Hongxun Hui

Research Assistant Professor
State Key Laboratory of Internet of Things for Smart City
Department of Electrical and Computer Engineering
University of Macau

N21, Avenida da Universidade, Taipa, Macau, China
Tel: +86-18143465355; +853-66441368
E-mail: hongxunhui@um.edu.mo
Personal website: https://huihongxun.github.io

Research Interests

- **Smart Grid**: Modeling, optimization, control and market mechanism of flexible loads to provide regulation services.
- **Integrated Energy System**: Urban multi-energy systems, heating/cooling systems, gas and green hydrogen systems.
- **Internet of Things**: Smart device, power-communication coupling networks, distributed control, artificial intelligence.

Education

Ph.D., College of Electrical Engineering, Zhejiang University — Hangzhou, China
Supervisor: Prof. Yonghua Song & Prof. Yi Ding — 09/2015 – 06/2020

Visiting Scholar, Advanced Research Institute, Virginia Tech — Arlington, USA
Supervisor: Prof. Saifur Rahman — 10/2018 – 10/2019

Visiting Scholar, CURENT Research Center, University of Tennessee — Knoxville, USA
Supervisor: Prof. Fangxing (Fran) Li — 06/2019 – 07/2019

B.S., College of Electrical Engineering, Zhejiang University — Hangzhou, China
Outstanding Graduates, Overall GPA: 3.88/4.0 (**Top 3%**) — 09/2011 – 06/2015

Working Experience

Research Assistant Professor, University of Macau — Macao, China
State Key Laboratory of Internet of Things for Smart City — 10/2022 – Present

Post-doctoral Fellow, University of Macau — Macao, China
State Key Laboratory of Internet of Things for Smart City — 10/2020 – 10/2022

Researcher, Zhuhai UM Science & Technology Research Institute — Zhuhai, China
Smart City Research Center — 07/2020 – 09/2020

Publications

Books

1. Yi Ding, Yonghua Song, **Hongxun Hui** and Changzheng Shao. Integration of Air Conditioning and Heating into Modern Power Systems. *Springer*; 2019.

Journal Publications

Journal Publications as first/corresponding author:

2. **Hongxun Hui**, Yi Ding, Zhenzhi Lin, Pierluigi Siano and Yonghua Song, "Capacity Allocation and Optimal Control of Inverter Air Conditioners in Multi-area Power Systems," ***IEEE Transactions on Power Systems***, vol. 35, no. 1, pp. 332-345, Jan. 2020.
3. **Hongxun Hui**, Pierluigi Siano, Yi Ding, Peipei Yu, Yonghua Song, Hongcai Zhang and Ningyi Dai, "A Transactive Energy Framework for Inverter-based HVAC Loads in a Real-time Local Electricity Market Considering Distributed Energy Resources", ***IEEE Transactions on Industrial Informatics***, vol. 18, no. 12, pp. 8409-21, Dec. 2022.
4. **Hongxun Hui**, Yi Ding, Tao Chen, Saifur Rahman and Yonghua Song, "Dynamic and Stability Analysis of the Power System with the Control Loop of Inverter Air Conditioners," ***IEEE Transactions on Industrial Electronics***, vol. 68, no. 3, pp. 2725-2736, Feb. 2020.
5. **Hongxun Hui**, Yi Ding and Menglian Zheng, "Equivalent Modeling of Inverter Air Conditioners for Providing Frequency Regulation Service", ***IEEE Transactions on Industrial Electronics***, vol. 66, no. 2, pp. 1413-23, Feb. 2019.
6. **Hongxun Hui**, Yi Ding, Qingxin Shi, Fangxing Li, Yonghua Song and Jinyue Yan, "5G Network-based Internet of Things for Demand Response in Smart Grid: A Survey on Application Potential," ***Applied Energy***, vol. 257, pp. 113972, Jan. 2020. **(ESI Highly Cited Paper, Top 1%)**
7. **Hongxun Hui**, Yulin Chen, Shaohua Yang, Hongcai Zhang and Tao Jiang, "Coordination Control of Distributed

Generators and Load Resources for Frequency Restoration in Isolated Urban Microgrids," ***Applied Energy***, vol. 327, p. 120116, Dec. 2022.

