

For the intermittence and instability of solar energy, energy storage can be a good solution in many civil and industrial thermal scenarios. With the advantages of low cost, simple structure, and high efficiency, a single-tank thermal energy storage system is a competitive way of thermal energy storage (TES). In this study, a two-dimensional flow and heat transfer ...

Many researchers have presented their studies regarding thermal stratification in water storage tanks. Rodrigues et al. [7] had carried out a non-dimensional analysis to represent the transient natural convection model for domestic storage tank. They identified that heat losses through the walls are controlled by Rayleigh number, overall heat loss coefficient, and aspect ...

This study focusses on the energy efficiency of compressed air storage tanks (CASTs), which are used as small-scale compressed air energy storage (CAES) and renewable energy sources (RES). The objectives of this ...

The U.S. Energy Information reports the growth of new "fuel economy vehicle" production [1], [2]. The enactment has been established to control vehicle specification, and smoke released that can cause pollution [3]. The policy of Energy Efficient Vehicle (EEV) has likewise been produced to satisfy a set of specification requests regarding carbon emission levels and ...

The urgent need for sustainable energy solutions in light of escalating global energy demands and environmental concerns has brought hydrogen to the forefront as a promising renewable resource. This study provides a comprehensive analysis of the technologies essential for the production and operation of hydrogen fuel cell vehicles, which are emerging ...

This study focusses on the energy efficiency of compressed air storage tanks (CASTs), which are used as small-scale compressed air energy storage (CAES) and renewable energy sources (RES). The objectives of this study are to develop a mathematical model of the CAST system and its original numerical solutions using experimental parameters that consider ...

The goal is to provide adequate hydrogen storage to meet the U.S. Department of Energy (DOE) hydrogen storage targets for onboard light-duty vehicle, material-handling equipment, and portable power applications. By 2020, HFTO aims to ...

Energy storage systems play a crucial role in the overall performance of hybrid electric vehicles. Therefore, the state of the art in energy storage systems for hybrid electric vehicles is discussed in this paper along with appropriate background information for facilitating future research in this domain. Specifically, we compare

key parameters such as cost, power ...

Climate change and energy crisis are two major problems facing humanity. Unfortunately, non-renewable fossil fuels remain the world's largest energy provider and contribute to climate change and environmental pollution [1]. One of the major products that use fossil fuel are automobiles and therefore, the transportation industry in many countries are ...

The hazardous effects of pollutants from conventional fuel vehicles have caused the scientific world to move towards environmentally friendly energy sources. Though we have various renewable energy sources, the perfect one to use as an energy source for vehicles is hydrogen. Like electricity, hydrogen is an energy carrier that has the ability to deliver incredible amounts ...

Hydrogen is one of the most promising energy vectors to assist the low-carbon energy transition of multiple hard-to-decarbonize sectors [1, 2]. More specifically, the current paradigm of predominantly fossil-derived energy used in industrial processes must gradually be changed to a paradigm in which multiple renewable and low-carbon energy sources are ...

Electric vehicles (EVs) are becoming popular and are gaining more focus and awareness due to several factors, namely the decreasing prices and higher environmental awareness. EVs are classified into several categories in terms of energy production and storage. The standard EV technologies that have been developed and tested and are commercially ...

Buildings consume approximately 190% of the total electricity generated in the United States, contributing significantly to fossil fuel emissions. Sustainable and renewable energy production can reduce fossil fuel use, but necessitates storage for energy reliability in order to compensate for the intermittency of renewable energy generation. Energy storage is critical for success in ...

During the discharging mode, the solid ice build is melted using warm HTM (glycol solution) returning from the building side and that is flowing through the embedded coil elements of the storage tank. The stored cool thermal energy is thus captured by the warm HTM, and the temperature of which in due course of time is reduced to the desired ...

In the simplest form, energy storage allows the postponement of energy and electricity consumption. The most common form of energy storage are the stars, one of which is the Sun. However, when we think about energy storage, most of us are inclined to imagine batteries used in our everyday electronic appliances such as mobile phones or tablets.

The ICE and fuel tank typically integrate with the driving motor; also, the battery pack gives the reserve power for driving. ... The battery-supercapacitor hybrid energy storage system in electric vehicle applications: a case study. *Energy*, 154 (2018), pp. 433-441. [View PDF](#) [View article](#) [View in Scopus](#) [Google Scholar](#) [89]

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