# **2022 IEEE International Conference on Energy Internet** (ICEI 2022)

Stavanger, Norway 28 – 29 December 2022



IEEE Catalog Number: CFP22D74-POD **ISBN:** 

978-1-6654-9328-4

## 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:	CFP22D74-POD
ISBN (Print-On-Demand):	978-1-6654-9328-4
ISBN (Online):	978-1-6654-9327-7

#### 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



## 2022 IEEE International Conference on Energy Internet (ICEI) ICEI 2022

### **Table of Contents**

Message from the Chairs	5	x
-------------------------	---	---

## 2022 IEEE International Conference on Energy Internet

<ul> <li>Large-Signal Modeling for Full-Bridge LLC Resonant Converter Using Extended Hyperbolic</li> <li>Tangent Function</li></ul>	
<ul> <li>Metaverse Applications in Energy Internet</li></ul>	
<ul> <li>Portfolio Strategy of Power Producer Considering Energy Storage in Spot Market, Ancillary</li> <li>Market and Option Market</li></ul>	
Multi-Period Two-Stage Stochastic DER Aggregation for Power Flexibility Reserve	
Distributed Photovoltaic-Storage System Optimization Planning Considering Flexible         Resources in Smart Distribution Network       25         Guanzhang Ju (State Grid Jibei Electric Power Company Limited, China),       25         Min Zhao (State Grid Jibei Electric Power Company Limited, China),       5         Shunxin Li (State Grid Jibei Electric Power Company Limited, China),       3         and Ruipeng Jing (Tianjin University, China)       5	
Echo State Network Based Noise Detection in Energy Internet Orienting Justice Blockchain Data	

Joint Bidding Strategy of Onsite Energy Storage Subject in Multi-Market Collaborated with Wind Power Plants
Intelligent Control Technology of air Source Heat Pump for Mango Drying
A Bidirectional Converter Stabilization Control Strategy for Novel Power Systems
<ul> <li>Analysis of Carbon Emission Reduction Potential of Regional Multi-Energy System</li> <li>Considering the Influencing Factors of Carbon Emissions</li></ul>
Research on Joint Bidding in Multi-Market Strategy of Energy Storage Subject
Research On Optimization Of Electric Vehicle Charging Scheduling Based On Blockchain 67 Yuhong Di (Beijing University of Technology, China), Ru Huo (Beijing University of Technology, China), Chuang Sun (Tsinghua University, China), Shiqin Zeng (Shenzhen Power Supply Bureau Co., Ltd, China), Zongxuan Sha (Beijing University of Technology, China), and Tao Huang (Beijing University of Posts and Telecommunications, China)
<ul> <li>Reliability Optimization Planning Method of New Energy Grid Considering the Growth</li> <li>Characteristics of Hydrogen Load</li></ul>

vi

<ul> <li>Fast Charging Strategy Based on the Control-Oriented Stress Model</li></ul>	
<ul> <li>Mechanism and Influencing Factor Analysis of High Frequency Oscillation in PMSG-Based Wind Farm with Grid-Connected System</li></ul>	
Research on Collaborative Interaction Strategy for Massive Distributed Renewable Energy in Clusters	
Multi-Micro Network Multi-Time Scale Trading Mechanism Design and Trading Strategy         Optimization       97         Tong Li (Electric Power Research Institute of State Grid Liaoning         Electric Power Co., Ltd, China) and Qian Sun (Electric Power Research         Institute of State Grid Liaoning Electric Power Co., Ltd, China)	
<ul> <li>Ancillary Market Mechanism for Load Participation in Peak Load Shifting of Power System</li> <li>with High Penetration of Renewable Energy</li></ul>	
<ul> <li>Machine Learning-Based Heat Generation Rate Estimation and Diagnosis for Lithium-ion</li> <li>Batteries</li></ul>	
<ul> <li>Carbon Emission Analysis of Source, Network and Load in Power System</li></ul>	

Optimal Capacity Configuration of Battery Storage System for Zero Energy Office Building on Campus
Yuan Cao (Hohai University, China), Kun Yu (Hohai University, China), Xingying Chen (Hohai University, China), Le Bu (Hohai University, China), Fei Mei (Hohai University, China), Haochen Hua (Hohai University, China), and Yuntian Zheng (Hohai University, China)
Energy Trading Strategy of Multi-Integrated Energy System Considering Carbon Emissions 123 Tong Li (Electric Power Research Institute, China) and Heyang Sun (Electric Power Research Institute, China)
Research on Building Cluster Identification Based on Two-Stage Clustering and BP Neural Network
Research on Optimal Operation Strategy of Load Aggregator Considering Energy Data       135         Transaction       135         Junni Li (State Grid Corporation of China, China), Jimeng Song (State       136         Grid Corporation of China, China), Yu Zhang (Beijing SGITG-Accenture       136         Information Technology, China), Ziqi Shen (State Grid Corporation of       136         China, China), Tianguang Yang (Beijing SGITG-Accenture Information       137         Technology, China), Mengting Jiao (North China Electric Power       138         University, China), and Yafeng Wen (North China Electric Power       136         University, China)       136
An Asymmetric Control Strategy for Bipolar VSC-HVDC Connected Islanded New Energy 141 Maolan Peng (Company of China Southern Power Grid, China), Lei Feng (Company of China Southern Power Grid, China), Hang Liu (Company of China Southern Power Grid, China), Xilin Yan (Company of China Southern Power Grid, China), and Dachao Huang (Company of China Southern Power Grid, China)
Optimal Power Generation Portfolio Considering the Trading of Generation Right and Carbon Emission Allowance
A Novel Design for Data Processing Framework of Park-Level Power System with Data Mesh Concept
Economic Analysis of Shared Energy Storage in Multi Micro-Energy Network

<ul> <li>Architecture and Functional Design of Two-Stage Distributed Energy Storage Operation</li> <li>Platform</li></ul>
Optimization of SVM and ANN Based on GAPA and Its Application in Short-Term Load         Forecasting       173         Jingyi Zhang (Beijing University of Posts and Telecommunications, China), Yueting Wang (Beijing University of Posts and Telecommunications, China), Wenpeng Jing (Beijing University of Posts and Telecommunications, China), Zhaoming Lu (Beijing University of Posts and Telecommunications, China), Xiangming Wen (Beijing University of Posts and Telecommunications, China), and Yong Liu (Beijing University of Posts and Telecommunications, China)
Distributionally Robust Decision-Dependent Generation and Transmission Expansion Planning for 100% Renewable Energy Utilization

Author Index	1	8	5
		-	