Special Issue

Modeling, Controlling and Protecting of the Vehicle-Grid System in Electrified Railways

Message from the Guest Editors

Electrified railways are an efficient, safe, environmental-friendly, and energy-saving way of transportation. In recent decades, they have gained remarkable achievements in developing both the economy and society. Nowadays, more and more electrified trains are taken into service and interacting with the traction power grid, resulting in a complex vehicle–grid system with a higher risk of instability and fault. On the one hand, the interaction between the traction power supply grid and the electrical multiple units may cause a harmonic instability problem or low-frequency oscillation, which could lead to the shutdown of the traction power in the vehicles. On the other hand, the components of the electrified railway suffer heavy loads and harsh operating environments, making them prone to failure and affecting the normal operation of the train. Consequently, ensuring a stable and reliable operation of the electrified railway is of paramount importance. This requires an accurate model, high-performance control, and reliable protection methods for every aspect of the vehicle–grid system.

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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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