

2021 12th International Renewable Engineering Conference IREC

Under the Patronage of H.E. Prof. Mohammad Abu Qudais, Minister of Higher Education and Scientific Research



April 14th-15th, 2021

Jordan Time	Day1	Day2		
10:00 AM	Welcoming and Opening Prof. Ala'aldeen Al-Halhoul Session 1	SG1: Keynote Speakers Session Chair: Eng. Ismail Salim Session 9	ER2: Session Chair: Dr. Mutaz Alghzaiwat Session 10	OC and AS1: Session Chair: Dr. Samer As'ad Session 11
10:30 AM				
11:00 AM	WE in Jordan Keynote Speakers Session Chair: Prof. Ala'aldeen Al-Halhoul Session 2	SG2: Session Chair: Eng. Qusai Soud Session 12	OC and AS2: Session Chair: Dr. Samer As'ad Session 13	ES and M2: Session Chair: Dr. Mutaz Alghzaiwat Session 14
11:30 AM				
12:00 PM				
12:00 PM	Break	Break		
12:30 PM	WE in Jordan Panel Discussion Session Chair: Prof. Ala'aldeen Al-Halhoul Session 3	ER3: Keynote Speakers Session Chair: Dr. Mutaz Alghzaiwat Session 15	ER4: Keynote Speakers Session Chair: Dr. Samer As'ad Session 16	SG3: Session Chair: Dr. Hesham Abusaimh Session 18
1:00 PM				
1:30 PM	WE1: Keynote Speakers + Panel Discussion Session Chair: Dr. Samer As'ad Session 4	Break		
2:00 PM				
2:30 PM				
3:00 PM	Break	SG4: Session Chair: Dr. Hesham Abusaimh Session 19	EE and G: Session Chair: Dr. Samer As'ad Session 20	F and RE: Session Chair: Dr. Mutaz Alghzaiwat Session 21
3:30 PM				
4:00 PM	WE2: Session Chair: Dr. Samer As'ad Session 5	ER1: Session Chair: Dr. Mutaz Alghzaiwat Session 6	Break	
4:30 PM				
5:00 PM				
5:30 PM	ICT and IoT: Session Chair: Dr. Hesham Abusaimh Session 7	ES and M1: Session Chair: Dr. Mutaz Alghzaiwat Session 8	Break	
6:00 PM				
6:30 PM				
6:45 PM	Wrap up and closure			

IREC 2021 Detailed Program

Day 1: Wednesday 14th April 2021

Welcoming: 10:00 am – 10:30 am, by Prof. Ala'aldeen Al-Halhouli

Opening + Guest Speaker + Keynote Speakers: 10:30 am – 12:00 pm

The Minister of Higher Education and Scientific Research patronizes the IREC 2021 and gives his plenary speech

Guest Speakers: H. E. Eng. Hala Zawati and H. E. Eng. Mohammed Al Najjar

Keynote speakers: Dr. Louy Qoaidar, Dr. Dureid Mahasneh,

Water Energy Nexus in Jordan

Time	Title	Guest Speaker
11:15 – 11:00	Transformation of the Energy Sector in Jordan	H.E. Eng. Hala Zawati, Minister of Energy and Mineral Resources
11:30 – 11:15	Energy prospective in the water sector and the Water-Energy Nexus	H.E. Eng. Mohammed Al Najjar, Minister of Water and Irrigation
11:45 – 11:30	Water Energy Nexus Management in Jordan: Resources and projects	(Dr. Louy Qoaidar (GIZ
12:00 – 11:45	Interaction of climate change with the sectors of Energy and Water	(Dr. Dureid Mahasneh (EDAMA
Break: 12:00pm – 12:30pm		
01:30 – 12:30	Panel Discussion <ul style="list-style-type: none"> – H.E. Eng. Hala Zawati, Minister of Energy and Mineral Resources – H.E. Eng. Mohammed Al Najjar, Minister of Water and Irrigation – Dr. Louy Qoaidar (GIZ) – Dr. Dureid Mahasneh (EDAMA) 	

