2022 IEEE PES Innovative Smart Grid Technologies - Asia (ISGT Asia 2022)

Singapore
1-5 November 2022



IEEE Catalog Number: CFP22ISK-POD ISBN: 979-8-3503-9967-7

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:
 CFP22ISK-POD

 ISBN (Print-On-Demand):
 979-8-3503-9967-7

 ISBN (Online):
 979-8-3503-9966-0

ISSN: 2378-8534

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 content

Topic: System Planning and Operation with High Renewable Penetrations (Part 1)
Reconfiguration Based Load Restoration in Active Distribution Networks with A Voltage Frequency Dependent Load Model
Value-Based Expansion Planning in Storage-Concerned Distribution Networks6 Wei Lin, Zixu Wang, Zhifang Yang and Alexander A Vasin
Cyber-Physical Co-Simulation Testbed for Real-Time Reactive Power Control in Smart Distribution Network
Joint Renewable Generation Maximization and Radial Distribution Network Reconfiguration16 Kin Cheong Sou and Kenny Giron
A New Monitoring and Control Method for Improving Voltage Stability Margin21 Naoki Kono, Naoto Yorino, Yutaka Sasaki, Naoki Inoue, Yoshifumi Zoka, Ahmed Bedawy and Hajime Yasuda
Multi-Application Battery Energy Storage Systems for Energy Arbitrage and Frequency Regulation: Singapore Context Analysis26 Sajitha K. Nair, Katayoun Rahbar, Peng Peng and Albert Albert

Topic: Stability Analysis of Low-Inertia Grids

Impact of High Intermittent PV Systems on the System Frequency and Rate of Change of Frequency in Malaysia31 Xie Cherng Miow, Yun Seng Lim, Lee Cheun Hau, Jianhui Wong and Haris Patsios
Inertia Estimation for Interconnected Networks and its Application to the Uruguayan Power System36 Octavio J. Rodriguez, Alvaro D. Giusto and Aldo S. Rondoni
Resilience-oriented Modeling and Co-optimization for Coupled Power and Water Distribution Systems41 Yesen Yang and Edmond Y.M. Lo
Enhancement of Volt-VAR Control Using Voltage Sensitivity in Grid-Connected Photovoltaics System46 Sandro Sitompul, Ken Shimomukai and Goro Fujita
Transient stability improvement of Croatian power system using FACTS51 Anica Šešok and Ivica Pavić

Topic: Artificial intelligence for grid resilience enhancement

Interpretable Data-Driven Probabilistic Power System Load Margin Assessment with Uncertain Renewable Energy and Loads56 Bendong Tan, Junbo Zhao, Weijia Liu and Nan Duan
A Reinforcement Learning-based Volt-VAR Control Dataset and Testing Environment61 Yuanqi Gao and Nanpeng Yu
Adversarial Attacks on Deep Neural Network-based Power System Event Classification Models66 Yuanbin Cheng, Koji Yamashita and Nanpeng Yu
Data-Driven Ice Blockage Estimation of Water Intake at Niagara Hydropower Station71 <i>Koji Yamashita and Nanpeng Yu</i>
Critical Load Identification for Load Redistribution Attacks76 Praveen Verma, Sagar Gupta, Pallab Dasgupta and Chandan Chakraborty
Higher Training Size, Increased Model Complexity or Both: A Novel Decision Framework for Cycle Life Classification of Lithium-Ion Cells81 Muhammad Osama Tarar, Naveed UL Hassan and Ijaz Haider Naqvi
Topic: Poster Session
Zonal Day-Ahead Energy Market: A Modified Version of the IEEE 39-bus Test System86 Gioacchino Tricarico, Raju Wagle, Maria Dicorato, Giuseppe Forte, Francisco Gonzalez-Longatt and Jose Luis Rueda
Harmonic Analysis of Grid-Connected Inverters Based on Symmetrical Components91 Kenichiro Sano and Wanbin Xing
A Novel Preventive Frequency Stability Constrained OPF Considering Wind Power Fluctuation96 Sangwon Kim
Detection of Bad Data and False Data Injection Based on Back-Propagation Neural Network101 Shiqi Li and Yinghui Han
Effect of Using Battery Energy Storage System in Merit-Order Based Load Frequency Control Considering Change in Area Control Error106 Masaru Saida, Naoki Sasada, Masaki Imanaka and Takeyoshi Kato
Detection of Bad Data and Cyber Attacks in State Estimation using Support Vector Machine111 Yinghui Han and Shiai Li

