

# Energy storage vehicle patent

Which patent families are based on VTO-funded advanced batteries Research?

Many of the patent families in Table 6 are relatively new, and are examples of how VTO-funded advanced batteries research has helped form part of the foundation for recent advances made by leading companies. Samsung SDI has the two patent families at the head of this table (representative patents US #9,979,019 and US #9,368,791).

What is the influence of VTO-funded and other DOE-funded advanced batteries patents?

The influence of VTO-funded and Other DOE-funded advanced batteries patents can be seen primarily within advanced batteries technology, although the influence also extends to related technologies such as ultracapacitors, nanocomposites and electric vehicles.

How fast does patenting a battery grow?

Between 2005 and 2018, patenting activity in batteries and other electricity storage technologies grew at an average annual rate of 14% worldwide, four times faster than the average of all technology fields, according to a joint study published today by the European Patent Office (EPO) and the International Energy Agency (IEA).

How many advanced batteries patents are granted by Doe?

Following this review, and based on feedback from VTO, the initial list of advanced batteries patents funded by DOE contained a total of 723 granted U.S. patents. Defining VTO-funded vs. Other DOE-funded Advanced Batteries Patents As noted above, linking DOE-funded patents to individual offices is often a difficult task.

What are VTO-funded advanced batteries patents?

VTO-funded advanced batteries patents have a particular focus on different electrode materials, notably manganese, titanium and nickel/cobalt/iron, plus the use of lithium-ion batteries in transport applications. Recent years have also seen an increase in VTO-funded patenting related to silicon-based and metal/alloy electrodes.

How many advanced batteries patents are associated with VTO funding?

515 advanced batteries patents are confirmed to be associated with VTO funding (330 U.S. patents, 62 EPO patents, and 123 WIPO patents). We grouped these VTO-funded advanced batteries patents into 256 patent families.

For example, Sunamp Ltd applied for a patent of an automotive thermal battery energy storage which can be used for EV cabin heating and dehumidification [77]. ... Integration and validation of a thermal energy storage system for electric vehicle cabin heating. SAE Tech Pap, 2017-March (2017), 10.4271/2017-01-0183. Google Scholar

Turbo Energy's Energy Storage Solution. Valencia, Spain, Oct. 18, 2023 (GLOBE NEWSWIRE) -- Turbo

Energy, S.A. (Nasdaq: TURB), a Spain-based company specializing in photovoltaic solar energy ...

Among the top 5 patents, 3 patents are related to the vehicle with an international patent classification (IPC) code of "B60" which denotes the "performing operations transporting vehicles in general". ... and overcharging. In Table 9, a summary of patent documents related to Energy storage EMS and control strategy is provided. Table 9 ...

All publications, patents, and patent applications cited herein are incorporated by reference in their entirety for all purposes to the same extent as if each individual publication, patent, or patent application were specifically and individually indicated to be so incorporated by reference. ... Electric vehicle powered by capacitive energy ...

advanced batteries patents into 256 patent families. o In addition, we identified a further 603 advanced batteries patents (434 U.S. patents, 56 EPO patents and 113 WIPO patents) that ...

The EV maker's recent patent for an Energy Storage Device hints one could be coming. ... The device contains a battery pack that can send, receive, and store energy from the grid or vehicle. It ...

2020-11-20 Priority to US17/100,700 priority Critical patent/US11962030B2/en ... The battery pack may represent one of the most expensive and massive assemblies in the context of most electric vehicle transportation and grid storage applications. ... The energy storage system 100 illustrates a sealed container including various components and ...

An energy storage system comprising at least one energy storage module adapted to supply electrical energy to a hybrid vehicle. The energy storage module comprises an enclosure, at least one battery array located within the enclosure, and an energy storage controller module located within the enclosure and electrically connected to the battery array.

Battery-Supercapacitor Hybrid Energy Storage Systems in Electric Vehicles. Electrification is an important means of decreasing greenhouse gas emissions in the transportation sector. The global electric car fleet has now exceeded 5 million and will continue to increase in future. The energy storage system is a critical part of the electric vehicle.

U.S. Patent Application 20210159567 ... U.S. patent application number 17/100700 was filed with the patent office on 2021-05-27 for integrated energy storage system. The applicant listed for this patent is TESLA, INC.. ... The battery pack may represent one of the most expensive and massive assemblies in the context of most electric vehicle ...

A kinetic energy storage system utilizes a flywheel with a motor generator to store energy. A flywheel rotor is located in an elongate housing which forms at least part of a rigid framework. In use on a vehicle, the framework provides a chassis for the vehicle and the vehicle may be powered from the flywheel. The flywheel

rotates at high speed in a vacuum and the motor ...

