



University of Djelfa 17000 DZ Algeria

URL: <http://www.univ-djelfa.dz>

# Program ICATRES 2024

The 1st International Conference on Applications and Technologies of Renewable Energy Systems

ICATRES 2024, Djelfa on December 18-19, 2024, Algeria

**Day 01: Wednesday, December 18, 2024.**

<b>8 h – 9 h 00</b>	<b>Registration 1</b>
<b>9 h 00 – 09 h 45</b>	<b>Opening Ceremony</b> ( Faculty conference room ) Pr. El Hadj AILAM (Rector of Djelfa University), Pr. Mohamed Bouhicha (Director of DGRSDT), Pr. Hafaifa Ahmed (Dean of Faculty), Pr. Mazouz Lakhdar (General Chair), Dr. Toual Belkacem (General Chair)
<b>09 h 45 – 10 h 45</b>	<b>Plenary Session 1</b> Hydrogène vert défis et perspectives Dr. M'Raoui Abelhamid CDER, Algeria Chairs : Pr. Hatti mustapha, Pr. Hasnaoui Othman
<b>10 h 45 – 11 h 15</b>	<b>Coffee break</b>
<b>11 h 15 – 12 h 15</b>	<b>Plenary Session 2</b> The past, present and future of Electric Vehicles Pr. Korhan Kayisli Gazi University, Turkey Chairs : Pr. Gueddim Ahmed, Pr. Mokrani Lakhdar
<b>12 h 15– 13 h 15</b>	<b>Plenary Session 3</b> Grid codes: ensuring reliable and efficient operation of renewable energy systems Pr. Hasnaoui Othman ENS Tunis Pr. Kourda Mohamed Férid ENIT Tunis Chairs : Pr. Mitiche Lahcen, Pr. Attalah Benalia
<b>13 h 15 – 14h20</b>	<b>Lunch</b>





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**Day 01: Wednesday, December 18, 2024. Afternoon: Oral Sessions**

	Session 1 (Room 1)	Session 2 (Room 2)	Session 3 (Room 3)
<b>Chairs</b>	<b>Dr. Laroussi Kouider, DR Benjedia Bachir</b>	<b>Pr. Mokrani Lakhdar, Pr. Hatti mustapha</b>	<b>Pr. M'hamedi Kamel, Dr. Habib Sadam</b>
<b>14h30- 14h45</b>	ID.3 Enhancing Stand-alone Photovoltaic System Performance Using Artificial Intelligence.	ID.14 Decentralized Sensor Fault Detection and Isolation Using Robust Observer for a DC Microgrid.	ID.75 Study the effect of the orifices' positioning on the efficiency of a venturi scrubber in cleaning gases resulting from biomass gasification.
<b>14h45- 15h00</b>	ID.41 Comparative study of P&O and PSO-based MPPT algorithms for PV systems under partial shading conditions.	ID.53 Fuzzy Control-Based Energy Management For a Hybrid Energy System.	ID.96 Numerical Study of Density Ratio Effects on Entropy Generation in Variable-Density Elliptical Jets.
<b>15h00 -15h15</b>	ID.48 Modeling of photovoltaic module by design of experiment method.	ID.58 Neural DTC of Permanent Magnet Synchronous Motor Based on Fuzzy Logic Stator Resistance Estimator Feed by a photovoltaic generator.	ID.131 Total manometric height (HMT) and its role in improving the efficiency of renewable energy use in agricultural systems
<b>15h15 -15h30</b>	ID.66 Implementation of an IoT-based energy monitoring system for a standalone PV system.	ID.60 Decentralized Energy Management for DC Microgrids Using Fuzzy Logic, PI and SMC in Hybrid Renewable Systems.	ID.133 Utilizing Control Techniques in Shunt Active Power Filters