Effect of La Niña weather conditions on operation of a future 100% renewable grid in

The Resilience of The Grid from The Risk of Failure Due to Kite Thread Disturbance

Australia.....116

Sudarmono MOO Sasmono

Lucy Roberts, Bin Lu and Kylie Catchpole

Case Study Khatulistiwa Grid......120



11th International Conference on Innovative Smart Grid Technologies (Asia)

1st - 5th November 2022, Singapore

Conservation Voltage Reduction using Submersible Transformer Integrated with OLTC and Monitoring System.....125 Supakit Chotigo and Prajak Kittirattanaviwat Control Structure Related Admittance-Shaping Effects in VSM Controlled Converters.......130 Carolin I. Hirsching, Marco Lindner, Alexander Bisseling, Michael Suriyah and Thomas Battery based Renewable Energy Source Grid-connected Generation System with Improved Power Quality Feature+.....135 Anurag Tiwari and Ruchi Agarwal Harnessing Resource and Demand Flexibility for Energy Management in Urban Microgrids.....140 Lalitha Subramanian, Jiyan Wu, Rudy Tjandra, Sebastian Troitzsch, Tobias Massier, Erine Siew Pheng Teh, Romain Migne and Yan Xu PV-Grid Interface Hybrid Energy Management System for EV Charging Station without PLL.....145 Rahul Raj Kar and Rupesh Ganpatrao Wandhare **Topic: System Planning and Operation with High Renewable Penetrations (Part 2)** Stability Comparison Between AC and DC Microgrids Applying Sensitivity Analysis........150 Yuchen Zhang and Cao Jiahui Three-Phase SRF PLL Model for System Frequency Response Studies in Low-Inertia Systems......155 Matej Krpan, Igor Erceg, Igor Kuzle and Hrvoje Pandžić Offshore Wind Grid Integration - A Techno-Economic Comparison of MVDC and HVAC.....160 Phuong Hong Nguyen Estimation of Maximum Available Power in Solar Photovoltaic Power Plants Under Normal Operation and Cloud Shading......165 Soudipan Maity, Zakir Hussain Rather and Suryanarayana Doolla A Linear Probabilistic Optimal Power Flow Model with Linearization Error Checking........170 Zhentong Shao, Qiaozhu Zhai, Yan Xu and Xiaohong Guan A Machine Learning Based Approach for Frequency Response Prediction in Low Inertia Power System......175 Akhilesh Panwar, Zakir Hussain Rather, Ariel Liebman, Suryanarayana Doolla and Roger Dargaville Classification of Strategies Enhancing the Penetration of Electric Vehicles in German Low Voltage Grids......180 Sina Steinle, Lukas Held, Patrick Vasile, Michael R. Suriyah and Thomas Leibfried



11th International Conference on Innovative Smart Grid Technologies (Asia)

1st - 5th November 2022, Singapore

Topic: Renewable generation and low-inertia grid
System Strength: Classification, Evaluation Methods, and Emerging Challenges in IBR-dominated Grids185 Aleksandar Boričić, Jose Luis Rueda Torres and Marjan Popov
Day-ahead Generation Schedule Considering Community Microgrid's Uncertainties190 Motonari Satoh, Yutaka Sasaki, Yoshifumi Zoka and Naoto Yorino
Optimal Two-Level Charging Station Pricing Considering Electric Vehicle User Price Elasticity195 Xun Li, Chikun Huang, Han Wang and Youwei Jia
A Review of Control Strategies for Operation of Distributed Resources Under Grid Faults200 Amit Gupta and Chandrasekhar Perumalla
Fault Current-Constrained Optimal Power Flow on Unbalanced Distribution Networks205 Jose Enrique Tabarez, Arthur K. Barnes, Adam Mate and Russell W. Bent
Integration of Pump-Storage Batteries in Offshore Wind Farms: Evaluation of Effects on Power Exchange210 Phuong Hong Nguyen
Distance protection of inverter based renewables power evacuating lines and downstream network: Issues and mitigation approach215 Vedanta Pradhan, Neethu George, OD Naidu, Zoran Gajic and Sinisa Zubic

