Energy storage electric vehicle patent

How EV technology is affecting energy storage systems?
The electric vehicle (EV) technology addresses the issue of the reduction of carbon and greenhouse gas emissions. The concept of EVs focuses on the utilization of alternative energy resources. However,EV systems currently face challenges in energy storage systems (ESSs) with regard to their safety,size,cost,and overall management issues.

How are energy storage systems evaluated for EV applications?
Evaluation of energy storage systems for EV applications ESSs are evaluated for EV applications on the basis of specific characteristicsmentioned in 4 Details on energy storage systems,5 Characteristics of energy storage systems,and the required demand for EV powering.

What challenges do EV systems face in energy storage systems?
However,EV systems currently face challenges in energy storage systems (ESSs) with regard to their safety,size,cost,and overall management issues. In addition,hybridization of ESSs with advanced power electronic technologies has a significant influence on optimal power utilization to lead advanced EV technologies.

What is a sustainable electric vehicle?
Factors, challenges and problems are highlighted for sustainable electric vehicle. The electric vehicle (EV) technology addresses the issue of the reduction of carbon and greenhouse gas emissions. The concept of EVs focuses on the utilization of alternative energy resources.

How many electricity storage patents are there?
Between 2000 and 2018, inventions in batteries accounted for nine out of ten electricity storage patents, far outweighing electrical (9%), thermal (5%) and mechanical (3%) electricity storage solutions.

What types of energy storage systems are used in EV powering applications?
Flywheel, secondary electrochemical batteries, FCs, UCs, superconducting magnetic coils, and hybrid ESSs are commonly used in EV powering applications , , , , , , , , , . Fig. 3. Classification of energy storage systems (ESS) according to their energy formations and composition materials. 4.

2011-08-12 Priority to US13/209,348 priority Critical patent/US8517132B2/en 2011-12-08 Publication of US20110297470A1 publication Critical patent/US20110297470A1/en ... Exchange of energy storage elements in electric vehicles characterised by the energy transfer between the charging station and the vehicle.

It is based on electric power, so the main components of electric vehicle are motors, power electronic driver, energy storage system, charging system, and DC-DC converter. Fig. 1 shows the critical configuration of an electric vehicle (Diamond, 2009).

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A hybrid electric vehicle (HEV) is a relatively practical technology that has emerged as electric vehicle technology has gradually matured. The analysis of the HEV patent lifecycle is crucial for understanding its impact on the development of this technology. This lifecycle tracks the progress of HEV technologies from their inception and patenting, through ...

In transportation, electric vehicles are gaining significant market share, and drones and other electric aircraft will transform shipping, mobility, and other industries. ... The foundational intellectual property has been examined by the USPTO and is allowed for issuance of a patent. Team Overview. ... Energy storage; electric transportation ...

The energy storage system (ESS) of an electric vehicle determines the electric vehicle"s power, range, and efficiency. The electric vehicles that are available in the market currently use battery-based ESS. ESS of electric vehicles experiences a high number of charge and discharge currents which degrade the battery life span. The introduction of supercapacitors has led to the ...

This application discloses a kind of battery packs, vehicle and energy storage device, the battery pack includes cell array and supporting element, the cell array includes several single batteries, the single battery has first size, the first size is the maximum value for virtually clamping two plane-parallel spacing of the single battery, at least one single battery meets: 600mm<=first size ...

To ensure grid reliability, energy storage system (ESS) integration with the grid is essential. Due to continuous variations in electricity consumption, a peak-to-valley fluctuation between day and night, frequency and voltage regulations, variation in demand and supply and high PV penetration may cause grid instability [2] cause of that, peak shaving and load ...

In the context of global CO 2 mitigation, electric vehicles (EV) have been developing rapidly in recent years. Global EV sales have grown from 0.7 million in 2015 to 3.2 million in 2020, with market penetration rate increasing from 0.8% to 4% [1].As the world"s largest EV market, China"s EV sales have grown from 0.3 million in 2015 to 1.4 million in 2020, ...