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Session 4 (Room 1)		Session 5 (Room 2)	Session 6 (Room 3)
Chairs	Pr. Ameur Aissa, Dr. Mhamedi Benalia	Pr. Hadjadj abdechafik, Pr. Bessisa Lakhdar	Pr. Djekidel Rabeh, Pr. Negadi Karim
15h30 - 15h45	ID.19 Optimal Power Flow with STATCOM Effect in Power System.	ID.104 Photovoltaic Cells Fed a Dual Open-End Winding Induction Motor Driven by Fuzzy Field-Oriented Control.	ID.89 Enhancing Renewable Energy Performance through the Application of Best Available Techniques.
15h45- 16h00	ID.92 Performance Analysis of Savonius Wind Turbine Equipped with Three Diffusers of Different Configurations Under Variable Tip Speed Ratios.	ID.117 Optimal Integration of Multiple PV-DG in Distribution Network Using the Bat Algorithm.	ID.91 Optimisation MPPT Controller of Photovoltaic Panel with Interval Type 3 Sugeno Fuzzy Logic Control.
16h00- 16h15	ID.98 Optimization by Gaussian Radial Basis Function Neural Networks of the Performance of Doubly Fed Induction Machine System based on Wind Energy.	ID.125 Sizing a photovoltaic pumping system for irrigation purposes: a comprehensive study of feasibility and performance.	ID.99 Influence of Distributed Renewable Energy Sources on Voltage Stability in Smart Grids.
16h15 - 16h30		ID.40 Space state identification of 500W proton exchange membrane fuel cell system using artificial neural network	ID.124 DPC-Based Control of a Grid-Connected Photovoltaic Inverter Under Various Irradiation Conditions
17h00	Coffee break		





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**Day 01: Wednesday, December 18, 2024. Poster Sessions**

	Session 1 (Hall 1)	Session 2 (Hall 2)	Session 3 (Hall 3)	Session 4 (Hall 4)
Chairs	Pr.Biran Mouhoub Pr.Bot Youcef	Dr. Benmessaoude tahar Dr. Rouini abdelghani	Dr. Khoudiri said Dr. Araria Rabah	Dr. Kezrane Cheik Dr. Taibi ELhadi
15h 00-16 h00	ID.36 Diagnosis of Stator Faults in Induction Motors within Renewable Energy Systems Using a High-Resolution Analysis Method.	ID.129 Advanced Control Strategies: A Comparative Study to Optimize Wind Turbine Performance Across Operating Regions.	ID.2 Detection in Open Circuit and Line-Line Fault of Photovoltaic Systems using Xgboost and Deep Learning.	ID.22 Numerical analysis to enhance energy efficiency in bricks specifically tailored for hot climates in Algeria. Case study: Hot climate of Tamanrasse.
	ID.127 Control Strategy of DTC-SVM for Enhanced Performance in Double Star Permanent Magnet Synchronous Machines .	ID.28 Enhancing Fault Detection in Wind Turbine Systems Using Recursive Feature Elimination with Random Forest Classifiers and XGBoost.	ID. 130 A Modified Teaching - Learning based Optimization algorithm (MTLBO) for PV systems under partial shading condition	ID.46 Numerical Study of the Bearing Capacity of Offshore Structures on Heterogeneous Clay Under Vertical Loading. ID.140 The influence of interaction energy between voids on 3D Nano porous materials behavior without and within surface effect
	ID.128 Space Vector Modulation-Based Sliding Mode Control for Five-Phase Permanent Magnet Synchronous Motors.	ID.122 Photovoltaic System Reliability and Performance Through Fault Detection.	ID.100 Optimizing PMU Placement for Enhanced Observability and Efficiency in Power Systems.	ID.47 Investigation of Vibration Dynamics in Perforated Nanobeam for Hydrogen Detection via van der Waals Energy Interactions.
	ID.49 Experimental Analysis of the Impact of Blade Number on the Performance of a Savonius Wind Turbine	ID.26 Reconfiguration To Mitigate The Impact Of Integrating Electric Vehicle Charging Stations On Distribution Networks.	ID.138 Using a hybrid PSO-MOA algorithm, a multi-objective economic emission dispatch solution	ID.143 Fatigue crack growth analysis using extended isogeometric analysis with a moving local mesh.



