

2022 5th International Conference on Power Engineering and Renewable Energy (ICPERE 2022)

**Bandung, Indonesia
22 – 23 November 2022**



**IEEE Catalog Number: CFP2246T-POD
ISBN: 978-1-6654-5549-7**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2246T-POD
ISBN (Print-On-Demand):	978-1-6654-5549-7
ISBN (Online):	978-1-6654-5548-0

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Table of Contents

Session 1A Renewable Energy I

ID	TITLE
5978	LCOE vs PV Penetration in Indonesia De-dieselization Programs Muhammad Faizal Sofyan, Ahmad Adhiim Muthahhari, Afrias Evindra, Mohamad Ramdan Herawan, Yoga Perdana and Fajar Sastrowijoyo...1
3923	Wind farm layout optimization based on the wind resource grid Thoa Le Thanh, Eduard Muljadi and Dieu Vo Ngoc...6
0642	Operational Road Map in North Sulawesi and Gorontalo Power Grid Considering the Intermittent Photovoltaic Penetration Arif Majiid Nusa Pratama, Muhammad Irfan Hashfi, Romario Oktavelen Ginting Munthe, Kevin Marojahan Banjar-Nahor and Nanang Hariyanto...12
1901	Hosting Capacity of Solar Power Plant in Java Madura Bali Andhika Prastawa, Arya Rezavidi, Diwangkoro Muhammad Dolaputra, Yoga Sandi Perdana, Dicky Edwin Hindarto and Yohanes Sumaryo Hadi...18
3798	Efficiency Analysis of Nuclear-Biogas-Solar Hybrid Power Plant Fauzi Dewanto and Burhanuddin Halimi...23
3391	Integration of Battery Energy Storage System (BESS) for Increase Flexibility and Penetration Renewable Energy in Indonesia: A Brief Review Chico Hermanu Brillianto Apibowo, Sarjiya Sarjiya, Sasongko Pramono Hadi and F. Danang Wijaya...29

Session 1B Power Electronics I

ID	TITLE
4462	Performance Comparison of The 8/6 SRM Inverters Ronaldo Martua, Jihad Furqani and Arwindra Rizqiawan...35
1032	Voltage Mode Control for Three-Phase Modified Cuk Inverter Misbahul Munir, Arwindra Rizqiawan, Anwar Muqorobin and Jihad Fuqani...41
1909	High Efficiency Multiphase Cascaded DC-DC Boost Converters With Inductance Optimization Muhammad Muzakki, Jihad Furqani and Arwindra Rizqiawan...47
1542	Design of Battery Charger with IoT Capabilities for Electric Bikes Kevin Naoko, Dhanurangga Al Fadh, Danu Ihza Pamungkas, Muhammad Amin Sulthoni and Arwindra Rizqiawan...53
8755	A Reliable Nested Neutral-Point-Clamped (RNNPC) Converter Faramarz Faraji and Honnyong Cha...59
8159	An Interactive Charging Strategy Model between Electric Vehicles and Distribution Electricity Network Zitong Fan and Tek Lie...66

Session 2A Power System I

ID	TITLE
4121	Power Flow Analysis of DC Train Substation System Maman Rukmana, Trisna Wati and Santi Triwijaya...71
7821	The Optimal Electricity Supply Option for Grid Transition of Non-Grid Isolated Island: Case Study Pulau Rengit, Belitung Anis Ratna Sari, Sudarmono Sasmono and Wahmisari Priharti...77

2669	Network Vulnerability Risk of Power Grid Under Intentional Transmission Attacks Eko Yudo Pramono, Ardylla Rommyonegge, Bambang Anggoro, and Nanang Hariyanto...82
6094	Simulation of Simple Grid-connected System Based on PV Distributed Generation Mingran Li and Goro Fujita...89
4509	Solar Smart Dome Modelling with Helioscope Dianing Novita Nurmala Putri, Stevanus Stevanus, Daisman Pb Adji, Endang Djuana, Kuart Rahardjo, Fergyanto E. Gunawan, Arif S Budiman, Bens Padamean and Sugiarto Romeli...95
7607	A Review on Asset Health Management and Criticality Parameters in PLN Indonesia A.P. Purnomoadi, H.S. Purnomo, A.S. Habibie, N.E. Saputro, D.R. Jintaka and I.M. Sari...101

