Special Issue

Advanced Solutions for the Efficient Integration of Electric Vehicles in Electricity Grids

Message from the Guest Editors

The EV fleet becomes an increasingly important factor for power systems as new grid planning and operational challenges are raised for system operators due to their dynamic spatiotemporal charging behaviour. The challenge for system operators is not only the extra energy demand, but also the simultaneous power demand at the distribution level. Indicatively, the EV charging demand can double the yearly electricity consumption of a household, but the critical issue is that the EV (peak) power demand can be increased by five times when considering the synchronised home charging of an EV fleet at the neighbourhood level. This additional EV demand can provoke network operational issues (overloading or voltage excursions) in the existing grid infrastructure, which would require costly grid reinforcements. The scope of this Special Issue is to present advanced EV charging and management solutions, enabling the efficient integration of electric vehicles in the electricity grids at all grid levels under a mass deployment scenario.

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Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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