénieurs de Tunis (ENSIT), the École Nationale d'Ingénieurs de Tunis (ENIT), and the research laboratories LISIER (Laboratoire d'Ingénierie des Systèmes Industriels et d'Energies Renouvelables, LR16ES03) and LARA (Laboratoire de Recherche en Automatique).

We also warmly thank the authors for their contributions, the reviewers and session chairs for their dedicated work, and the keynote speakers. We wish you a fruitful conference and a pleasant stay in Hammamet.

The CESS 2026 Organizing Committee

General Chairs
Prof. Abdelkader Chaari (Tunisia)
Prof. Rached Gharbi (Tunisia)
Prof. Bozenna Pasik-Duncan (USA)
Prof. Achraf Jabeur Telmoudi (Tunisia)

Committees

Honorary Chairs	Moez Chafra (Tunisia), Slim Driss (Tunisia), Ammar Hidouri (Tunisia)
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Finance Chair	Abderrahmen Zaafouri (Tunisia)
Local Committee Chairs	Jaouher Chrouta (Tunisia), Lotfi Chaouech (Tunisia), Med Hedi Moulahi (Tunisia), Wajdi Saad (Tunisia), Adel Taieb (Tunisia), Bilel Touaiti (Tunisia)

Venue and Practical Information

- **Venue:** Alhambra Thalasso Hotel, BP 66, 8052 Yasmine Hammamet, Tunisia.
- **Access:** Enfidha–Hammamet International Airport and Tunis–Carthage International Airport, each about one hour's drive from the hotel.
- **Accommodation:** registered participants are offered two nights (October 28–30, 2026) in a double room, full board, included in the registration package; a single-room supplement of 70 TND per night is available on request, subject to availability.
- **Registration desk:** open on Wednesday, October 28, from 08:30, in front of the conference rooms.
- **Rooms:** Averroes (plenary room), Cheminée and El Mansour. Virtual sessions V-01 and V-02 are fully online, on the virtual platform, with no physical room. Two or three parallel sessions are held in each time slot.

Program at a Glance

Presentation Guidelines

Keynote Talks: 60 minutes (45 minutes for the presentation, followed by 15 minutes for questions and discussion).

Oral Presentations: 20 minutes per paper (15 minutes for the presentation, followed by 5 minutes for questions). All presenters must be present in the session room from the beginning of the session. Session chairs are kindly asked to follow the schedule strictly.

Accepted Formats: PDF or PowerPoint (PPT/PPTX). The 16:9 format is recommended. Slides must be loaded onto the session room computer before the session starts. Online presenters must share their screens on the virtual platform and connect 15 minutes before their session starts.

P in-person session **V** virtual session (online presenters)

Wednesday, October 28, 2026

Time	Program		
08:30–10:00	*Registration*		
10:00–10:15	**Opening Ceremony** – Averroes		
10:15–11:15	**Keynote 1** – Prof. Nahla Ben Amor (University of Tunis) – Averroes		
11:15–12:30	*Networking break*		
12:30–14:00	*Lunch*		
14:00–15:40	**P-01** Room: Averroes **UAV and Robot Planning, Control and Identification** *Chairs: Saidi & Mellah*	**P-02** Room: Cheminée **Mobile and Medical Robotics, Drones and Cooperative Robots** *Chairs: Ben Salah & Mekki*	**P-03** Room: El Mansour **Power Electronics, PV Control and Microgrid Protection** *Chairs: Ferchichi & Guizani*
15:40–16:00	*Coffee break*		
16:00–17:40	**P-04** Room: Averroes **Photovoltaic Systems, Power Devices and Network Control** *Chairs: Rubaai & Guizani*	**P-05** Room: El Mansour **Artificial Intelligence, Vision and IoT Applications** *Chairs: Haddouk & Mekki*	
20:00	*Dinner*		

