



INTERNATIONAL POSTGRADUATE CONFERENCE FOR ENERGY RESEARCH(IPCER) 2022

Level 3, Pullman Kuala Lumpur Bangsar Hotel

19 December 2022 (Monday)

		STUDIO 1 (Parallel Session 1)	STUDIO 2 (Parallel Session 2)	STUDIO 3 (Parallel Session 3)	STUDIO 4 (Parallel Session 4)	STUDIO 5 (Parallel Session 5)
19th December (Monday) Session Chairs	Session A Presentation 11:00 am – 1:00 pm	Prof. Dr. Mohd Amran Mohd Radzi Dr. Siti Rohani Sheikh Raihan	Prof. Ir. Dr. Ab Halim Abu Bakar Dr. Maaspaliza Binti Azri (UTeM)	Associate Prof. Dr. Md Hasanuzzaman Dr. Shahid Bashir	Associate Prof. Dr. Shamsul Aizam Bin Zulkifli (UTHM) Dr. Muhammad Shakeel Ahmad	Prof. Dr. Adarsh Kumar Pandey Dr. Azimah Omar
	Session B Presentation 2:15 pm – 3:30 pm	Prof. Dr. Kumar Chinnaiyan V. (KPRIET, India) Dr. Jafferi Jamaludin	Dr. Kinnalesh Vongchanh Dr. Yushaizad Yusof (UKM)	Dr. Tran Sy Nam (Vietnam) Dr. Azam Akhbari	Associate Prof. Dr. Syahrul Ashikin Azmi Dr. Amirul Syafiq Abdul Jaafar	Dr. Deuansavanh Phommavongsa (Laos) Dr. Che Hang Seng
	Session C Presentation 3:45 pm – 5:15 pm	Professor Dr. Khaing Zaw Lin (Myanmar) Associate Prof. Dr. Md Hasanuzzaman	Prof. Dr. K. Mohanasundaram (KPRIET, India) Dr. Azimah Omar	Associate Prof. Dr. Y. Raja Sekhar (India) Dr. Siti Rohani Sheikh Raihan	Associate Prof. Dr. Aman Mohd Ihsan Mamat (UiTM) Dr. Muhammad Shakeel Ahmad	Associate Prof Dr. S. Karthikeyan (KPRIET, India) Dr. Shahid Bashir

	Time	Paper ID	Title	Initial Topic	Authors/University/Country
Session 1A 19th Dec 2022 Studio 1 (Parallel Session 1) Session Chairs: Prof. Dr. Mohd Amran Mohd Radzi Dr. Siti Rohani Sheikh Raihan	11:00 - 11:15	13	Robust Dynamic Control of Constant Current Source Based Dual Active Bridge DC/DC Converter used for Off-board EV Charging	Power Electronics and Energy Conversion	Muhammad Husnain Ashfaq, Jeyraj Selvaraj, UMPEDAC
	11:15 - 11:30	18	Experimental Verification of a Bidirectional Converter for Vehicle-to-Grid Application	Power Electronics and Energy Conversion	Zulhilman Bin Hassan, Jeyraj Selvaraj, N. A. Rahim, UMPEDAC
	11:30 - 11:45	28	Power Converter Applications for Cap-Stone Project for UTHM Undergraduate Student	Power Electronics and Energy Conversion	Shamsul Aizam Zulkifli, UTHM
	11:45 - 12:00	37	Design and Simulation of Hybrid Shunt Active Filter for PQ improvement Using Genetic Algorithm Tuning PID Controller in -4 Wire System	Power Electronics and Energy Conversion	Sugavanam K R, Jaya College of Engineering and Technology, Chennai, India
	12:00 - 12:15	38	Performance Analysis of a Cascaded Bidirectional DC-DC Converter for High Current Applications	Power Electronics and Energy Conversion	Mohammad Faisal Akhtar, Siti Rohani Sheikh Raihan, N. A. Rahim, UMPEDAC
	12:15 - 12:30	45	High Impedance Fault Detection in Medium Voltage Distribution Network	Electric Power Systems	Noor Amira Binti Mohd Shah, Ab Halim Abu Bakar, Tan Chia Kwang, Mohd Syukri Ali, UMPEDAC
	12:30 - 12:45	102	Comparative Studies of Metaheuristic Optimization Techniques for Optimal Allocation and Sizing of Distributed Generation in Radial Distribution Network	Electric Power Systems	Noor Ropidah Bujal, Politeknik Sultan Haji Ahmad Shah, Pahang
12:45 - 13:00	123	Performance Analysis of Power Electronics Learning Equipment	Power Electronics and Energy Conversion	Mohd Ridhwan Bin Abd Ghafar, UKM	

