2024 7th International Conference on Renewable Energy and Power **Engineering (REPE 2024)**

Beijing, China **25-27 September 2024**



IEEE Catalog Number: CFP24REP-POD ISBN:

979-8-3503-7556-5

Copyright © 2024 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:
 CFP24REP-POD

 ISBN (Print-On-Demand):
 979-8-3503-7556-5

 ISBN (Online):
 979-8-3503-7555-8

ISSN: 2771-702X

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



2024 7th International Conference on Renewable Energy and Power Engineering

(REPE 2024)

Table of Contents

Preface		
Res	search on Neutral Point Voltage Balance Control Method of NPC Energy Storage Converter	
Em	Jiang Wang, Duan Zhanyu, Shuai Hong, Chen Jialin, He Gong, Xiang Kai, Yan Wei	
Tes	at and Analysis of Ice Flashover Characteristics of 500kV Segment Composite Insulators for Heavy Ice Area 14 Linfeng Zhang, Jiacheng Dong, Jun Lu, Haining Wang, Pengkang Xie, Bowen Wang	
Res	search on User-Side Self-regulatory Voltage Regulation Method Considering Responsibility Definition	
PM	ISM Zero-low Speed Rotor Position Estimation Control Strategy Based on Improved SOGI-ANF	
>	HVDC Transmission System and Line Protection	
Fas	st Calculation of Transient Temperature Rise of Duct Cable Based on Fitting Function	
Arc	Extinction Moment Identifying Method for Flexible Grounding System Based on SOGI	
	tput Power Prediction of Thermal Power Plants Based on Optimized Random Forest Algorithm44 Shuchun Ji, Zichun Zhao, Qianxin Guo, Shengwei Xin, Yonggang Zhao, Ruojun Zhang, Yue Zhu, Shunli Fang, thua Du, Zhonghua Jin	
Res	search on Deep Sea Offshore Wind Energy DRU-MMC Transmission Scheme	
De:	sign of Nonlinear Control System Based on Operator Theory for WPT System Considering Constant Power Load	
	Yuta Ono, Mingcong Deng	

>	Smart Grid Control Model and Reliability Evaluation
Rese	earch on Virtual Impedance Compensation Control Method of Parallel Compensator with Energy Storage60
	Wanlin Guan, Yihua Wang, Hang Lu, Yanlong Liu, Baiyue Song, Jiancheng Ma
	Three-Phase State Estimation Method for Low-Voltage Distribution Networks Considering the Measurement and atrol Characteristics of Three-Phase Three-Wire Inverter Power Supplies
	Rujia Qiu, Yiming He, Bin Xu, Shi Cheng, Xiaoming Wang, Hao Zheng, Wei Yan
Ana	alysis of Electric Ferry's Coordinated Charging Impacts on Distribution Network
Situ	ation Awareness of Distribution Network Based on TPA-BiLSTM
Stud	dy on the Influence of Topology, Load Distribution and PV Installation Location on PV Hosting Capacity85 Zihan Lin, Chen Chen
Mul	lti-area Microgrid Leader-follower Game Strategy for Fuel-cell Hybrid Electric Vehicles
Netv	work Intrusion Detection Method for Smart Grid Based on PCA-ISBO-GRU-AM
Dete	ection of Abnormal Electricity Usage in Smart Grids Based on TCN-DAE-IOOA
Rese	earch on the Architecture and Application of Digitalization of Power Grid Standards Based on CPS
>	New Power System Construction and Operation Management
Ana	alysis of Company Project Reservation under the Evolution of New Power System
The	Cost-effectiveness of Photovoltaic Systems to Ease Energy Financial Burdens on Underprivileged Households
	T. F. Mazibuko, K. Moloi, K. T. Akindeji
Life	e Cycle Cost Evaluation of Energy-saving Transformers for New Power System
Load	d-Side Shared Energy Storage New Energy Consumption Strategy Based on Nash Bargaining
	Annual Time Series Production Simulation Method for Regional Power Grids Considering Provincial ance-inter-Provincial Medium and Long-Term Mutual Assistance
_	Yiyu Wen, Li Shen, Hong Zhou, Mingkui Wei New Bettery Development and Beyon Symphy Technology
> ···	New Battery Development and Power Supply Technology
Opti	imal Pricing Model for Electric Vehicle Charging Stations Considering Competition