Topic: Grid-Edge Systems and Technologies (Part 1)

Comparative Evaluation of Cyber-Attacks on AC Microgrid Secondary Control220 Haoyu Zhang and Zhipeng Yao
Optimal Scheduling in Rural Community Microgrids225 Jialun Zhong and Yuxiao Wang
Community Energy Cooperation with Shared Energy Storage for Economic- Environment Benefits230 Yinyan Liu, Haoning Xi, Yunqi Wang, Jun Lin and Jin Ma
Coordinated Control of Air-conditioning Load and Battery Energy Storage System for Improving Electricity Supply-demand Balancing235 Rajabu Myovela and Kato Takeyoshi



11th International Conference on Innovative Smart Grid Technologies (Asia)

1st - 5th November 2022, Singapore

Topic: Electricity Market, Innovative Business Mechanism, Policy/Regulatory Aspects (Part 1)
A Bilevel Electricity Market Equilibrium Model Considering GENCO's Optimal
Investment and Bidding Decision240
Binghao HE, Huanxin Liao, Wenxuan Liu and Junhua Zhao
Flexible Stochastic Bilevel Scheduling Strategy in Hydropower Dominated Energy Markets245
Abolfazl Khodadadi, Lennart Söder and Mikael Amelin
Daily Generation Schedule Estimation for the Entire Power System Considering Japanese Electricity Markets250
Tsubasa Nagae, Taisuke Masuta, Yusuke Manabe and Nobuyuki Yamaguchi
A Bid Limit-based P2P Energy Trading Framework255
Jainendra Jain, Sachinkumar Suthar and Naran M. Pindoriya
Enabling Trusted Peer-to-Peer Microgrid Energy Transactions during High-Impact Low Probability Weather Events260 Lakshita Lakshita and Nirmal Nair
LAKSTILIA LAKSTILIA ARIA /NITTHAL NAUT

Topic: Artificial Intelligence and Cloud Based Smart Technologies in Modern Grids

A Review of Machine Learning Applications for Li-Ion Battery State Estimation in Electric Vehicles.........265

Wesley Qi Tong Poh, Yan Xu and Robert Thiam Poh Tan

Hybrid Digital Twin Architecture for Power System Cyber Security Analysis........270

Vijayakumar Ayyalusamy, Sivaneasan B., Kandasamy NK, Jianfang Xiao, Khalid Abidi and AMBRISH Chandra

Distribution Network Characterization for Ancillary Service Provision: Frequency Response through Voltage Control........275

Maria Robowska, Mazher Syed, Graeme Burt and Yan Xu

Topic: Electric vehicles

Modeling of the EV dynamic wireless charging load........280

Xin Cui, Liang Liang, Wei Liu, Junhong Liu and Yunhe Hou

An EV Charging Scheduling Methodology to Reduce Demand and Energy Charges in Industrial and Commercial Sites.......285

Can Berk Saner, Anupam Trivedi and Dipti Srinivasan

A Vehicle and Charging Scheduling Framework for Campus Shuttle Electric Buses.......290

Can Berk Saner, Raymond Ho Chin Wei, Sayed A. R. Alkaff, Wei Zheng Lee, Yu Wei Lee, Anupam Trivedi and Dipti Srinivasan

Towards Making Intelligent Decisions on SOC Strategies for EV Battery Life Enhancement under Practical DoD Ranges.........295

Ayesha Khan, Ijaz Haider Naqvi and Naveed Ul Hassan

EV Driving Across Seasons: SOC strategies for Higher Battery Life Expectancy.........300

Kashif Raza, Ijaz Haider Naqvi and Naveed Ul Hassan

Topic: Topical Developments of Power Electronics Converter in System Resilience Enhancement

