Bmw suspension vibration energy storage technology

Could BMW's new EV suspension system boost EV range?
According to CarBuzz, a new patent filed with the German patent office shows BMW is designing a new suspension system capable of harvesting energy from an EVs wheel movement as it absorbs the shock from a bump. With the auto industry quickly transitioning to fully electric vehicles, automakers are racing to develop ways to boost EV range.

How does BMW's new suspension work?
However,BMW plans to take it a step further. BMW is redesigning the suspension,which traditionally wastes energy to support wheel movement as a way to generate usable energy. The filing shows an innovative design that captures energy generated while the wheel moves in reaction to driving over a bump.

Is energy harvesting from vehicle suspension systems a good idea?
Energy harvesting from vehicle suspension systems has been studied by some researchers , . These studies are often based on the passive regenerative suspension system which is not suitable for maintaining ride comfort as the main purpose of the vehicle active suspension system (ASS).

Could a new EV suspension system harvest energy from a bump?
BMWis building a new suspension system designed to do just that. According to CarBuzz,a new patent filed with the German patent office shows BMW is designing a new suspension system capable of harvesting energy from an EVs wheel movement as it absorbs the shock from a bump.

Can a hybrid electromagnetic active suspension system improve vehicle dynamic performance?
To improve vehicle dynamic performancewhile reducing the energy consumption of active suspension systems,this paper proposes a novel hybrid electromagnetic active suspension system (HEAS) integrating a hydraulic-electromagnetic energy-regenerative module (HERM) and a linear motor (LM).

Can vibrational energy be recovered in suspension systems?
Therefore,the recovery of vibrational energy in suspension systems has attracted widespread attention from researchers . Studies by Abdelkareem and Xu et al. show that each damper can generate a potential recovery power of 45-420Wunder standard driving and roll conditions.

Vehicle suspension vibration can cause damping oil temperature-rise, which further effects the suspension performance, rapids the suspension failure, and goes against the ...

Electromagnetic rotary harvesters convert the vibration energy of a car"s perpendicular suspension vibration into electricity through a transmission system that ...

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The conventional onboard actuators in the active suspension system (ASS) consume a high amount of external energy, which restricts their application in reducing the ...

For commercialisation of PCMs (liquid-solid phase change materials) based energy storage systems, the biggest challenge is to improve the thermal responsive rate of ...

This paper presents the first state-of-the-art review on simultaneous vibration control and energy harvesting strategy, a multi-disciplinary topic related to structural dynamics, ...

The most common energy harvesting systems in vehicle suspensions are compared in terms of advantages and limitations. In addition, the challenging issues and ...

As energy saving and recycling in the automobile industry becoming a hot topic today, the energy recovery and regeneration system attracts the attention of a large number of ...

This study introduces time-delay active control technology into nonlinear suspension systems, aiming optimize both energy harvesting and vibration suppression ...

This paper proposes a comprehensive vehicle energy regeneration system consists of regenerative braking, suspension vibration energy recovery and exhaust waste heat ...

Abstract Regenerative shock absorbers (RSAs) provide a promising way of recovering and utilizing waste energy of vehicle suspen-sion. Simultaneously minimizing vibration and ...

This study examines the efficacy of a seat inertial suspension system in relation to vibration isolation and energy recovery in electric commercial vehicles. The research ...

German luxury vehicle manufacturer, BMW has recently filed a patent for innovative system that works towards using energy from the movement of an EV""s suspension system to charge its ...

This paper presents a state-of-the-art review on a hot topic in the literature, i.e., vibration based energy harvesting techniques, including theory, modelling methods and the ...

A quarter vehicle model was constructed to demonstrate the capability of the hybrid generator to harvest vibration energy from automotive suspension system, as shown in ...

Although these can regenerate vibration energy, some drawbacks arise, mainly in rectifying bidirectional vertical movement of the suspension system to unidirectional rotational movement.

It converts mechanical energy into electrical energy and restores energy vibration using a suspension shock

absorber while driving, which improves energy use and provides greater ...

The suspension vibration energy generated by high-speed tracked vehicles under off-road driving conditions is huge, but the power density of existing regenerative ...

ABSTRACT The active suspension has undoubtedly improved the performance of the vehicle, however, the trend of "low-carbonization, intelligence, and informationization" in the automotive ...

The energy regeneration shock absorber is divided into four components, as follows: a suspension vibration energy input module, a transmission module, a generator module, and an ...

This paper explores the vibration isolation performance and vibration energy recovery performance of an energy-harvesting vehicle suspension system em...

SUMMARY To realize smart detection and safe operation of freight trains, a continuous and stable energy source is required for electrical equipment on the train. It is a feasible scheme to ...

This study introduces a flywheel rotor support structure for an active magnetic suspension flywheel energy storage system. In this structure, there is an axial offset between ...

To improve vehicle dynamic performance while reducing the energy consumption of active suspension systems, this paper proposes a novel hybrid electromagnetic active suspension ...

Aiming at the problem of vibration suppression of high-speed flywheel energy storage rotor system supported by electromagnetic bearings, a reduced order linear active disturbance ...

The invention discloses an energy storage suspension device having a vibration energy recovery function, relates to a vibration energy recovery device for an energy storage suspension, and ...