8. **Hongxun Hui**, Yi Ding and Yonghua Song, "Adaptive Time-Delay Control of Flexible Loads in Power Systems Facing Accidental Outages," ***Applied Energy***, vol. 275, pp. 115321, Oct. 2020.
9. **Hongxun Hui**, Yi Ding, Yonghua Song and Saifur Rahman, "Modeling and Control of Flexible Loads for Frequency Regulation Services Considering Communication Latency and Detection Error," ***Applied Energy***, vol. 250, pp. 161-74, Sep. 2019.
10. **Hongxun Hui**, Yi Ding, Weidong Liu, You Lin and Yonghua Song, "Operating Reserve Evaluation of Aggregated Air Conditioners", ***Applied Energy***, vol. 196, pp. 218-228, Jun. 2017.
11. **Hongxun Hui**, Yi Ding, Kaining Luan, Tao Chen, Yonghua Song and Saifur Rahman, "Coupon-Based Demand Response for Consumers Facing Flat-Rate Retail Pricing," ***CSEE Journal of Power and Energy Systems***, 2022.
12. **Hongxun Hui**, Peipei Yu, Hongcai Zhang, Ningyi Dai, Wei Jiang and Yonghua Song, "Regulation Capacity Evaluation of Large-scale Residential Air Conditioners for Improving Flexibility of Urban Power Systems," ***International Journal of Electrical Power & Energy Systems***, Apr. 2022.
13. Jiatu Hong, **Hongxun Hui***, Hongcai Zhang, Ningyi Dai and Yonghua Song, "Event-triggered Consensus Control of Large-scale Inverter Air Conditioners for Demand Response," ***IEEE Transactions on Power Systems***, vol. 37, no. 6, pp. 4954-4957, Nov. 2022.
14. Jiatu Hong, **Hongxun Hui***, Hongcai Zhang, Ningyi Dai and Yonghua Song, "Distributed Control of Large-scale Inverter Air Conditioners for Providing Operating Reserve Based on Consensus with Nonlinear Protocol", ***IEEE Internet of Things Journal***, vol. 9, no. 17, pp. 15847-57, Sep. 2022.
15. Kang Xie, **Hongxun Hui***, Yi Ding, Yonghua Song, Chengjin Ye, Wandong Zheng and Shuiquan Ye, "Modeling and Control of Central Air Conditionings for Providing Regulation Services for Power Systems," ***Applied Energy***, vol. 315, p. 119035, Jun. 2022.
16. Sheng Wang, **Hongxun Hui***, Yi Ding, Chengjin Ye and Menglian Zheng, "Operational Reliability Evaluation of Urban Multi-Energy Systems with Equivalent Energy Storage," ***IEEE Transactions on Industry Applications***, vol. 59, no. 2, pp. 2186-2201, Mar. 2023.
17. Sheng Wang, Junyi Zhai, **Hongxun Hui***, "Optimal Energy Flow in Integrated Electricity and Gas Systems with Injection of Alternative Gas," ***IEEE Transactions on Sustainable Energy***, vol. 14, no. 3, pp. 1540-1557, Jul. 2023.
18. Yulin Chen, Donglian Qi, **Hongxun Hui***, Shaohua Yang, Yurun Gu, Yunfeng Yan, Yi Zheng, Jiangfeng Zhang, "Self-triggered Coordination of Distributed Renewable Generators for Frequency Restoration in Islanded Microgrids: A Low Communication and Computation Strategy," ***Advances in Applied Energy***, vol. 10, p. 100128, Jun. 2023.
19. Sheng Wang, Junyi Zhai, **Hongxun Hui***, Yi Ding and Yonghua Song, "Operational Reliability of Integrated Energy Systems Considering Gas Flow Dynamics and Demand-Side Flexibilities," ***IEEE Transactions on Industrial Informatics***, vol. 20, no. 2, pp. 1360-1373, Feb. 2024.
20. Sheng Wang, **Hongxun Hui*** and Pierluigi Siano, "Resilience of Gas Interchangeability in Hydrogen-Blended Integrated Electricity and Gas Systems: A Transient Approach with Dynamic Gas Composition Tracking," ***iEnergy***, vol. 2, no. 2, pp. 143-154, Jun. 2023.
21. Sheng Wang, **Hongxun Hui*** and Junyi Zhai, "Short-Term Reliability Assessment of Integrated Power-Gas Systems with Hydrogen Injections Using Universal Generating Function," ***IEEE Transactions on Industry Applications***, vol. 59, no. 5, pp. 5760-5773, Sep. 2023.
22. **Hongxun Hui***, Tao Chen, Han Wang and Sheng Wang, "Optimal operation and control of smart energy systems," ***Engineering Reports***, vol. 5, no. 10, e12790, Oct. 2023.
23. Sheng Wang, **Hongxun Hui***, Yi Ding and Junyi Zhai, "Decentralized Demand Response for Energy Hubs in Integrated Electricity and Gas Systems Considering Linepack Flexibility," ***IEEE Internet of Things Journal***, vol. 11, no. 7, pp. 11848-11861, Apr. 2024.
24. Sheng Wang, **Hongxun Hui***, Yi Ding and Yonghua Song, "Long-Term Reliability Evaluation of Integrated Electricity and Gas Systems Considering Distributed Hydrogen Injections," ***Applied Energy***, vol. 356, p. 122374, Feb. 2024.
25. Liya Ma, **Hongxun Hui***, Sheng Wang and Yonghua Song, "Coordinated optimization of power-communication coupling networks for dispatching large-scale flexible loads to provide operating reserve," ***Applied Energy***, vol. 359, p. 122705, Apr. 2024.
26. Yingcong Sun, **Hongxun Hui***, Taoyi Qi and Laijun Chen, "Multi-Time Scale Optimization of Urban Micro-Grids Considering High-Penetration of PVs and Heterogeneous Energy Storage Systems," ***IEEE Internet of Things Journal***, Early Access, 2024.

27. Sheng Wang, **Hongxun Hui***, Junyi Zhai and Pierluigi Siano, "Carbon-Embedded Nodal Energy Price in Hydrogen-Blended Integrated Electricity and Gas Systems With Heterogeneous Gas Compositions," ***IEEE Transactions on Sustainable Energy***, Early Access, 2024.