Performance Improvement of Weak Grid Interfaced Microgrid Using Multi Generalized Integrator Controller......305 Vijayakumar Gali, Prashant Jamwal, Anuar Syzdykov and Arshyn Zhanbolatov MPC Control for Low Power PV System Against Grid Voltage Disturbances.......310 Mukhtar Turarbek, Vijayakumar Gali and Prashant Jamwal Implementation of DC-DC Converter using Ultra Capacitor and Digital Controller for Battery Electric vehicle Applications......315 Chitra Selvi Shokkalingam, Ramani Kannan TS and Sundaramoorthi R. Modified Triple-port Double Boost Switched Inductor based DC-DC Converter for Single Phase PV System.....320 Chitra Selvi Shokkalingam and Kamalathiyagarajan S. Performance Analysis of Grid Connected SPCS under Unbalanced Grid Voltage, Frequency Deviation and Harmonics......325 Meghraj Morey, Nitin Gupta, ManMohan Garg and AjayKumar Singh A Novel Three-Phase Multilevel Inverter Cascaded by Three-Phase Two-Level Inverter and Two Single-Phase Boosted H-Bridge Inverters......330 Niraj Kishore, Kapil Shukla and Nitin Gupta

Topic: Toward Digitalized Microgrids with Blockchain, Data Driven Techniques, and Cyber-Resilience Enhancement Methods

Tron Blockchain Based Pricing Scheme for Energy Trading Considering Carbon Emissions Taxes......335 Jiawei Yang, Hongxu Huang, Yiwen Zhang, Jiahong Dai and Hoay Beng Gooi A Cumulative Modified Weibull Model for Transformer Reliability Analysis Considering Environmental and Operational Factors......340 Lingfeng Luo, Nan Zhou, Yan Xu and Peng Wang Efficiency Optimization for Hybrid Si + SiC Neutral-Point-Clamped Dual-Active-Bridge Converter for Energy Storage Systems......345 Jiaxin Dong, Josep Pou, Suvajit Mukherjee, Amit Kumar Gupta and Yu Zeng Distributed Energy Control System Based on Blockchain and 5G......349 Yong Yan, Zhongxu Li, Jianping Huang and Hao Chen A Confidence-Aware Data-Driven Method for Batch Small-Signal Stability Assessment of Power Systems......354 Qiaoqiao Li, Rui ZHANG and Koh Leong Hai A Missing Data Tolerance Data-driven Method for Open-Circuit Fault Diagnosis of Three-phase Inverters Based on Random Forest and Resampling Scheme.......359 Yuancheng Su, Yang Xia and Rui Zhang Model Predictive Control Strategy of Grid-tied Converter control in Weak-Grid conditions for Containerized Microgrid (CMG) Systems......364 Gaurav Mani Gupta, Suman Mondal and Ali I. Maswood



11th International Conference on Innovative Smart Grid Technologies (Asia)

1st - 5th November 2022, Singapore

Topic: Applications of Optimization Techniques for Planning and Operation of Modern Grids A Comprehensive Literature Review for Optimal Planning of Distributed Energy Resources in Distribution Grids..........369 Ruoxuan Leng, Zhengmao Li and Yan Xu Efficient Clustering of Distributed Energy Resources Minimising Cluster Variances........374 Jun-Xing Chin and Gabriela Hug Joint Optimization of Battery Energy Storage and Gas Turbine for Ancillary Service Provision........379 Rohit Chandra, Katayoun Rahbar and Peng Peng Two-Stage Optimization Framework for Battery Energy Storage System Co-Optimization in Regulation Market.........384

Topic: Grid-edge Systems and Technologies (Part 2)

Sajitha K. Nair, Katayoun Rahbar and Peng Peng

Mobile Vehicle to Microgrid for Emergency Distribution System Operation Considering EV SOCs.......389

Yuki Sato, Taisuke Masuta and Thavatchai Tayjasanant

Distribution Network Congestion Management with Internet Data Centers Using Bilevel Programming.......394

Zhihao Yang, Anupam Trivedi, Dipti Srinivasan, Ming Ni and Haoming Liu

Investigating Demand-Side Management (DSM) Opportunities Using Load Profiling: The Case of Qatar.......399

Haya Monawwar, Khaled Abedrabboh, Omar Almarri and Luluwah Al-Fagih

Optimal sizing of Battery Energy Storage Systems for self-consumption in Urban Microgrids.......404

