Secondly, the improved brute-force search is developed to solve train operation energy-saving multi-objective problems. The running time, speed, distance, power, and energy ...

Third, an intelligent model is proposed for the lighting system based on the energy-saving scheme and solution using BECH energy analysis software combined with DIALux software. A ...

Abstract This paper investigates the real-time optimal train regulation design for metro lines with energy-saving based on a model predictive control method. A traffic model is proposed for ...

Focusing on the energy-conservation train operation issues, this paper proposes an effective real-time train regulation scheme for metro systems with energy storage devices.

The method demonstrated here to quantify opportunities for metro train energy conservation and emissions mitigation is broadly applicable to electric metro and commuter trains ...

Our energy-efficient train regulation strategies can improve train departure punctuality, headway regularity, reduce passenger waiting times, and achieve energy savings. Furthermore, the ...

Its aim is to further increase the energy efficiency of trains in metro, tramway, and suburban DC rail operations through the clever use of ...

Steiner, Klohr, and Pagiela (2007) proposed a reliable technical solution with an enormous energy saving potential (i.e., the on board energy storage system with Ultracaps for railway ...

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

Semantic Scholar extracted view of "Control of metro-trains equipped with onboard supercapacitors for energy saving and reduction of power peak demand" by F. Ciccarelli et al.

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 ...

The transformation of railway infrastructure and traction equipment is an ideal way to realize energy savings of urban rail transit trains. ...

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 ...

The energy consumption of urban rail transit plays a significant role in the operating costs of trains. It is particularly crucial to decrease the ene...

Among several energy saving methods, this paper focuses on the simultaneous application of speed profile optimization and energy storage systems, to efficiently utilize regenerative ...

Optimized energy demand management led to a reduction in wasted energy during metro operations, particularly through the utilization of regenerative braking systems.

The paper describes real data obtained through on-site and train on-board measurement schemes and a methodology to achieve metro system energy savings redirecting ...

High electric energy consumption is one of the main challenges of metro systems, which the operators deal with. Among several energy saving methods, this paper focuses on the simulta-neous ...

Preliminary results confirm the feasibility of the energy saving concept indicating a large potential for the MetroHESS reuse of 5000-6000 kWh/day per rectifier substation of otherwise ...

The annual passenger volume has reached 29.46 billion. Under the same transportation capacity, the per capita energy consumption per kilometer of metro is approximately ...

Are metro systems energy-saving? Against the background of energy saving and emission reduction,energy-saving technologies of metro systems have been applied to metro design,and ...

An effective response to transport authorities" needs for enhanced energy efficiency, Hesop(TM) optimises the energy usage in metro, tramway and suburban ...

The optimality is discussed for the proposed two-stage optimization processes. Numerical experiments are conducted based on train and infrastructure data of the Beijing Yizhuang ...

Regenerative braking energy (RBE) utilization plays a vital role in improving the energy efficiency of electrified railways. ... "Optimal control of reversible substations and wayside storage devices for ...

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

Real-time train regulation in the metro system with energy storage devices: An efficient decomposition algorithm with bound contraction Focusing on the energy-conservation train operation issues, this ...

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

The imperative for moving towards a more sustainable world and against climate change and the immense potential for energy savings in electrified railway systems are well-established. ...

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 demonstrates that solar power integration in metro rail systems is feasible to enhance urban sustainability. Solar-powered metro rail ...

As a major use of electricity, the energy efficiency of urban railways is of great concern. To reduce the operational energy consumption of a metro line, this paper proposes a two-stage optimization model ...

The energy KPI was also employed to quan-tify the relative savings of the technology demonstrator and summarise the overall savings per system platform demonstrator.

Firstly, taking the energy consumption index and punctuality index as the objectives, a train energy-saving operation optimization model is established. Then, the solution method based on ...

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