

Special Session 6: Application and Nexus of Energy, Transportation, and Market by the EV&V2G Technology

Session Organizer:

Yitong Shang, The Hong Kong University of Science and Technology,
ytshang@ust.hk

Yin Zhan, China University of Mining and Technology, 202214@cumtb.edu.cn
Wenlong Liao, Ecole Polytechnique Federale de Lausanne, wenlong.liao@epfl.ch

Brief Description of the Session Thematic:

Electric vehicles (EVs) are not only green transportation tools but also enable bidirectional power flow through vehicle-to-grid (V2G) technology, further optimizing energy utilization efficiency. However, the integration of EVs and V2G technology has created a complex and interdependent system where energy, transportation, and market dynamics are closely intertwined. This interconnection forms a multi-dimensional network that poses both challenges and opportunities to current infrastructure, policies, and market frameworks. In order to effectively analyze and optimize these interrelated systems, researchers have been extensively exploring advanced approaches such as artificial intelligence (AI), mathematical optimization, and heuristic techniques. This special session aims to transform the way we manage and integrate energy, transportation, and market systems by providing in-depth analyses of these technologies' applications in single domains or cross-domain couplings.

Topics and Keywords:

1. Energy systems integration such as bidirectional power flow, renewable energy integration, energy storage optimization and so on
2. Transportation systems optimization such as EV charging infrastructure planning, impact of EVs on urban mobility, autonomous EVs and so on
3. Market dynamics such as V2G business models, economic impact of EV adoption, market incentives and subsidies and so on
4. Nexus of energy, transportation, and market by the EV&V2G technology