Special Session on methodologies, models and solutions for smart multi-carriers energy systems

Special Session Organizers

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Abstract

The success of new energy paradigm, such as smart grid and multienergy systems, is based on "integration". It means integration of resources, technologies, and energy carriers' combination. Therefore, it is fundamental to implement advanced models, novel methodologies to design and manage energy systems, and predict their performances in terms of practicality, energy generation capacity, and cost benefits.

In this context, advanced hardware, software, communication and remote-control systems can certainly offer valid support in guaranteeing the satisfaction of the energy needs of users together with preserving reliability, security and resilience of smart grids.

The focus is on devices, controllers, architectures, forecasting and detection methodologies, but also on privacy-preserving techniques and solutions for planning resilient and cyber-resilient energy networks and multienergy systems.

Special Session Topics

This special session aims at gathering contributions able to cope with the above topics. This relates possible contributions dealing with (but not limited to):

- ✓ Advanced solutions for the integration of electric-thermal-gas-H_2 based vectors.

- ✓ Control and management strategies for smart grids, multienergy systems and energy hubs.

- ✓ Technologies for reliable, flexible, secure and resilient energy grids.

- ✓ Methodologies and algorithms for anomaly and fault detection and prediction.

- ✓ Techniques, technologies, and devices for cybersecurity and for cyber-resilient smart grids and multi-vectors networks.

- ✓ Machine Learning Applications and Forecasting techniques for Resilient and Secure Smart Grid.

- ✓ Digital twin Technologies in energy and digitalization sectors.