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Session 2A 19th Dec 2022 Studio 2 (Parallel Session 2) Session Chairs: Prof. Ir. Dr. Ab Halim Abu Bakar Dr. Maaspaliza Binti Azri (UTeM)	11:00 - 11:15	101	Reactive Power Compensation using Dual Phase Shift Modulation for Dual Active Bridge Converter	Power Electronics and Energy Conversion	Intan Mastura, Mohamad Fathi Bin Mohamad Elias, Nasrudin bin Abd Rahim, UMPEDAC
	11:15 - 11:30	124	Performance Analysis of a Switched-Mode Flyback DC-DC Converter with Non-Ideal Switching Devices	Power Electronics and Energy Conversion	Shazlin Shafiqah Shamsul Kamar, UniMAP
	11:30 - 11:45	64	Studies Of 6000w Pure Sine Wave and Modified Sine Wave Power Inverter for The Development of Remote Monitoring Applications	Power Electronics and Energy Conversion	Muhammad Isyraq Azaman, UniKL
	11:45 - 12:00	34	Conservation of Voltage Reduction	Power Systems and Smart Grids	Mithila Seva Bala Sundaram, UMPEDAC
	12:00 - 12:15	88	Harmonic Reduction of Three Phase Series Asymmetrical Cascaded Multilevel Voltage Source Inverter	Power Electronics and Energy Conversion	Musa Yusup Lada, UTeM
	12:15 - 12:30	73	Minimizing Economic Dispatch Impacts of Extreme Weather Induced Power Outage Through Genetic Algorithm	Power Systems and Smart Grids	Mohammad Ali Tofiqh, N. A. Rahim, Jeyraj Selvaraj, UMPEDAC
	12:30 - 12:45	23	Variable Length Black Hole for Optimization and Feature Selection	Smart Grid Design and Security	Tara Othman Qdire, UTHM



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Session 3A 19th Dec 2022 Studio 3 (Parallel Session 3) Session Chairs: Associate Prof. Dr. Md Hasanuzzaman Dr. Shahid Bashir	11:00 - 11:15	15	Sustainable and renewable energy from biomass waste in Malaysia's palm oil industry	Biomass and Bioenergy	Azam Akhbari, Shaliza Ibrahim, UMPEDAC
	11:15 - 11:30	69	Improving the sensitivity of microbial electrochemical sensors via surface modification on stainless steel 304L	Biomass and Bioenergy	Ryan Yeo Yow Zhong, UKM
	11:30 - 11:45	52	A review of building envelopes integrated with phase change materials	Energy in Buildings	John Paul, UMP, Pahang
	11:45 - 12:00	72	Recent Achievement in Electrochemical Biosensors for the Determination of Biomolecules Using Unmodified and Modified Electrodes	Energy Technology	Thulasiprevinnah A/P Santhanathas, Centre for Ionics, Dept. of Physics, Universiti Malaya
	12:00 - 12:15	76	Heat transfer enhancement of concentric tube heat exchanger using Al ₂ O ₃ nanofluid	Energy Transfer	Roshan Manghwar, Jeyraj Selvaraj, N. A. Rahim, UMPEDAC
	12:15 - 12:30	122	Performance Simulation of PVT System Using TRNSYS For Varying Mass Flow Rates	Energy Conversion	Y Raja Sekhar, Vellore Institute of Technology, India