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	Session 1 (Room 1) <a href="https://meet.google.com/crg-dndf-acu">https://meet.google.com/crg-dndf-acu</a>	Session 2 (Room 2) <a href="https://meet.google.com/tdp-rpvo-eyn">https://meet.google.com/tdp-rpvo-eyn</a>	Session 3 (Room 3) <a href="https://meet.google.com/ijy-fhsb-fmu">https://meet.google.com/ijy-fhsb-fmu</a>
Chairs	Dr. Beladel Abdelkader Dr. Belboul zekria	Dr. Djaidir Benrabeah Dr. Karboua Djeloul	Dr. Cherrak Naas Dr. Gozim djamel
14h30 - 14h45	ID.7 Optimal Design of Hybrid Renewable Energy Systems: A Case Study of the Biskra Oasis in Algeria.	ID.59 Fault Tolerant Control of Doubly Fed Induction Generator based Wind Energy Conversion System.	ID.33 Filtrage des perturbations électromagnétique affecté un système photovoltaïque autonome contrôlé à distance
14h45 - 15h00	ID.8 Design and Simulation of a Hybrid Energy Microgrid for Off-Grid Regions: A Case Study of Ain El Ibel, Djelfa, Algeria.	ID.65 Fault Tolerant Control for Induction Motors with Broken Bars Using a Fuzzy Sliding Mode Controller	ID.81 Comparison between Boost converter based on MOSFET and IGBT for photovoltaic systems
15h00 - 15h15	ID.10 Evaluation of losses due to the orientation and inclination of photovoltaic solar panels.	ID.69 Comparative Study between the Sliding Mode Controller and Fuzzy Sliding Mode Controller in a Speed Control for Induction Motor with Broken Rotor Bars	ID.109 Design of an Intelligent Speed Tracking Controller Using Low-cost Arduino Mega 2560 for a PMDC Motor Under Real Constraints
15h15 - 15h30	ID.16 Energy Management Strategy using Deep Neural Networks for Hybrid Storage Systems to Ensure Load Supply in Isolated Agricultural Areas.	ID.71 Tuning PI Controller Parameters with Fuzzy Logic for Doubly Fed Induction Generator.	ID.118 Robust Control of a PV Solar Power Plant for Injecting Maximum Power to the Grid Under Frequency Fluctuation Problem.





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<b>Chairs</b>	Dr. Rezaoui mounir, Dr. Hameur alaine	Dr. Bachir Nail, Dr. GHIBECHE Youcef
<b>15h45 - 16h00</b>	ID.24 Data-Driven Solar Panels Power Prediction: Model Comparison Including Hyperparameter Tuning Process	ID.68 Optimal Wind Turbine Placements Using Whale Optimization Algorithm: A Comparative Analysis
<b>16h00 - 16h15</b>	ID.55 Comparative Evaluation of Grey Wolf Optimization and Incremental Conductance Algorithms for MPPT in PV Systems.	ID.70 Application of Deep Q-Network for Predictive Modeling of Environmental Variables in Arid Regions: A Case Study of Central Algeria
<b>16h15 - 16h30</b>	ID.61 Development of Fuzzy Logic – Sliding Mode Control System with Comparison Between MPPT Strategies Connected to Power	ID.79 Optimal Power Flow of Hybrid Wind/Thermal Generators Concedering Economic and Environmental Factors using BES Algorithm
<b>16h30 - 16h45</b>	ID.76 Reconfiguration Techniques for Maximum Power Extraction in Complex Partial Shaded Solar PV Arrays	ID.80 Optimal Tuning of PID Controller for DFIG-based wind energy conversion systems using hybrid ACO and PSO algorithm
<b>16h45 -17h00</b>	ID.101 Comparative Analysis of PO and Hybrid Fuzzy PO MPPT Control Methods for Solar PV Powered Shunt Active Filter	ID.50 Detection of faults affecting the photovoltaic pumping system using state observers model
<b>17h00</b>	<b>Coffee break – 1<sup>st</sup> day Wrapping up</b>	





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**Day 02: Thursday, December 19, 2024.**

<b>8 h – 8 h 30</b>      	<b>Registration 2</b>  <b>Plenary Session 4</b> <b>Transition énergétique et thermique solaire</b> <b>Pr. Amor Bouhdjar</b> <b>CDER, Algérie</b> <b>Chairs : Pr. Rahmani Kouider, Pr. Kadouri Ameur</b>
<b>8 h 30 – 9 h 30</b>      	<b>Plenary Session 5</b> <b>Systèmes d'énergie décentralisés à faible émission de carbone</b> <b>Pr. M'hamedi Kamel</b> <b>Boumerdes University,</b> <b>Chairs: Pr. Laroussi Kouider, Pr. Kourda Mohamed Férid</b>
<b>09 h 30 – 10 h 30</b>      	<b>Coffee break</b>
<b>10 h 30 – 11 h 00</b>      	