Rudy Tjandra, Lalitha Subramanian, Muhammed Imran, Erine Siew Pheng Teh, Romain Migne, Tobias Massier and Yan Xu

Topic: Grid-edge Systems and Technologies (Part 3)

Coordinated Operation Scheduling Method of Distribution Grid and Microgrids with Gradient Estimation by Finite Difference..........409

Tetsushi Ono, Tsutomu Kawamura, Kenichiro Yamane and Lian-Zhu Shan

Charging Navigation for Commercial Electric Vehicles in Considering Traffic and Queuing Dynamics.........414

Yantao Sun, Oilin Huang, Mengge Shi and Youwei Jia

Topic: Advances in Virtual Power Plant: Modelling, Optimization, and Implementation Multi-Objective Volt/Var Control of Virtual Power Plant for Mitigating Voltage Unbalance..........419 Qijun Liang, Cuo Zhang and Zhao Yang Dong PPO-based Pricing Method for Shared Energy Storage System.........424 Xiangyu Li, Hangyue Liu, Chaojie Li, Guo Chen and Shiping Wen

Topic: Uncertainty Handling in Modern Power Grids

Stochastic Unit Commitment Model Considering the Impact of Carbon Emissions Trading........429

Xin Bai, Xinran He, Yuge Sun, Li Zhang, Suibin Zhang and Tao Ding

Security Assessment of Power System with Stochastic Uncertainty Based on Steady-state Controllable Distance........434

Chenxi Hu, Jiazuo Hou and Yunhe Hou

Topic: Energy Transition Strategies, and Environmental and Climatic Benefits of Pushing Forward

Topic: Power Electronic Converters in Power Grids

Power Balancing with Zero Sequence Voltage Injection Method for Cascaded H-Bridge
Inverter Fed Grid-Connected PV System454
Jitendra Tanguturi, Satendra Kumar and Siva Kumar Keerthipati
Analysis of Three-Level Bidirectional DC/DC Converters for Interfacing Ultracapacitors459 Sindhu Geetla, Naresh Palla and Seshadri Sravan Kumar Vanjari
Model Predictive Voltage and Current Control of Four Leg Inverter for Micro-grids and Distributed Generation Applications464 Sivakumar Gannamraju and Ravikumar Bhimasingu
Impact of non-idealities on Control of Ultracapacitor based Energy Storage Systems469 Naresh Palla, Sai Vinay Kishore N and Seshadri Sravan Kumar Vanjari



11th International Conference on **Innovative Smart Grid Technologies (Asia)**

1st - 5th November 2022, Singapore

An AC-Feasible Linear Model in Distribution Networks with Energy Storage.......474 Wei Lin

Flexibility in Active Distribution Networks – Modelling a Fully Coupled Multi-Energy System in MESMO......475

Verena Kleinschmidt, Thomas Hamacher and Vedran Peric

Research on Optimal Configuration of Battery Energy Storage System for Photovoltaic Systems with Different Load Demand.......480

Xiaolin Chen, Wenjin Zheng, Xiaochen Xu, Jing Zhang, Yu Bai and Yuekai Pan

Topic: Electricity Market, Innovative Business Mechanism, Policy/Regulatory Aspects (Part 2)

Transformation of Existing Commercial Building Cluster Towards Renewable Rich Microgrid: A Case Study for Marina Bay Sands Singapore.......485 Jaydeep Saha, Samuel Lam Wei Liang, Nicholas Foo Cher Jun, Justin Tan Wee How, Ann Lee and Sanjib Kumar Panda Cost of Charging Electric Vehicles in a City......490 Wenhao Gao and Huixin Li

Suitability Assessment of Flywheel Energy Storage Systems for providing new Frequency Response Services in the UK......495 Andrew J. Hutchinson and Daniel T. Gladwin

Topic: Virtual Presentations

Moving Target Defense Oriented D-FACTS Deployment and Operation.......500 Zhen Yu, Binger Ye, Jiazhou Wang, Yang Liu, Yinguo Yang, Qiuyu Lu, Yu Zhu, Shuangxi Wu and Yang Liu