Thursday, October 29, 2026

Time	Program		
08:30–10:10	P-06 Room: Averroes **Sliding Mode Control and Observers** *Chairs: Bacha & Kanzari*	P-07 Room: Cheminée **Robot Control, Intelligent Control and Diagnosis** *Chairs: Saidi & Mellah*	P-08 Room: El Mansour **Fuel Cells, Energy Storage and Hybrid Systems** *Chairs: Chrouta & Haddouk*
10:10–10:30	*Coffee break*		
10:30–11:30	**Keynote 2** – Prof. Ahmed Rubaai (Howard University) – Averroes		
11:30–12:30	*Networking break*		
12:30–14:00	*Lunch*		
14:00–15:40	P-09 Room: Averroes **EV Charging and Microgrids** *Chairs: Ben Salah & Rubaai*	P-10 Room: El Mansour **Hybrid Renewable Systems, Fuel Cells and Desalination** *Chairs: Ferchichi & Guizani*	
15:40–16:00	*Coffee break*		
16:00–18:00	P-11 Room: Averroes **Open-End Winding Drives** *Chairs: Rubaai & Bacha*	P-12 Room: El Mansour **Energy Systems Modeling and Optimization** *Chairs: Ben Salah & Kanzari*	V-01 Fully online **Virtual Session I: Energy Planning, Efficiency and Storage** *Chairs: Ferchichi & Chrouta*
20:00	*Dinner*		

Friday, October 30, 2026

Time	Program	
09:00–10:40	P-13 Room: Averroes **Photovoltaic Systems II: Grid Integration and Advanced Control** *Chairs: Telmoudi & Saidi*	V-02 Fully online **Virtual Session II: AI, Diagnosis and Estimation** *Chairs: Mekki & Haddouk*
10:40–11:00	*Coffee break*	
11:00–11:30	**Closing Ceremony** – Averroes	

Keynote Speeches

Keynote 1: Adversarial Debiasing via Agentic Orchestration for Automated Fairness Enforcement

Speaker Prof. Nahla Ben Amor

Affiliation Institut Supérieur de Gestion de Tunis (ISG), University of Tunis, Tunisia

Date & time Wednesday, October 28, 2026, 10:15–11:15

Room Averroes (plenary room)



Abstract. Machine learning models are increasingly used in sensitive areas such as credit scoring, recruitment, justice, and public services. They learn from historical data that carries the trace of past decisions, and can therefore reproduce the biases present in that data. Adversarial debiasing is one of the approaches used to limit this problem. A classifier learns to predict the target, while an adversary tries to recover the sensitive attributes from the representations learned by the model. By making this recovery more difficult, the classifier learns to rely less on those attributes. In practice, the method remains hard to control. The strength of the fairness constraint is set by hand before training, with no mechanism to target a given fairness level, and the sensitive attributes must be declared manually for each dataset. This talk presents an agentic approach to adversarial debiasing. The system identifies the sensitive attributes, measures fairness at each step of training, and automatically adjusts the constraint applied to the model, protecting several sensitive attributes within a single run. Fairness is no longer a fixed setting, but a decision revised throughout learning. The approach is evaluated on the FFB benchmark and on HIMS-Tunisia, a dataset from Tunisia's national migration survey, and compared with reference methods.

Biography. Nahla Ben Amor is a Professor of Business Computing at the Institut Supérieur de Gestion de Tunis (University of Tunis), where she heads the Doctoral School of Management Sciences. She led the LARODEC laboratory from 2013 to 2025 and is an associate member of IRIT (Toulouse) and of the scientific council of the Maison des Sciences de l'Homme et de la Société de Toulouse. Her research focuses on reasoning and decision-making under uncertainty, in particular probabilistic and possibilistic graphical models, preference representation and collective decision-making. More recently, she has been working on responsible AI, especially algorithmic fairness and the governance of intelligent systems. She is a certified ISO/IEC 42001 Senior Lead Auditor. She has supervised some twenty PhD theses and published more than one hundred international papers. She co-chairs a track of ECAI 2027 and the program committee of ECSQARU 2027, and serves on the program committees of IJCAI and UAI.

Keynote 2: Next-Generation Intelligent Motion Control: Dual-Parallel Fuzzy-Neural Architectures for High-Precision Industrial AC Drives

Speaker Prof. Ahmed Rubaai, Life Fellow, IEEE

Affiliation Electrical Engineering and Computer Science Department, Howard University, Washington, DC, USA

Date & time Thursday, October 29, 2026, 10:30–11:30

Room Averroes (plenary room)