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	Session 7 (Room 1)	Session 8 (Room 2)	Session 9 (Room 3)
Chairs	Pr. Allaoui Taib, Dr. Ouai Attallah	Dr. Kouadri Amar, Dr. Antar Tahiri	Dr. Douroum, Dr. Mahammedi Aek
11h00 - 11h15	ID.64 Machine learning approaches for Liquid desiccant regeneration system.	ID.1 Ab initio study of Structural, thermal stability and electronic properties of LiRuPO <sub>4</sub> compund; A storage energy application.	ID.31 Thermo-Hydrodynamic Analysis of Complex Ducts under Varied Magnetic Field Orientations.
11h15 - 11h30	ID.77 Efficient Partial Shading Detection in Photovoltaic Systems Using a Lightweight MobileNet and SVM Classifier.	ID.17 Optimisation du Confort Thermique et de la Qualité de l'Air par le Mélange des Jets dans les Systèmes de Ventilation Résidentiels.	ID.39 Implementation of Air Cooler Prototype Based on Thermoelectric Effect and Controlled Using Arduino Uno.
11h30 - 11h45	ID.95 Fault Detection and Identification Scheme for Passive Components in DC/DC	ID.30 Responses Analysis of an Internal Combustion Engine fuelled by Petroleum Diesel and Waste Cooking Oil Biodiesel.	ID.74 Influence of Sinusoidal Corrugated Surfaces on Heat Transfer in Concentric Double Heat Exchanger.
11h45 - 12h00			
12h00 - 12h15			





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	Session 4 (Hall 1)	Session 5 (Hall 2)	Session 6 (Hall 3)
Chairs	Pr. Aidaoui Lakhdar Dr. Bendriss Abdelkader	Dr. Ben aissa Tahar Dr. Ben saci ahmed	Pr. Bacha Abdelkader Dr. Lahoual mohamed
12h00 - 12h45	ID.84 Numerical study of air-hydrogen non-premixed turbulent flam behaviour in unsteady state regime.	ID.103 Transforming Renewable Energy Systems with Artificial Intelligence and Machine Learning.	ID.45 Structural, Optical, and Morphological Characterization of Lead Sulfide Deposits Synthesized via Spray Pyrolysis for Energy Renewable Applications.
	ID.87 Numerical Simulations of Single and Multiple Jets Issued from Lobed Diffusers from Lobed Diffusers.	ID.107 Enhanced PV Power Extraction Using a Single-Sensor Voltage-Based MPPT with Boost Converter	ID.54 Numerical Investigation of Resonance Frequency Shift in Biomolecule-Nanoresonator Systems with Hydrogen Adsorbed adatoms
	ID.142 Numerical Investigation of Thermo-Hydraulic Performance of Newtonian Fluids Mixing in Compact Micromixer.	ID.123 Energy Loss Mechanisms in Bulk Heterojunction Organic Solar Cells.	ID.62 Analytical Study of Temperature-Dependent Resonance Frequencies in Perforated Nanobeams for Enhanced Efficiency in NEMS Applications
	ID.144 Thermo-hydraulic evaluation of mixing efficiency using non-Newtonian fluids in short microdevices.	ID.132 Impact of the STATCOM device on the behavior of high voltage AC networks<	ID.73 Advanced Water Quality Assessment with Frequency Shift-Based Mass Sensing in Adatoms-Microstructure.
	ID.63 PMSM Drive for Solar Water Pumping System.	ID. 09 Environmental Impact and Characterization of Renewable Energy as Oily Sludge Ash Biomass	ID.18 Congestion Effect on Production Cost in Power System with Renewable Energy Integration





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**Day 02 Thursday, December 19, 2024 : Virtual Sessions**