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Session 4A 19th Dec 2022 Studio 4 (Parallel Session 4) Session Chairs: Associate Prof. Dr. Shamsul Aizam Bin Zulkifli (UTHM) Dr. Muhammad Shakeel Ahmad	11:00 - 11:15	10	Solar insolation and PV module temperature impact on the actual grid connected solar photovoltaic system in German Malaysian Institute	Solar Energy	Rozita Binti Mustafa, UPM
	11:15 - 11:30	39	Concentrating Solar Power Technologies: A Bibliometric Study in Bangladesh Perspective	Solar Energy	Safayet Mahmud, Ragib Rownak, Islamic University of Technology, Gazipur, Bangladesh
	11:30 - 11:45	42	The Influence of Nanofluid Characteristics on the Thermal Performance of Photovoltaic Thermal System	Solar Energy	Mukhamad Faeshol Umam, M. Hasanuzzaman, N. A. Rahim, UMPEDAC
	11:45 - 12:00	51	Effect of lead sintering aid to TiO ₂ photoanode for flexible dye sensitized solar cell	Solar Energy	Muhammad Hazim bin Mohamed Khir, Sunway Univ
	12:00 - 12:15	17	An Experimental Investigation on A Simple Direct-Drive Waterpower Generation System Utilising an Oscillating Water Column	Renewable Energy	Mohamad Alif bin Omar, UNITEN
	12:15 - 12:30	24	Performance of Single Cell and Double Stacked Thermoelectric Generator Modules for Low Temperature Waste Heat Recovery	Renewable Energy	PM Dr. Wan Ahmad Najmi Bin Wan Mohamed, UiTM Shah Alam
	12:30 - 12:45	81	Investigation of the Day Ahead Optimal Power Flow Based on Forecasted Meteorological Data Using Machine Learning: A case study of Ampang	Renewable Energy	Haider Jouma Touma, Muhamad Mansor, UNITEN
	12:45 - 13:00	100	Hydrogen-rich syngas production via dry reforming of methane over Ni/MgO-ZrO ₂ catalyst	Renewable Energy	Ahmad Salam Farooqi, UTP

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Session 5A 19th Dec 2022 Studio 5 (online) (Parallel Session 5) Session Chairs: Prof. Dr. Adarsh Kumar Pandey Dr. Azimah Omar	11:00 - 11:15	79	One-pot Conversion of Sago Pith Waste (SPW) into 5-Hydroxymethyl Furfural (HMF)	Biomass and Bioenergy	Vioni Derosya, Ayato Kawashima, Ehime University, Japan
	11:15 - 11:30	85	Bio-waste based porous carbon electrode materials for Dye Sensitized Solar Cells	Biomass and Bioenergy	Vogisha Kunjune, Centre for Ionics, Dept. of Physics, UM
	11:30 - 11:45	87	Deoxygenation of Palm Kernel Oil over Ni-Co based Catalysts for Bio-jet Fuel Production	Biomass and Bioenergy	Zar Ni Phyo, Lee Hwei Voon, Nurul Asikin Mijan3, UMPEDAC
	11:45 - 12:00	90	Characterization of local plastic wastes as potential alternative fuels	Biomass and Bioenergy	Truong Quoc Huy, Gertruth Leevhan Tihin, Lee Hwei Voon, UMPEDAC
	12:00 - 12:15	32	Design Data Logger Using For PV Analyzer Based on Arduino	Renewable Energy	Asnal Effendi, Institute of Technology Padang, Indonesia
	12:15 - 12:30	78	Energy Consumption Analyses of the VRF-SV Hybrid System Installed In A Large Retail Facility In The Tropics	Energy in Buildings	Umair, Prof. Ir. Dr. Yau Yat Huang, University of Malaya
	12:30 - 12:45	83	Comparative analysis study of zero-energy, self-sustained, and virtually off-grid community settlements	Energy Analysis	Moe Thiri Zun, Muhammad Shakeel Ahmad, UMPEDAC
	12:45 - 13:00	91	Techno-economic and Environmental Impact Assessment of Hybrid Solar Water Desalination System in Indonesia	Energy Analysis	Athaya Fairuz Mahadita, M. Hasanuzzaman, UMPEDAC



