

Prof. Jia Li, Shanghai University

Research on the topology balance model and energy optimization management method for energy industry internet

The creation of an energy internet characterized by renewable energy and industrial internet is critical to make a substitution for clean energy and sustainable development. However, the strong coupling of physical information and the complexity of space-time structure in multi-source heterogeneous energy systems causes systems parameters are hybrid. Moreover, its network topology also changes dynamically to respond to users' requirements, which makes the systems have a strong nonlinearity, time delay, randomness and uncertainty. Considering the essential characteristics of multi-heterogeneous energy subsystems based on "power supply; power grid; load; energy storage", this presentation focuses on the core issue of spatial-temporal relationship evolution and regulation of energy industry internet total factor interconnection. The main topics are multi-source heterogeneous energy industrial internet topology, models for balancing supplements and loads of multi-energy supplement energy systems, methods of optimization management for dynamic energy based on "power supply; power grid; load; energy storage" and optimization methods of the operation of energy system with variable constraints and multi-target.