Journal Publications as collaborator:

28. Dunjian Xie, **Hongxun Hui**, Yi Ding and Zhenzhi Lin, "Operating Reserve Capacity Evaluation of Aggregated Heterogeneous TCLs with Price Signals," ***Applied Energy***, vol. 216, pp. 338-47, Apr. 2018.
29. Qiangqiang Xie, **Hongxun Hui**, Yi Ding, Chengjin Ye, Zhenzhi Lin, Jiadong Cui and Peng Wang, "Use of Demand Response for Voltage Regulation in Power Distribution Systems with Flexible Resources," ***IET Generation, Transmission & Distribution***, vol. 14, no. 5, pp. 883-92, Jan. 2020.
30. Kang Xie, **Hongxun Hui** and Yi Ding, "Modeling and Control Strategy of Thermostatically Controlled Loads for Virtual Energy Storage System," ***Protection and Control of Modern Power Systems***, Oct. 2019.
31. Yi Ding, Dunjian Xie, **Hongxun Hui**, Yan Xu and Pierluigi Siano, "Game-Theoretic Demand Side Management of TCLs for Smoothing Tie-line Power of Microgrids," ***IEEE Transactions on Power Systems***, vol. 36, no. 5, pp. 4089-4101, Sep. 2021.
32. Wenqi Cui, Yi Ding, **Hongxun Hui**, Zhenzhi Lin, Pengwei Du, Yonghua Song and Changzheng Shao, "Evaluation and Sequential Dispatch of Operating Reserve Provided by Air Conditioners Considering Lead–Lag Rebound Effect," ***IEEE Transactions on Power Systems***, vol. 33, no. 6, pp. 6935-50, Nov. 2018.
33. Ge Chen, Hongcai Zhang, **Hongxun Hui** and Yonghua Song, "Fast Wasserstein-distance-based Distributionally Robust Chance-constrained Power Dispatch for Multi-zone HVAC Systems," ***IEEE Transactions on Smart Grid***, vol. 12, no. 5, pp. 4016-4028, Sep. 2021.
34. Ge Chen, Hongcai Zhang, **Hongxun Hui**, Ningyi Dai and Yonghua Song, "Scheduling Thermostatically Controlled Loads to Provide Regulation Capacity Based on a Learning-based Optimal Power Flow Model," ***IEEE Transactions on Sustainable Energy***, vol. 12, no. 4, pp. 2459-2470, Oct. 2021.
35. Ge Chen, Hongcai Zhang, **Hongxun Hui** and Yonghua Song, "Chance-constrained Regulation Capacity Offering For Hvac Systems Under Non-gaussian Uncertainties With Mixture-model-based Convexification," ***IEEE Transactions on Smart Grid***, vol. 13, no. 6, pp. 4379-4391, Nov. 2022.
36. Yongzhu Hua, Qiangqiang Xie, **Hongxun Hui**, Yi Ding, Weiran Wang, Huibin Qin, Xiangrong Shentu and Jiadong Cui, "Collaborative Voltage Regulation by Increasing/decreasing the Operating Power of Aggregated Air Conditioners Considering Participation Priority," ***Electric Power Systems Research***, vol. 199, pp. 107420, Jun. 2021.
37. Tao Chen, Meng Song, **Hongxun Hui** and Huan Long, "Battery Electrode Mass Loading Prognostics and Analysis for Lithium-ion Battery-based Energy Storage Systems," ***Frontiers in Energy Research***, vol. 9, p. 754317, Oct. 2021.
38. Tao Chen, Ciwei Gao, **Hongxun Hui**, Qiushi Cui and Huan Long, "A Generalized Additive Model-based Data-driven Solution For Lithium-ion Battery Capacity Prediction and Local Effects Analysis," ***Transactions of the Institute of Measurement and Control***, Nov. 2021.
39. Yi Ding, Wenqi Cui, Shujun Zhang, **Hongxun Hui**, Yiwei Qiu and Yonghua Song, "Multi-state Operating Reserve Model of Aggregate Thermostatically-Controlled-Loads for Power System Short-term Reliability Evaluation," ***Applied Energy***, vol. 241, pp. 46-58, May 2019.
40. Xinran Zhuang, Chengjin Ye, Yi Ding and **Hongxun Hui**, "Data-driven Reserve Allocation with Frequency Security Constraint Considering Inverter Air Conditioners," ***IEEE Access***, Aug. 2019.
41. Qingxin Shi, Wenxia Liu, Bo Zeng, **Hongxun Hui** and Fangxing Li, "Enhancing Distribution System Resilience Against Extreme Weather Events: Concept Review, Algorithm Summary, and Future Vision," ***International Journal of Electrical Power & Energy Systems***, vol. 138, p. 107860, Jun. 2022.
42. Shuyang Xu, Xingying Chen, Jun Xie, Saifur Rahman, Jixiang Wang, **Hongxun Hui** and Tao Chen, "Agent-based Modelling of Electricity Market with Residential DR," ***CSEE Journal of Power and Energy Systems***, vol. 7, no. 2, pp. 368-380, Mar. 2021.
43. Ge Chen, Hongcai Zhang, **Hongxun Hui** and Yonghua Song, "Deep-Quantile-Regression-Based Surrogate Model for Joint Chance-Constrained Optimal Power Flow with Renewable Generation," ***IEEE Transactions on Sustainable Energy***, vol. 14, no. 1, pp. 657-672, Jan. 2023.
44. Ge Chen, Hongcai Zhang, **Hongxun Hui** and Yonghua Song, "Scheduling HVAC loads to promote renewable generation integration with a learning-based joint chance-constrained approach," ***CSEE Journal of Power and Energy Systems***, Early Access, 2023.
45. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui**, Yulin Chen and Ningyi Dai, "Real-time Harmonic Contribution Evaluation Considering Multiple Dynamic Customers", ***CSEE Journal of Power and Energy Systems***, Early Access, 2023.