WE1: Water Energy Nexus1, Regional context and Governance**Keynote Speaker: 01:30pm – 02:15pm****Panel Discussion: 02:15pm – 03:30pm****Keynote speakers: Dr. Adel Ben Youssef, and Mr. Khalid Salmi, Dr. Raya A. Al-Masri**

Time	Title	Keynote Speakers	Country
01:30 – 01:45	Energy- Water- Food nexus governance	Dr. Adel Ben Youssef	France
01:45 – 02:00	Food, Water & Energy Nexus in the Arab Region: Challenges & Opportunities	Khalid Salmi (RCREEE)	Egypt
02:00 – 02:15	Exploring the Status Quo of Water-Energy Nexus Policies and Governance in Jordan	Dr. Raya A. Al-Masri	Jordan
Panel Discussion on Water-Energy Nexus Opportunities in Jordan			
03:30 – 02:15	<ul style="list-style-type: none"> - Eng. Mohammad AL Dwairi (MWI) - Eng. Mais Al-Ardah (WAJ) - Eng. Yacoub Marar (MEMR) - Eng. Ahmed Aldohni (NEPCO) - Dr. Raya A. Al-Masri 		

Break: 3:30pm – 4:00pm**WE2: Water Energy Nexus2, 4:00pm-6:00pm**

Paper ID	Title	Authors	Country
26	Energy evaluation for the co-generation of cold and hot water system	Amer Saloum	Syria
62	Effect Of Floating Azolla Cover On The Evaporation Of Open Waters In Jordan	Ismail Salim and Ahmed Sleem	Jordan
65	Power Generation and Water Treatment Using Sediment Microbial Fuel Cells (SMFCs)	Bassem Mansour, Hajar Nasser and Hussein Juniedi	Syria
88	Performance Analysis of Successive Evaporation Condensation Solar Still (SECSS) Desalination Unit with Heat Recovery	Mahmoud Gamaeldin, Samy Elsherbiny, Sameh Ibrahim and Osama El Samni	Egypt
99	Photovoltaic Panel Efficiency Improvement by using Direct Water Passive Cooling with Clay Pot	Wahib Owhaib, Yousef Qandah, Hamza Al-Ajalain, Ahmad Tuffaha and Wael Al Kouz	Jordan

IREC 2021 Detailed Program

Day 1: Wednesday 14th April 2021

ER1: Energy Resources1, 4:00pm – 6:00pm

Paper ID	Title	Authors	Country
19	Parametric Investigation of Nano-Fluids Utilization in Parabolic Trough Collector	Osama Ayadi, Mohammad Hamdan, Yousef Al-Far, Abdulrahman Tayseer, Salam Al-Abadi, Ahmad Assaf and Otabeh Al-Oran	Jordan
23	Estimation of power produced by PV generator using weather data	Nabeel Aboshaban, Eman Abdelhafez and Mohammad Hamdan	Jordan
27	Radial junction silicon nanowire solar mini modules grown on FTO/glass substrates	Mutaz Al-Ghzaiwat and Martin Foldyna	France and Jordan
34	Wind Turbine Runaway Safety System, Design and Concept	Ammar Alkhalidi, Majd Alsaitah and Muath Albasyouni	Jordan
35	Coordination between offshore and onshore Voltage Source Converter for Doubly Fed Induction Generator wind farm	Jamil Arifin and Jingxin Zhang	Australia
48	Optimal sizing of Decentralized Biogas Plants in the West Bank	Sara Kharouf, Rula Abdalhaq and Abdelrahim Abusafa	Palestine
51	Design, Performance and Economic Analysis of Solar PV System: A Case study size 148.8 kWp for Al-Tafila Center for Care and Rehabilitation (Jordan)	Mais Alzgoool, Omran Alnassan and Laith Ahmad	Jordan

ICT and IoT: Information and Communications technology ICT/Internet of Things IoT, 6:00pm – 6:45pm

Paper ID	Title	Authors	Country
21	Harmonization between Renewable Energy and Cloud Computing towards Green Computing A Case Study: Data Center at The University Of Jordan	Mohammad Hamdan, Ayat Salem and Yazan Shamayleh	Jordan and Cyprus
81	Study of CUBESAT systems for IoT	Jamil Arifin	Australia
82	A Review Study on 5G NR Slicing enhancing IoT	M.A. Faruque	Australia