Abstract. This keynote presentation introduces a novel artificial intelligence (AI) control architecture engineered to succeed traditional Proportional-Integral-Derivative (PID) controllers in high-precision speed trajectory tracking for industrial alternating current (AC) drive systems. The proposed framework features a dual-parallel structure comprising two four-layer fuzzy-neural networks configured to replicate and advance classical PI and PD control actions. Crucially, the foundational fuzzy rules are synthesized directly from the physical operational knowledge of the drive system, embedding domain expertise into the intelligent controller. To achieve superior operational adaptability, a hybrid real-time learning paradigm—integrating Particle Swarm Optimization (PSO), Genetic Algorithms (GA), and Backpropagation (BP)—is deployed to dynamically optimize the network weights and membership functions. This mechanism equips the initial fuzzy design with robust self-learning capabilities, enabling the system to mitigate complex nonlinearities and parameter variations seamlessly. Unlike static, non-adaptive FL controllers, this self-tuning capability enables the drive system to dynamically counteract performance degradation caused by mechanical wear or shifts in electrical characteristics over time. Finally, the efficacy and robustness of the complete control solution are demonstrated through rigorous experimental validation on an industrial AC drive. Velocity control performance is evaluated utilizing a high-fidelity hardware-in-the-loop (HIL) emulation platform centered on a dSPACE DS1104 board and the MATLAB/Simulink environment.

Biography. Ahmed Rubaai received the M.S.E.E. degree from Case Western Reserve University, Cleveland, OH, in 1983, and the Dr. Eng. degree from Cleveland State University, Cleveland, OH, in 1988. He joined Howard University, Washington, DC, in 1988, where he is currently Professor and Chair of the Department of Electrical Engineering and Computer Science. Dr. Rubaai was named an IEEE Fellow in 2015. His research focuses on high-performance drives, knowledge-based control structures, intelligent manufacturing systems, and industrial applications. He is the founder and lead developer of Howard University's state-of-the-art Silicon Microchip Design and Validation Laboratory, recognized by President Ben Vinson III as one of the "Twenty-Four Moments that Defined Howard in 2024." He also established the innovative 4+1 Accelerated Dual-Degree Program in Computer Engineering with a concentration in Chip Design and Validation. In addition, Dr. Rubaai has extensive expertise in ABET accreditation for engineering and computer science programs, and has successfully led accreditation reviews for Electrical Engineering, Computer Engineering, and Computer Science. His many honors include the IEEE IAS Prize Paper Award, ASEE Best Paper Award, NASA Glenn Software Release Award, and multiple Howard University teaching and service awards. He has also held several leadership positions in IEEE and ASEE, including Chair of the IEEE-IAS Publications Department and Chair of the ASEE Division of Experimentation and Laboratory Oriented Studies.

Technical Sessions Overview

Code	Session title	Papers	Day, time, room
P-01	UAV and Robot Planning, Control and Identification	711, 729, 712, 468	Wed. Oct. 28, 14:00–15:20, Averroes
P-02	Mobile and Medical Robotics, Drones and Cooperative Robots	599, 654, 723 (v), 35 (v), 744	Wed. Oct. 28, 14:00–15:40, Cheminée
P-03	Power Electronics, PV Control and Microgrid Protection	741, 536, 515, 713	Wed. Oct. 28, 14:00–15:20, El Mansour
P-04	Photovoltaic Systems, Power Devices and Network Control	521, 535, 605, 625	Wed. Oct. 28, 16:00–17:20, Averroes
P-05	Artificial Intelligence, Vision and IoT Applications	607, 612, 586, 456	Wed. Oct. 28, 16:00–17:20, El Mansour
P-06	Sliding Mode Control and Observers	540, 541, 530, 750	Thu. Oct. 29, 08:30–09:50, Averroes
P-07	Robot Control, Intelligent Control and Diagnosis	620, 619, 584, 523	Thu. Oct. 29, 08:30–09:50, Cheminée
P-08	Fuel Cells, Energy Storage and Hybrid Systems	714, 686, 598, 621	Thu. Oct. 29, 08:30–09:50, El Mansour
P-09	EV Charging and Microgrids	742, 743, 565, 628	Thu. Oct. 29, 14:00–15:20, Averroes
P-10	Hybrid Renewable Systems, Fuel Cells and Desalination	685, 746, 529, 717, 718	Thu. Oct. 29, 14:00–15:40, El Mansour
P-11	Open-End Winding Drives	611, 609, 610, 608, 606	Thu. Oct. 29, 16:00–17:40, Averroes
P-12	Energy Systems Modeling and Optimization	579, 595, 539, 745	Thu. Oct. 29, 16:00–17:20, El Mansour
V-01	Virtual Session I: Energy Planning, Efficiency and Storage	613 (v), 614 (v), 615 (v), 594 (v)	Thu. Oct. 29, 16:00–17:20, Online
P-13	Photovoltaic Systems II: Grid Integration and Advanced Control	725, 726, 740, 486, 747	Fri. Oct. 30, 09:00–10:40, Averroes
V-02	Virtual Session II: AI, Diagnosis and Estimation	583 (v), 706 (v), 734 (v)	Fri. Oct. 30, 09:00–10:00, Online

