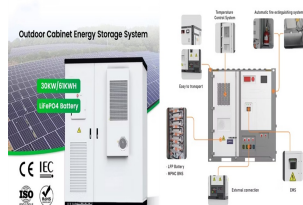
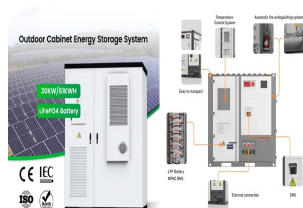


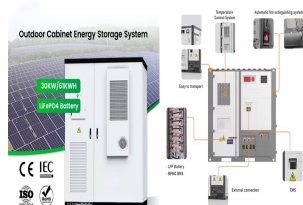
# ASHGABAT TRAM NEW ENERGY STORAGE APPLICATION



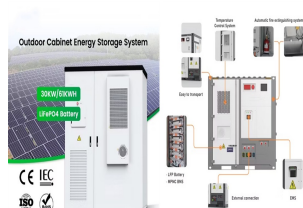
Which regenerative energy management strategy is best for a tramway? The adaptive EMS allows better harnessing of regenerative energy than the RB-EMS. In this paper an adaptive energy management strategy (EMS) based on fuzzy logic and the optimal sizing for a tramway with a hybrid energy storage system (ESS) combining batteries (BT) and supercapacitors (SC) are presented.



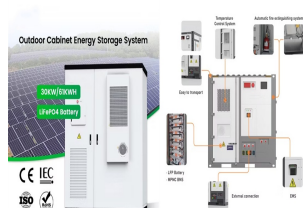
Is a hybrid ESS a good option for a tramway? An adaptive EMS (based on fuzzy logic) for a tramway with hybrid ESS is proposed. A sizing approach and optimal battery-supercapacitor combination is presented. The cost model considers initial investment and degradation by cycling of the ESS. The hybrid ESS shows a clear operating cost reduction from the SC-based ESS.



How do BT and SC sizing optimize a tramway? The sizing optimization is carried out through multi-objective genetic algorithms (GA). The multi-objective approach considers an economic model in order to evaluate the influence of the BT and SC sizing on the operating cost of the tramway in a long term view (whole lifetime of the vehicle).



Does a tramway operate in a catenary-less zone? The selected case study is the tramway of Seville, which operates in zones with and without catenary. The aim is to minimize the daily operating cost of the tramway taking into account the BT and SC degradation approach (cycling) and fulfilling the performance of the tramway in the catenary-less zone.



New energy storage tech breathing life and jobs back into Coal fired power plants are one of the biggest causes of the catastrophic climate crisis now facing our civilization and over the ???

# ASHGABAT TRAM NEW ENERGY STORAGE APPLICATION

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Small-scale Compressed Air Energy Storage (CAES) for stand ??? The video clip shows that the system, i.e. the small-scale distributed power generation using compressed air energy storage ???