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**Large-scale wind power local consumption based on energy-intensive loads**

**Boyu Xie**  
Wuhan University, China

Due to the spatial imbalance between load-intensive areas and renewable energy-intensive areas, the long-distance transmission through Ultra-high-voltage (UHV) alternating current (AC) and direct current (DC) is a common practice for the consumption of renewable energy. However, because of the intermittency of renewable energy and high land prices, long-distance transmission still has technology and economy problems and controversies. This paper proposes a method of using energy-intensive industries to consumption of wind power locally. By engaging energy-intensive loads in the frequency regulation, efficient use of wind power is guaranteed. The control framework of electrolytic aluminum participating in wind power consumption is proposed by analyzing the production process of its. The coal-fired generators together with the shortterm interruptible electrolytic aluminum load in the supermicrogrid are able to compensate for the intermittency of wind power. This energy layout model has great application potential in China according to the distribution characteristics of wind power and energy-intensive industries. Finally, the effectiveness of the proposed method is verified by an actual project in Inner Mongolia, China.

**Biography**

Boyu Xie received the B.S. degree in electrical engineering from Wuhan University, Wuhan, China, in 2017. He is currently working toward the PhD degree in the School of Electrical Engineering and Automation, Wuhan University.

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