The prospect of energy storage for Kampala tram

How much energy does a tram use?
The greater the distance between stations, the greater the demand energy. The first interval has the largest distance and maximum energy consumption. If the recovered braking energy is not included, the energy consumption is 7.012 kwh. Fig. 3. DC bus demand energy curve. The tram adopts the power supply mode of catenary free and on-board SESS.

Why does Kampala need an electrified Metro?
The metropolitan depends on imported refined petroleum through Mombasa,Kenya. Petroleum demand reduces by 45.21%when 90% of road passengers switch to the passenger railway category. Therefore,the construction of an electrified Kampala metro becomes the central focus for policy changes over the planning period. Figure 7.

How are transportation systems interlinked in Kampala?
These transportation systems are interlinked using high-speed computersclocking a benchmark score above 200 PFLOPS. The computers coordinate the Kampala metro,sedans,commuter buses,Boda-bodas,electric commuter buses,and pedestrian walkways as the city's inhabitants go about their daily business.

What is gkma doing in Kampala?
GKMA invested heavily in a Kampala metro system,fly-overs,intelligent interchange junctions,and underpasses linking the populated areas of the metropolitan as a mitigation for traffic jams and congestion. The Clock-tower,the Yard,and Wandegeya junctions are a wonder to commuters of the year 2022.

Should Kampala be electrified?
To control its consumption,the establishment of an electrified Kampala metro becomes the central focus for policy changes if the metropolitan is to achieve sustainability. The demand for fossil fuels is expected to rise by 25.36% over the planning horizon.

How sustainable is the Kampala Metro?
The analysis shows that sustainability is plausible by optimizing the total primary energy supply, electrical power production from PV-solar & hydropower technologies, and switching 90% of passengers of the road category to the Kampala metro. 1. Introduction

With steadfast economic development, the Greater Kampala Metropolitan Area (GKMA) faces increasing pressures to raise low-carbon electricity in the energy consumption by fuel type, abate CO2...

A hybrid energy storage system (HESS) of tram composed of different energy storage elements (ESEs) is gradually being adopted, leveraging the advantages of each ESE. The optimal sizing of HESS with a

reasonable combination of different ESEs has become an important issue in improving energy management efficiency. Therefore, the optimal sizing ...

This article focuses on the optimization of energy management strategy (EMS) for the tram equipped with on-board battery-supercapacitor hybrid energy storage system. The purposes of the optimization are to prolong the battery life, improve the system efficiency, and realize real-time control. Therefore, based on the analysis of a large number of historical operation data, this ...

The study considers profoundly the advancement of SDG7 (Affordable & Clean Energy), SDG11 (Sustainable Cities & Communities), SDG13 (Climate Action), and the Paris Low-carbon Roadmap. The novelty of this study is the development and initial use of the Kampala reference energy system (RES) of the GKMA-TIMES model.

With a vibrant economic development, Greater Kampala Metropolitan Area (GKMA) would need to boast low-carbon electricity generation, reduce carbon emissions, and re-structure transportation,...

An intense exploration of renewables, alternative energy storage, and conversion technologies are driven by the growing need for energy conversion and storage, coupled with environmental concerns about global warming and fossil fuel depletion [1], [2], [3].The conventional energy conversion and storage systems are based on supercapacitors, ...

The poster covers the development of a low-carbon footprint for the greater Kampala metropolitan area using a TIMES/CGE hybrid framework. The study recommends a significant injection of...

Scenarios that limit global warming to 1.5 °C describe major transformations in energy supply and ever-rising energy demand. Here, we provide a contrasting perspective by ...

Kampala s need for energy storage in 2023. Hence, researchers introduced energy storage systems which operate during the peak energy harvesting time and deliver the stored energy ...

Lin Haixue General Situation and Prospect of Modern Energy Storage Technology. Jan 2015; 34-47; Lin Haixue General Situation and Prospect of Modern Energy Storage Technology [J]. Journal of Power ...

This energy storage technology, characterized by its ability to store flowing electric current and generate a magnetic field for energy storage, represents a cutting-edge solution in the field of energy storage. The technology boasts several advantages, including high efficiency, fast response time, scalability, and environmental benignity. However, the use of ...

Kampala s need for energy storage in 2023. Hence, researchers introduced energy storage systems which operate during the peak energy harvesting time and deliver the stored energy during the high-demand hours.

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Large-scale applications such as power plants, geothermal energy units, nuclear plants, smart textiles, buildings, the food industry, and ...

Underground Thermal Energy Storage (UTES) store unstable and non-continuous energy underground, releasing stable heat energy on demand. This effectively improve energy utilization and optimize energy allocation. As UTES technology advances, accommodating greater depth, higher temperature and multi-energy complementarity, new research challenges emerge.

A sustainable energy portfolio for Greater Kampala Metropolitan Area is a low-carbon scenario endowed with CO 2 abatement strategies that guarantee a carbon footprint ...

Scenarios that limit global warming to 1.5 °C describe major transformations in energy supply and ever-rising energy demand. Here, we provide a contrasting perspective by developing a narrative of...

Waste-to-energy nexus: A sustainable development. Background Green economic development refers to reducing pollution emissions and increasing production ...

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