7th International Conference on Environment Friendly Energies and Applications (EFEA 2022)

UNIVERSITÉ DES MASCAREIGNES

SAVOIR, C'EST POUVOIR

14-16 December 2022

Dr R. Somanah

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Conference Venue- Hotel Voila, Bagatelle, Moka

Bagatelle Mall of Mauritius PO Box 30 Réduit
Tel. +230 406 8000
hello@voilahotel.mu
Travel from airport to hotel : please take taxi from airport to hotel (price 2000 rupees max).

Chairs' Message

It is not surprising that in recent years, there has been an increasing interest in the development of environmentally friendly energy technologies and systems. This is mainly due to the general awareness and recognition that fossil fuels used to generate power over the past two centuries are exhaustible, and not totally benign in usage, two of the major side effects being acid rain and global warming.

It is in response to this renewed interest in clean energy that International Conference on Environment-Friendly Energies and Applications (EFEA) was put into place. The 1st EFEA event was held in Ghardaïa, Algeria in 2010. The 2nd edition of the conference, EFEA2012, was held at Northumbria University at Newcastle upon Tyne, with a broader scope of topics. The 3rd Edition of EFEA 2014 followed the path of EFEA 2012 by including topics such as energy policy and security, biofuel, geothermal energy as well as lifelong learning and professional development in renewable energy. The 4th and 5th edition of EFEA (i.e. EFEA2016 and EFEA2018) were held in 2016 Serbia and Rome respectively. In 2020, the advent of the COVID 19 pandemic compelled the organizing committee to run the 6th edition of EFEA, i.e. EFEA 2020, entirely online in Bulgaria due to travel restrictions at the time.

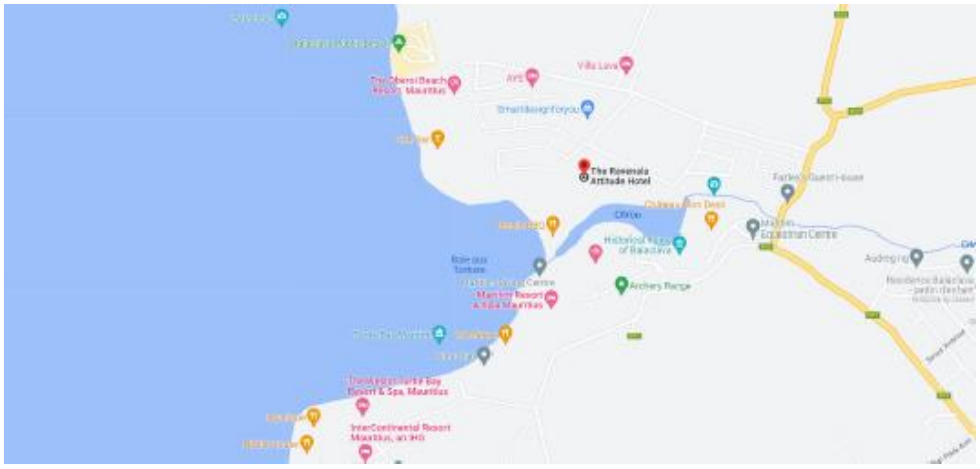
Since then, running conferences in hybrid mode has become a common practice. This 7th edition of EFEA, hosted by the Université des Mascareignes, is no exception. We are running this conference in hybrid mode with participants from several continents. The main objective of this conference, in collaboration with several other Universities, is to bring academics, scientists, engineers and industrial partners together to discuss the recent developments in the areas of renewable energy and their applications in the Mauritian context.

We hope you will enjoy the conference and take some time to visit Mauritius with its inspiring landscape, beaches, colonial and modern architecture as well as cafes and restaurants.

With best wishes,
Prof. Mohamed DJEMAI, Dr. D. Rughoo and Dr. R. Dreepaul

Conference Dinner

The conference gala dinner will take place at Hotel Ravenala Attitude, on Thursday, December 15, 19:30 pm.
Address: Turtle Bay, Balaclava
Phone: +230 204 3000; email: resa@hotels-attitude.com



Invited Speakers

Prof. Alireza Maheri
University of Aberdeen,
School of Engineering, King's College,
Room 382, Fraser Noble Building, Aberdeen, AB24 3UE
United Kingdom
alireza.maheri@abdn.ac.uk

Keynote speech: Distributed hybrid energy systems and energy transition

Prof. Maheri joined University of Aberdeen in 2016. Prior to that, he was a Senior Lecturer at the Department of Mechanical and Construction Engineering, Northumbria University (2009-2016) and a member of Aerospace Vehicle Architecture and Design Integration Research and Teaching Group, Department of Aerospace Engineering, University of Bristol (2007-2009). Dr Maheri has a BSc in Mechanical Engineering from Shiraz University, a Masters in Mechanical Engineering-Energy Conversion from Amirkabir University of Technology and a PhD in Mechanical Engineering-Design and Simulation of Adaptive Aero-structures from UWE Bristol.