ES and M1: Energy Storage and Management Systems1, 6:00pm – 6:45pm

Paper ID	Title	Authors	Country
12	A Community-Based Building-to-Building Strategy for Multi-Objective Energy Management of Residential Microgrids	Saman Nikkhah, Adib Allahham, Mohammad Royapoor, Janusz Bialek and Damian Giaouris	United Kingdom
28	Status of energy in Syria - Study on how to meet the energy shortage by means of renewable resources	Issam Al Halabi, Gaith Warkozek, Swagat Das and Banishree Misra	Syria
30	Potential of using Off-grid PV/Wind/Diesel Battery Hybrid Energy System in Jordan	Radi Al Rashed, Tawfeek Fazaa and Osama Ayadi	Jordan

IREC 2021 Detailed Program

Day 2: Thursday 15th April 2021

SG1: ATSGIRES1, Keynote Speaker: 10:00am – 12:00pm

Keynote Speakers: Dr. Adib Allahham, Dr. Hani Mohsen, Prof. Ahmad Harb, and Eng. Shukri Halaby

Time	Title	Keynote Speakers	Country
10:00 – 10:15	Introduction about ATSGIRES, ATSGIRES Modules and E-learning Platform	Dr. Adib Allahham	United Kingdom
10:15 – 11:15	Introduction on training centre, ATSGIRES Equipment and current test technologies for smart grid	Dr. Hani Mohsen	Jordan
11:15 – 11:30	Hardware-in-Loop (HIL) Simulation for testing Smart Grids	Dr. Adib Allahham	United Kingdom
11:30 – 11:45	Impacts of Renewable Energy on Power Electric Grid	Prof. Ahmad Harb	Jordan
11:45 – 12:00	Lessons learned from COVID 19 for improved grid resiliency and higher RE penetration	Eng. Shukri Halaby	Jordan

ER2: Energy Resources2, 10:00am – 12:00pm

Paper ID	Title	Authors	Country
54	Reactive lift-type Spherical Turbine Design for the Disi-Station Pipes in Jordan -Study Case	Sara Alirshedat, Hani Attar, Ahmed Saad, Farouq Al-Shami, and Ayman Amer	Jordan
59	Study of DC Short Circuit Fault & Protection of VSC-HVDC Based Off-Shore DFIG Wind Farm	M.A. Faruque and Jingxin Zhang	Australia
61	Study the effect of some bacteria treatment on fertilizer specifications resulted from organic waste (cow manure_ food residue)	Razan Alrhia, Mousa Al Samara and Omiema Nasser	Syria
63	A new design method of PSS for power system including DFIG-based wind turbines	Anouar Farah and Khalid Alqunun	Saudi Arabia
71	Performance Comparison for Sun-Tracking Mechanism Photovoltaic (PV) and Concentrated Photovoltaic (CPV) Solar Panels with Fixed System PV Panels in Jordan	Layali Abu Hussein, Mohammad Musa and Osama Ayadi	Jordan
89	Design and Performance Evaluation of Large Field of Flat Plate Solar Collectors Network for Industrial Application	Ehab Kamel, Osama Elsamni, Hesham Elkaranshawy and Mahmoud Elsheniti	Egypt
92	Distributed Solar PV System for Industrial Applications in Palestine	Abdel-Karim Daud and Sameer Khader	Palestine
93	Utilization of Desulfurized Diesel in Domestic Boiler	Mohammad Hamdan	Jordan

OC and AS1: Optimization, Control and Automation Systems in RE1, 10:00pm – 12:00pm

