2020 International Conference on **Smart Grid and Clean Energy Technologies (ICSGCE 2020)**

Kuching, Malaysia 4 – 7 October 2020



IEEE Catalog Number: CFP2008M-POD ISBN:

978-1-7281-5737-5

Copyright © 2020 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:
 CFP2008M-POD

 ISBN (Print-On-Demand):
 978-1-7281-5737-5

 ISBN (Online):
 978-1-7281-5736-8

ISSN: 2688-0849

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



Table of Contents

2020 (8th) International Conference on Smart Grid and Clean Energy Technologies (ICSGCE 2020)

Prefacevi
Committeesvii
Solar Energy Utilization and Energy Storage Technology
A Case Study on Optimal Sizing of Battery Energy Storage to Solve 'Duck Curve' Issues in Malaysia 1
Ling Ai Wong, and Vigna K. Ramachandaramurthy
Optimal Power Dispatch of a Grid-Connected Photovoltaic with Groundwater Pumped-Hydro Storage System Supplying a Farmhouse
Khanyisa Shirinda, Kanzumba Kusakana, and Sandile P. Koko
Research on Economic Dispatching and Collaborative Optimization of Industrial Park Micro-grid with Solar-Battery-Charge
Zhang Fuxing, Gui Yonghua, Miao Honglei, Li Yiqing, Zeng Zhaoyu, Luo Juan
Comparative Analysis of a Bifacial and a Polycrystalline Solar Cell Device Performances by Optimizing Effective Parameters Using PC1D
Raian Islam, Murad Mehrab Abrar
Effect of Pt Additions in the Interconnections on the Resistivity and Power Output of Solar Modules 21
Karen Mee Chu Wong, Sying Cuan Yee, Gulnaziya Issabayeva, Yun Seng Lim
Solar-Thermal Power Scheduling by Inserting α -Constrained Method to Nonlinear Simplex Method with Mutations
Sunimerjit Kaur, Y. S. Brar, J. S. Dhillon
Building Energy and Energy Engineering
A Optimal Control Strategy of Building Energy System Considering Thermal Comfort35
Jing Xu, Shiju Wang, Xuefei Zhang, Ke Xu, Juan Li, Lijia Du

A Two-stage Design Method for Integrated Energy System based on Optimistic and Pessimistic Criterion
Ke Xu, Shiju Wang, Xuefei Zhang, Jing Xu, Juan Li, Congshan Wang
An Effective Methodology for the Optimal Sizing of the Renewable Energy Sources and Energy Storage System in a Nearly Zero Energy Building
Evangelos Tsioumas, Dimitrios Papagiannis, Markos Koseoglou, Nikolaos Jabbour, and Christos
Mademlis
POET Concept for Improving Electrical and Thermal Efficiency of Main Equipment in a Residential Energy Hub
J. Siecker, K. Kusakana, and B.P. Numbi
Financial Benefits of PV only, BESS only and PV with BESS under the Trading Arrangements of NEM and ETOU in Malaysia
Lee Cheun Hau, Yun Seng Lim
Estimation of the Consumed Electric Energy by the Unschedulable Loads in a Nearly Zero Energy Building65
Dimitrios Papagiannis, Nikolaos Jabbour, Evangelos Tsioumas, Markos Koseoglou, and Christos
Mademlis
A Novel Methodology for Converting a Conventional Building to a Nearly Zero Energy Building71
Nikolaos Jabbour, Evangelos Tsioumas, Markos Koseoglou, Dimitrios Papagiannis, and Christos
Mademlis
Power and Energy Engineering
Simulation and Validation of a New IEEE Reliability Test System (RTS-GMLC) using PyPSA77
Ameen Sarhan, Vigna K. Ramachandaramurthy, Tiong Sieh Kiong, Janaka Ekanayake
An Effective Power Hardware-in-the-Loop System for the Simulation Testing of an Energy Management System of a Nearly Zero Energy Building Microgrid
Markos Koseoglou, Evangelos Tsioumas, Nikolaos Jabbour, Dimitrios Papagiannis and Christos
Mademlis
The Roles of Green Technology with the aids of Financial Development in Reducing Carbon Dioxide Emission
Hui Shan Lee, Zhi Wei Soon, Wai Mun Har, and Sin Yee Lee
Qualitative Methodology for comparison of Performance of Air Source Heat Pump Water Heaters96
Stephen Tangwea and Kanzumba Kusakana

Future	Security Challenges for Smart Societies: Overview from Technical and Societal Perspectives 103
М	ohammad Aldabbas, Xuan Xie, Bernd Teufel, Stephanie Teufel
	bjective Power Scheduling of Wind-Thermal Integrated System by Using α -Constrained Simplex112
S	unimerjit Kaur, Y. S. Brar, J. S. Dhillon
Study c	on Wind Power Development with Support of Pumped Storage
D	ong Zhang
Mode	ern Power System and Operation
A Meth	odology to Model Daily Charging Load in the EV Charging Stations Based on Monte Carlo Simulation
X	inwen Ni, Kwok Lun Lo
	Scale Horizontal Axis Hydrokinetic Turbine as Alternative for Remote Community Electrification in 131
Tá	an Kheng Wee, Martin Anyi, Ngu Sze Song
	ırn Stator Winding fault Diagnosis for Permanent Magnet Synchronous Motor based Power Spectral Estimators
Sa	ara Zerdani, Mohammed Larbi El Hafyani, Smail Zouggar
	hnical Loss Detection of Electricity based on Neural Architecture Search in Distribution Power
Li	na Dong, Qi Li, Kejia Wu, Ke Fei, Chuan Liu, Ning Wang, Jun Yang, Yigui Li
Non-ted	chnical Loss Detection using Missing Values' Patter
Ju	ın Yang, Ke Fei, Fajuan Ren, Qi Li, Jiajun Li, Yishu Duan, Lina Dong
	Circuit Analyses of Parallel and Non-Parallel Transformer Operations for Railway Power Supply: A tudy for Third Rail System
ZI	ni Hao Tan, Kein Huat Chua, Yun Seng Lim, Li Wang
The Sta	ate-of-the-Arts of Peak Shaving Technologies: A Review
K	ein Huat Chua, Huoy Lih Bong, Yun Seng Lim, Jianhui Wong, Li Wang
Microgr	ids control strategies: A survey of available literature
K	elebogile Confidence Meje, Lindiwe Bokopane, and Kanzumba Kusakana