Professor Mohamed Emad Farrag (Emad)
Department of Electrical and Electronic Engineering
Mohamed.Farrag@gcu.ac.uk

Keynote speech: Capacity building opportunities in renewables sector, Sri Lanka as a case study

Mohamed Emad Farrag is a Professor in the Department of Electrical and Electronic Engineering at Glasgow Caledonian University (GCU). Prof Farrag is a Charter Engineer and Academic Accreditor at the IET, MIET, MIEEE and FHEA. He has many publications in distinguished journals and refereed conferences in the field of electrical power engineering and integration of energy storage systems into the smart grid. His research interests include artificial intelligent control application in condition monitoring and control of FACTS technologies. He has organised and chaired the UPEC2018

conference, invited speakers in many conferences and Colloquiums in power engineering. Emad is leading multi-million projects in capacity building funded by Erasmus+ with partners from Europe, Egypt and Sri Lanka. In addition to projects funded by the SFC, ETP, he is working with power industry companies like SPEN on a development project for assessment of their assets.

Dr. Zhiwei Gao
Associate Professor
Department: Mathematics, Physics and Electrical Engineering
Northumbria University
United Kingdom

Plenary talk: Augmented observer techniques for abnormality estimation and resilient control with applications to power converters and wind energy systems

Before joining Northumbria University, he held research and academic positions respectively in Newcastle University, University of Liverpool, University of Leicester, University of Manchester, University of Duisburg-Essen, and Tianjin University. Dr. Gao is the senior member of IEEE, and HEA fellow. He was the recipient of the Alexander von Humboldt Research Fellowship in 2004. Dr. Gao is currently the Associate Editor of IEEE Transactions on Systems, Man, and Cybernetics: Systems, IEEE Transactions on Industrial Informatics, IEEE Transactions on Industrial Electronics, IEEE Transactions on Automatic Control, ISA Transactions (Elsevier), Journal of Ambient Intelligence and Humanized Computing (Springer), IEEE Access, and the editorial board member of Renewable Energy (Elsevier). His research interests include Condition monitoring and fault diagnosis, fault tolerant design and control, machine learning and data-driven approaches, and their applications in wind turbine systems, power converters, power systems, onshore and offshore renewable energy systems.

Notes to All Delegates

Registration desk:
First floor, hotel Voila

Notes to Chairmen and Oral Presenters

- Chairmen must be in their respective rooms 10 minutes before the start of their session.

- Presenters must meet with chairmen of their session 10 minutes before the start of their session to hand in the **Presentation Power Point file**. For each paper, 20 minutes (15 minutes presentation and 5 minutes question and answer) is allocated. Presenters must keep to the allocated time to ensure the smooth running of the program.

- The program is subject to the last-minute alterations. Please refer to the conference noticeboard for the most up-to-date information as well as your mobile phone app.

Program: 7th International Conference on Environment Friendly Energies and Applications (EFEA 2022)

DAY 0 - Tuesday, 13/12/2022	
13.00-16.00	**Workshop 1: Economical evaluation and optimal design of energy projects** Professor Didier Aussel, University of Perpignan, France Room: C22
18:00 – 22:00	**Welcome cocktail party** Hotel Voila, Bagatelle, Moka.

