

The traction substation is an essential part of the traction power supply system of the high-speed railway, and the energy consumption of traction accounts for as much as 2/3 of the ...

Traction power fluctuations have economic and environmental effects on high-speed railway system (HSRS). The combination of energy storage system (ESS) and HSRS shows a promising potential for ...

The back-to-back railway energy router (BTB-RER) has been a research hotspot in the electrified railways, in order to balance traction network interphase power, reuse braking energy, and ...

Finally, this paper discusses the current structure of new energy access to traction power supply system, and it looks forward to the feasibility of new energy access to traction power ...

In the background of energy conservation and environmental protection, the focus has shifted towards electricity consumption in urban rail systems (URS) [1, 2]. The traction power ...

The urban railway system provides convenient access to urban and suburban areas. The stations along the railway lines offer parking facilities for electric vehicles (EVs) with park-and ...

Abstract: To solve the negative sequence (NS) problem and enhance the regenerative braking energy (RBE) utilisation in an electrified railway, a novel energy storage traction power supply system ...

However, the stochastic nature of heavy-duty electric locomotives and PVs poses significant challenges to ensuring the safe and efficient operation of the railway system. Correspondingly, a real-time energy ...

Regenerative braking is one of the main reasons behind the high levels of energy efficiency achieved in railway electric traction systems. During regenerative braking, the traction ...

After that, the existing power quality problems in the electrified railway system with energy storage system and its control strategy are analyzed. Finally, some typical demonstration ...

A comprehensive study of the traction system structure of these vehicles is introduced providing an overview of all the converter architectures used, categorized based on the type of onboard energy ...

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The intelligent control system applied to improve the power quality can suppress harmonics, reduce negative-sequence currents, and improve the power factor. The paper (Nikiforov ...

Recently, some of railway operation sectors are developing the hybrid-powered railway vehicles. In this paper, the basic design concepts and the variations of hybrid traction systems are presented, as well ...

Then describes the characteristics of the form evolution of the high-speed railway traction power supply system and summarizes the existing and evolving forms of its "source-network ...

Based on their established operational maturity and performance, supercapacitors and flywheels are recommended for wayside energy storage systems. The insights from the analysis are ...



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