Tram Italy Energy Storage System

What is a sustainable tram & how does it work?
With the new tram up and running, sustainable battery technology permits zero emission travel around the busy and condensed city of Florence. Noise reduction technology is used onboard to lessen the tram's impact in the city, with noise-levels kept to a minimum.

Why is the tram system catenary-free?
Battery installationhas given the tram system catenary-free status,as the trams can run without overhead lines. As a result,the tramway is less invasive within the city's historic architecture and the technology has also saved millions of euros on installing wiring.

What is a battery powered tram?
The new technology is based on an onboard energy storage system(OBESS),with scalable battery capacity. It can be installed directly on the roof of existing trams - saving on costs,and visual impact - all while ensuring better environmental performance for a more sustainable society. In Florence,battery powered trams have been tested since 2021.

Are there battery powered trams in Florence?
In Florence,battery powered trams have been tested since 2021. Fitted to trams on the existing Sirio fleet,the battery technology enables the trams to operate on a section of the line entirely under battery power,without the use of overhead infrastructure.

How does a tram work?
The tram is running forward and backward on the rail line in the testing periods. Operation Mode Switching (OPMS) method. The tram is mainly manually operated based on a control screen, shown in Fig.5 (b). For safety in the test period, the LB and UC are only working in discharging mode when the tram is running.

Why should you choose a new tramway in Florence?
As a result, the tramway is less invasive within the city's historic architecture and the technology has also saved millions of euros on installing wiring. With the new tram up and running, sustainable battery technology permits zero emission travel around the busy and condensed city of Florence.

This paper describes a hybrid tram powered by a Proton Exchange Membrane (PEM) fuel cell (FC) stack supported by an energy storage system (ESS) composed of a Li-ion battery (LB) pack and an ultra-capacitor (UC) pack. This configuration allows the tram to operate without grid connection.

CAF"s Urbos tramway platform will be utilised for the Bologna network, featuring vehicles with a capacity for over 200 passengers and a length of 35 metres. These trams will be equipped with CAF"s OESS system, ...

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This paper investigates the benefits of using the on-board energy storage devices (OESD) and wayside energy storage devices (WESD) in light rail transportation (metro and tram) systems. The analysed benefits are the use of OESD and WESD as a source of supply in an emergency metro scenario to safely evacuate the passengers blocked in a metro ...

Spanish renewable energy specialist Ingenium Group and compatriot Endurance Motive, which makes batteries for stationary and e-mobility applications, have formed an alliance aimed at promoting battery energy storage systems (BESS) in Italy.

Energy storage systems (ESSs) play a significant role in performance improvement of future electric traction systems. This paper investigates an ESS based on supercapacitors for trams as a ...

The key idea of a hybrid energy-storage system (HESS) ... respectively. Based on the case study of a real 3 kV railway system in Italy, the simulation results showed that the Li-ion battery-based stationary ESS was able to reduce the peak current, voltage drop and losses by 43.2%, 5.26% and 22.4%, respectively. Moreover, for the application of an Ni-MH battery ...

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ITALY: Hitachi Rail has been awarded a contract to supply 46 trams equipped with batteries to avoid the need for overhead wires in the historic city of Firenze. The order announced on July 30 includes the supply of digital ...

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The tram will consist of 5 modules with one key feature being the readiness for the upgrade with the OESS (On Board Energy Storage Systems) system, which allows the unit to operate on catenary-free sections, thereby reducing the visual impact on the historic Italian city whilst improving energy efficiency.

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Italy preps energy storage auctions. The appropriate minister has signed into law a decree which will allow electricity transmission system operator (TSO) Terna to stage procurement exercises ...

All studies which deal with the topic of storage systems consider Italy to be one of the most attractive locations for the sale and marketing of storage systems and the related innovative electricity supply models. In its last year"s report entitled ...

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