46. Yulin Chen, Keng-Weng Lao, Donglian Qi, **Hongxun Hui**, Shaohua Yang, Yunfeng Yan and Yi Zheng, "Distributed Self-triggered Control for Frequency Restoration and Active Power Sharing in Islanded Microgrids," ***IEEE Transactions on Industrial Informatics***, vol. 19, no. 10, pp. 10635-10646, Oct. 2023.
47. Peipei Yu, Hongcai Zhang, Yonghua Song, **Hongxun Hui** and Ge Chen, "District Cooling System Control for Providing Operating Reserve Based on Safe Deep Reinforcement Learning," ***IEEE Transactions on Power Systems***, vol. 39, no. 1, pp. 40-52, Jan. 2024.
48. Peipei Yu, Hongcai Zhang, Yonghua Song, **Hongxun Hui** and Chao Huang, "Frequency Regulation Capacity Offering of District Cooling System: An Intrinsic-motivated Reinforcement Learning Method," ***IEEE Transactions on Smart Grid***, vol. 14, no. 4, pp. 2762-2773, Jul. 2023.
49. Hongyi Li, **Hongxun Hui** and Hongcai Zhang, "Consensus-based Energy Management of Microgrid with Random Packet Drops," ***IEEE Transactions on Smart Grid***, vol. 14, no. 5, pp. 3600-3613, Sep. 2023.
50. Yongzhu Hua, Qiangqiang Xie, **Hongxun Hui**, Yi Ding, Jiadong Cui and Lihuan Shao, "Use of Inverter-Based Air Conditioners to Provide Voltage Regulation Services in Unbalanced Distribution Networks," ***IEEE Transactions on Power Delivery***, vol. 38, no. 3, pp. 1569-1579, Jun. 2023.
51. Hongyi Li, **Hongxun Hui** and Hongcai Zhang, "Decentralized Energy Management of Microgrid Based on Blockchain-Empowered Consensus Algorithm with Collusion Prevention," ***IEEE Transactions on Sustainable Energy***, vol. 14, no. 4, pp. 2260-2273, Oct. 2023.
52. Shiquan Shan, Siqi Jia, Haojin Wu, Qi Zhang, **Hongxun Hui** and Zhijun Zhou, "New Solar-biomass Assisted Thermophotovoltaic System and Parametrical Analysis," ***Green Energy and Resources***, vol. 1, no. 2, p. 100019, Jun. 2023.
53. Shaohua Yang, Keng-Weng Lao, Yulin Chen and **Hongxun Hui**, "Resilient Distributed Control against False Data Injection Attacks for Demand Response," ***IEEE Transactions on Power Systems***, vol. 39, no. 2, pp. 2837-2853, Mar. 2024.
54. Hongyi Li, **Hongxun Hui** and Hongcai Zhang, "Blockchain-Assisted Virtual Power Plant Framework for Providing Operating Reserve with Various Distributed Energy Resources," ***iEnergy***, vol. 2, no. 2, pp. 133-142, Jun. 2023.
55. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui** and Yulin Chen, "A Robustness-enhanced Frequency Regulation Scheme for Power System Against Multiple Cyber and Physical Emergency Events," ***Applied Energy***, vol. 350, p. 121725, Nov. 2023.
56. Ji Zhang, Zhixiang Zhang, Shiqiao Zhou, **Hongxun Hui**, Ning Mei and Han Yuan, "Performance enhancement of the combined power-refrigeration cycle using a liquid-gas-gas ejector for ocean thermal energy conversion," ***Energy Conversion and Management***, vol. 296, p. 117688, Nov. 2023.
57. Tianyun Xu, Tao Chen, Ciwei Gao and **Hongxun Hui**, "Intelligent Home Energy Management Strategy with Internal Pricing Mechanism Based on Multi-Agent Artificial Intelligence-of-Things," ***IEEE Systems Journal***, vol. 17, no. 4, pp. 6045-6056, Dec. 2023.
58. Taoyi Qi, Chengjin Ye, **Hongxun Hui** and Yuming Zhao, "Fast Frequency Regulation Utilizing Non-Aggregate Thermostatically Controlled Loads Based on Edge Intelligent Terminals," ***IEEE Transactions on Smart Grid***, Early Access, 2023.
59. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui** and Yulin Chen, "Secure Distributed Control for Demand Response in Power Systems Against Deception Cyber-Attacks with Arbitrary Patterns," ***IEEE Transactions on Power Systems***, Early Access, 2024.

Journal Publications in Chinese:

60. Yi Ding, **Hongxun Hui**, Zhenzhi Lin, Menglian Zheng, Xinyao Qu and Wenqi Cui, "Design of Business Model and Market Framework Oriented to Active Demand Response," ***Automation of Electric Power Systems***, vol. 41, no. 14, Jul. 2017. **(TOP 5 Highly Cited Papers of this Journal in 3 Years)**
61. Xunhu Yin, Yi Ding, **Hongxun Hui**, Minglei Bao, Lizhong Xu, Xueyong Tang and Maosheng Sang, "Design of Demand Response Mechanism in Initial Electricity Spot Market Considering Response Behaviors of Customers," ***Automation of Electric Power Systems***, Early Access, Jun. 2021.
62. Yi Ding, Kaining Luan and **Hongxun Hui**, "Energy Saving and Emission Reduction From the Glowworm Project —Coupon-based Demand Response Demonstration in Flat Rate Market," ***IEEE Spectrum***, vol. 78, pp. 76-78, Jan. 2019. (**Invited Paper**)
63. Han Wang, Xiaoyuan Xu, Zheng Yan, **Hongxun Hui** and Xiaotao Fang, "Theoretical Methods and Application Prospects for Uncertainty Quantification in Distribution Network Operation Under the Influence of Stochastic Source-load," ***Journal of Global Energy Interconnection***, vol. 5, no. 3, pp. 233-244, May. 2022.
64. Sheng Wang, Jian Tan, Wenbo Shi, Fenghua Zou, Guang Chen, Linyu Wang, **Hongxun Hui** and Lei Guo, "Practices of the New Power System in the UK and Inspiration for the Development of Provincial Power Systems

