

2022 6th International Conference on Smart Grid and Smart Cities (ICSGSC 2022)

**Chengdu, China
22-24 October 2022**



**IEEE Catalog Number: CFP22URA-POD
ISBN: 978-1-6654-8784-9**

**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:	CFP22URA-POD
ISBN (Print-On-Demand):	978-1-6654-8784-9
ISBN (Online):	978-1-6654-8783-2
ISSN:	2768-007X

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

2022 the 6th International Conference on Smart Grid and Smart Cities

(ICSGSC)

Preface	vi
Conference Committees	vii

Power Transmission and System Control

Research on Non-invasive Specific Electrical Load Identification Based on VMD Algorithm	1
<i>Zhao Zhihua, Wang Huanning, Huang Yan, Yao Hejun, Li Nan, Tan Hengyu, Liu Yuan</i>	
A Carbon Emission Accounting Model of Transmission Line Considering Measurement Error	6
<i>Hengjing He, Leping Zhang, Shangli Zhou, JinYang Du, Jun Yang, Chenyu Liu, Yifan Gu, Xia Xiao</i>	
An Artificial Intelligence-Based Pruning Algorithm Method for Optimal Operation Mode of AC-DC Hybrid Grid.....	10
<i>Tie Bao, Lei He, Yang Liu, Chuang Liu</i>	
Distributed Consistent Coordinated Control of Modular Converters on AC Side of Electric Power Router.....	17
<i>Libo Zhang, Yong Shi, Chunyan Ma</i>	
Optimal Charging Power Tracking Control of Advanced Adiabatic Compressed Air Energy Storage over Wide Operation Ranges	24
<i>Jiayu Bai, Wei Wei, Shengwei Mei</i>	
Expansion Planning of Transmission Network Considering Abundance and Depletion Characteristics of Hydropower-dominated Power System.....	33
<i>Yang Liu, Fang Liu, Weiting Xu, Yunche Su</i>	

Data Transmission and Power Calculation in Power System

Research on Carbon Measurement Models of Substations	37
<i>Hengjing He, Shangli Zhou, Leping Zhang, Ziang He, Bensong Zhang, Yifan Gu, Chenyu Liu, Xia Xiao</i>	
Research on Data Leakage Prevention Technology in Power Industry	43
<i>Jing Ma, Yonggang Xu, Jinqiang Fan, Xiaobin Yao, Yaming Cao, Chen Zheng</i>	
Demand Model Generation from Traces: Adaptive KDE Data-Driven Optimization	48
<i>Maurizio Pinna, Luca Vassio, Danilo Giordano, Marco Mellia</i>	

A Power Quality Data Transmission Scheme for the Distribution Network.....	55
<i>Yu Lei, Liu Yinliang, Xu Quan, Lin Xinhao, Lei Jinyong, Yuan Zhiyong, Cen Baoyi, Yang Donghai</i>	
Research on the Optimal Allocation Method of Flexible Resources in Power System	60
<i>Lu Zhao, Yunlong Wu, Li Fan, Qing Gong</i>	
Reserve Capacity Allocation and Optimization Method of Power Systems with Renewable Energy	65
<i>Wu Weijie, Wu Jiekang, Yang Guorong, Li Yixin, Li Meng, Zhang Yinning</i>	
Research on Security Classification and Classification Method of Power Grid Data.....	72
<i>Jinqiang Fan, Yonggang Xu, Jing Ma</i>	