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Session 1B 19th Dec 2022 Studio 1 (Parallel Session 1) Session Chairs: Prof. Dr. Kumar Chinnaiyan V. (KPRIET, India) Dr. Jafferri Jamaludin	14:15 - 14:30	35	Testing Methods for State of Health (SoH) Evaluation of Second Life Batteries	Energy Storage	Vignesh S, Hang Seng Che, Jeyraj Selvaraj, UMPEDAC
	14:30 - 14:45	96	Electric vehicle energy consumption modelling and analysis: A Malaysia case study.	Electric Mobility	Mohd Syahmi Hashim, Muhamad Mansor, UNITEN
	14:45 - 15:00	56	Comparative research on the performance speed of Axial flux Permanent Magnet Generator (PMG)165 with manufacturing specification and experimental for implementation the Low-Speed Wind Turbine System	Renewable Energy	Jupry Hamzah, Mohd Razif Idris, UniKL
	15:00 - 15:15	57	The experimental investigation on the effect speed performance of Alternator product that use in automobile for adopting at the Low-Speed Wind Turbine System in Malaysia	Renewable Energy	Jupry Hamzah, Mohd Razif Idris, UniKL
	15:15 - 15:30	104	A development of PLC trainer prototype for standalone photovoltaic (SAPV) system application	Solar energy	Normazlina Binti Mat Isa, Politeknik Merlimau, Melaka



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Session 2B 19th Dec 2022 Studio 2 (Parallel Session 2) Session Chairs: Dr. Kinnalesh Vongchanh Dr. Yushaizad Yusof (UKM)	14:15 - 14:30	89	Development of Hybrid Self-Cleaning Coating Using Lanthanide-Based Light Spectral Response Material to Enhance Photovoltaic (PV) Panel Efficiency	Energy Efficiency	Khishn Kumar Kandiah, Amirul Syafiq, Vengadaesvaran Balakrishnan, Ramesh Subramaniam, UMPEDAC
	14:30 - 14:45	118	Energy audit on lighting system for 7-storey commercial educational building – energy saving opportunity	Energy Efficiency	Mohd Nezuan Bin Othman, Politeknik Kuching Sarawak
	14:45 - 15:00	46	The Overview of Green Technology Evolvment in Malaysia	Energy Planning	Siti Birkha Binti Mohd Ali, Wan Nazirah Wan Md Adnan, Anis Sabirin Baharom, M. Hasanuzzaman, N. A. Rahim, UMPEDAC
	15:00 - 15:15	47	Graphene nanoparticle dispersed ternary eutectic phase change material for thermal energy storage	Energy Storage	Kalidasan Balasubramanian, Sunway Univ
	15:15 - 15:30	49	PCM-based domestic solar water heating in Malaysia: Setbacks and countermeasures	Energy Storage	Wan Afin Fadzlin binti Wan Mohd Fadzli, M. Hasanuzzaman, N. A. Rahim, UMPEDAC



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Session 3B 19th Dec 2022 Studio 3 (Parallel Session 3) Session Chairs: Dr. Tran Sy Nam (Vietnam) Dr. Azam Akhbari	14:15 - 14:30	44	Challenges of integration methods of PV/T systems	Solar Energy	Abdullah Abdulmuhsen Saleh Basuhaib, Jeyraj Selvaraj, M. Hasanuzzaman, UMPEDAC
	14:30 - 14:45	55	Organic Solar cells Efficiency: Recent advances and Challenges	Solar energy	Ali Said, Mohd Khairil Rahmat, UniKL
	14:45 - 15:00	121	Experimental Performance Evaluation on PV-module	Solar Energy	Azlan Muharam, Zarulrizam Ab Jalil, Muhamad Asrul Affendi Mat Nor & Noor Soudiqqin Ismail, Politeknik Melaka,
	15:00 - 15:15	71	Comissioning and performance of SENTRY™ biosensor for wastewater monitoring in Malaysia	Energy Technology	Muhammad Farhan Bin Hil Me, UKM
	15:15 - 15:30	75	Performance Of Vapor Compression Refrigeration Cycle Integrated with Solar Thermal Collector	Solar energy	Hafeez Khoharo, Jeyraj Selvaraj, M. Hasanuzzaman, Laveet Kumar, UMPEDAC