in China," **Integrated Intelligent Energy**, vol. 44, no. 7, pp. 19-32, Jul. 2022. **(Excellent Paper Award of the Integrated Smart Energy Conference)**

65. Taoyi Qi, **Hongxun Hui**, Lizhong Xu, Xiang Ma and Yi Ding, "Modeling and Control of Generalized Demand Response in Micro-grids Based on GridLAB-D," ***Distribution & Utilization***, vol. 37, no. 7, pp. 3-10, Aug. 2020.
66. Kang Xie, Kaijie Zhang, Kaining Luan, **Hongxun Hui**, Yishuang Hu and Yi Ding, "Exploration of Demand Response Score Scheme Under Electric Power System Reform," ***Power Demand Side Management***, vol. 21, no. 3, May 2019.
67. Zhenyu Chen, Wenqi Cui, **Hongxun Hui**, Bin Yang, Kaining Luan and Yi Ding, "Research and Practice of Interruptible Load in the Market Environment (II)," ***Power Demand Side Management***, vol. 19, no. 1, Jan. 2017.
68. Zuofeng Li, Wenqi Cui, Zhenyu Chen, **Hongxun Hui**, Kaining Luan, Bin Yang and Yi Ding, "Research and Practice of Interruptible Load in the Market Environment (I)," ***Power Demand Side Management***, vol. 18, no. 6, Nov. 2016.
69. Weidong Liu, **Hongxun Hui**, Lijun Zhang, Chenbo Xu, Yikai Sun and Yi Ding, "Analysis on Peak Load Regulation Potential and Evaluation Model of Residential Loads," ***Southern Power System Technology***, vol. 10, suppl. 1, pp. 256-263, Dec. 2016.
70. Yi Ding, Huahua Wu, **Hongxun Hui** and Jun Zhang, "Analysis and Related Suggestions on Power Market Mechanism of Demand Side Response in China," ***Southern Power System Technology***, vol. 10, no. 3, pp. 24-31, Mar. 2016.
71. Kaijie Zhang, Guofeng Ding, Ming Wen, **Hongxun Hui**, Yi Ding, Min He, Jiefeng Chu, Kang Xie, Chutian Yu and Lijun Zhang, "Review of Optimal Dispatching Technology and Market Mechanism Design For Virtual Power Plants," ***Integrated Intelligent Energy***, vol. 44, no. 2, pp. 60-72, Feb. 2022.
72. Tong Wu, **Hongxun Hui*** and Hongcai Zhang, "Review of Commercial Air Conditioners for Participating in Urban Grid Regulation," ***Electric Power***, Early Access, 2023.
73. Yule Sun, Taoyi Qi, Yuming Zhao, Chengjin Ye and **Hongxun Hui**, "Research on Location and Capacity Determination of Charging Stations under the Coupling of Road and Electrical Networks Considering V2G Potential of Electric Vehicles," ***Integrated Intelligent Energy***, Early Access, 2023. **(Excellent Paper Award of the Integrated Smart Energy Conference)**

International Conference

74. **Hongxun Hui**, Peipei Yu, Hongcai Zhang, Ningyi Dai, Wei Jiang and Yonghua Song, "Regulation Capacity Evaluation of Large-scale Heterogeneous Residential Air Conditioning Loads," *IEEE Sustainable Power and Energy Conference (iSPEC)*, Nanjing, China, pp. 1-6, Nov. 2021. **(Best Paper Award)**
75. **Hongxun Hui**, Qifan Yang, Ningyi Dai, Hongcai Zhang, Yi Ding and Yonghua Song, "Anticipatory Control of Flexible Loads for System Resilience Enhancement Facing Accidental Outages," *13th International Conference on Power System Technology (PowerCon 2021)*, Haikou, China, pp. 1-6, Nov. 2021.
76. **Hongxun Hui**, Yi Ding, Shihai Yang, "Modeling and Analysis of Inverter Air Conditioners for Primary Frequency Control Considering Signal Delays and Detection Errors," *Energy Procedia*, vol. 158, pp. 4003-4010, Feb. 2019.
77. **Hongxun Hui**, Yi Ding, Yonghua Song and Saifur Rahman, "Modelling and Dynamic Performance Analysis of the Power System Under Unit Contingency Shutdown Accidents Considering DR," *Energy Proceedings*, vol. 3, pp. 1-6, Aug. 2019.
78. **Hongxun Hui**, Yi Ding, Kaining Luan and Daoqiang Xu, "Analysis of 815 Blackout in Taiwan and the Improvement Method of Contingency Reserve Capacity Through DLC," *IEEE PES General Meeting*, Portland, USA, 2018.
79. **Hongxun Hui**, Xing Jiang, Yi Ding, Yonghua Song and Li Guo, "Demonstration of Friendly Interactive Grid Under the Background of Electricity Market Reform in China," *EEEIC/I&CPS Europe*, pp. 1-5. *IEEE*, Milan, Italy, 2017.
80. **Hongxun Hui**, Weidong Liu and Yi Ding, "Quantitative Analysis of Air Conditioner Aggregation for Providing Operating Reserve," *Energy Procedia*, vol. 104, pp. 50-55, Dec. 2016.
81. Peipei Yu, **Hongxun Hui***, Hongcai Zhang*, Chao Huang and Yonghua Song, "Frequency Regulation Capacity Offering of District Cooling System based on Reinforcement Learning," *IEEE PES General Meeting*, Denver, USA, 2022.
82. Yanqi Liu, **Hongxun Hui**, Hongcai Zhang and Liang Gao, "Risk Assessment of Offshore Wind Farm Outages Under Typhoon Conditions," *IEEE PES General Meeting*, Denver, USA, 2022.
83. Xinyao Qu, **Hongxun Hui**, Yi Ding and Kaining Luan, "Optimal Control of Intelligent Electricity Consumption for Residential Customers Considering Demand Response," *Energy Procedia*, vol. 145, pp. 510-515, Jul. 2018.
84. Sheng Wang, **Hongxun Hui**, Yi Ding and Chengzhi Zhu, "Cooperation of Demand Response and Traditional