Paper ID	Title	Authors	Country
3	A Linear Programming Based Load Scheduling System Considering Dynamic Pricing and Renewable Energy	Reda El Makroum, Ahmed Khallaayoun, Mhammed Chraibi and Rachid Lghoul	Morocco
6	Gradual Faults Diagnosis by a Novel Impedance Characterization Method	Najwa Lamdihine, Mohammed Ouassaid and Ghassane Aniba	Morocco
9	A modified Active Frequency Drift Method for Islanding Detection	Abdullah Al-Odienat and Khaled Al-Maitah	Jordan
10	Adaptive Fuzzy Control of Three-Phase Grid-Connected Inverter	Myada Shadoul, Hassan Yousef, Rashid Al-Abri and Amer Al-Hinai	Oman
25	Risk Assessment of Solar Energy Projects in Lebanon using Reference Ideal Method	Volkan Cakir, Myriam Baddour, Jose Lameh, Mariella Mansour, Romy Nehme and Nicolas Karam	Lebanon
29	An Average Current Control Method in Multiphase Interleaved Bidirectional DC/DC Converter connected on DC Microgrids	Arifin Wibisono, Mochammad Facta and Iwan Setiawan	Indonesia
38	Effect of modulation index on the performance of the three-phase modular multi-level converters	Rami Mousa and Samer Rabih	Syria
41	Analysis and Simulation of Maximum Power Point Tracking Based on Gradient Ascent Method	Hani Muhsen and Ihab Tanninah	Jordan

Break: 12:00pm – 12:30pm

SG2: ATSGIRES2, 12:30pm – 2:30pm

Paper ID	Title	Authors	Country
7	Evaluating grid connected photovoltaic system performance and estimating the produced Electric Power	Raed Alcharea and Waseem Saeed	Syria
20	Strategy of Integrating Buildings with Smart Systems	Musa Shaheen and Issa Eleyan	Jordan
31	Developing an Energy Benchmark for Hotel Residential Buildings in Jordan	Osama Ayadi, Osama Abdalla, Yousef Al Hallaq and Abdallah Al Dalabih	Jordan
37	Improving the Stability of Smart Grids by Using Flexible Alternating Current Transmission Systems (FACTS)	Jamal Alnasseir, Raed Alcharea and Fadi Almaghout	Syria
40	Comparison between T-cell and half-bridge cell submodule based modular multilevel converters for use in smart transformer	Abdulrahman Alhabbal, Rami Mousa and Samer Rabih	Syria
42	Designing a Micro-grid for a Real Grid Tied PV System	Fouad Zaro and Ibrahim Kiriakos	Palestine
43	Optimal Load Management of Smart Homes considering PVs and Comfort of Residents	Saeed Alyami	Saudi Arabia
45	The Dynamic Behavior of Large Scale Safawi PV plant integrated to the National Transmission Grid of Jordan, Particularly 132 Kv Busbar	Sara Awni Qutaishat, Ahmed Al-Salaymeh and Hani Obaid	Jordan

OC and AS2: Optimization, Control and Automation Systems in RE2, 12:30pm – 2:30pm

Paper ID	Title	Authors	Country
44	Low Frequency Oscillation Analysis for Dynamic Performance of Power Systems	Abdullah Al-Odienat, Mohammad Al-Momani, Khaled Alawasa, and Seba Gharaibeh	Jordan
52	Optimal Location of Distributed Generation and its Impacts on Voltage Stability	Razan Alrhia, Haitham Daghrou and Moussa Alsamara	Syria
58	Maximum Power Point Tracking Technique Using Combined Incremental Conductance and Owl Search Algorithm	Sara Altamimi, Eyad Feilat and Dia Abu Al Nadi	Jordan
68	Smart Distribution System using Fuzzy Logic Control	Mohammad Obeidat, Mohamad Qawaqneh, Ayman Mansour and Jalal Abdallah	Jordan
77	Model Predictive Current Control with Duty Ratio Optimization for Three Phase Grid Tie Micro Inverter Based on Runge Kutta Approximation	Sameer Khader and Mohamad Abu Nahleh	Palestine
98	Chi-Squared Test to Investigate the Causes and Effects of Overcrowding in Emergency Department	Ammar Alkhalidi, Mohammed Abu Nukta, Ashraf Dawagreh and Moa'd Jada'an	Jordan