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Session 4B 19th Dec 2022 Studio 4 (online) (Parallel Session 4) Session Chairs: Associate Prof. Dr. Syahrul Ashikin Azmi Dr. Amirul Syafiq Abdul Jaafar	14:15 - 14:30	19	Improved hexacopter pitch movement performance with adaptive controller	Power Electronics and Energy Conversion	Drs AL MT, Fajrin, Asnal Effendi, Institute of Technology Padang, Indonesia
	14:30 - 14:45	116	Low Harmonics Plug-in Home Charging Electric Vehicle Battery Charger utilizing Multi-Level Rectifier, Zero Crossing and Buck Chopper Part5: Simulation Model of Zero Crossing	Power Electronics and Energy Conversion	Saharul Arof, Philip Mawby, Hamzah Arof, Emilia Noorsald, UniKL
	14:45 - 15:00	117	Low Harmonics Plug-in Home Charging Electric Vehicle Battery Charger utilizing Multi-Level Rectifier, Zero Crossing and Buck Chopper Part4: BMS control for Battery Cell State Of Charge Balancing using single charging supply with Priority and Sequencing Technique	Power Electronics and Energy Conversion	Saharul Arof, Philip Mawby, Hamzah Arof, Emilia Noorsal, UniKL
	15:00 - 15:15	114	Software and hardware Noise cancellation of Controllers for Series Motor Four Quadrants Drive DC Chopper for DC Drive Electric Car	Electric Mobility	Mohd Sazali Said, Saharul, UniKL
	15:15 - 15:30	115	Series Motor Four Quadrants DC Chopper For DC Drive Electric Vehicle Driving Cycle Test Part 1: ECE15 and EUDC Test	Electric Mobility	Fathul Hazrimy, Saharul, UniKL



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Session 5B 19th Dec 2022 Studio 5 (online) (Parallel Session 5) Session Chairs: Dr. Deuansavanh Phommavongsa (Laos) Dr. Che Hang Seng	14:15 - 14:30	93	Contrastive Analysis of Energy and Environment Index in Lao PDR	Energy Analysis	Sayfar Rasachak, Kyoto University, Japan
	14:30 - 14:45	98	Drill Bit Selection and Drilling Parameter Optimization using Machine Learning	Energy Efficiency	Aditi Nautiyal, DIT University, India
	14:45 - 15:00	77	Assessment of Best Energy Mix Scenario for Myanmar Energy Security towards 2050	Energy Planning	Zu Zu May, Keiichi N. Ishihara, Kyoto Univ., Japan
	15:00 - 15:15	86	Effect of Polyethylene Glycol and Activated Carbon Macroparticles on Thermal Conductivity of Paraffin Wax for Thermal Storage Applications	Energy Storage	Lwin Phone Myat, Muhammad Shakeel Ahmad, UMPEDAC
	15:15 - 15:30	120	Techno-economic evaluation of CO2 utilization from gas processing facility to blue methanol using green hydrogen	Energy Systems	Tri Martanto, Universitas Indonesia, Depok