The hybrid vehicle that existing market is popular, and the automobile kinetic energy recovery system of hot research, be mainly divided into and rely on chemical devices and flywheel gear energy storage to realize paratively speaking, with chemical devices be the hybrid vehicle of energy-storage units and kinetic energy recovery system application comparatively early, ...

A human energy harvesting and storage system that captures energy from various human activities and stores that energy on a vehicle to be used for various vehicle applications. In one embodiment, piezoelectric devices, or other types of energy generating devices, are provided in the seat of the vehicle that generate electricity from the weight and movement of a person ...

Patent Application No: 201741010719. Invention Title: A vehicle with housing for removably retaining at least a portable energy storage device. Description: The invention is a novel vehicle that consists of a housing assembly to retain one or more portable energy storage devices. The housing assembly comprises a housing frame, a receptacle, and ...

A compact energy storage system includes a high speed rotating flywheel and an integral motor/generator unit. The rotating components are contained within a vacuum enclosure to minimize windage losses. ... 1995-02-06 Priority to US08/384,573 priority Critical patent/US5614777A/en ... Solar powered wing vehicle using flywheels for energy storage ...

The energy-storage assembly is configured to store the wave energy harvested by the hydrofoil assembly. When the hydrofoil assembly and the yaw assembly unfold, the hydrofoil assembly increases the efficient area for wave-energy harvesting. ... Justia Patents With Disparate Vehicle Feature US Patent for Folding wave-energy-harvesting mechanism ...

A flywheel energy storage system for a vehicle, comprising a first shaft, a second shaft operatively coupled to the first shaft and to the vehicle's drivetrain, a flywheel operatively coupled to the first shaft, and a motor operatively coupled to the first shaft and electrically coupled to a power source, the motor being adapted to receive energy from the vehicle's electrical system and the ...

Provided are systems for vehicle energy storage having parallel cooling comprising a plurality of modules. Each module may comprise two half modules coupled together. Each half module can include a plurality of battery cells. A current carrier of each half module may be electrically coupled to the cells. The cells may be disposed between the current carrier and a plate.

It was seen that patent filings in gravity based energy storage systems has been, on average, increasing year-on-year. 2023 was also full of commercial developments and brought news that Gravitricity and Energy Vault are moving forward with commercialising gravity energy storage systems around the world; Gravitricity are partnering with ABB and ...

Toyota, an Industrial Property (IP) leader in fuel cells, including fuel cell vehicles. Indeed, for 20 years, Toyota Group has built up a significant fuel cell-related patent portfolio with 12,000+ patented inventions - currently the largest worldwide. As the chemical energy storage sector boomed in the mid-2000s, matching its peak inventive activity in the domain, the Group ...

A battery pack, a vehicle, and an energy storage device. The battery pack includes a housing with a first direction and a second direction perpendicular to the first direction. The battery pack housing includes at least one rectangular cell accommodating unit is formed therein. The battery pack also includes a plurality of rectangular cells, and has a dimension greater than or equal to ...

An energy generating and storage system used with an electric vehicle, having batteries, and at least one accumulator charging means connected to the batteries. The accumulator charger includes at least one alternator or generator and air induction turbines. Each air induction turbine includes a free-wheeling member in induction communication with the alternator or generator.

A cooperative energy management in a virtual energy hub of an electric transportation system powered by PV generation and energy storage. IEEE Trans. Transp. Electrification. 7, 1123-1133. [https://doi ...](https://doi.org/10.1109/TPES.2018.2842101)

2020-12-28 Priority to CN202011578571.5A priority Critical patent/CN112687916B/en 2021-04-20 Publication of CN112687916A publication Critical patent/CN112687916A/en ... The hybrid energy storage system for a fuel cell vehicle according to claim 5, characterized in that: the fuel cell system also comprises a pressure relief tank (20), wherein ...

the storage battery preferably further includes a plurality of battery cell groups, with each group extending axially in a direction parallel to the generally cylindrical outer wall of the gas storage tank. In this manner, the storage battery and the gas storage tank may be tucked into close proximity of the rear seatback of the vehicle, so as to minimum the space occupied by the ...

Tesla also sells electric vehicle powertrain components to other vehicle manufacturers, as well as battery systems for homes, commercial sites and utilities. Tesla Motors Patents by Type. Tesla Motors Patents Granted: Tesla Motors patents that have been granted by the United States Patent and Trademark Office (USPTO).

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