	Session 6 (Room 1) <a href="https://meet.google.com/crg-dndf-acu">https://meet.google.com/crg-dndf-acu</a>	Session 7 (Room 2) <a href="https://meet.google.com/tdp-rpvo-eyn">https://meet.google.com/tdp-rpvo-eyn</a>	Session 8 (Room 3) <a href="https://meet.google.com/ijy-fhsb-fmu">https://meet.google.com/ijy-fhsb-fmu</a>
<b>Chairs</b>	<b>Dr. Merzouk Imad</b> <b>Dr. Bilal Korich</b>	<b>Dr. Bakria Daradji</b> <b>Dr. Benrahmoune Mohamed</b>	<b>Dr. Aziz Rabehi</b> <b>Dr. Mahi Nabil</b>
12h00- 12h10	ID.106 Dynamic Modeling and Control of an S500 UAV using Proportional-Integral-Derivative (PID) algorithm.	ID.38 Control of Doubly-Fed Induction Generator integrated into wind turbine using sliding mode regulator .	ID.11 Hydrogen Production from Thermochemical Cycle with Cu-Cl intermediate, thermal and exergy study.
12h10- 12h20	ID.108 Structural Analysis and Modeling of an S500 Quadcopter Frame.	ID.135 Separation between broken rotor bar fault and load variation using the combination of analytical signal and current indicator.	ID.23 Using DFT method to investigated the physics properties of NaZrIrSi quaternary Heusler compound for energy storage and conversion.
12h20 - 12h30	ID.110 Structural Analysis and Modeling of X500 Quadcopter Frame.	ID.136 Detection of Broken Rotor Bars in Six-Phase Squirrel Cage Induction Motors	ID.42 Heat's impact on CIGS semiconductor coatings used in magnetron sputtering to create solar cells.
12h30 - 12h40	ID.111 Structural Analysis and Modeling of a 5-inch Quadcopter Frame.	ID.137 Enhanced Hybrid Approach for Photovoltaic Module Parameters Extraction Using the RIME Algorithm.	ID.44 Pyrolysis of methane for the production of "turquoise" hydrogen.
12h40 - 12h50	ID.114 A Hybrid Approach to Industrial Automation: Integrating Renewable Energy and Robotic Cells Using Lambda Petri Nets.	ID.145 Robust formation control of wheeled nonholonomic robots via predictive sliding mode control.	ID.134 Modeling and Adjustment of A Wind Power Plant Based on a Permanent Magnet Synchronous Generator





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Chairs	Dr. Khoudiri Abdelkader Dr. Amari Abderahmane	Dr. Teta Ali Dr. KHERFAN Riad lakhdar	Dr. Naas Toufik Dr. Nadour Mohamed
12h50 - 13h10	ID.72 Fault-Tolerant Control Based On Super Twisting Sliding Mode Observer Of Dual Star Permanent Magnet Synchronous Motor For Electric Vehicle.	ID.25 Metaheuristic Algorithm for Extracting the Parameters of the Single-Diode Model of a PV System	ID.32 Optoelectronic Study in Elpasolite A2AlAgCl6 Halide double Perovskites for solar cell applications
	ID.115 Approach to Robot Fault Diagnosis: Integrating AI, FT, and Renewable Energy.	ID.82 Design and Optimization of a Stand-Alone PV System for Remote Research Facilities: A Case Study of the El Maabouda Materials Research Unit.	ID.126 Nonlinear Observer-Based Passivity Control for Asynchronous Motors .
13h10 - 13h20	ID.119 Design an Optimal Fractional order ((FO-PD )) Controller based on new Algorithms and Fractional Order Integral Backstepping Controller For PV System.	ID.105 Thermal study of shell and tube heat exchanger.	ID.146 Economic evaluation of Patenga Sea Beach Hybrid Energy System using HOMER
	ID.121 Fault Detection and Isolation of Wind Turbine using Minimal Learning Machine.	ID.139 Predicting Solar Radiation in Ouargla City with Artificial Neural Networks Enhanced by PSO and GA.	ID.147 Fuzzy logic control implementation in a pv system
			ID.43 Influence of Hubbard's parameter on the characteristics of Ba <sub>2</sub> GdReO <sub>6</sub> , a potential ferromagnetic double perovskite oxide for thermoelectric uses





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13 h 20 – 14 h 00	Closing Ceremony
	Lunch