4 ENERGY STORAGE DEVICES. The onboard energy storage system (ESS) is highly subject to the fuel economy and all-electric range (AER) of EVs. The energy storage devices are continuously charging and discharging based on the power demands of a vehicle and also act as catalysts to provide an energy boost. 44. Classification of ESS:

Research by Mathys & Squire finds that 14,000 global patents for electric vehicle technology were filed with the World Intellectual Property Organisation (WIPO) in the last year, an increase of 59 percent on the 8,794 filed five years earlier.

The increase of vehicles on roads has caused two major problems, namely, traffic jams and carbon dioxide

(CO 2) emissions.Generally, a conventional vehicle dissipates heat during consumption of approximately 85% of total fuel energy [2], [3] in terms of CO 2, carbon monoxide, nitrogen oxide, hydrocarbon, water, and other greenhouse gases (GHGs); 83.7% of ...

The development of electric vehicles (EVs) has been expanding rapidly in recent years to meet the demand of energy conservation and environmental protection. However, despite the promotion of EV, consumers are reluctant to buy EV because of issues such as charging anxiety and charging safety. For companies to break into the fierce competitiveness ...

Batteries and Energy Storage: ... Paving the road to electric vehicles - a patent analysis of the automotive supply industry. Journal of Cleaner Production, 167 (2017), ... Measuring China"s new energy vehicle patents: a social network analysis approach. Energy, 153 (2018), pp. 685-693.

With regard to the development of the electric vehicle industry, several studies focused on patents and technological innovation for NEVs. For instance, taking Japan as an example, Ahman discussed the relationship of government policy and the development path of electric vehicles [14] own et al. studied the role and importance of standards in an emerging ...

Nucurrent and Solarlytics - combined 115 patents in energy storage. "These companies certainly aren"t household names, but their patent applications are likely to attract attention from much larger investors," Baycroft says. The ...

Excel file >8,980 patents; IP trends, including time evolution of published patents and countries of patent filings. ... Since their development in the early 1990"s, lithium-ion batteries have become an essential energy storage device for a wide range of applications, including electronic devices, stationary storage and electric vehicles ...

The invention includes a Microprocessor Control Center for controlling an Electric Vehicle Charging Station, and methods thereof, which include a load center for aggregating a charging load from a renewable energy source, an electrical energy source, and electricity taken directly from the transmission grid when the storage depleted. The objective of ...

1977-05-05 Priority to US05/793,883 priority Critical patent/US4095665A/en ... Energy generating and storage system for electric vehicle or the like FR2548289A1 (en) * 1983-06-28: 1985-01-04: ... System for saving and utilising energy for vehicles with electric and/or mixed engine traction US20030122512A1 (en) * 2001-11-26:

Amount of batteries and other energy storage needs to grow fiftyfold by 2040 to put world on track for climate and sustainable energy goals; Electric vehicles now main drivers of battery innovation ; Advances in rechargeable lithium-ion batteries focus of most new inventions ; Asian countries have strong lead in global battery technology race

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We designed and demonstrated a patent-pending, non-destructive battery fire prevention system suitable for use in both energy storage systems and electric vehicles. Certification in Process With support from CalSEED, we are engaging with a nationally recognized testing laboratory to gain groundbreaking certifications for our repurposing process ...

The manual incorporates improvements and refinements to test descriptions presented in the Society of Automotive Engineers Recommended Practice SAE J2464 ""Electric Vehicle Battery Abuse Testing"" including adaptations to abuse tests to address hybrid electric vehicle applications and other energy storage technologies (i.e., capacitors).

Abstract: A service vehicle can have a service vehicle battery that can provide energy to, and/or receive energy from, a separate machine that is normally configured to operate based on energy provided by a battery of the machine. If a machine becomes unable to operate using the battery of the machine, the service vehicle can travel to the machine and use an ...

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