Special Session III

Special Session Basic Information:

专栏题目 Session Title	中文：储能技术在新型电力系统中的应用 英文：Application of Energy Storage Technology in New Power Systems

专栏介绍和征稿主题
Introduction and topics

中文：储能技术在新型电力系统中的应用对未来能源结构至关重要，尤其是在推动能源转型和提高系统灵活性方面。随着可再生能源的发展，电力系统面临波动性和间歇性挑战，储能技术提供了有效的解决方案。通过储能技术，系统可实现负荷平衡、能源时移和供需匹配，确保稳定性与可靠性。

储能技术能够高效整合风能、太阳能等可再生能源，存储多余电能并在高峰时释放，减少对传统发电厂的依赖和碳排放。同时，在电网故障时提供快速响应，增强电网可靠性。智能电网的发展使储能技术与智能控制系统结合，优化调度、提升经济效益，并参与需求响应和辅助服务市场，增强电网调节能力。储能系统的健康监控与预测性维护技术能识别故障风险，实施预防性维护，保证系统稳定运行。

总之，储能技术不仅增强电力系统的灵活性和稳定性，还推动低碳目标和可再生能源的高效利用，为未来智能电力系统发展提供支持，助力全球能源产业向更清洁、智能、可持续的方向发展。

针对以上内容，主要征稿主题包括：

1. 储能技术在可再生能源系统中的集成与优化
2. 智能电网环境下的储能系统调度与管理技术
3. 储能技术在需求响应与辅助服务市场中的应用
4. 储能系统健康监控与故障预测技术
5. 储能系统在电网故障与应急响应中的快速反应能力
6. 低碳目标下的储能技术与电力市场机制优化
7. 储能系统的经济性分析与商业化发展路径
8. 储能技术与电力系统安全性、稳定性协同优化

英文：The application of energy storage technology in new power systems is crucial for the future energy structure, especially in promoting energy transition and enhancing system flexibility. With the development of renewable energy, power systems face challenges of volatility and intermittency, and energy storage technology provides an effective solution. Through energy storage technology, the system can achieve load balancing, energy time-shifting, and supply-demand matching, ensuring stability and reliability.

Energy storage technology can efficiently integrate renewable energy sources such as wind and solar power, store excess electricity, and release it during peak times, reducing dependence on traditional power plants and carbon emissions. Additionally, it provides rapid response during grid failures, enhancing grid reliability. The development of smart grids enables the integration of energy storage technology with intelligent control systems, optimizing scheduling, improving economic efficiency, and participating in demand response and ancillary services markets to enhance grid regulation capabilities. Health monitoring and predictive maintenance technologies for energy storage systems can identify fault risks and implement preventive maintenance, ensuring stable operation of the system.

In summary, energy storage technology not only enhances the flexibility and stability of power systems but also promotes low-carbon goals and the efficient use of renewable energy, providing support for the development of future smart power systems and helping the global energy industry move toward a cleaner, smarter, and more sustainable direction.

The main topics for submission based on the above content include:

1. Integration and optimization of energy storage technology in renewable energy systems
2. Energy storage system scheduling and management technology in smart grid environments

3. Application of energy storage technology in demand response and ancillary services markets
4. Health monitoring and fault prediction technology for energy storage systems
5. Rapid response capability of energy storage systems in grid faults and emergency situations
6. Optimization of energy storage technology and power market mechanisms for low-carbon goals
7. Economic analysis and commercialization development path of energy storage systems
8. Collaborative optimization of energy storage technology with power system safety and stability

Special Session Chair(s):

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Organizer's Brief Biography

中文：博士，副教授，博士生导师，丹麦奥尔堡大学访问学者，IEEE PES 中国区青年专家委员会副秘书长，担任多个 SCI 国际学术期刊、国内电力行业相关期刊的审稿人。在《中国电机工程学报》、《CSEE Journal of Power and Energy Systems》、《IEEE Transactions on Sustainable Energy》、《电工技术学报》、《高电压技术》、《电网技术》等高水平期刊上发表论文 30 余篇，均被 SCI/EI 检索；发表在“IEEE Transactions on Sustainable Energy”的论文获得 ESI 全球排名前 1%高被引论文；参与编著书籍《固体电蓄热及可再生能源消纳技术》、《清洁能源工程技术原理与应用》2 部；申请发明专利 25 项；曾获得沈阳市科技进步一等奖 1 项，沈阳市自然科学学术成果奖 1 项，教育部国际合作优胜奖 IEEE PCCC Outstanding Young Engineer Award。

英文：PhD, Associate Professor, PhD Supervisor, Visiting Scholar at Aalborg University, Denmark, Deputy Secretary-General of the IEEE PES China Youth Experts Committee, and reviewer for multiple SCI international academic journals and domestic power industry-related journals. She has published over 30 papers in high-level journals, including China Electric Power Engineering Journal, CSEE Journal of Power and Energy Systems, IEEE Transactions on Sustainable Energy, Journal of Electrical Engineering, High Voltage Technology, Grid Technology, all indexed by SCI/EI. Her paper published in IEEE Transactions on Sustainable Energy was ranked in the top 1% of highly cited papers globally by ESI. She contributed to the books Solid-State Electric Storage and Renewable Energy Integration Technologies and Principles, Applications of Clean Energy Engineering Technology. She has applied for 25 invention patents. She has received several awards, including the First Prize for Scientific and Technological Progress in Shenyang, the Shenyang Natural Science Academic Achievement Award, and the Ministry of Education International Cooperation Excellence Award, as well as the IEEE PCCC Outstanding Young Engineer Award.

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Organizer's Brief Biography

中文：杨贺钧，博士，副教授，博士生导师，安徽省高端人才引育青年拔尖（青年学者），丹麦奥尔堡大学、台湾元智大学访问学者，主持国家自然科学基金（青年基金、面上项目）、安徽省自然科学基金（面上项目、联合基金重点项目）、国重实验室开放基金等多项，主持省级、校级和院级教学研究课题各 1 项，在 IEEE、IET、JES、电自等期刊和会议发表论文 60 余篇，发明专利 40 余项，获得省级电网公司科技进步三等奖、安徽省教学成果一等奖、南瑞继保奖教金、远东奖教金等奖项，主要研究方向为电力系统规划与可靠性、储能系统运行与规划、新型配电系统运行与商业模式等。

英文： Hejun Yang, PhD, Associate Professor, PhD Supervisor, Anhui Provincial Young Scholar, Visiting Scholar at Aalborg University and Yuan Ze University. He has led some research projects including the national natural science foundation of China, Anhui provincial natural science foundation, funds of the state key laboratory, the fundamental research funds for the central universities of China, etc. And He has led some teaching research projects including provincial level and university's level and college's level. He has published more than 60 papers in journals (e.g., IEEE, IET, JES) and conferences and authorized (applied) more than 40 patents. He has received several awards. His main research interests focus on areas of power system planning and reliability, and energy storage planning and operations, new power electric distribution system operation and commercial mode.