Detailed Program of the Technical Sessions

Presenting authors are marked with an asterisk (*). Papers marked **(v)** are presented online. Each paper is allotted 20 minutes (15 min presentation + 5 min questions).

SESSION P-01: UAV and Robot Planning, Control and Identification

Wednesday, October 28, 14:00–15:20 **Room: Averroes** **Chairs:** Imen Saidi & Rabah Mellah

ID	Title	Authors
711	Kinodynamic Trajectory Planning for Autonomous Quadrotors in Complex Environments: A Comparative Study of A* and RRT*	Mariem Ben Ameur*, Nada Braiek, Imen Saidi
729	Fault-Tolerant Fractional-Order Sliding Mode Control with an Extended State Observer for a 2-DOF Pelican Robot	Khouloud Guesmi*, Imen Saidi
712	Hybrid Global–Local Motion Planning for Energy-Aware UAV Navigation in Dynamic Environment	Nada Braiek*, Imen Saidi
468	Fractional-Order NARMAX Neural Network Identification of Drone Vertical Dynamics Using Dung Beetle Optimizer	Bilel Kanzari*, Adel Taieb, Achraf Jabeur Telmoudi, Abdelkader Chaari

SESSION P-02: Mobile and Medical Robotics, Drones and Cooperative Robots

Wednesday, October 28, 14:00–15:40 **Room: Cheminée** **Chairs:** Chokri Ben Salah & Hassene Mekki

ID	Title	Authors
599	Informed, Costmap-Aware RRT* with Dubins-Constrained Steering for Nonholonomic TurtleBot3 Navigation	Mohamed Amine Bouallegui*, Imen Saidi, Amine Abadi, David Fofi
654	Adaptive A* Navigation Planning for Safe TurtleBot3 Operation Amid Obstacles in Medical Environments	Baha Eddine Hammou*, Imen Saidi, Amine Abadi, Toufik Bakir
723 **(v)**	A Cosserat Rod Model for Force–Moment Wrench Estimation in Compliant Robotic Ultrasound	Samar Jridi*, Manel Abbes, Hela Chaker, Hassen Mekki, Pierre Vieyres, Gérard Poisson
35 **(v)**	Tracking Drones with Adaptive Kalman Filter: Adaptive versus Non-Adaptive Kernel Approach	Raed Abu Zitar*, Mohammad Kassab
744	Collaborative Drone–Robot Systems for Efficient Urban Delivery	Haifa Souilem, Ferdaws Ben Naceur*, Chokri Ben Salah

SESSION P-03: Power Electronics, PV Control and Microgrid Protection

Wednesday, October 28, 14:00–15:20 **Room: El Mansour** **Chairs:** Noureddine Ferchichi & Sami Guizani

ID	Title	Authors
741	Compact model assessment of normally off 4H-SiC vertical JFET for sustainable power conversion	Khaoula Shili*, Hanen Jemai
536	A Novel UIS-Based Method for High-Voltage Characterization of SiC MOSFET Output Capacitance	Hichem Ben Ammar*, Tarek Ben Salah, Hatem Garrab
515	Thermal impact on MPPT controllers of photovoltaic systems: comparative benchmark of P&O, INC, FLC and NNET	Majed Lamouchi*, Fethi Messaoudi, Hechmi Ben Azza, Abderrahmen Zaafouri
713	A Systematic Review of Microgrid Protection Frameworks: Current Status and Future Directions	Noureddine Ferchichi*, Houssem Ben Aribia, Slim Abid

SESSION P-04: Photovoltaic Systems, Power Devices and Network Control

Wednesday, October 28, 16:00–17:20 **Room: Averroes** **Chairs:** Ahmed Rubaai & Sami Guizani

