

# Drilling energy storage technology

Can electric energy storage be used for drilling based on electric-chemical generators?

The article outlines development of an electric energy storage system for drilling based on electric-chemical generators. Description and generalization are given for the main objectives for this system when used on drilling rigs isolated within a single pad, whether these are fed from diesel gensets, gas piston power plants, or 6-10 kV HV lines.

How can energy storage improve land drilling operations?

Overall, energy storage solutions integrated with natural gas, dual-fuel, or diesel technology can reinvent land drilling operations by lowering fuel costs, maximizing capital efficiency, and meeting lower emissions regulations. This hybrid system is a significant reduction in the total cost of ownership for drilling contractors and operators.

How does the Cat land drilling energy storage system work?

The Cat Land Drilling Energy Storage System solves this problem for Rig 162 by allowing the battery and generators to work in tandem. The battery is quick to pick up an energy load while the generators ramp up. When the generators are ready, the Energy Storage System ramps down and the rig experiences a smooth power transfer.

Which rigs have energy storage systems for onshore drilling?

The energy storage system developed for onshore drilling is among the world's first ones. As a foreign analog, only the project of the German rig manufacturer Bentec implemented in Oman can be highlighted. In 2017, the container-type 0.9 MW Bentec ESS with a storage capacity of 0.3 MW was put into trial operation on the KCA Deuteg T-94 rig.

Can energy storage systems improve energy efficiency of DPS-powered rigs?

Based on average daily power consumption statistics and load diagrams for various rig operating modes at more than fifty pads equipped with DPS, it was proposed to improve the energy efficiency of individual DPS-powered rigs by introducing energy storage systems (Fig. 1).

Are energy storage systems a key component of the energy transition?

Energy storage systems are an important component of the energy transition, which is currently planned and launched in most of the developed and developing countries. The article outlines development of an electric energy storage system for drilling based on electric-chemical generators.

The Energy Transition can create new business opportunities for drilling contractors, as new technologies required to tackle emissions reductions need skills and capabilities found in the drilling industry: for example, using rigs for other purposes such as Carbon Capture and Storage (CCUS), and Geothermal energy.

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In April, Standard Lithium installed an adsorption column from Koch Technology Solutions at a demonstration plant in Arkansas; it plans to use this technology rather than its own ion-exchange ...

Therefore, economical and efficient energy storage technology has become a key link in the development of power systems [1], [2]. ... Investment in drilling and cementing of the well 2) Cavern dissolution is difficult to control. 3) The construction period is longer compared to other methods. 4) The creep may lead to a decrease in the storage ...

The Cat Land Drilling Energy Storage System solves that problem by pairing gas generators with a robust battery storage system --lithium ion batteries along with an inverter and fully ...

RICHLAND, Wash. -- A contractor is using an innovative system at the Hanford Site to cut into a waste-filled underground tank, showcasing new technology that improves efficiency and reduces worker and environmental risks.. Field crews with tank farms contractor Washington River Protection Solutions spent five months building and testing the technology ...

In this article, the aim is to develop a model for efficient energy management using hybrid energy to power a drilling rig. This involves utilizing wind turbines and emergency generators, as well as charging battery storage systems with recycled energy from the depot through regenerative braking. The goal is to decrease the fuel consumption of diesel ...

Thermodynamically, the thermal energy stored on heating was released during the cooling process by the heat exchanger activity as shown in DSC profile curves. The obtained thermal energy storage densities in the presence and absence of  $\text{Fe}_3\text{O}_4$  @ $\text{SiO}_2$  @Ag nanoparticles were 133.46 MJ/m<sup>3</sup> and 76.709 MJ/m<sup>3</sup>, respectively. As can be seen, the ...

Its first 20k project, Kaskida, was discovered in 2006 and put aside because of a lack of high-pressure technology. Similar high-pressure, high-temperature oil fields that would benefit from the 20k technology are found off the coasts of Brazil, Angola and Nigeria, said Aditya Ravi, a Rystad Energy analyst.

This paper describes a study to evaluate the feasibility of adopting technology to reduce the size of the power generating equipment on drilling rigs and to provide &quot;peak shaving&quot; energy through the new energy generating and energy storage ...

Caterpillar Oil & Gas announced the launch of the Cat Hybrid Energy Storage Solution to help drillers and operators cut fuel consumption, lower total cost of ownership (TCO) and reduce ...

Hybrid heavy drilling technology reduces emissions, operating costs for offshore drilling. Nov 2, 2009. ... The energy storage system connects to the bus of an uninterruptible power supply (UPS) or the AC supply power from an utility or engine/generator source. It is charged from the bus, then returns the power through a variable frequency ...

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The energy storage medium for aquifer heat energy is natural water found in an underground layer known as an aquifer [9]. This layer is both saturated and permeable. ... Because shallow ATEs have cheaper drilling costs and a greater storage capacity due to the greater temperature differential between the groundwater & the reinjected water ...

U.S. DEPARTMENT OF ENERGY OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY 18. Combined Wellbore Construction and RTES Funding Opp. All icons from FlatIcon . Reservoir Thermal Energy Storage (RTES): Up to \$7.9 million. Seeks to demonstrate low-temperature (<130 C) RTES technology: o To reduce emissions from energy -

Hybrid battery storage with energy management software is one of them. ... Drilling contractors are pursuing technology implementation that helps them meet their ESG goals by deriving power from greener energy sources and reducing energy waste. One method that companies can put to work to achieve these objectives is equipping a rig for ...

Siemens Energy signed an agreement with Maersk Drilling to upgrade two ultra-harsh environment CJ70 jack-up drilling rigs in the North Sea with hybrid power plants using lithium-ion energy storage. The rigs - the Maersk Intrepid and Maersk Integrator - were retrofitted with BlueVault(TM) batteries from Siemens Energy.

Initial data from two Maersk Drilling jackups show that hybrid power plants using lithium-ion energy storage have resulted in 25% emissions reductions compared with those rigs' baselines. The two CJ70 jackup rigs - the Maersk Intrepid and Maersk Integrator - were retrofitted with BlueVault batteries from Siemens Energy. They are the first jackups to employ a ...

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