Power Generations for Providing Spinning Reserve," *Energy Procedia*, vol. 421, pp. 2035-2041, Dec. 2017.

85. Xinyao Qu, **Hongxun Hui**, Shengchun Yang, Yaping Li and Yi Ding, "Price Elasticity Matrix of Demand in Power System Considering Demand Response Programs," *IOP Conf. Series: Earth and Environmental Science*, vol. 121, no. 5, Feb. 2018.
86. Wenqi Cui, Yi Ding, **Hongxun Hui** and Maozhen Li, "Two-stage Payback Model for the Assessment of Curtailment Services Provided by Air Conditioners," *Energy Procedia*, vol. 142, pp. 2050-2056, Dec. 2017.
87. Haiyue Yu, Kang Xie, **Hongxun Hui**, Yi Ding, "Review of Flexible Loads for Participating in Frequency Regulation," *IEEE Conf. on Energy Internet and Energy System Integration*, Wuhan, China, pp. 1-5, Oct. 2020.
88. Yulin Chen, Xing Huang, Keng-Weng Lao, Shaohua Yang, **Hongxun Hui**, Donglian Qi, "A Zeno-Free Distributed Self-Triggered Secondary Control Scheme for Islanded Microgrids," *2022 IEEE/IAS Industrial and Commercial Power System Asia (I&CPS Asia)*, pp. 848-853, Jul. 2022.
89. Sheng Wang, **Hongxun Hui***, "Operational Risk for Integrated Power and Gas Systems Considering Varying Hydrogen Concentrations With High Penetration of Wind," *IEEE IAS Global Conference on Renewable Energy and Hydrogen Technologies*, Male City Maldives, pp. 1-5, Mar. 2023.
90. Shaohua Yang, Keng-Weng Lao, **Hongxun Hui**, Yulin Chen, "A Resilient Controller for Frequency Regulation of Power Grids Against Cyber Attacks," *IEEE IAS Global Conference on Renewable Energy and Hydrogen Technologies*, Male City Maldives, pp. 1-5, Mar. 2023.
91. Tong Wu, **Hongxun Hui***, Hongcai Zhang, "Hardware-in-the-loop Towards Frequency Regulation Service by HVACs with Real-time Digital Simulator," *2023 8th Asia Conference on Power and Electrical Engineering (ACPEE 2023)*, Tianjin, China, pp. 1-5, Apr. 2023.
92. Zifei Wang, Hongyi Li, **Hongxun Hui***, Hongcai Zhang, "A Local Energy Market for Industrial Parks Considering Carbon Emission Quota," *2023 8th Asia Conference on Power and Electrical Engineering (ACPEE 2023)*, Tianjin, China, pp. 1-5, Apr. 2023.

Teaching and Invited Talks

Teaching

1. Introduction to Internet of Things, Department of Electrical and Computer Engineering, University of Macau, 2022/2023; 2023/2024.
2. Power System Operation and Control (Teaching Assistant of Prof. Yi Ding and Prof. Pierluigi Siano), College of Electrical Engineering, Zhejiang University, 2016.

