

# **Tsinghua-IET Electrical Engineering Academic Forum 2022**

IET Conference Publications 813

Beijing, China and Online  
28 – 29 May 2022

ISBN: 978-1-7138-6579-7

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2022) by the Institution of Engineering and Technology  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2023)

For permission requests, please contact the Institution of Engineering and Technology  
at the address below.

Institution of Engineering and Technology  
P. O. Box 96  
Stevenage, Hertfordshire  
U.K. SG1 2SD

Phone: 01-441-438-767-328-328  
Fax: 01-441-438-767-328-375

[www.theiet.org](http://www.theiet.org)

**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  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

A Control Strategy for MMC Variable-Frequency Drive .....	1
<i>Y. Xiong, L. Zhang, L. Wang, Z. Kang</i>	
Research on Control System of New Energy Storage Combined Thermal Power Unit Based on Improved Voltage Droop Control .....	8
<i>Y. Hu, X. Yin, P. Yang, R. Yang</i>	
Adaptability Analysis of Current Differential Protection for Linces of Doubling-Fed Induction Generator Station Connection to Flexible-Direct Grid.....	14
<i>B. Chen, X. Dong, H. Wang, Y. Dai, C. Deng, W. Chao, J. Huang, G. Ling</i>	
Adaptive Time Period Aggregation for Day-Ahead Unit Commitment .....	21
<i>Z. Yu, H. Zhong, X. Yan</i>	
Controlling Time-Variant Virtual Inertia: A Dynamic Programming Approach.....	29
<i>S. Yan, L. Fu, Y. Wang, F. Yang, C. Yu, P. Han</i>	
Data Visualization of Film Capacitors.....	37
<i>Y. Zhang, F. Chen, D. Liu, Q. Feng, S. Zhong, J. Pei, Z. Yang, Z. Dang</i>	
Day-Ahead Scheduling Strategy Based on Interaction Between the Power System and Electric Loads.....	44
<i>H. Zhang, B. Deng, J. Shi, W. Yang, B. Yang, H. Su, B. Cheng</i>	
DC Line Protection Scheme of all-DC Offshore Wind Transmission System.....	49
<i>X. Kong, C. Zhang, Z. Bin, T. Liang, F. Xie, Z. Hao</i>	
Demand Response Strategy for HVAC Based on Reinforcement Learning and Imitation Learning .....	56
<i>Y. He, H. Zhong, G. Zhang, G. Ruan</i>	
Distributed Robust Optimal Scheduling of Multi-Energy Complementary Based on Wasserstein Distance.....	61
<i>X. Wang, F. Xu, Y. Wang, J. Shi, H. Wen, C. Guo</i>	
Distribution Grid Voltage Regulation Strategy Based on Adaptive Control of Distributed PV Inverter .....	69
<i>T. Wen, C. Chen, S. Sheng, X. Wang, Y. Ma</i>	
Insulation Condition Assessment of Cable Intermediate Joint Based Topsis Method with Variable Weight .....	75
<i>X. Ou, S. Liu, J. Chen, Y. Wang, L. Li, H. Qiu</i>	
Linear Quadratic Regulator Optimized Feedback Control Method for Resonant Inverter Power Supply in High Frequency AC Power Distribution of Electric Vehicle.....	81
<i>H. Zhou, J. Liu, P. Zhang, M. Ma, Z. Fang, J. Zeng</i>	
Modelling Lithium-Ion Battery Energy Storage System for Steady-State and Transient Analyses.....	88
<i>P. Liu, W. Zhao, X. Xie, J. Zhang, F. Li, P. Xu, W. Liu</i>	
Research on Optimization Strategy of Micro Energy Grid Multi-Station Fusion Mode Control System .....	94
<i>Q. Xu, F. Hu, B. Yang, X. Huang, Y. Yang</i>	

Research on Voltage Coupling Mechanism of MV-LV Distribution Network Under High-Proportion  
Distributed PV Penetration..... 100  
*Z. Liu, C. Chen, S. Sheng, L. Wu, Y. Shao*

**Author Index**