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Session 1C 19th Dec 2022 Studio 1 (Parallel Session 1) Session Chairs: Professor Dr. Khaing Zaw Lin (Myanmar) Associate Prof. Dr. Md Hasanuzzaman	15:45 - 16:00	53	Recycling End-of-Life Photovoltaic Modules in Malaysia: Challenges and Potential Solutions	Solar energy	Hui Fang Y, M. Hasanuzzaman, N. A. Rahim, UMPEDAC
	16:00 - 16:15	94	Testing the hydraulic press machine for densification of biomass briquette for household use	Biomass and Bioenergy	Kinnaeth Vongchanh, Chan Sarin, Institute of Technology of Cambodia
	16:15 - 16:30	70	Thermal behaviour of Paraffin- MWCNT stabilized by Sodium dodecylbenzene sulphonate nano-enhanced phase change material for energy storage applications	Energy Storage	Yasir Ali Bhutto, Sunway Univ
	16:30 - 16:45	67	Controllable Hydrothermal Synthesis of LiMn ₂ O ₄ and its Electrochemical Properties for Lithium-Ion Battery	Energy Storage	Muhammad Zulhadi Iskandar Bin Radzi, Vengadaesvaran Balakrishnan, N. A. Rahim, Siti Rohani Sheikh Raihan, Adarsh Kumar Pandey, Mohd Zieauddin Kufian, Ramesh Subramaniam, UMPEDAC
	16:45 - 17:00	27	A New Method for Improving the Performance of the 3-phase Induction Motor	Energy conversion	Zuriman Anthony, Institute of Technology Padang, Indonesia



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Session 2C 19th Dec 2022 Studio 2 (Parallel Session 2) Session Chairs: Prof. Dr. K. Mohanasundaram (KPRIET, India) Dr. Azimah Omar	15:45 - 16:00	50	Investigation of Thermal Performance and Chemical Stability of Metal Infused Salt Hydrate Phase Change Material for Thermal Energy Storage	Energy Storage	Adarsh Kumar Pandey, Reji Kumar, Mahendran Samykano, D Buddhi, VV Tyagi, Sunway Univ
	16:00 - 16:15	54	Impact of different surfactants on graphene nanoplates enhanced paraffin-based phase change material	Energy Storage	Noraz Al-Khairi Bin Noran, Adarsh Kumar Pandey, Jeyraj A/L Selvaraj, N. A. Rahim, D Buddhi, VV Tyagi, UMPEDAC
	16:15 - 16:30	74	An Overview On Redox Hydrogel Electrolyte For Energy Storage Devices	Energy Storage	Kayelvily Sadaiyandy @ Gopal, Fac. Of Science, UM
	16:30 - 16:45	80	Investigative study of cost effective ZrO ₂ Nanoparticles/Acrylic Based Diaphragm for alkaline electrolyzers	Energy Technology	Abdul Qayoom, Muhammad Shakeel Ahmad, Jeyraj Selvaraj, UMPEDAC
	16:45 - 17:00	82	Solar Powered Landslide Detection Using Global System Mobile (GSM) Communication	Solar energy	Noorhanaliza Berahan, Management and Science University, Selangor
	17:00 - 17:15	95	Development of a Zigbee Based Solar Powered Fire Forest Detection	Solar energy	Baharudin Hamzah, Management and Science University, Selangor