ID	Title	Authors
521	Intelligent PSO-based MPPT Control for a Grid-Assisted Solar Pumping System under Partial Shading	Dhekra Belgassmi*, Fethi Messaoudi, Nadia Mars, Abderrahmen Zaafouri
535	Experimental Investigation of Current Sharing and Switching Asymmetries in Parallel-Connected SiC Transistors	Hichem Ben Ammar*, Tarek Ben Salah, Hatem Garrab
605	Potential-Induced Degradation in PV Systems: A Unified Three-Domain Mechanistic Framework and Architecture Susceptibility Map	Yoldess Kouki*, Sami Guizani
625	Next-Generation Coordinated Emergency Control for Interconnected Power Networks	Ahmed Rubaai*

SESSION P-05: Artificial Intelligence, Vision and IoT Applications

Wednesday, October 28, 16:00–17:20 **Room: El Mansour** **Chairs:** Amira Haddouk & Hassene Mekki

ID	Title	Authors
607	FaceRec: Self-Supervised Learning for Robust Facial Recognition in Real-World Conditions	Laila Ouannes, Asma Elfahem*, Sami Gazzah
612	Evaluating Landmark-Guided Fine-Tuning for Self-Supervised Face Recognition in Real-World Conditions	Thouraya Khlifi*, Laila Ouannes, Sami Gazzah
586	Acoustic Detection and Localization of Water Leaks in PVC Pipes Using the ARL Method: A Low-Cost Embedded System with IoT Supervision	Narjes Khaterchi*, Bilel Touaiti, Hechmi Khaterchi, Rached Gharbi
456	Intelligent Street Lighting System Based on LED Technology, Adaptive Dimming and IoT Control for Smart Cities	Anouar Chebbi*, Amira Haddouk, Hfaiedh Mechergui, Mohamed Sellami

SESSION P-06: Sliding Mode Control and Observers

Thursday, October 29, 08:30–09:50 **Room: Averroes** **Chairs:** Anis Bacha & Bilel Kanzari

ID	Title	Authors
540	Discrete Adaptive Second-Order Sliding Mode Observer for Wind Energy Conversion Systems	Hanin Tirellil*, Khouloud Elghoul, Khadija Dehri
541	Discrete Second-Order Sliding Mode Control with Adaptive Switching Gain for DC-DC Buck Converter	Houda Ben Ali*, Samah Ben Atia, Khadija Dehri
530	Wind Turbine Monitoring to Enhance Control Strategies	Dhia Eddine Boubaker*, Moez Boussada, Ahmed Said Nouri
750	Comparative Simulation Analysis of Sliding Mode Control, Perturb and Observe, and Incremental Conductance for Photovoltaic Systems Under Variable Irradiance	Houssine El Hammedi*, Jaouher Chrouta, Achraf Jabeur Telmoudi, Abderrahmen Zaafouri

SESSION P-07: Robot Control, Intelligent Control and Diagnosis

Thursday, October 29, 08:30–09:50 **Room: Cheminée** **Chairs:** Imen Saidi & Rabah Mellah

ID	Title	Authors
620	Design and Stability Analysis of a Hybrid Sliding Mode-Iterative Learning Controller for a 2-DOF Pelican Robot	Khouloud Guesmi*, Imen Saidi
619	PSO-Optimized Fractional-Order Sliding Mode Control for Robust Quadrotor Trajectory Tracking	Mariem Ben Ameur*, Nada Braiek, Imen Saidi
584	Neuro-Fuzzy Control of a Fan Heater Using an Arduino Mega 2560 Board	Rabah Mellah*, Ahcene Triki, Amokrane Allache, Yasmina Bensai
523	Machine Learning-Based Predictive Analytic for BLDC Motor Commutation Issues	Khouloud Slimi*, Moez Boussada, Anis Messaoud, Majda Ltaief

SESSION P-08: Fuel Cells, Energy Storage and Hybrid Systems

Thursday, October 29, 08:30–09:50 **Room: El Mansour** **Chairs:** Jaouher Chrouta & Amira Haddouk

