Metro energy saving and storage

Within the transition process of urban rail transit systems, the challenges of high energy consumption, increasing carbon emissions, limited economic viability, and intricate risks emerge as ...

This paper aims to fill the gap present in the technical literature and deals with a control strategy of SCs onboard of metro trains oriented to the optimization of the energy saving and the ...

Estimated energy consumption for each trajectory includes auxiliary loads and tractive effort to overcome resistive forces. Inter-run variability in estimated energy consumption implies ...

Abstract 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 simultaneous ...

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

Storage technologies devices, which may be on board or located in both the substations or along the track, are very interesting means for enhancing energy saving, energy efficiency, ...

For metro systems with wayside ESDs, Liu et al. (2018) described the instant utilization, storage, and release of regenerative energy, and generated energy-efficient train timetables by ...

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

For metro systems with wayside ESDs, Liu et al. (2018)described the instant utilization, storage, and release of regenerative energy, and generated energy-efficient train timetables by ...

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 turn the stored energy could power upon demand selected stationary electrical loads in Metro stations of a non-safety critical character (such as lighting, ventilation, pumps, etc.) leading ...

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 ...

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 a metro ...

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 ...

In recent years, with a remarkable increase in urban rail transit operations, the issue of energy efficiency in train operations has attained increasing attention. In this study, a two-stage ...

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 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 ...

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 ...

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 ...

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.

With the running and dwell levels considered, we investigate the integrated energy-efficient train timetabling and rolling stock circulation planning problem for a metro line, where the ...

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 ...

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 ...

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. ...