2023 IEEE International Conference on Energy Technologies for Future Grids (IEEE ETFG 2023)

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SPECIAL SESSION

Multi-Energy Systems to Facilitate Low-Carbon Energy Transition

Countries worldwide are making efforts to reduce carbon emissions and mitigate climate change by adopting renewable energy sources. Governments have set ambitious targets for carbon reduction, to achieve net-zero emissions by mid-century. This transition is driven by the growing awareness of the need for sustainable energy sources and the impacts of traditional fossil fuels on the environment. The increasing penetration level of variable renewable energy sources, strict targets for reducing greenhouse gas emissions, and the requirements for improving system security and reliability call for significant changes in our energy systems. The integration of multiple energy carriers such as electricity, heat, cooling, and natural gas through multi-energy networks is a promising alternative during the low-carbon energy transition. These networks offer a unified platform to incorporate various advanced energy technologies, including renewables, cogeneration, P2X, electric vehicles, and energy storage. The synergies between energy supply networks have a great potential to provide flexible integration, reduce dependence on high-carbon energy carriers, and increase the entire system's energy efficiency. However, the design, optimization, and operation of such systems present significant challenges due to their complexity, uncertainty, and variability. To advance research and development in this promising and dynamic area, this Special Session calls for papers that focus on the low-carbon energy transition in multi-energy systems. We welcome contributions that demonstrate the potential of multi-energy systems to improve energy efficiency, enhance energy security and resilience, and reduce greenhouse gas emissions. The papers should cover topics such as, but not limited to:

1. Investigating the operations, planning, and economics of decarbonization pathways in reaching net-zero targets in multi-energy systems;
2. Development of control and management strategies for multi-energy systems to ensure stability and reliability;
3. Techno-economic analysis and feasibility studies of low-carbon multi-energy systems;
4. Mechanisms for further proliferation and integration of different energy resources in energy trans- active markets;
5. Policy and regulatory frameworks to support the development and deployment of low-carbon multi-energy systems;
6. Energy storage, P2X technologies, and management systems for multi-energy systems;
7. AI technologies applications that enable efficient data monitoring and operation of multi-energy systems.

Special Session Panelists:

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Conference Website: https://attend.ieee.org/etfg-2023/ Track SS1: Multi-Energy Systems

Paper Submission Site: https://cmt3.research.microsoft.com/IEEEETFG2023/