DAY 1 - Wednesday, 14/12/2022		
09.00-10.00	Registration and coffee break	
10:00 – 10:30	Opening Ceremony	
10:30 – 11:30	*Keynote speech 1 –* ***Prof. Alireza Maheri, University of Aberdeen, UK*** ***Distributed hybrid energy systems and energy transition.*** Chair : N. Akaloo	
11:30 – 11:45	Coffee break	
11:45 – 13:05	Parallel Sessions-1	
Chair Raj Dreepaul	Educator 1	Hybrid Renewable Energy System 1 – P59, P44, P45, P65
Chair: D. Rughoo	Educator 2	Biomass and biofuel – P3, P23, P51, P63
Chair : B. Sreekeessoon	Accelerator	PV systems 1 – P47, P49, P68, P66
13:05 – 14:00	Lunch	
14:00 – 15:40	Parallel Sessions-2	
Chair: N. Latchoomun	Educator 1	Special session 1: Distributed Hybrid Renewable Energy Systems & Energy Transition (A. Maheri): P1, P7, P8, P24, P70
Chair: V. Lockmun-Bissessur	Educator 2	Special session 2: Modern trends in design and control for use in green and decarbonized industry and renewable applications (L. Ristic): P13, P14, P15, P16, P18.
Chair: S. Peeroo	Accelerator	Wind Energy Systems 1: P35, P53, P39, P40, P10
15:40 – 15:55	Coffee break	
15:55 – 17:15	Parallel session 3	
Chair: R. Fareed	Educator 1	PV systems 2: P4, P6, P21, P33
Chair: D. Rughoo	Educator 2	EV systems: P5, P42, P46, P55
Chair: J. Doorga	Accelerator	Education: P9, P41, P48, P50
End of Day 1		

DAY 2 - Thursday, 15/12/2022		
8:30 – 9:00	**Registration and coffee break**	
9:00– 10:00	Keynote speech 2 **– Prof. M. Farrag, Glasgow Caledonian University.** ***Capacity Building opportunities in renewables sector for developing countries, Sri Lanka as an example*** Chair: N. Akaloo	
10:00 – 10:15	**Coffee Break + Poster**	
10:15 – 12:00	**Parallel Sessions-3**	
Chair: I. Khodabacus	**Educator 1**	**Advanced Power Systems: P11, P34, P52, P54, P64**
Chair R. Fareed	**Educator 2**	**Wind Energy Systems 2: P36, P37, P38, P58, P20**
Chair: K. Sewraj	**Accelerator**	**Marine and system optimisation: P19, P25, P27, P56, P57**
12:00 – 13:00	**Lunch**	
13:00 – 14:00	Keynote speech 3 **– Dr. Zhiwei Gao, Northumbria University.** ***Augmented observer techniques for abnormality estimation and resilient control with applications to power systems and wind energy systems*** Chair: N. Akaloo	
14:00 – 14:15	**Coffee Break**	
14:15 – 16:00	**Parallel Sessions-4**	
Chair: N. Latchoomun	**Educator 1**	**Energy systems 1: P43, P67, P71, P73, P74,**
Chair R. Dreepaul	**Educator 2**	**Energy management: P60, P69, P72, P75**
K. Khodabux	**Accelerator**	**Energy systems 2: P2, P17, P22, P29, P77**
16:00:16:30	**Closing Speech and Feedbacks**	
19:00 – 24:00	**Conference Gala Dinner**	

Paper ID	Paper Title	Primary Contact Author Name
1	Integration of Wave Energy into Distributed Hybrid Renewable Energy Systems: Power and Cost Modelling Requirements	Hamish Forsythe
2	A socio-economic approach to energy transition in Mauritius	Betchoo Nirmal Kumar
3	Biomass-based scenario to achieve the electricity sustainability: the case of Reunion Island	Jordy Rabetanetiarimanana
4	Proposal of a Novel Nonlinear Nested Control for a Solar Panel: Theory and Simulation Results	Djamel Dhahbane
5	Impact of Eco-Driving on Energy Consumption of an Electric Vehicle	Amine Hamri
6	Designing and testing low-cost solar water heater using date palm fibers	Mohammed Anis Khemissat
7	Tidal Energy Power and Cost Modelling	Aerk Dimri
8	Multiobjective Optimisation of Grid Connected Wind-PV-Micro Hydro-Battery Systems	Jennifer Ricketts
9	An award winning approach to education relating to renewable energies	Bob A Gilmour
10	A Comparative Assessment of Cutting Techniques in Offshore Energy Foundation Structures	Kenneth Bisgaard Christensen
11	Study and Testing of the Directional Phase Overcurrent Protection and the RCA's Impact on Its Performance and Directional Decision Making	Mohammed Bouchahdane
13	Indirect Field-Oriented Control of an Asymmetrical Six-Phase Induction Motor Drive	Leposava B Ristić
14	Design and Performance Study of a Large-Scale Brushless Doubly Fed Reluctance Generator	Leposava B Ristić
15	Comparation between PI and Model Predictive Control of Two Mass Resonant Mechanical System	Leposava B Ristić
16	Model Predictive Control of Two Mass Resonant Mechanical System Optimized by Neural Network	Leposava B Ristić
17	New Active Fault tolerant control of multicellular converter	Boubakeur Rouabah
18	Experimental research and comparison of energy consumption of screw compressors with and without VSD	Mirjana Stamenic
19	Design Optimisation of Wind-PV-Microhydro- Multi-Energy Storage System for a Net-zero Campus, Case of University of Aberdeen Old Aberdeen Campus	Aerk Dimri
20	Identification some of the temperature related factors affecting hybrid PV-MTEG systems efficiency by experimental methods	Slawomir Wnuk
21	Risk Identification of the Solar PV Value Chain in Mauritius	Chandrika Ramiah
22	Transmission Lines Protection Using Numerical Relays	Mohammed Bouchahdane
23	Modeling of a mechatronic system for automating the production of biopellets with the apparatus of Petri nets	Iliyana Naydenova
24	Techno-economic assessment of Hydrogen Refuelling Station: Case Study of Hydrogen Train	Nadia Amena Iskandar
25	A Bio-inspired Meta-heuristic Optimization approach for Economic Load Dispatch	Rani C Chinnappa Naidu
27	Decarbonising Heating Systems for a Net-zero Campus, Case of University of Aberdeen Hillhead Halls	Duncan Massey
29	Application of Lagrangian mechanics to the hydrodynamic analysis of a cold-water pipe for Ocean Thermal Energy Conversion	Lucas Vatinel