Invited Talks

1. Distributed Control of Large-scale Thermostatically Controlled Loads for Improving Flexibility in Urban Power Systems, *Southeast University*, Nanjing, China, Aug. 15, 2022.
2. Regulation Capacity Evaluation of Large-scale Heterogeneous Residential Air Conditioning Loads, *IEEE Sustainable Power and Energy Conference (iSPEC)*, Nanjing, China, Dec. 23, 2021.
3. Anticipatory Control of Flexible Loads for System Resilience Enhancement Facing Accidental Outages, *International Conference on Power System Technology (POWERCON)*, Haikou, China, Dec. 8, 2021.
4. Real-time Local Electricity Market Considering High-Penetration Distributed Energy Resources, *the 13th International Conference on Applied Energy (ICAE 2021)*, Thailand, Nov. 29, 2021. (Panel Speaker)
5. Adaptive Control of Flexible Loads for Enhancing the Power System Resilience Facing Accidental Outages, the *5th IEEE Conference on Energy Internet and Energy System Integration (EI2 2021)*, Taiyuan, China, Oct. 2021.
6. How to Write an Academic Paper, *Southeast University*, Nanjing, China, Jul. 28, 2021.
7. Control of Thermostatically Controlled Loads for Providing Regulation Services in Power Systems, *International Conference on Renewable Energy*, Rome, Italy, Nov. 2020. (Plenary Speaker)
8. Equivalent Modeling and Control of Inverter Air Conditioners for Providing Frequency Regulation Service, the *4th IEEE Conference on Energy Internet and Energy System Integration (EI2 2020)*, Wuhan, China, Oct. 2020. (Outstanding Presentation)
9. Modelling and Dynamic Performance Analysis of the Power System Under Unit Contingency Shutdown Accidents Considering DR, *International Conference on Applied Energy*, Västerås, Sweden, Aug. 2019.
10. Modeling and Analysis of Inverter Air Conditioners for Primary Frequency Control Considering Signal Delays and Detection Errors, *International Conference on Applied Energy*, Hong Kong, China, Aug. 2018.
11. Demonstration of Friendly Interactive Grid Under the Background of Electricity Market Reform in China, *IEEE EEEIC17 and I&CPS Europe*, Milan, Italy, Jun. 2017.

12. Electricity Distribution Pricing Mechanism in China. *IEEE PES General Meeting*, Boston, USA, Jul. 2016.
13. Quantitative Analysis of Air Conditioner Aggregation for Providing Operating Reserve, *Low-carbon Cities & Urban Energy*, Jinan, China, Jun. 2016.

Issued Invention Patents

1. **Hongxun Hui**, Yi Ding, Weidong Liu, Lijun Zhang, Yikai Sun and Chenbo Xu, "A Calculation Method of Aggregated Air Conditioners for Providing Regulation Services for Power Systems," No. CN201610821647.X, Dec. 2018.
2. **Hongxun Hui** and Chuangxin Guo, "A Self-powered Pinch Meter Based on Micro-generator and SCM," No. CN201410009920.X, Jul. 2016.
3. **Hongxun Hui** and Chuangxin Guo, "A Dismantling Equipment for Electronic Devices Based on SCM," No. CN201410010721.0, May 2016.
4. **Hongxun Hui**, Yibai Lu, Lequan Yu, Litong Lv and Hui Sun, "An Electrocardiogram Detection Device Based on Bluetooth Communication," No. CN201410094326.5, Mar. 2016.
5. Yi Ding, **Hongxun Hui**, Zhenyu Chen, Kaining Luan, Chunyu Xie, Wenqi Cui, Kang Xie, "One Demand Response Method Considering the Total Cost Risk of Power System," No. CN201811050910.5, Jul. 2020.
6. Yi Ding, **Hongxun Hui**, Yonghua Song, "Hybrid Control Method of Integrated Inverter Air Conditioners for Providing Frequency Regulation Services," No. CN201910511062.1, Nov. 2020.
7. Yi Ding, **Hongxun Hui** and Yonghua Song, "An Intelligent Meter with Multi-time Scale Electricity Prices," No. CN201610543375.1, May 2019.
8. Yi Ding, Kang Xie, **Hongxun Hui**, Kaijie Zhang, "Frequency Regulation Controller of Inverter Air Conditioners Considering Incentive Signals," No. CN201910576119.6, Oct. 2020.
9. Yong Xia, Yi Ding, **Hongxun Hui**, Zhenyu Chen, Kaining Luan, Wenqi Cui and Xinyao Qu, "An Incentive Demand Response Method Based on Coupons," No. CN201811051906.0, Jul. 2021.

Software Copyrights

1. **Hongxun Hui**, Yi Ding and Wenqi Cui, "Software for Coupon Computing and Settlement in Friendly Interactive Smart Grid," No. 2018SR449433, May 2018.
2. Yi Ding, Dunjian Xie and **Hongxun Hui**, "Software for Game Theory-Based Collaborative Optimization Control of Thermostatically Controlled Loads," No. 2019SR0481590, Mar. 2019.
3. Dunjian Xie, Yi Ding and **Hongxun Hui**, "Simulation Software for Optimal Coordination of Thermostatically Controlled Loads for Demand Response," No. 2019SR0450852, Mar. 2019.

Research Projects

1. Regulation Technologies of Flexible Resources in Power-Communication Deep Coupling Network (2023-2026), Supported by Science and Technology Development Fund, Macao, China, Project No. 0117/2022/A3, Budget 1,294,500.00 MOP, Principal Investigator.
2. Regulation Technologies of Large-scale Demand-side Resources in Urban Power Systems Considering High-penetration Renewable Energies (2022-2023), Supported by Key Laboratory of Modern Power System Simulation and Control & Renewable Energy Technology, Ministry of Education (Northeast Electric Power University), Project No. MPSS2022-10, Budget 50,000.00 CNY, Principal Investigator.
3. Key technologies and applications of network-load-storage interaction of virtual power station in smart city (2022-2024), Supported by Science and Technology Development Fund, Macao, China, Co-Principal Investigator.
4. Friendly Interactive Smart Grid Between Supply-Side and Demand-Side (2016-2020), Supported by Ministry of Science and Technology of China, Project No. 2016YFB0901100, Key Member.
5. Cooperative Control of Flexible Loads in Power Systems with High Penetration of Renewable Energies (2018-2019), Supported by Zhejiang University, Academic Rising Star Program, Project No. 2018025, Key Member.
6. Reliability Analysis and Optimization of Smart Grid Considering the Coordinated Operation of Flexible Resources and Wind Power (2016-2019), Supported by National Natural Science Foundation of China, Project No. 51577167, Key Member.
7. Control Method and Peak-shaving Capacity Evaluation of Flexible Loads (2016-2017), Supported by State Grid Zhejiang Electric Power Company, Project No. 5211JY15001S, Key Member.
8. Research and Application of Demand Response (2016-2017), Supported by State Grid Jiangsu Electric Power

Company, Project No. KH20161699, Key Member.

