

In our briefing German energy transition: Potential for investors we gave a detailed overview of the opportunities and risks of the energy transition in Germany for domestic and foreign investors. After looking in detail at the opportunities and challenges in the offshore wind, onshore wind and photovoltaics sectors in our series, we take a closer look at renewable ...

There is a significant energy transition in progress globally. This is mainly driven by the insertion of variable sources of energy, such as wind and solar power. To guarantee that the supply of energy meets its demand, energy storage technologies will play an important role in integrating these intermittent energy sources. Daily energy storage can be provided by ...

Deep Atlantic carbon storage increased and the meridional overturning circulation weakened at the mid-Pleistocene transition to 100,000-year glacial-interglacial cycles, according to analyses ...

The bottom of the ocean is rich in mineral resources, and deep-sea mining has been a research hotspot in recent years. As a key part of deep-sea mining operation, polymetallic nodule collection technology has been researched in many countries around the world. The distribution of deep-sea polymetallic nodule mining areas and the characteristics of nodules ...

Deep Sea Pumped Storage. November 26, 2019 by Bernhard Ernst, Jochen Bard, Matthias Puchta, Christian Dick - Fraunhofer IEE. Share this article "Storing Energy at Sea (StEnSea)" is a novel pumped storage concept for storing large amounts of electrical energy offshore. ... The concept was investigated by Fraunhofer IEE and project partners ...

Deep-sea pumped hydro storage is a novel approach towards the realization of an offshore pumped hydro concept, which uses the pressure in deep water to store energy in hollow concrete spheres--also known as the StEnSea (Stored Energy in the Sea) technology. This chapter presents the fundamental working principles and the results from the ...

Hydrogen long-distance transportation has received a lot of attention in the literature. So far, the most discussed alternatives for transporting hydrogen to long distances are through pipelines, and a few solutions based on liquefaction and shipping [38]. Hydrogen could be mixed with natural gas and transferred and stored in the natural gas grid [39].

This paper describes a new underwater pumped storage hydropower concept (U.PSH) that can store electric energy by using the high water pressure on the seabed or in deep lakes to accomplish the energy transition from fossil to renewable sources. Conventional PSH basically consists of two storage reservoirs (upper and

lower lake) at different topographical ...

The Fraunhofer Institute in Germany plans to test an underwater storage device that turns pumped storage on its head and, they say, can compete on a cost basis with conventional pumped storage ...

This paper addresses the German submarine technology and its evolution during the last 35 years. It concentrates on features integrated in the new submarine class 212 for the navies of Germany and Italy, like hydrogen/oxygen storage and energy generation by fuel cells, signature minimization, permanent magnet propeller motor, water ram weapon expulsion system. etc.

The project consortium consists of Leuphana University of Lüneburg and GeoDienste GmbH, supported by GeoEnergy Celle e.V. Keyword: Aquifer Thermal Energy Storage (ATES), medium-deep, geological ...

In recent years, due to the global energy crisis, increasingly more countries have recognized the importance of developing clean energy. Offshore wind energy, as a basic form of clean energy, has become one of the current research priorities. In the future, offshore wind farms will be developed in deep and distant sea areas. In these areas, there is a new trend of ...

The large-scale storage of surplus electrical energy from renewable sources is an unsolved problem. Among the four technologies used for energy storage: mechanical, electrical, thermal, and chemical, mechanical pumped hydro energy storage (PHS) in water reservoirs at high altitude provides 94% of the world's energy storage capacity [1].

The Energy Storage System (ESS) for marine or sea vehicles is a combination of dissimilar energy storage technologies that have different characteristics with regard to energy capacity, cycle life, charging and discharging rates, energy and ...

A new form of PSH has been developed by the Fraunhofer Institute for Energy Economics and Energy System Technology in Germany. The project, entitled Storing Energy at Sea (StEnSea), uses concrete spheres anchored on the seafloor. To store energy, water is pumped out of the spheres, against the pressure of the surrounding seawater.

With worldwide demand for oil, natural gas and minerals rising, and recent discoveries of sources located in the deep sea, new machinery will be needed to harvest these resources from increasingly harsh environments. Rexroth is the first to adapt numerous standard components to fit the special requirements for deep-sea applications such as pressure ...

Web: <https://www.arcingenieroslaspalmas.es>