Security Analysis of Battery Energy System to Cyber and Physical Attacks on Sensors
Rui Wang, Zihuai Zheng, Beibei Ying, Kaikai Pan
Designing of Solar Photovoltaic Parking Infrastructure at Ufa International Airport-A Case study on EV Charging Potential
Rahman Md Nafeez, Rafikov Rinat Airatovich, Kozlov Vladislav, Renata Shammatova, Viacheslav Vavilov
Battery Cells and Materials Performance Evaluation
Kenza Maher, Ameni Boumaiza
Simultaneous Deployment of Battery Electric Vehicles and Hydrogen Fuel Cell Vehicles to Manage Surplus Wind Power Generation: A Case Study of Orkney
Junyuan Wu
Performance and Safety of Lithium-Ion Batteries under Hot Desert Climates
Kenza Maher, Ameni Boumaiza
➤ Reliability Analysis and Safety Monitoring of Electrical Systems
Research on Online Pictures Recognition of Fault Scenario for Power Supply Reliability Management Based on Improved AI Algorithm
Qingguang Yu, Ding Liu, Yu Zhang, Xin Yao, Leidong Yuan, Long Wang, Xiyue Ma, Haoran Zhao
Research on Online Evaluation and Optimization of Power Supply Reliability Considering Distributed Solar Energy
Yu Zhang, Lei Chen, Jinyu Wang, Yuanhong Liu, Jun Tan, Jinyue Shi, Bo Yuan, Qingguang Yu
Research and Implementation on Dependency Relationship for Power Supply Reliability Management in Photovoltaic-Storage-Charging Station System Based on Complex Risk Model
Leidong Yuan, Qingguang Yu, Xin Yao, Min Guo, Jialin Liu, Lulu Jia, Ziyang He, Xiaodi Jin
Research on Weak Point Location and Relation Analysis of Power Supply Reliability in New Type Power System
Yu Zhang, Lei Chen, Donghui Huang, Guangxian Lyu, Yuanhong Liu, Shicheng Huang, Fangfang Yang, Qingguang Yu
Research on Weak Point Dependency Relationship Identification for Power Supply Reliability Management in New Type Power System
Qingguang Yu, Xin Yao, Xiaoyu Che, Yu Zhang, Leidong Yuan, Jinyue Shi, Hualong Yu, Xin Gao
Exploration on the Practice of Improvement Measures for the Power Supply Reliability in Distribution Network in New Type Power System
Jun Tan, Erpeng Liu, Hui Li, Yu Zhang, Xiaolei Yang, Jinyue Shi, Zhi Xie, Chengcai Yin
Research on Flexible Load Control Strategy and Power Supply Reliability Management Based on Sensitivity Analysis in New Type Power System
Min Guo, Qingguang Yu, Zhang Yu, Xin Yao, Leidong Yuan, Zexiong Wang, Tiandong Zhang, Zhihui Li
Research of Monitoring and Evaluation Approach for Power Supply Reliability Management Based on Online Data Acquisition in New Type Power System
Xiaoyu Che, Yijun Zhou, Yu Zhang, Zhirui Kang, Jinyue Shi, Xuguang Yang, Shuai Li, Weihua Du

