

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.

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).

How to reduce energy consumption of drilling rigs?

(DPS), or gas piston or gas turbine units (Pavkovic et al. 2016). As for the rigs, this energy consumption mode is POOH). introducing energy storage systems (Fig. 1). 1. Capital costs of powering drilling rigs are reduced with tings check once per shift. Also, the ESS does not need 2. The diesel fuel consumption will be reduced by up to 3.

What makes a good energy storage system?

Due to specific requirements of land-based drilling rigs, the energy storage system ought to be robust, compact and easily transportable, and characterized by inherently high operational safety.

How to design a control strategy for energy storage system sizing?

The basis for the control strategy design and corresponding energy storage system sizing has been obtained by analyzing the load profiles of the diesel generator power-plant within the isolated oil drilling rig AC microgrid, characterized by highly-variable active and reactive power requirements.

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Tolerance in bending into a certain curvature is the major mechanical deformation characteristic of flexible energy storage devices. Thus far, several bending characterization parameters and ...

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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 ...

Flywheels are electro-mechanical storage devices that store kinetic energy in a rotating mass so-called rotor coupled with an electric machine working as a motor in charging or a generator in ...

The primary focus lies on drilling rigs isolated within individual pads, which may be powered by diverse sources such as diesel gensets, gas piston power plants, or 6-10 kV HV lines. Analyzing the power operating modes of these rigs, the ...

The primary use of oilfield equipment is the development of successfully explored oilfields. Various applications of this equipment include well completion and drilling. The main functions of oilfield equipment include flow ...

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