Potential impact of wind-based Synthetic Inertia on the Frequency Response of the Argentine-Uruguayan Interconnected Power Systems.......505 Nicolas Yedrzejewski and Alvaro D. Giusto

A Multi Grid Coordinated Resilience Enhancement Approach for Load Recovery under Extreme Fault......510

Xiaotong Zhang, Hongxu Huang, Chaoxian Lv, Ge Zhang and Rui Liang

Locating Faulty Section in Tie-line Using Classification Based Methods........515

Viresh S. Patel, Aastha Kapoor, Ankush Sharma and Saikat Chakrabarti

Risk-Averse Graph Learning for Real-time Power System Emergency Load Shedding.......520 Jizhe Liu, Yuchen Zhang, Ke Meng, Yan Xu and Zhao Yang Dong

Impacts of Residential Ice Storage Systems on Low Voltage Networks.......525 Javad Jazaeri, Tansu Alpcan and Robert Gordon

Real Time Detection and Control of Loss of Synchronism using Energy Function Criterion and Phase Sequence Exchange Technique......530

Nitesh Singh, Saikat Chakrabarti and Ankush Sharma



11th International Conference on Innovative Smart Grid Technologies (Asia)

1st - 5th November 2022, Singapore

Robust Data-driven Sparse Estimation of Power Flow Sensitivities for Smart Grid Monitoring and Operation535
Yingqi Liang, Junbo Zhao, Dhivya Sampath Kumar, Pierluigi Siano and Dipti Srinivasan
A Unified Distributed Secondary Controller using a Dynamic Consensus Algorithm in DC Microgrids540
Dawei Liao, Fei Gao and Xin Liu
Smart Charging of Electric Vehicles at Residence Under Different Tariff Regimes and Meter Configurations545 Keerthi Balaram Javvadhi and Pradeep Yemula
Voltage Stability Enhancement Through Active Power Control of Converter-Interfaced Generation550
Weilin Zhong, Georgios Tzounas and Federico Milano
Price Chain Analysis From Primary Energy Prices To Electricity Market Clearing Prices555 Li Junjie, Wang Hongliang, Luo Yufeng, Hai Zheng, Lan Zhou, Hu Jiahua and Wang Yizheng
Optimal Power Sharing Control with Stability Enhancement for Islanded Microgrids560 Li Sun and Guangzhong Dong
Streaming-Data-Driven Distributionally Robust Joint Operation of Multi-Microgrids and Off-Site Hydrogen Refueling Stations under Uncertainties565 Longyan Li, Chao Ning and Haifeng Qiu
Trajectory Based Model Predictive Control Strategy for LC Filtered VSIs570 Jiahao Yu, Fei Gao and Junzhong Xu
Distributed Hierarchical Control for VSC-Based DC Microgrids with AC-DC Coupled Strategy575
Boshen Zhang, Fei Gao, Yuanlong Li and Dong Liu
Comparing Spatio-Temporal Models for Aggregate PV Power Nowcasting580 Guoping Ruan, Xiaoyang Chen, Yang Du, Eng Gee Lim, Lurui Fang and Ke Yan
Optimal Strategy for Customer Directrix Load based Demand Response Considering Comfort and Preference of Customers585 Yan Meng, Shaolun Xu, Juhua Hong, Shuai Fan, Jucheng Xiao and Guangyu He
Exploring Peer-to-Peer Demand Response Transaction Framework between Prosumers in Electricity Retail Market590 Min Lu, Kang Xie, Yicheng Jiang, Lizhong Xu, Kan Yang and Xunhu Yin
A Gramian Angular Field Transform-Based Higher-Dimension Data-Driven Method for Post-Fault Short-Term Voltage Stability Assessment595
Yuchi Tang, Chao Ren, Rui Zhang and Shuo Ren
The Effect of Battery Storage Participation in Australian Wholesale Electricity and Frequency Control Markets600 Yi Huang, Dan Gordon and Paul Scott
Autonomous Decentralized Control of Distributed Generation using Multi-Agent Reinforcement Learning605
Jian Liu, Weifeng Xu, Zhijun Liu, Guanhua Fu, Yunpeng Jiang and Jun Wang
Economic Dispatch-Based Secondary Control for Islanded Microgrid610 Fahad S. Alshammari and Ayman EL-Refaie