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Session 3C 19th Dec 2022 Studio 3 (hybrid: physical & online) (Parallel Session 3) Session Chairs: Associate Prof. Dr. Y. Raja Sekhar (India) Dr. Siti Rohani Sheikh Raihan	15:45 - 16:00	26	Biogas Production from Palm Oil Mill Effluent at Low pH	Biomass and Bioenergy	Wan Adam Fitri Wan Mohd Farred, UNITEN
	16:00 - 16:15	60	Analysis of Voltage Harmonic Generation Using Single-phase Semi-Controlled Rectifier with Multiple Loads	Power Electronics and Energy Conversion	Noradniazman Abd Aziz, Yushaizad Yusof, UKM
	16:15 - 16:30	66	Water Splitting for Clean Energy through Bipolar Junction Created on Anion-Exchange Membranes	Alternative Fuels	Muhammad Ahmad, University of Education, College Road, Lahore
	16:30 - 16:45	63	The Optimal Location of Multi-Microgrid System for Voltage Profile Enhancement and Real Power Loss Reduction in Power System using Analytical Approach	Power Systems and Smart Grids	Ainna Nadirah Zubidi, Bazilah Ismail, UniKI
	16:45 - 17:00	31	Experimental Investigation of Insulator Dielectric Strength of Transmission Tower in Rocky Areas	Power Systems and Smart Grids	Yusreni Warmi, Institute of Technology Padang, Indonesia
	17:00 - 17:15	48	Investigation Of Ambient Temperature in The Dry Type Transformer (DTTH) For the Safety Operation Mode	Electric Power Systems	Shaharudin Yub, UniKL
	17:15 - 17:30	61	A Study on Wind Turbine Systems Involving Ventilators, Charging Controller and Output Voltage Monitoring for Power Generation	Wind Energy	Abdul Halim Abd Rahman, Nor Athirah Amnah Ahmad Zaini, UniKL
	17:30 - 17:45	99	Fabrication of MFC chamber electrode for bioelectricity harvesting produced by phototrophic bacteria (PTB)	Biomass and Bioenergy	Abdulkadir Albaba Aliyu, Khanom Simarani, Institute of Biological Science, UM

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Session 4C 19th Dec 2022 Studio 4 (online) (Parallel Session 4) Session Chairs: Associate Prof. Dr. Aman Mohd Ihsan Mamat (UiTM) Dr. Muhammad Shakeel Ahmad	15:45 - 16:00	20	Overview of Axial Flux Permanent Magnet Generator for Small Scale Industry	Renewable Energy	Nur Afiqah Binti Mostaman, UTHM
	16:00 - 16:15	21	Initial Design of Free energy magnetic generator (FEMG)	Renewable Energy	Nur Afiqah Binti Mostaman, UTHM
	16:15 - 16:30	22	A Review: Various Design of Radial Flux Permanent Magnet Generator Technologies	Renewable Energy	Nur Afiqah Binti Mostaman, UTHM
	16:30 - 16:45	59	Energy Performance Review of Battery-Powered Drones for Search and Rescue (SAR) Operations	Energy Efficiency	Muhammad Firdaus Mohd Ali, Jafferi Jamaludin, Ismail Ahmedy, Lilik Jamilatul Awalun, UMPEDAC
	16:45 - 17:00	62	Electromagnetic performance of sandwich permanent magnet flux-switching machine using modular rotor	Renewable Energy	Irfan Ali Soomro, UTHM

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Session 5C 19th Dec 2022 Studio 5 (online) (Parallel Session 5) Session Chairs: Associate Prof. Dr. S. Karthikeyan (KPRIET, India) Dr. Shahid Bashir	15:45 - 16:00	16	BIM-Based LCA for housing estates in Thailand	Energy in Buildings	Pattanan Inharwararak, University of Liverpool
	16:00 - 16:15	119	Stratification and radiation of heat in hybrid gold-graphene/ethylene glycol nanofluid flows past a leaning cylinder	Thermodynamics	Siti Nur Ainsyah Binti Ghani, Institute of Mathematical Sciences, UM
	16:15 - 16:30	84	Evaluation of Generation Cost-based Feed-in Tariff Rate for Wind Energy in Myanmar	Wind Power	Ye Min, Jeyraj Selvaraj, Thi Thi Soe, UMPEDAC
	16:30 - 16:45	36	Economic analysis of phase change material integrated photovoltaic thermal systems: A Short communication	Renewable Energy	Jeeja Jacob, John Paul N, Adarsh Kumar Pandey, N. A. Rahim, Jeyraj Selvaraj, K. Kadirgama, UMPEDAC
	16:45 - 17:00	92	An Experimental Investigation of Back Flow Cooling Tempered Glass Photovoltaic Thermal System in the Malaysian Peninsula Climate	Solar Energy	Ridwan Muhammad, Jeyraj Selvaraj, UMPEDAC