Power System Equipment and Detection Device

An Improved PLL of VSC-HVDC System under Unbalanced and DC Distorted Voltage	78
<i>Yongyuan Wang, Wei Pan, Ruhai Huang, Donghui Bai, Jianquan Shi</i>	
Equivalent Modeling Method for the Frequency and Voltage Emergency Control Device Box	83
<i>Yong Huang, Fei Ao, Tingting Luo, Yabing Yan</i>	
Sound Diagnosis Method of Power Transformer Discharge Fault Based on CEEMDAN-SVM	88
<i>Tianwen Zheng, Zhen Xu, Tiejun Ma, Shengwei Mei, Lei Pan</i>	
An On-site Detection Scheme of Power Quality Monitoring Device Considering Time Synchronization	93
<i>Feng Yalin, Zheng Tianyue, Zhang Yusheng, Li Shupeng, Cen Baoyi, Liu Yu, Wang Xin</i>	
Inverse Park Transformation PLL for VSC-HVDC under Unbalanced Voltage Condition	98
<i>Qihao Zhong, Ke Wu, Nianhua Luo, Zhenliang Chen, Jianquan Shi</i>	
Condition Monitoring and Diagnosis of Switching Power Facility Based on Mechanical Characteristics	103
<i>Yujian Liang, Yong Xiao, Long Di, Feng Hu, Yin Du, Jiahua Shen, Guoming Wang</i>	

Smart Grid and Micro Grid Technology

Distributed Optimal Control of Voltages in Weak Sub-transmission Networks with High Penetration of Solar Power.....	109
<i>Rongquan Fan, Ting Li, Yuqi Han, Wenhui Zeng, Xingqi He, Zhiyuan Tang</i>	
Comparison of Mobile Energy Storage Output Strategy and Operation Economy of Low Voltage Distribution Network with Distributed Generation Access	115
<i>Wenpei Li, Hu Xiong, Bin Xiang, Jiayuan Li, Xiaoguang Jiang</i>	
Research and Development of New Energy Microgrid Charging Simulation Platform	120
<i>Wang Huanning, Huang Yan, Tan Hengyu, Yao Hejun, Zhang Han, Zhao Zhihua, Liu Yuan</i>	
A Microgrid Management System Based on Metaheuristics Particle Swarm Optimization.....	126
<i>Haotian Deng, Jing Jiang, Haiya Qian, Hongjian Sun</i>	
Frequency Control Method of Microgrid Based on Online Parameter Identification.....	132
<i>Yin Cheng, Yong Shi, Chunyan Ma</i>	

Energy Storage Control Strategy to Improve Transient Voltage Stability of Distribution Network.....	137
<i>Zuquan Liang, Chao Ma, Libo Jiang, Ziwei Li, Tianwen Zheng, Shengwei Mei</i>	

Smart City and Integrated Energy System

Digital Twin Enabled the Networking Recommendation Strategy of Devices in Data Center.....	143
<i>Buhua Chen, Hongwen Li, Jingjing Liang, Buyang Shen, Chengbin Shen, Kunlun Li</i>	
Location-Based Crowdsensing Technologies for Planning of Public Transport and other Smart City Solutions	151
<i>Alena Plašilová, Jan Procházka</i>	
Security Controls for Smart Buildings with Shared Space.....	156
<i>Tapio Frantti, Markku Korkiakoski</i>	
Economic Dispatch of Domestic Hot Water System Considering Heat Losses.....	166
<i>Peijun Zheng, Peng Liu, Jiang Liu, Yosuke Nakanishi</i>	
Demand Side Management Considering Household Appliances and EV.....	171
<i>Zihao Dong, Jing Jiang, Haiya Qian, Hongjian Sun</i>	
Evaluation the Development of China's Regional Logistics Industry Using Cluster Principal Component Analysis and Entropy Weight Method	178
<i>Xiqiao Lin, Chunli Zhou, Chunhao Lu</i>	
RFID-based Multi-purpose Smart Post Boxes in Smart Cities	184
<i>Alena Plašilová, Jan Procházka</i>	
Stochastic Scheduling of a Wind-Photovoltaic-Hydro Complementary System Using Stochastic Dual Dynamic Programming Method.....	190
<i>Chang Liu, Fang Liu, Ruiguang Ma, Yufan Chen, Li Pan, Xiao Xu</i>	

Author Index