ES and M2: Energy Storage and Management Systems2, 12:30pm – 2:30pm

Paper ID	Title	Authors	Country
60	An economic study of the life cycle of solar energy projects in Tartous Governorate (Model: matn alssahil station)	Mohammad Al Shiekh, Gassan Yakkoub and Moussa Alsamara	Syria
66	Smart Hubs 1 – A Demonstration of Electric Vehicle's Lithium – Ion Battery Charging Characteristic and Efficient Demand Side Energy Management with Solar Photovoltaic System	Christian Onwe, Mansoureh Zangiabadi, Neal Wade, Martin Feeney	United Kingdom
67	Hierarchical Test strategy and sizing considerations for retired lithium-ion batteries from electric vehicles	Christian Onwe, Ruisheng Li and Neal Wade	United Kingdom
70	SWH sizing and economic evaluation for local hospital – Palestinian territories	Mohammed Alsayed	Palestine
74	A Multi-Objective Scheduling Technique for Home Energy Management System	Imane Hammou Ou Ali, Mohammed Ouassaid and Mohamed Maaroufi	Morocco
85	Reactive Power Management and Protection Coordination of Distribution Network with High Solar Photovoltaic Penetration	Koti Reddy and Amit Kumar Singh	India
86	Numerical Simulation of Lithium-ion battery aging mechanisms and charging-discharging cycle	Salman Shahid, Mohammad Munib, Mohammad Uzair and Mohammad Alkhedher	UAE and US
100	Thermal energy storage using Dead Sea brine	Manar Ellauzi and Mohamad Khawaja	Jordan

Break: 2:30pm – 3:00pm**ER3: Energy Resources3, Keynote Speaker: Prof. Martin Kaltschmitt, Dr Abed Alaswad and Prof. Ahmed Al-Salaymeh, 3:00pm – 4:00pm**

Time	Title	Keynote Speakers	Country
3:20 – 3:00	PV and Wind Generation Systems for Climate protection - Towards an All-Electric-World	Prof. Martin Kaltschmitt	Germany
3:40 – 3:20	Bioenergy and Sustainability Issues	Dr Abed Alaswad	United Kingdom
4:00 – 3:40	Renewable energy strategy in Jordan	Prof. Ahmad Salaymeh	Jordan

ER4: Energy Resources4, Keynote Speaker: Prof. Suhil Kiwan, Prof. Ismael Al-Hinti and Johannes Uhl, 3:00pm – 4:00pm

Time	Title	Keynote Speakers	Country
3:20 – 3:00	Perspectives of Renewable Energy in Jordan	Prof. Suhil Kiwan	Jordan
3:40 – 3:20	The Jordanian – German Energy Partnership: Boosting sustainable energy through bilateral co-operation	Mr. Johannes Uhl	Jordan
4:00 – 3:40	Renewable Energy in Jordan	Prof. Ismael Al-Hinti	Jordan

SG3: ATSGIRES3, 3:00pm – 4:00pm

Paper ID	Title	Authors	Country
46	Transfer Learning Approach for Occupancy Prediction in Smart Buildings	Mohamad Khalil, Stephen McGough, Zoya Pourmirza, Mehdi Pazhoohesh, and Sara Walker	United Kingdom
53	An integration platform for optimised design and real-time control of smart local energy systems	Kunpeng Wang and Neal Wade	United Kingdom
55	Maximum PV Penetration Level integrated to the National Transmission Grid of Jordan, Particularly 132 KvBusbar	Sara Awni Qutaishat, Ahmed Al-Salaymeh, Ahmed Al-Salaymeh and Hani Obaid	Jordan

