

TRAM RAMP ENERGY STORAGE



What are energy storage systems in tramway applications? Context and Motivation Energy storage systems in tramway applications aim to increase energy efficiency through adequate energy planning and control. Typically, storage systems for tramway installations encompass batteries and super-capacitors (SCs),,,



Why is energy storage system on trams important? The energy storage system on the trams has been convinced to meet the requirements of catenary free tram network for both at home and abroad. This technology improves the technical level of domestic tram development greatly and promotes the development of China's rail tram industry.



What is the energy storage system of catenary free trams? On the basis of the research on the energy storage system of catenary free trams, the technology of on-board energy storage, high current charging and discharging and capacity management system has been broken through. The trams with the energy storage system have been assembled and have completed the relative type tests.



How does a tramway storage bank work? The storage bank can be installed wayside or on-board. In the first case, the storage system supplies the tramway through the catenary, while in the latter it directly provides energy to the traction machinery. In both cases, the storage system is formed by SCs and batteries, as customary in tramway installations (e.g. see [20, 23]).



Can supercapacitor-based energy storage system be used on trams? To solve technical problems of the catenary free application on trams, this chapter will introduce the design scheme of supercapacitor-based energy storage system application on 100% low floor modern tram, achieving the full mesh, the high efficiency of supercapacitor power supply-charging mode, finally passed the actual loading test [8,9].

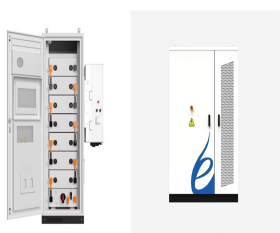
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Which storage configurations are suitable for tramway applications? In this paper, results for two typical storage configurations for tramway applications, namely wayside and on-board, have been provided. This supposes one of the most salient features of the developed methodology, which is versatile enough to be adapted to different configurations and thus comparing different constructive solutions.



On-board production of traction energy: This solution applies to conventional diesel buses and the upcoming technology of fuel cell powered trams or buses. In the case of diesel buses, the power chain normally has a mechanical ???



The characteristics of the energy storage equipment of the tram, which is the tram power supply system, will largely affect the performance of the whole vehicle. Since there is ???



and discharging strategies for the supercapacitor energy storage system in modern trams are developed. Additionally, fault diagnosis is carried out on supercapacitors during the charging ???



Abstract: In order to design a well-performing hybrid storage system for trams, optimization of energy management strategy (EMS) and sizing is crucial. This paper establishes a ???