ID	Title	Authors
714	Robust Parameter Identification of Proton Exchange Membrane Fuel Cells Using the Selfish Herd Optimizer	Lazhar Linoubli*, Ahmed Jeridi, Salah Hadji, Ramzi Ben Messaoud
686	Metaheuristic Optimization of PEM Fuel Cells Using the Adaptive Gold Rush Optimizer	Houda Allagui*, Ahmed Jeridi, Abderrahmen Zaafouri
598	Optimization and Energy Management of an Autonomous Hybrid System	Farhat Boukhili*, Sami Guizani, Tahar Bahi, Amina Lakhdara
621	A Review of the Key Determinants of Energy Consumption in Electric Traction Systems	Meryem Noui*, Mohamed Benidir, Slah Sbika, Abderezak Lashab, Ammar Noui, Abderrahmen Zaafouri

SESSION P-09: EV Charging and Microgrids

Thursday, October 29, 14:00–15:20 **Room: Averroes** **Chairs:** Chokri Ben Salah & Ahmed Rubaai

ID	Title	Authors
742	A 10-kW Inductive Power Transfer EV Charger Based on a Three-Level Resonant Inverter with AI-Assisted Predictive Phase-Shift Control	Nour Elimen Saadani*, Mohamed Haikel Chehab, Chokri Ben Salah
743	AI-Assisted Predictive Energy Management of a Smart DC Microgrid with Renewable Energy, Battery Storage and Coupling-Aware Inductive EV Charging	Nour Elimen Saadani*, Mahmoud El Amri, Chokri Ben Salah
565	Low-Complexity Energy Management for Hybrid DC Microgrid (PV–Wind–Battery) with Variable Sources and Loads	Assef Elimami*, Rached Gharbi
628	Enhancing Energy Source Coordination in Residential Hybrid Microgrids Using Particle Swarm Optimization	Karim Hedhli*, Imen Saidi

SESSION P-10: Hybrid Renewable Systems, Fuel Cells and Desalination

Thursday, October 29, 14:00–15:40 **Room: El Mansour** **Chairs:** Noureddine Ferchichi & Sami Guizani

ID	Title	Authors
685	Optimal Parameter Identification of Proton Exchange Membrane Fuel Cells Using the Aquila Optimizer	Ahmed Jeridi, Houda Allagui*, Abderrahmen Zaafouri
746	Design and Control of a Stand-Alone Hybrid Power System Integrating Photovoltaic, Wind, and Battery Sources for Low-Power Rural Applications	Mohamed Akram Jaballah*, Khaoula Shili, Hanene Jamai
529	Teaching learning based algorithm for Optimal Off-Grid hybrid System Sizing with Real-Time Data from Southern Tunisia	Nadia Mars, Dhekra Belgassmi*, Lassad Houcine, Abderrahmen Zaafouri
717	Techno-Economic Sizing of a Stand-Alone PV–Wind–Hydrogen System Powering Seawater Reverse Osmosis with a Rule-Based Energy Management Strategy: A Case Study in Sousse, Tunisia	Ranim Mtir*, Imen Ben Hamida, Chokri Ben Salah
718	Integrated Modeling of a Large-Scale Solar-Powered Seawater Reverse Osmosis Desalination Plant: A Case Study of Sidi Abdelhamid, Tunisia	Ranim Mtir*, Imen Ben Hamida, Chokri Ben Salah

SESSION P-11: Open-End Winding Drives

Thursday, October 29, 16:00–17:40 **Room: Averroes** **Chairs:** Ahmed Rubaai & Anis Bacha

ID	Title	Authors
611	Evaluation of Asymmetrical Hybrid H-Bridges and Cascaded Inverters Topologies for Open-End Winding IM Drives	Sami Guizani*, Bilel Saidi
609	Performance Evaluation of a Salient-Poles OEW-PMSM Driven by Hybrid Cascaded Inverter	Bilel Saidi*, Sami Guizani
610	Asymmetric Configuration of Open-End Winding IM Driven by H-Bridge and 2-Level Inverters	Bilel Saidi*, Sami Guizani
608	Assessment of H-Bridge Inverters for Open-End Winding Wound Rotor Synchronous Machine with Dampers	Abdelmonoem Nayli*, Sami Guizani
606	Performance Advancements in PV Pumping Systems Using Open-End Winding Induction Motor Driven by Two-Level Inverters	Yoldess Kouki*, Sami Guizani

SESSION P-12: Energy Systems Modeling and Optimization

Thursday, October 29, 16:00–17:20 **Room: El Mansour** **Chairs:** Chokri Ben Salah & Bilel Kanzari