11th International Conference on Innovative Smart Grid Technologies (Asia)

1st - 5th November 2022, Singapore

Distance Protection with Dynamic Trip Region for Lines Terminated by Inverter Based Resources615
Yuhao Xie, Yu Liu, Dian Lu, Binglin Wang, Yun'an Xu and Yixiong Jia
General Format of Phase-Mode Transformation Matrices for 3 Phase Power Systems and Applications to Transmission Line Protection620 Jinhao Qiu, Yu Liu, Dian Lu, Yuan Nie and Ze Liu
Power Network Parameter Estimation with Voltage and Current Magnitude Measurements625
Yixiong Jia, Yu Liu, Kang Yue, Xinguo Zhang, Yun'an Xu and Yuhao Xie
Phasor Domain Single-Ended Transmission Line Fault Location Method Based on Harmonics without Remote Side Information630 Ze Liu, Yu Liu, Dian Lu, Mengzhao Duan and Jinhao Qiu
Control Configuration Based on AOE and Its Application in the Power Allocation of BESSs635
Shufeng Dong, Yibo Hua, Kunjie Tang and Chengsi Xu
Performance Analysis of Adaptive AC/DC-Coupled Droop Characteristic in DC Microgrids640
Chunxiaolu Yang, Boshen Zhang, Fei Gao, Dawei Liao and Jiahao Yu
Day-Ahead Scheduling of Behind-the-Meter Battery Energy Storage Systems to Serve Utility Infrastructure645
Joymala Moirangthem and Krishnanand Kaippilly Radhakrishnan
Optimal Coordination of Electric Vehicles for Voltage Support in Distribution Networks650 <i>Xiaoli Chen and Alessandra Parisio</i>
Demonstration of Islanding and Grid Reconnection capability of a microgrid within distribution system655 Niroj Gurung, Aleksandar Vukojevic and Honghao Zheng
Impact of Solar Generation Unit on the Static Stability of Power Systems660 Ruslan Ufa, Vladimir Rudnik and Fujin Deng
False Data Injection Attack Detection with Feedforward Neural Network in Electric Vehicle Aggregator Bidding Price
Poornachandratejasvi L. Bhattar, Naran M. Pindoriya, Anurag Sharma and Naayagi Ramasamy T
Congestion Management In Interconnected Microgrids For P2P Energy Trading Integrated with ESS670
Ajitha S, Yazhini S, Sridharan Priyadharsen, Narayanan K, Anurag Sharma and Gulshan Sharma
A Framework For Price Determination For P2P Energy Trading675 Yazhini S, Sridharan Priyadharsen, Ajitha S, Narayanan K, Anurag Sharma and
Tomonobu Senjyu
Power loss reduction in distribution systems in the presence of DGs and EVs680 Kartik Iyer, Mounikaa J, Misha Jha, Narayanan K, Gulshan Sharma, Anurag Sharma and Tomonobu Senjyu
Power Optimization in DC Micro-grid with Monetary Perspective685 Ashish Laddha, Vijayakumar Krishnasamy, Nandha Kumar Kandasamy and
Satyanarayana Neeli



11th International Conference on Innovative Smart Grid Technologies (Asia)

