

<div class="df\_qntext">How to optimize train energy-saving operation in Guangzhou Metro Line 7?

Firstly, a train energy-saving operation optimization model is established by combining energy consumption and punctuality. Then, the solution method based on the Pareto archive NSGA-II algorithm is developed. Finally, the developed optimization model is applied in Guangzhou Metro Line 7 to verify the performance.

<div class="df\_qntext">Why is energy conservation important for Metro Trains?

Quantitative analysis of the factors affecting the energy consumption of metro trains and finding out the breakthrough points of energy conservation is of great practical significance for reducing transport costs and improving energy utilization.

<div class="df\_qntext">Are metro systems sustainable?

In the realm of urban transportation, metro systems serve as crucial and sustainable means of public transit. However, their substantial energy consumption poses a challenge to the goal of sustainability. Disturbances such as delays and passenger

<div class="df\_qntext">Do on-board energy storage trains save energy?

Finally, the effects of different parameters and models of the SC are analyzed. The implementation of on-board energy storage (OBES) trains in urban rail transit is gradually increasing, leading to distinct energy-saving driving strategies compared with conventional grid-powered trains due to the unique characteristics of OBES.

<div class="df\_qntext">How to improve energy efficiency in metro systems under disturbances?

Energy efficiency in metro systems under disturbances by adjusting the dwell time and cruise speed of trains. Our experiments conducted in a simulation environment demonstrate the superiority of our method over baseline methods, achieving a traction energy co

<div class="df\_qntext">How efficient is Guangzhou Metro Line 7?

Finally, the developed optimization model is applied to Guangzhou Metro Line 7 to verify the performance. The results show that the energy consumption of the developed operation strategy is 24.4 % less than that of the minimum travel time strategy, and the total operation time meets the punctuality requirements.

To improve energy sustainability, two different kinds of energy-saving devices have been introduced extensively in metro operations. One is operated with passive control ...

With the widespread utilization of energy-saving technologies such as regenerative braking techniques, and in support of the full electrification of railway systems in a wide range of ...

China has unveiled plans to boost its energy storage sector as it strives to shore up its energy security and cope

with a surge in power demand ...

About Since the launch event of the new journal, Energy Storage and Saving (ENSS), was held on Apr. 8, 2021, for further promoting the journal development, the International Conference on Energy ...

First, GBM is used to simulate the energy prices, energy savings, energy-saving revenue allocation, etc. Then, the RSM is proposed to optimize multiple contract parameters. Finally, ...

Firstly, an energy-saving multi-objective model for multi-train operation is established, which takes the total energy consumption and train travel time of the whole metro line as the ...

Reducing traction energy consumption and increasing the utilization efficiency of regenerative braking energy are two important energy-saving approaches that are closely related to ...

This study evaluates the impact of on-board energy storage devices on train energy efficiency. Using operational data from Changsha Metro Line 5 and incorporating literature reviews and simulations, ...

As an important form of public transportation and urban underground space utilization, the metro has been promoted in more and more big cities in China. Metro is an important part of urban rail transit ...

In light of reducing train operation energy consumption while maintaining the passenger service level for creating sustainable urban rail transit systems, we address a non-parallel train timetabling problem ...

The Regenerative Braking Energy (RBE) of metro trains plays an important role in metro energy saving. If the regenerative energy can be directly absorbed by the adjacent trains, the ...

Traction: The energy-feedback system is inactive, and the energy-storage system discharges based on the SOC: if the SOC is normal, the energy-storage system discharges; if the SOC is abnormal, the ...

onstruction of the hybrid regenerative braking energy recovery system is explained. Then, based on the power demand of low-voltage load in metro stations, a dual-mode power management strategy is ...

Preliminary results confirm the feasibility of the energy saving concept indicating a significant potential for the hybrid energy storage devices and subsequent energy re-use of ...

The installation of stationary super-capacitor energy storage system (ESS) in metro systems can recycle the vehicle braking energy and ...

Jingxue Energy-saving is a leading provider of overall solutions for cold storage and energy-saving plant enclosures in China, as well as a leading manufacturer of energy-saving thermal insulation panels in ...

With the "carbon peaking and carbon neutrality" target direction, China's high-speed railway is developing steadily towards the trend of energy saving...

With the accelerated urbanization in China, passenger demand has dramatically increased in large cities, and traffic congestion has become ...

Energy Storage and Saving(ENSS) is an international, interdisciplinary, open access journal that disseminates original research articles in the field of energy storage and energy saving. The aim of ...

In light of reducing train operation energy consumption while maintaining the passenger service level for creating sustainable urban rail transit ...

renewable-energy-based powersystemto support the integration ofdemand- and supply-side management[ 2 ]. An increasedfocus on energy storage develop-ment will significantly reduce the ...

Abstract: The installation of stationary super-capacitor energy storage system (ESS) in metro systems can recycle the vehicle braking energy and improve the pantograph voltage profile.

Train operation curve optimization is one of the main methods to reduce the energy consumption of train operation. This paper introduces the metro train energy-saving operation ...

The comprehensive exploration of energy improvements in lighting system energy is necessary. To evaluate the energy-saving potential and identify the efficiency improvement ...

To evaluate the benefit from regenerative energy storage, the authors formulate an improved integrated scheduling and speed control model to calculate the net energy consumption ...

In metro systems, reducing traction energy consumption and increasing the use of regenerative braking energy (RBE) are two important methods of energy-saving optimization, which ...

Ultimately, onboard storage systems are compared with other solutions for energy-saving and catenary-free operation, with particular focus on ...

Abstract: The implementation of on-board energy storage (OBES) trains in urban rail transit is gradually increasing, leading to distinct energy-saving driving strategies compared with ...

Firstly, an energy-saving multi-objective model for multi-train operation is established, which takes the total energy consumption and travel time as the objective functions and the dwell ...



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