9. Modeling and Regulation Potential Evaluation of Air Conditioners, EVs, and Batteries (2015-2016), Supported by China Electric Power Research Institute, Project No. DZ71-15-004, Key Member.

Additional Information

Professional Services

- **Young Editorial Board Member**, Oct. 1, 2022 - Oct. 1, 2024, *Applied Energy*
- **Young Editorial Board Member**, Jul. 1, 2022 - Jun. 30, 2024, *Engineering Reports*
- **Guest Editor**, *Integrated Intelligent Energy*, Optimization, Control and Cyber-Security of Integrated Energy System; Power System Demand-Side Load Regulation Technologies based on IoTs
- **Program Committees**: *2020 International Conference on Renewable Energy (ICREN2020); 2021 International Conference on Power System and Energy Internet (PoSEI2021); 2021 13th International Conference on Applied Energy (ICAE2021); 2021 13th International Conference on Power System Technology (PowerCon2021); 2022 4th International Conference on Smart Power & Internet Energy Systems (SPIES2022); 2022 7th Asia Conference on Power and Electrical Engineering (ACPEE2022)*
- **Member of a Council**: *IEEE PES China Electric Vehicle Technical Committee, Technical Sub-Committee on Integration of Electric Vehicle and Energy Transportation System (2020-2023)*
- **Journal Reviewers**: *IEEE Transactions on Industrial Electronics* (Since 2017), *International Journal of Electrical Power & Energy Systems* (Since 2017), *Applied Energy* (Since 2018), *Journal of Modern Power Systems and Clean Energy* (Since 2018), *IEEE Transactions on Sustainable Energy* (Since 2019), *IEEE Transactions on Power Systems* (Since 2019), *IEEE Transactions on Smart Grid* (Since 2019), *IEEE Access* (Since 2019), *CSEE Journal of Power & Energy Systems* (Since 2019), *Journal of Electrical Engineering & Technology* (Since 2019), *International Transactions on Electrical Energy Systems* (Since 2019), *Renewable & Sustainable Energy Reviews* (Since 2019), *Economic Alternatives* (Since 2019), *IET Energy Systems Integration* (Since 2019), *IEEE Transactions on Industry Applications* (Since 2019), *IEEE Transactions on Circuits and Systems I: Regular Papers* (Since 2019)
- **Conference Reviewers**: *IEEE PES General Meeting*, *International Conference on Applied Energy*, *IEEE Sustainable Power & Energy Conference*, *International Conference on Smart Energy Systems and Technologies*, *IEEE International Conference on Environment and Electrical Engineering and IEEE Industrial and Commercial Power Systems Europe.*
- **Vice President**: IEEE Industry Applications Society Student Branch Chapter in Zhejiang University (2018-2020)

Selected Honors & Rewards

- Highly Cited Review Paper Award, by the Journal Applied Energy, Aug. 2022.
- Excellent Paper Award of the Integrated Smart Energy Conference, Jul. 2022.
- Winning Prize, the 1st China Postdoctoral Innovation & Entrepreneurship Competition, 2022.
- Best Paper Award of the 3rd IEEE Conference on Sustainable Power and Energy, 2021.
- The First Prize and the only Best Innovation Award at a national competition on artificial intelligence (AI) application in power dispatching, Oct. 2021.
- The Second Prize and the only Best Innovation Award at a national competition on artificial intelligence (AI) application in power dispatching, Jan. 2021.
- National Scholarship, 2019. (The first ranking among 58 Ph.D. students in the major of power systems)
- First Batch of the Academic Rising Star Program, ZJU, 2018.
- Wang Guo Song Scholarship, 2019. (The highest honor in College of EE, 4 students among 180 Ph.D. students)
- Tang Lixin Scholarship, 2017. (The first and only winner in College of EE)
- Excellent Postgraduate Students' Award in ZJU and Zhejiang Province, 2020.
- Postgraduate Students' Scholarship, 2020.
- Outstanding Reviewer Award from Journal of Modern Power Systems and Clean Energy, 2018.
- Award of Honor for Graduate, 2016, 2017, 2018, 2019.
- Graduate of Merit/Triple A graduate, 2016, 2019.
- Outstanding Graduates of Zhejiang University, 2015.
- Excellent Honor in Edison Class, Zhejiang University, 2015.
- Scholarship for Excellence in Research and Innovation, 2015.
- Bosch Scholarship, 2015.
- Meritorious, Interdisciplinary Contest in Modeling (ICM), Consortium for Mathematics and Its Application, 2014.
- First Price, 7th Science Contest on Energy Saving & Emission Reduction, 2014.

- Fifth (5/149) and Best Design Award, 9th University Student Robot Contest (My Super Shopper), 2014.
- Third Price, 7th Intelligent Car Competition of Zhejiang University, 2014.
- First-Class Scholarship for Outstanding Merits/Students, 2012.
- Outstanding Student Leader Awards, 2012, 2014.
- Excellent Student Awards, 2012, 2013, 2014.