

Special Issue

Integration of Electric Vehicle Chargers and Energy Storage Systems in Smart Grids

Message from the Guest Editors

EVs are becoming increasingly popular as a sustainable mode of transportation, capable of enabling an effective green transition when integrated in renewable-fed smart grids. Energy storage systems have become crucial in helping to manage the variability of power production from renewable energy sources and in allocating energy for high power loads, ensuring a stable and reliable electricity supply. Power network interfaces with EVs and ESSs through power converters, which effectively drive the whole infrastructure. Their architecture and control algorithms play a crucial role in the future development of the grid. Furthermore, their diffusion reveals the need to also consider electromagnetic compatibility issues, both on individual devices and on the smart grid, in which the aggregation of disturbances can compromise the functioning of the network itself. The design of EV chargers and ESSs and their integration into the electric infrastructure must therefore be addressed with awareness of the power system architecture, as well as control and electromagnetic compatibility issues, ensuring the transition towards a more sustainable and resilient energy system.

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