Break: 4:00 pm – 4:30 pm**SG4: ATSGIRES4, 4:30pm – 6:30pm**

Paper ID	Title	Authors	Country
57	Axiomatic design of smart local energy systems	Robin Wardle, Neal Wade, Christopher Mullen and Mohammad Royapoor	United Kingdom
64	An approach to modelling a Smart Local Energy System demonstrator project	Christopher Mullen, Robin Wardle and Neal Wade	United Kingdom
73	Sustainable energy retrofitting for residential buildings in Palestine, a simulation based approach	Sameh Monna, Adel Juaidi, Ramez Abdallah and Tareq Salameh	Palestine and UAE
75	Optimal Energy Management Strategy in A GridTied System with PV, Wind, and ESS Considering Environmental Aspect	Meryeme Azaroual, Mohammed Ouassaid and Mohamed Maaroufi	Morocco
76	A Novel Multi-agent Mechanism for Managing Electrical Power Smart Grids	Ayman Mansour, Mohammad Obeidat and Jalal Abdallah	Jordan
78	Hybrid renewable energy system for a remote area in UAE	Tareq Salameh, Malek Alkasrawi, Adel Juaidi, Ramez Abdallah and Sameh Monna	Palestine, United States and UAE
83	Hybrid Power System for Jordanian Houses to reduce the electrical bill in efficient way	Samer Asa'd, Mohanad Halawani and Ozveren Suheyl	Jordan
96	Collaborative Microgrids: Design and Dynamic Analysis using Multiagent Fuzzy-Logic System	Abdallah El Zerk, Mohammed Ouassaid and Youssef Zidani	Morocco

EE and G1: Energy Efficiency and Green Buildings, 4:30pm – 6:30pm

Paper ID	Title	Authors	Country
22	Temperature swing across silica aerogel glazing system under Jordanian climate	Mohammad Hamdan and Eman Herzallah	Jordan
33	Polycarbonate bladed highway wind turbine: A case study	Qusai Soud, Esraa Suhil and Aseel Radwan	Jordan
56	Solving Ecological Problem of Pyrolysis Carbon (Black (PCB	Dr. Osayd Abdulfattah and Ramez Abdallah	Palestine
80	Energy Savings and Optimum Insulation Thickness in External Walls in Palestinian Buildings	Ihab Alsurakji, Ramez Abdallah, Mahmoud Assad and Amjad El-Qanni	Palestine
84	Investigation of the Palestinian overall heat transfer coefficient and comparison with International Building Codes	Hüseyin Çamur and Ramez Abdallah	Cyprus and Palestine
87	Analytical Hierarchy Process-Based Decision Making for Evaluating Pyro-lytic Carbon Black as an Alternative Source of Heating in Refugees Camps in Jordan	Belal Gharaibeh, Sa'Ed Awni Musmar, Ehab W. Al-Zamer and Samer W. Al-Zamer	Jordan
90	A retrofitting of commercial residential building into a green building concept: A case study in Jordan	Sameer Al-Tawabini, Malek Alkasrawi and Emad Abdelsalam	Jordan and US
91	An Intelligent Demand Side Management Algorithm for Smart buildings	Rajaa Naji El Idrissi, Mohammed Ouassaid and Mohamed Maaroufi	Morocco

F and RE: Future Challenges and Trends of Renewable Energy, 4:30pm – 6:30pm

Paper ID	Title	Authors	Country
8	Wind Power assistant to weak grid with special load: A case study of High power induction furnace	Ghaith Warkozek	Syria
16	An Experimental Comparison of Bifacial and Monofacial PV Modules	Osama Ayadi, Mustafa Jamra, Amer Jaber, Layth Ahmad and Mohammad Alnaqeb	Jordan
17	Sizing PV System in a Household for Charging an Electric Vehicle with Considering the Driving Profile	Adib Allahham and Waseem Saeed	United Kingdom and Syria
47	On-Road Vehicular Emissions Case of Palestine	Mohammad Karaeen, Afif Akel Hasan, Ahmed Abu Hanieh, Mahdi Abuhomos, and Muhannad Zorba	Palestine
49	The use of voltage envelope and voltage dependent loads to increase the penetration of renewables	Rose Wabuti, Neal Wade, David Greenwood, and Uma Rajarathnam	United Kingdom and India
50	Future Energy Mix Mapping for Jordan using Multi Criteria Decision Analysis	Ibrahim Rahoma and Firas Obeidat	Jordan
69	A Deep Review and Analysis of Artificial Neural Network Use in Power Application with Further Recommendation and Future Direction	Mohammad A Obeidat, Ayman Mansour, Baker Al Omaireen Jalal Abdallah, Fayez Khazalah, and Murad Alaqtash	Jordan
79	Biofuels Policy and Future in Jordan	Aya Mousa, Malek Alkasrawi, Emad Abdelsalam, Tareq Salameh and Imad Alsyouf	Jordan, United States and UAE