Session 2B High Voltage

ID	TITLE
4374	Development of Real-time, Large Scale, and End-to-End Online Monitoring Losses (OML) Ignatius Rendroyoko, Iskandar Nungtjik and Hugo Hadi Suhana...107
4348	Combination of Bowtie and Long Bowtie Antenna to Improve the Performance of Partial Discharge Measurement on Gas Insulated Switchgear Ari Mukti Wibowo and Umar Khayam...113
4337	The Experience of Heavy Water Contaminated Power Transformer Field Repairing Using Combination Method of Hot Oil Circulating and Hot Oil Spraying Muhammad Helmi Prakoso, Ramli Hardiman Situmeang and Alberikus Sano...118
1594	Interactive Web Application Design of Online Partial Discharge Monitoring Prototype Deny Viviantoro, Syarif Hidayat and Umar Khayam...123
1000	Calibration of Partial Discharge Sensors in Air and SF6 Insulation Arpan Zaeni and Umar Khayam...129
8358	Efficient Smart Grid Data Updating and Diagnostics for Transformer Loading Management Allan Jay Baco and Dionel Albina...134

Session 3A Renewable Energy II

ID	TITLE
9427	Evaluation Performance PV Module Traffic Lights in Magelang Satyawati Arbaningrum...N/A
7645	Solar Photovoltaic Rooftop Penetration Forecasting Through Bass Diffusion Model Ajeng Pratiwi, Sudarmono Sasmono and Nanang Hariyanto...140
7568	An experimental study of the performance of a CI engine using ethanol as a fuel stabilizer Aijaz Abbasi, Noraz Al-Khairi Noran and Mohd Fadil Ali Ahmed...N/A
2941	A Distributed PCS Based DC Microgrid System for Rural Electrification Fauzan Randibarnas, Kharisma S. Gautama, Eric Agustian, Tri Ardriani, Jihad Furqani and Arwindra Rizqiawan...145
6935	Design of Solar Photovoltaic Water Pumping System for Paddy Irrigation in India Mohamed Salman Mohamed Haniff...N/A
7486	Experiment Results on AC Tracking Resistance of ZnO/Epoxy Microcomposites Chang-Yeong Cheon, Seong-Wan Ahn, Jae-Jin Oh and Myungchin Kim...151

Session 3B Electric Machinery

ID	TITLE
6969	Anti-slip Design for Single wheel Roller Rig System with Two Stage Torque Limiter Kristian Ismail, Suwarno, Tri Desmana Rachmildha, Estiko Rijanto and Yanuarsyah Haroen...155

- 3518 Analysis of Torque Ripple, Magnetic Field, and Duty Cycle Optimization on 450W 8/6 Switched Reluctance Motor using Finite Element Method
Muhammad Fabio, Jihad Furqani, Syarif Hidayat and Umar Khayam...160
- 7255 A New Improved Modification of Switched Reluctance Motor 12/8 With Diamagnetic Material
Umar Sholahuddin, Agus Purwadi and Yanuarsyah Haroen...166
- 1573 Design and Validation Non-Isolated Boost Converter for Cascaded Photovoltaic Application
Emil Furqoni Muttaqin, M. Aldy Wildan Maulana, Irham Fadlika, Aripriharta, Arif Nur Afandi and Taufik...171
- 5348 Evaluation of Power Factor Characteristic in ILST Fan Drive Power System
Muhammad Very Nugroho, Asep Dadan Hermawan and Dwie Vannia Dianti...177
- 0599 Resistance Analysis of Softwood and Hardwood to the Rotor Speed for Micro-Scale Wind Turbine Blade Materials
Khoirun Raisiyah, Anugrah Azhar and Ambran Hartono...181

Session 4A Renewable Energy III

ID	TITLE
8093	Multi-aspect Assessment of Municipal Solid Waste Co-Firing Compared to Waste to Energy Plant Projects in Indonesia Muhammad Yunus Qomarul Huda, I Gde Agung Chandra Satriya Wibawa and Ivan Bagus Novendianto...184
9473	PV Intermittent Smoothing with BESS: A Case Study in Selayar Island Electrical Grid Muhammad Fajri Ramadhan, Restu Maulana Azmi, Eko Supriyadi, Fajar Sastrowijoyo and Wilman Agustawan...190
2896	The Effect of DC/AC Ratio Configuration of Photovoltaic Power Plant (PVPP) on Case Study of PLN's Dedieselization Programs Jordan Ananda Purnomo, Binhot Pardamaian Nababan, Aep Saefudin, Kadek Fendy Sutrisna, Silvia Wahyuni Theresia and Ferdinan Nasib Triputra Simanullang...N/A
5904	Technical and Economic Viability of PV Power Plants Construction for Rural Area in Nunukan North Kalimantan Rizal Bagja Wiguna, Galang Grapurwa and Adii Munnahar...194
1678	The Geographic Smoothing Potential of Solar Irradiation in Java, Madura, and Bali Electric Power System Hafsah Halidah, Andhika Prastawa, Zakariya Arif Fikriyadi, Nur Aryanto Aryono, Riza Riza and Fajril Mardiansah...200
1505	The Optimal Integration of Small Scale Wind Turbine to The Low-Inertia Grid: Case Study 3 Nusa Grid, Nusa Penida I Gede Putu Oka Indra Wijaya, Sudarmono Sasmono, Wahmisari Priharti, Yasarah Labibah and Bandiyah Sri Aprillia...205