33	Experimental Validation of an Energy Management System for a Residential PV and Energy Storage System	Iromi Ranaweera
34	Modal analysis and sound field modeling of a permanent magnet axial flux machine with one stator and two rotors	Leposava B Ristić
35	A review of offshore wind turbines and their various classifications	Kaleem Khodabux
36	Development of an Innovative Angle-Controlling Oscillation Mechanism for Wind Tunnel Testing	Xiang Shen
37	Hybrid aeroelastic models on dynamic responses of wind turbine blades	Xiang Shen
38	Conceptual design of different winding types for a 20MW wind turbine generator	Xiang Shen
39	Bio-inspired design of leading-edge tubercles on wind turbine blades	Xiang Shen
40	Aerodynamic Optimisations of Vortex Generators on a Wind Turbine Aerofoil using an Adjoint Solver	Xiang Shen
41	Developments of Remote Online Wind Laboratory with Experiments for Repository MOOCs	Kudabadu J C Kumara
42	Design of Carbon-Friendly E-scooter Charging Hub Powered by PV System with Extended Battery Life	Mohamed Farrag
43	Developing Role Model of PV Powered Battery Swapping Stations for e-scooters in Urban Regions	Mohamed Farrag
44	Particle Swarm Optimization Approach for Cost Minimization of Hybrid Renewable Energy Sources	Rani Chinnappa Naidu
45	Implications of geographical locations for hybrid floating solar and floating wind energy	Pak S Leung
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56	Sigmoidal analysis of MCT power curves	Bhamini B Sreekeessoon
57	Assessment of the wave power potential for the region of Souillac in Mauritius	Bhamini B Sreekeessoon
58	Mathematical approach to modelling sigmoidal power curves for Wind Energy Conversion Systems	Kaleem Khodabux
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62	Predicting Energy Consumption Using LSTM and CNN Deep Learning Algorithm	Rani Chinnappa Naidu
63	Optimizing Hydrogen Consumption in Fuel cells Using	Rani Chinnappa Naidu

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64	Economic Load Dispatch Using Novel Bat Algorithm Applying Doppler Effect	Rani Chinnappa Naidu
65	Design and Optimisation of Hybrid Solar Dryers for Dehydration of Vegetables	Rani Chinnappa Naidu
66	An assessment of the solar climate of a tropical island having a complex topography	Dhirajsing Rughoo
67	Implementation of a cloud-based solar radiation model using Regression Analysis for estimating photovoltaic power generation	Dhirajsing Rughoo
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73	Probabilistic wind power forecasting with an improved sparse-group Lasso-quantile regression neural network	Shixiang Lu
74	Facilitating the Implementation of Hybrid Renewable Energy Systems (HRES) in Nigeria through Incentive Policies	Ajinatswen A Dawuda
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77	Rotor Flux Observer Design for an Induction Motor Based Behavioural Speed Model	Jean Masala

We hope that you have enjoyed EFEA 2022

and

Look forward to seeing you at EFEA 2024.