Zhengyang Hu (胡正阳)

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Research interests: Optimal operation and control for renewable power integration

Education

2016.09 - present **Southeast University** Ph.D. candidate Electrical Engineering

Thesis Topic: Research on the transient frequency response characteristics and active control strategy for wind power plant. Supervisor: Prof. Bingtuan Gao.

2012.09 - 2016.06 **China University of Mining and Technology** BEng Electrical Engineering

Acquire solid fundamentals in mathematics, power systems, power electronics, and control theory. Rank 24th (out of the entire batch of 434 students) during the academic year 2012-2016.

Publications

[1] **Z. Hu**, B. Gao, Y. Mao, "Nonlinear model predictive control-based active power dispatch strategy for wind power plant considering dynamic wake effect," *International Journal of Electrical Power & Energy Systems*, 2023,148:108996. *link* (JCR: Q1, IF: 5.659)

[2] **Z. Hu**, B. Gao, R. Sun, "An active primary frequency regulation strategy for grid integrated wind farms based on model predictive control," *Sustainable Energy, Grids and Networks*, 2022,32:100955. *link* (JCR: Q1, IF: 5.405)

[3] **Z. Hu**, B. Gao, N. Chen, L. Qu, C. Peng, "Modified virtual synchronous generator based-primary frequency regulation for renewable generation integrated into power system," *IET Generation, Transmission & Distribution*, 2020,14(20):4435-4443. *link* (JCR: Q2, IF: 2.995)

[4] B. Gao, **Z. Hu**, W. Wang, et al, "Review on fast active power control and frequency support technologies of renewable energy stations," *Proceedings of the CSEE*, 2023, in press. *link* (in Chinese)

[5] Y. Zhang, **Z. Hu**, P. Peng, N. Chen, B. Tang, B. Gao, "Pole assignment based auxiliary damping control for renewable generation integrated into power system," *Electric Power*, 2021,54(10):217-222. *link* (in Chinese)

[6] B. Gao, **Z. Hu**, L. Zhang, Z. Yang, "De-loading optimal control of wind farm based on wake effect," *Renewable Energy Resources*, 2018(1):117-125. *link* (in Chinese)

[7] Y. Han, **Z. Hu**, Z. Yang, B. Gao, F. Duan and W. Fan, "A General Fault Ride Through Control Model for Typical Renewable Energy Generators," *2021 IEEE 11th Annual International Conference on CYBER Technology in Automation, Control, and Intelligent Systems (CYBER)*, Jiaxing, China, 2021, 549-554. *link*

[8] **Z. Hu**, B. Gao, S. Jiang, "Optimal temporary frequency support strategy for wind power plant considering extended operation region," *IEEE Transactions on Sustainable Energy*, under review.

Research Projects

Skills of **Matlab/Simulink**, **PSCAD** (software) and **DSP**, **RTLAB** (hardware) are used in the following projects.

1. **2021-present** Active and fast support of transient frequency and voltage for photovoltaic / wind power plant (National Key R&D Program of China under grant 2021YFB2400500)
   Involved in the research of the active and fast frequency support technologies and the optimization of steady-state operating conditions for wind power plant.
2. **2018-2019** Research on Impact Mechanism and Active Support Technology for Application of Power Electronic on Renewable Energy in Regional Grid (sponsored by China Electric Power Research Institute)
   Responsible for the scenario construction of photovoltaic/wind power plant integration and analysis of aggregation characteristics of photovoltaic/wind power plant.
3. **2017-2017** Research on the Impact of Large-scale Renewable Energy Integration on Damping Characteristics of Power System and the Corresponding Active Power Support Control Strategy (sponsored by China Electric Power Research Institute)
   Involved in the analysis and control of damping characteristics of the power system integrated with renewable energy generation based on virtual synchronous generator.