Session 4B Power Electronics II

ID	TITLE
5572	High-Efficiency Multiphase Modified DC-DC Cuk Converter Anam Rais Assidiq, Jihad Furqani and Arwindra Rizqiawan...210
1317	Review of Smart Street Lighting Research in Indonesia Umar Khayam and Arpan Zaeni...216
1059	New Single-Phase Voltage Source Inverter Based on Modified Cuk Cell with High Efficiency Wisayahyadi, Adrianus Yorgen Manurung, Misbahul Munir, Jihad Fuqani and Arwindra Rizqiawan...220

- 5397 Loss Analysis of 3-level LLC Converter with Duty Control
MinJae Kim, Seungwoo Baek, Hagwone Kim, JaeHo Choi and Jeongwon Kang...225
- 6889 Design and Implementation of Energy Management System For Small-Scale Hybrid Power Plant
Noviadi Arief Rachman, Agus Risdiyanto, Ant. Ardath Kristi, Agus Junaedi, Harjono Priyo Santosa and Umar Khayam...230
- 3197 Modulated Model Predictive Current Control for Three-phase NPC inverter with an LC Filter
Hanjong Yoon and Younghoon Cho...236

Session 5A Power System II

ID	TITLE
9704	Optimum Microgrid Sizing for Rural Application in Pulau Bangko, Southeast Sulawesi Sudirman Palaloi, Tisha Aditya Anggraini Jamaluddin, Andhika Prastawa, and Adi Soeprijanto...241
8743	Adaptive Ground Fault Relay Protection for Transformers with Different Neutral Grounding Resistors Irvan Lewi, Beni Septian Nugroho, Binhot P Nababan, Kevin Marojahan Banjar-Nahor and Nanang Hariyanto...246
8932	A Comparative Study of Battery Energy Storage Systems in Isolated Grids: Novel Approach to Shave Peaks and Optimize Energy Costs Bagas Maulana Sutardi, Ariesa Budi Zakaria, Ilham Akbar, Kevin Marojahan Banjar-Nahor and Nanang Hariyanto...252
7601	Research and Simulation of a new Multi-material Coupled Inductor Shanshan Wang, Yu Han, Xuanxi Liu and Younghoon Cho...258
9317	Dynamic Stability of Large-Scale Photovoltaic Based Generation Integration into Power Systems Muhammad Tayyab and Eduard Muljadi...264
8604	Voltage Responses of Tomia Island Microgrid Under Load Variations Yunita Muharram, Dedet Candra Riawan, Jinho Kim, Eduard Muljadi, and R. Mark Nelms...270

Session 5B Power System and High Voltage Engineering

ID	TITLE
2706	Analysis of the Effect of Loading on Age Loss and Efficiency on Dry Type Transformer at PT MRT Jakarta Retno Aita Diantari and Villania Annisa Fitri...276
6733	Demand Side Management in Microgrids: Between Theories and Practical Approaches Ibnu Kahfi Bachtiar, Nanang Hariyanto, Fathin Saifur Rahman, Indra Putra Almanar and Suwarno Suwarno...282
7713	Characterization of Energy Saving Lamps in Indonesia Based on Power Quality Agung Cahyadi Putra, Deny Hamdani and Umar Khayam...289
2934	Contingency Analysis of Electric Power Flow as a Power System Operation Approach Sapto Nisworo, Deria Pravitasari, Zulfikar Aji Kusworo, Sofan Setiawan and Agung Trihasto...295
5016	Mathematical Hosting Capacity Calculation due to Arise Voltage with The Equation of Line Approach Riki Khomarudin, Kevin Marojahan Banjar-Nahor and Nanang Hariyanto...300