

2025 International Conference on Smart Energy and Control Engineering (SECE 2025)

**Kunming, China
18-20 April 2025**

IEEE Catalog Number:
ISBN:

CFP251AD-POD
979-8-3315-9460-2



Copyright © 2025, IEEE

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:	CFP251AD-POD
ISBN (Print-On-Demand):	979-8-3315-9460-2
ISBN (Online):	979-8-3315-9459-6

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

XGBoost-Based Prediction of Autoignition Delay Time for Ammonia-Methane Mixtures	1
<i>Siman Zhou, Yonghui Guo, Aiguo Chen, Xianhao Wu, Hua Xiao</i>	
Urban Sewage Treatment Control Based on PSO-ADRC	5
<i>Yi Zhang, Enrang Zheng, Xin Meng, Qiang Li</i>	
Low-Power Intelligent Safety Tool Cabinet: Integration of Electro-Osmotic Dehumidification and IoT Management System	12
<i>Ke Feng, Daoze Lin, Jinlan Xu, Zhongxiu Weng</i>	
A Multi-Agent Reinforcement Learning Strategy for Dehumidification and Temperature Control in Intelligent Safety Tool Cabinets	17
<i>Guiliang Li, Jinrong Weng, Ke Feng, Fayu Yao</i>	
Development and Design of High Real-Time Power System Simulation Platform	21
<i>Zhe Dong, Jiahuan He, Zhongxin Liu, Ningyong Liu, Nachuan Liu, Anqi Wang</i>	
Research on Massive Data Transmission Technology for Digital Twin Applications in Substation Automation Equipment	28
<i>Zhiqiang Zeng, Maolin Han, Kaifang Hu, Hao Xu, Zhen Chen, Junqi Li, Yuanyuan Luo</i>	
Integrated Technology for Operating Data of Full Voltage Level Power Grid Based on Improved Affine Algorithm	37
<i>Defa Cao, Zengxiong Chen, Xiaofeng Yu, Zhihang Lin</i>	
Intelligent Detection of Surface Defects of Overhead Conductor Based on Axial Attention Mechanism of Multi-Relationship View	41
<i>Miao Gong, Fei Lu, Tao Wang</i>	
Game Optimization Scheduling Method for Regional Power Grid of 220kV Substation Based on Information Entropy	45
<i>Meng Ren, Junbao Zhang, Cunliang Wei, Defa Cao</i>	
Error Compensation Control for DC Power Metering Based on FFT Algorithm	49
<i>Lei Yang, Zhong Liu, Lei Li, Xiaoxiao Zhang, Zixuan Yu</i>	
Energy Scheduling Control Strategy for Grid-Connected Microgrids Considering Forecasting Errors	53
<i>Li Chen, Ming Yang, Donghua Yang</i>	
Characterization Study of New Energy Development in Rural Areas Based on K-Means Clustering	58
<i>Yuxin Zhai, Zichun Zhou, Huiru Zhao, Jing Hu, Kaihui Feng</i>	
Study on Numerical Simulation and Theoretical Calculation of Heat Transfer in a Pipe	63
<i>Tao Huang, Haishan Chen, Liangqiang Cao, Zhongrui Yuan, Yan Yan, Chuyun Zhang</i>	
Finite Element Analysis of Integrated Shell of Motor-Reducer based on ANSYS	68
<i>Xianguo Huang, Chunhui Liu</i>	
A Novel Automatic Transfer Switching Strategy Adapted for Renewable Energy Integration	73
<i>Zanzan Zhang, Ruizhi Ma, Minghao Wen, Xinhui Wu</i>	

Self-Healing of Faults in Distribution Networks with High Penetration of Renewable Energy Based on MMC	80
<i>Xiaoting Xue, Kun Qian, Wei Chen, Zilong Xia</i>	
Analysis of Voltage Fluctuations in Photovoltaic Power Stations Considering Meteorological Factor Weights on Similar Days	86
<i>Kexin Wang</i>	