ID	Title	Authors
579	Simulation and Analysis of a DFIG-Based Wind Energy System for Grid-Connected Applications	Slah Sbika*, Hechmi Ben Azza, Abderrahmen Zaafouri
595	Fractional-Order Parametric Identification of an Induction Machine Using a Hybrid Genetic Algorithm: A Steady-State and Spectral Analysis	Chafik Amri*, Bilel Kanzari, Adel Taieb, Abdelkader Chaari
539	GA, PSO, and Hybrid GA–PSO for Photovoltaic Systems: A Comparison Validated on Reference Datasets with a Standardized Evaluation Budget	Wafa Chebbi*, Hechmi Khaterchi, Rached Gharbi
745	Multi-Objective Optimization and Interactive Simulation of Cooperative Wind-Powered Maintenance Robots	Haifa Souilem, Ferdaws Ben Naceur*, Chokri Ben Salah

SESSION V-01: Virtual Session I: Energy Planning, Efficiency and Storage

Thursday, October 29, 16:00–17:20 **Fully online** **Chairs:** Noureddine Ferchichi & Jaouher Chrouta

ID	Title	Authors
613 **(v)**	Load-Level Sensitivity and Mitigation Screening in a Calibrated Representative Ghanaian Distribution Feeder	Abdul-Hanif Adams Batiadan, Mohamed Arbi Khlifi*
614 **(v)**	Separating Annual PV Balance from Electrical Capacity: A Roof-Constrained Retrofit Screen	Iyas Almughamsi, Mohamed Arbi Khlifi*, Mohsen Aldaadi
615 **(v)**	Energy Savings from Condenser Cleaning in an Aging Air-Cooled Chiller Plant: A Simulation-Based Economic Assessment	Marwan Nasser, Iskander Tlili, Mohamed Arbi Khlifi*
594 **(v)**	Influence of Fin Inclination on a Passive Thermal Storage System	Nizar Loussif*

SESSION P-13: Photovoltaic Systems II: Grid Integration and Advanced Control

Friday, October 30, 09:00–10:40 **Room: Averroes** **Chairs:** Achraf Jabeur Telmoudi & Imen Saidi

ID	Title	Authors
725	Improved Synchronization of Three-Phase Grid-Connected Photovoltaic Systems Using a Robust PLL and Adaptive Control	Chokri Ben Salah, Mohamed Haikel Chehab
726	Advanced Synchronization of Three-Phase Grid-Connected PV Systems: Positive-Sequence PLL with Machine Learning Gain Supervisor	Chokri Ben Salah, Mohamed Haikel Chehab
740	Industrial Photovoltaic Integration in a Seasonal Agro-Food Facility: Energy, Self-Consumption and Economic Assessment	Hanene Jamai*, Khaoula Shili
486	Digital Twin-Driven Adaptive Control for Performance Optimization and Reliability of Photovoltaic Water Pumping Systems	Omelkhir Mannai*, Ali Nsaibi, Rached Gharbi
747	An Intelligent Drift-Compensated Fuzzy Reference Generator for Robust Terminal Sliding Mode MPPT of Photovoltaic Systems	Sahbi Touhami*, Jaouher Chrouta, Achraf Jabeur Telmoudi

SESSION V-02: Virtual Session II: AI, Diagnosis and Estimation

Friday, October 30, 09:00–10:00 **Fully online** **Chairs:** Hassene Mekki & Amira Haddouk

ID	Title	Authors
583 **(v)**	Neurosymbolic Multi-Agent Reinforcement Learning for Industrial Cyber-Physical Systems: A Scoping Review and Research Roadmap	Mahdi Abdessalem*, Sami Gazzah, Selma Ben Attia
706 **(v)**	Multivariate Time-Series Fault Detection in Wind Turbines Using Transformer Autoencoder and Reconstruction-Based Thresholding	Haidera Mohameden Ahmednah*, Menny Elbah, Boudy Bilal, Sidi Biha, Hassen Mekki, Tarek Aroui, Moussa Boukhnifer
734 **(v)**	A Hybrid CNN-GRU Architecture for Lithium-Ion Battery State of Charge Estimation	Rima Fahem*, Donya Souidi, Jaouher Chrouta, Achraf Jabeur Telmoudi

(v): online presentation.



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