

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.

Can electric energy storage systems be used for drilling rigs?

The work to develop electric energy storage systems for drilling rigs has been underway worldwide for the last 5 years, however, mainly targeting isolated offshore rigs.

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).

What is a hybrid energy storage module?

Based on the research, a generic architecture of the energy storage module is developed, and an engineering prototype is built. The efficiency of using a hybrid energy accumulation design is proven; the design calls for joint use of Li-ion cells and supercapacitors, as well as three-level inverters, to control the storage system.

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.

This paper presents the development of a rule-based energy management control strategy suitable for isolated diesel power-plants equipped with a battery energy storage system for peak load shaving.

The charge/discharge of distributed energy storage units (ESU) is adopted in a DC microgrid to eliminate unbalanced power, which is caused by the random output of distributed ...

Take control of your energy supply, cut your bills and move towards a more sustainable future. With our energy storage systems, communities and businesses gain access to a safe, reliable and efficient power

management to support the energy transition and the electrification of transportation.

OnTrack DM drilling management system makes drilling data generated on the rig available anywhere and ultimately allows "drill from the beach" capability. OnTrack Historian real-time drilling activity recorder records all drilling activity, equipment, alarms, and events data generated on the rig in real time to a time and depth series database.

Energy Conversion and Management, 2016. This paper presents the development of a rule-based energy management control strategy suitable for isolated diesel power-plants equipped with a battery energy storage system for peak load shaving.

The rest of the paper is organized as follows: Section 2 reviews the literature related to the topic. Section 3 analyzes the energy of each stage of the drilling rig during the drilling and excavation process, establishes an EC model driven by mechanism and data hybrid, and proposes a multi-angle visualization analysis approach. Section 4 verifies the ...

In a hybrid system that combines the Cat Hybrid Energy Storage Solution and a gas genset, the transient response is even quicker than in conventional diesel-only rigs.

The PRECISE automated drilling system enables full control and direction of rig functions from a single control source, helping achieve safer, more efficient, and lower-cost operations with less downtime. ... Solar and Thermal Hydro Energy Storage; Clean Hydrogen Production Technology; Hydrogen Process Modeling; Lithium Brine Basin Resource ...

The SUPERCHOKE high-pressure drilling choke control system handles 5,000 to 15,000 psi [345 to 1,034 bar] and is precision engineered for precise well control. Controls can be operated from either remote or onsite consoles.

PowerBlade Energy Recovery System. PowerBlade(TM) is an energy recovery system that captures electrical braking energy from drilling or hoisting systems and provides that recycled energy back to the power grid to enable peak ...

The most recognizable icon of the oil and gas industry is a derrick towering high over the wellsite. The drilling rig represents the culmination of an intensive exploration process; only by drilling a well can a prospect be validated. Once ...

Two jack-up rigs were retrofitted with Siemens Energy's BlueVault(TM) lithium-ion energy storage system. Initial data show that the low-emission upgrades in batteries, data monitoring, and other efficiency measures can deliver reductions in CO₂ by up to 25 percent and NO_x emissions by up to 95 percent.

Battery Energy Storage System. Bentec Cable Chain. Electrical Drilling Rig Equipment: High performance

electrical equipment and advanced control systems. ... all types of mechanical drilling equipment and all electrical drilling ...

Rig Energy Storage System. The system provides storage of electrical energy using state of the art Lithium Ion LTO Batteries to load balance the engine operation on drilling rigs ...

It specifically discusses the evolution of an electric energy storage system for drilling, drawing its foundation from electric-chemical generators. The primary focus lies on drilling rigs isolated within individual pads, which may be ...

The Cameron digital drilling control system (DDCS) portfolio creates an integrated control and information system that boosts drilling operations. A high-value drilling automation center, the DDCS is ideal for knowledgeable drilling contractors who need reliable control systems that are also simple to use.

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 ...

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. ...

Researchers have studied the integration of renewable energy with ESSs [10], wind-solar hybrid power generation systems, wind-storage access power systems [11], and optical storage distribution networks [10]. The emergence of new technologies has brought greater challenges to the consumption of renewable energy and the frequency and peak regulation of ...

The ABB Drilling Drives System consists of several parts: ABB ACS800 Multi-Drive Lineups, Braking. Resistors, Motors, Remote I/O panels and an embedded control system. The DDC also controls switching of change-over circuits to run ...

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 ...

Based on the research, a generic architecture of the energy storage module is developed, and an engineering prototype is built. The efficiency of using a hybrid energy ...

Energy storage can provide support services to the electricity grid, or to an individual consumer behind-the-meter. Energy storage may be deployed as stand-alone systems or with power generation as part of a hybrid energy ...

Due to the inherent slow response time of diesel generators within an islanded microgrid (MG), their frequency and voltage control systems often struggle to effectively ...

At the 2020 IADC/SPE International Drilling Conference, Ms Hopkins discussed a demonstration performed by Caterpillar and Ensign Drilling of a gas-fueled power generation system that utilizes automation, built-in ...

necessitates solar, be energy storage ready. Drilling Rigs The Jelec Battery Energy Storage System, in association with the Jelec Automated Power Management System, provides a means of storing energy from the main generators and redistributing it to the drilling system to optimize generator load. In the event of a load spike

To tackle the challenges of fuel inefficiency and increased diesel consumption in drilling operations, we implemented a hybrid solution that integrates generator power with an ...

Corvus Energy, energy storage solutions provider for the offshore energy industry has been selected by National Oilwell Varco (NOV) to supply the Energy Storage System (ESS) to be used on an offshore drilling rig. Corvus ...

By harnessing the capabilities of the Battery Energy Storage System, drilling rigs gain the flexibility to run with fewer engines or at lower engine loads. This adaptability optimizes energy consumption, resulting in significant reductions in engine runtime. As a result, rigs experience improved fuel efficiency, leading to substantial diesel ...

Electrical Control System for Drilling Rig Drawworks Based on Super-capacitor Energy Storage [J]. Control and Instruments in Chemical Industry, 2016, 43 (05): 526-529. ... Composite Energy Storage ...

The custom hardware comprises of switchgear and controls to parallel the utility feed with generators and battery energy storage. The automated system dynamically limits the ...

Designed to optimize power generation, energy storage solutions such as the Hybrid Energy Management (hEMS) Systems are purpose-built to improve energy efficiency and reduce emissions. These e nergy storage solutions can ...

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