	Wind Farm Power Generation Model and Power Generation Forecast
Wi	nd Speed Forecasting Based on Trend Augmentation and Dual-phase Inverted Transformer
Rei	nforcement Learning for Reliable Power Allocation and Load Mitigation in Wind Farm
	Yazhou Wu, Hamed Badihi, Liyan Wen, Xueqian Fu, Yali Xue
Fau	alt Ride-through Strategy of MMC in Series with DR for Offshore Wind Farms
Ext	tended Wind-Storage Frequency Response Model Considering Temporal Factors
Sta	rt-up Strategy of DR-MMC based on Thyristors in Parallel for Offshore Wind Farms
Lo	w-Frequency Offshore Wind Power Transmission System with Dual-end Grid-forming Control
	search on Delay Reliability of Doubly-Fed Induction Generator of Wind Farm Participating in Frequence dulation of Power System
	Xin Yao, Qingguang Yu, Min Guo, Leidong Yuan, Jinyue Shi, Hao Sun, Yapeng Zhang, Wenzhao Yin
>	Modern Integrated Energy System and Energy Dispatching
Sin	nulation Study of Biomass-to-high-value Product Conversion Via Steam Gasification and Methanol Synthesis26
	Woranee Mungkalasiri, Narachai Sittipanya, Jitti Mungkalasiri
	tributionally Robust Optimization Scheduling for Off-grid Hydrogen Systems Considering Wind and Sole certainty27
	Yi Shen, Zhongjian Kang, Chenguang Zhang, Yihong Liu
A F	Renewable Energy Farm Forecasting Model Based on Ensemble Learning27
	Wanrong Bai, Xinge Xu, Zhicheng Ma, Jinxiong Zhao, Lei Zhang, Xiuming Bao
	MEC System Economic Operation Model Considering Renewable Energy Output Fluctuations and Equipment erating Characteristics
	Zhengsong Wang, Chunyang Liu, Hanrun Wang, Yiqiao Shen, Yanxu Song, Mengxue Wang
Raj	pid Quantification of Scheduling Uncertainty in Integrated Energy Systems under Extreme Scenarios29 Shupei Chen, Haiya Qian, Feng Li, Qingshan Xu
Lo	w-Carbon Economic Dispatch of Integrated Energy Systems in Parks Based on Carbon Emission Flow Theor
	Yuying Li, Hongtao Shen, Changhao Zhang, Ruoxi Geng, Mingyu Yang, Ji Li
>	Energy Configuration, Optimization and Management in New Energy Power Systems
Res	search on Key Technologies of Power Grid Side 100MW Energy Storage System
	Miao Honglei, Gui Yonghua, Zhang Zhifeng, Tang Bibo, Xiong Jie, Li Yiqing, Guo Ting, Zhang Fuxing
Co	nfiguration Optimization of Energy Storage in New Power System for Renewable Energy Exploitation

Research on the Value Evaluation of Electricity-Hydrogen Synergy	313
Research on the Coordinated Control Method for Distributed Power Generation Cluster under Peak Load S Strategy	
Jinyou Wang, Jiasheng Liang, Yong Lin, Weimin Shi, Mingguo Tian	
Impact on Generalization Performance under Diverse Domain Shifts of Energy Disaggregation for Non-In Load Monitoring	
Gerui Zhao, Gangquan Si, Zihan Shan, Feichi Zhong, Lele Cui, Haozhe Wang	
Techno-economic Comparison of 9 MW Floating PV (FPV) Solar Farms in Indonesia and the UK	328
Sustainability, Climate Change and the Electric Grid: The Case of Spain	334
Enrique Gonzalez, Marina Mattera, Jieyi Zhou, Raquel Ureña Joyanes	
Joint Scheduling Model of Distributed Generation, Energy Storage and Flexible Load under Resource Aggr Mode	•
Jinyou Wang, Jiasheng Liang, Yong Lin, Weimin Shi, Mingguo Tian	
Optimization of PV Microgrid Group Scheduling Based on Cooperative Alliance in Xizang	344
> Digital Power Equipment Design and Function Control	
A Bridgeless PFC-Modified Voltage-Doubler Rectifier with Shared Components	349
Partial Neural Network Based Modeling of 3-degree of Freedom Soft Actuator and Its Tip Position Control Koichi Sakata, Yuuki Morohoshi, Mingcong Deng, Shuichi Wakimoto	354
A Substation Power Equipment Detection Method and System Based on Infrared and Visible Light Fusion Junyi Yu, Fengming Shi, Jiahao Li	359
Improved MPC Method Based on Model Parameter Online Estimation for MMC	364
A General Controller Test Method of HVAC System Based on Combination of Virtual and Reality	369
Technical Method and Model of Boiler Peakregulation Based on Artificial Intelligence Algorithm	
Performance Analysis of Hydrogen-Powered Gas Turbine Engines: A Parametric Study	379
An Assessment Method of Negative Sequences Aiming at the Continuous Co-phase Traction Power Supply S	-
Weilan Li, Shaofeng Xie, Hui Wang	

> Author Index