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What are the patents for concrete energy storage

A high temperature thermal energy storage includes a foundation comprising thermal insulation, at least one self-supported cassette arranged on the foundation. At least one cassette is a self-supporting frame or assembled structure with respect to transport and installation, containing a number of concrete thermal energy storage elements, some or all of the elements include heat ...

A geopolymer Thermal Energy Storage (TES) concrete product includes at least one binder; at least one base activator; at least one fine aggregate having high thermal conductivity...

The exploration of concrete-based energy storage devices represents a demanding field of research that aligns with the emerging concept of creating multifunctional and intelligent building solutions. The increasing need to attain zero carbon emissions and harness renewable energy sources underscores the importance of advancing energy storage ...

The present disclosure provides advanced geopolymer concrete compositions that can be used as a solid sensible heat storage medium for a thermal energy storage system that is capable of...

The specific heat of concrete plays a crucial role in thermal energy storage systems, facilitating the efficient storage and release of thermal energy to optimise energy management and utilisation. The specific heat of concrete is a key factor considered by engineers and researchers in the design and optimisation of TES systems.

High operation temperatures for a concrete thermal energy storage system are always desirable. 29 Due to intrinsic instability of Portland cement concrete upon exposure to elevated temperatures, maximum operation temperatures for a concrete TES were limited to be below 400° C. 3, 28 For example, Laing et al. 11, 13 conducted testing with a Portland cement concrete ...

The high temperature thermal energy storage according to claim 6, comprising a stack of self-supported cassettes, the cassettes comprising a frame open in at least one end, containing ...

The invention provides phase-change energy-storage concrete and a manufacturing method thereof. According to the manufacturing method, a hollow metal material device is used as a carrier of a phase-change energy-storage material, the periphery of the hollow metal material device is sealed, and a feeding hole is formed in the top of the hollow metal material device ...

An underwater energy storage system includes a tank for storing a compressed gas that is adapted to be stored underwater. The tank includes at least one water opening through which water from surrounding environment

can flow into and out of the tank, and at least one gas opening through which the compressed gas is received. The underwater energy storage ...

Concrete-based energy storage devices face several challenges that need to be addressed for their successful implementation and commercialization. Both concrete-based batteries and supercapacitors currently face limitations in energy density compared to conventional lithium-ion batteries. While advancements have been made, such as the ...

As the photovoltaic (PV) industry continues to evolve, advancements in patents for concrete energy storage have become critical to optimizing the utilization of renewable energy sources. From innovative battery technologies to intelligent energy management systems, these solutions are transforming the way we store and distribute solar-generated electricity.

Researchers at the Massachusetts Institute of Technology (MIT) have developed a groundbreaking technology that could revolutionize energy storage by turning concrete into a giant battery writes Tom Ough for the ...

An energy storage apparatus includes a energy storage for storing water and compressed gas; a concrete layer surrounded the energy storage; an inner protection layer arranged Emerging topics in energy storage based on a large-scale analysis of academic articles and patents

The application is suitable for the technical field of energy-saving buildings, and provides a steel tube concrete energy storage component which comprises a steel tube and concrete filled in the steel tube, wherein the concrete comprises sulphoaluminate cement; a channel is arranged in the concrete and is used for being communicated with the control equipment so as to guide the ...

The utility model discloses a waterproof and heat-insulating structure of a concrete energy storage pool, which comprises a primer layer A, a polyurethane heat-insulating layer, a polyurethane daub repairing layer and a waterproof layer A which are sequentially arranged on a pool wall and a bottom plate from inside to outside, wherein a protective layer is further arranged on the ...

The Gravity energy storage and generating device, main object of the invention is to provide improved mechanical energy storage and release device comprising of the wound and weight energy storing elements. The said device installed in the ground or above where gravity plays a vital role in generating and storing, a large stainless steel encased concrete piston mass that ...

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