1st - 5th November 2022, Singapore

Energy management in low-voltage power systems: Benefiting from network-side flexibility690 Yue Song
National Carbon Market Supply Demand Balance Analysis Based on Unit Level Heterogeneous Characteristic Modeling691 Yening Lai, Yifei Zhang, Jie Huang and Xuetong Chen
Evolution of Electricity Distribution Control Room Data Streams – UK Case Study696 Euan A. Morris, Rory Telford, Calum Mackinnon and Kyle Jennett
Optimal Planning of Energy Storage Systems for PV Integration Considering Practical Needs of Decision Makers701 Qite Tan, Hui Jiang and Xin Zhang
Integration of Demand Side Flexibility Resources in Distribution Network Planning with High Penetration of PV706 Zhanyu Zhang, Junjie Hu and Huan Yan
Improved Reserve Option Design Method for Renewable Energy Generators711 Kun Hou, Li Zhang and Xinyan Su
Techno-Economic Comparison of Trading Agents for Renewable Energy Communities716 Franz Teske, Felix Funk, Adrian Fehrle and Jörg Franke
Economic Scheduling of Multi Microgrid System Considering Power Grid Expansion Costs721
Franz Teske, Adrian Fehrle, Felix Funk and Jörg Franke
Incentive models for electricity customers to participate in a cloud-based energy management system to generate flexibilities726 Adrian Fehrle, Franz Teske and Jörg Franke
Hierarchical AGC Dispatch with Aggregated Resources730 Mingxu Xiang
A Concept Solution Architecture for Electrical Distribution Control Centres731 Calum J. Mackinnon, Matthew Hamilton, Kyle Jennett, Euan A. Morris and Rory Telford
A Theoretical Loss Estimation Method for Distribution Network Based on Typical Equivalent Load Distribution Curve736 Yuxi Wang, Xuekai Zhang, Li Zhang, Yijing Ren, Xinyan Su and Chenhao Ying
Demand Analysis and Practice of Zero-carbon Industrial Parks741 Wei Chen, Yang Su, Shi Song and Xiao Chen
A Simplified Matching Algorithm of the Carbon Neutrality Path for the Industry Zones746 <i>Jingqi Jin, Nan Li, Yening Lai, Jie Huang and Xuetong Chen</i>
Optimal Operation of Green-Port Logisitcs System for Consumption Enhancement of Off-Shore Wind Power751 Zichuan Shi, Feilong Fan, Jinming Yu, Guohao Yin, Hai Zhang and Zi Su
Stochastic Scheduling of Mobile Energy Storage Systems for Transmission System Resilience Enhancement756
Zhanglei Guan, Haoyuan Yan and Tianyang Zhao
A Multi-Agent Deep Reinforcement Learning based Voltage Control on Power Distribution Networks761 Bin Zhang, Amer M. Y. M. Ghias and Zhe Chen



11th International Conference on Innovative Smart Grid Technologies (Asia)

1st - 5th November 2022, Singapore

Blockchain Application in Methodology for CCER......766

Zhigang Luo and Kehan Liao

Energy-economic-environmental Feasibility of Building-integrated Photovoltaic Systems in Singapore.......770

Yingqi Liang, Can Berk Saner, Tong Jun Kenneth Koh, Hao Dou, Zhaoqi Huang, Faika Andreas Wolfram and Jinxin Tan

Study on the Financial Settlement of Textile Printing and Dyeing Enterprises in the Carbon Trading Environment........775

Ruixin Xie, Shuyun Ren, Sirui Xiao and Na Liu

Charging Right Transaction Mechanism Among Green Charging Stations based on Blockchain Techniques.........780

Yujie Liu, Mengge Shi, Youwei Jia and Linni Jian

Suggestions on improving the carbon spot market and developing China's carbon futures market.......785

Hao Pan, Zhibin Chen and Zixin Wang

Sustainable Energy-based Cryptocurrency Mining.......789

Yingqi Liang, Can Berk Saner, Bryan Min Kwang Lim, Kai Tseng Hong, Jeffrey Wei Chong Lim, Keeve Juin Hwee Ho, Li Zheng Lim and Yun Ying Loh

Techno-economic Analysis and Strategy of Electric Vehicle Charging Station Deployment in Singapore.......794

Yingqi Liang, Can Berk Saner, Xin He, Wei Wen Toh, Yingxuan Wang, Hao Zhou and Yiran Zhu

Analysis on Motivation of Textile Printing and Dyeing Enterprises to Participate in Carbon Trading in China.......799

Caimei Gao, Shuyun Ren, Xinxin Huang and Shiting Huang

Review on China's National Carbon Market and Analysis for Commercial Development Potential of Carbon Capture, Utilization and Storage in China......804

Ivan LI, Haoming Zhu and Liping Zhang

Techno-economic-environmental Analysis of Electric Vehicle Charging Facility Deployment in Singapore.......808

Yingqi Liang, Can Berk Saner, Yuan Hao Kenny Kok, Kai Wen Kelly Chang, Yao Rong Lim, Jun Qing Lee and Qian He