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Energy storage technology for oil pumping units

Overview

If you’re an engineer working with hydraulic oil pump energy storage systems, a plant manager optimizing machinery, or simply a tech enthusiast curious about industrial energy solutions – grab your wrench (or coffee), because this article’s for you. We’re breaking down complex hydraulic wizardry.

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Supercapacitor energy storage system for pumping units-SciEngine SciEngine AI CUSTOMER □□ LOGIN AI JOURNALS BOOKS CART CUSTOMER □□ LOGIN Advanced Search Account Login Get verification code Forget the password Get code Sign in Register □Privacy policys□and□Terms and conditions□ reset password OK.

Therefore, based on the balance theory of gearbox torque, we introduced and discussed some significant energy-saving technologies, such as phased pumping units, dual-horsehead pumping units, shock absorber device, load reducer device, lower barbell pumping units, multi-balance device. How energy-saving technologies are used in beam pumping units?

Many energy-saving technologies for the beam pumping units were used by changing their construction, sizes or adding other components to decrease the fluctuation rate and the peak torque of the net output torque of gearbox for the effect of energy-saving, load reduction and running with safety.

Can flywheel-energy-storage device save energy of pumping units?

In the existing literatures (Jiang et al., 2009; Liu, 2003; Zou, 2009), the flywheel-energy-storage device can save energy of pumping units, because its rotary inertia \ (J_ {\text {m}} \), that is transmitted to the gearbox shaft, should be multiplied by the square of the transmission ration.

What type of pumping unit was used in Daqing oilfield?

The prime motor was a 22 kW three-phase asynchronous motor. The beam pumping unit was CYJ10-3-37HB. The tests were carried out in the simulation oil well with 1000 m depth of pump in Daqing oilfield. Some engineers simplified the calculation of the transmission efficiency for pumping units.

Why are beam pumping units used in oilfield?

The beam pumping units applied in oilfield for more than 150 years, because it had the advantages of simple structure, reliable and durable. At present, it is still one of the most important artificial lift methods in the world.

How much power does oil pumping use in China?

In the China, there were nearly 160,000 wells using sucker-rod pumping in 2014, and the oil pumping units were about 80% in the oil field. At the same time, the electricity consumption of the artificially lifted well was about 33.38% of the total power consumption (Zhou 2011).

How efficient are beam pumping units?

Most of the system efficiency of the beam pumping units is less than 30% (Zhou 2011); this means that will waste vast energy. The beam pumping units can be simplified to the four-bar linkage; the rotary motion of the motor is converted into the reciprocating motion of the rod pump with low transmission efficiency.

Energy storage technology for oil pumping units

Pumped Storage , GE Vernova

With higher needs for storage and grid support services, Pumped Hydro Storage is the natural large-scale energy storage solution. It provides all services from reactive power support to frequency control, synchronous or ...

Pumping Unit

Pumping Unit Description Je Energy's Pumping Unit is a highly efficient and reliable well production equipment designed to increase well production efficiency and reduce operating costs. The pumping unit features an ...

Optimal scheduling and management of pumped hydro storage ...

Pumped hydro-energy storage will become a fundamental element of power systems in the coming years by adding value to each link in electricity production and the ...

Analysis on Energy-saving Technology of Oil Field Pumping Unit

Download Citation , On Aug 1, 2018, Liang Wang and others published Analysis on Energy-saving

Technology of Oil Field Pumping Unit , Find, read and cite all the research you need on ...

Optimization of staggered peak intermittent pumping operation

In this paper, for the poor economic benefits and insufficient green power consumption capacity faced by the pumping unit well group intermittent pumping system with the introduction of wind, ...

Supercapacitor energy storage system for pumping units

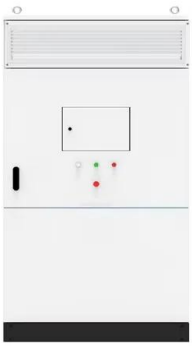
Addressing issues such as difficulty in maintaining complete balance of the balance block in the pumping unit system, grid pollution caused by reverse power generation, heating caused by ...

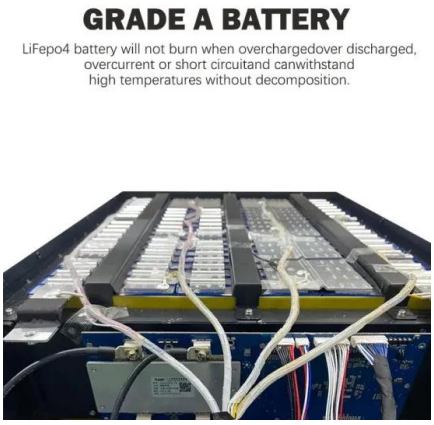
Energy-saving system of secondary balance for ...

Energy saving of pumping unit is an important part of equipment energy-saving technology in China's oil field, but the energy consumption of the mechanical extraction system accounts for about ...

Microsoft Word

The uses for this work include: Inform DOE-FE of range of technologies and potential R& D. Perform initial steps for scoping the work required to analyze and model the benefits that could ...



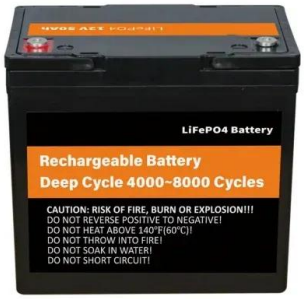


All Pumped Up - Oilfield Technology

As the nation's new petroleum industry evolved, exploration and production pioneers realized improving oil well pump efficiency could greatly extend the economic life of far deeper wells. By the time of the headline-making 1901 ...

Review of energy saving technologies for beam pumping units

Based on the background of offshore oil exploitation and shale oil and gas exploitation, through summarizing and analyzing various technical schemes, it is proposed ...



A review of beam pumping energy-saving technologies

In this article, the energy-saving technology of hydraulic pumping unit is comprehensively reviewed, aiming to clarify the latest progress of energy-saving technology ...

How Does A Pumping Unit Work?

A pumping unit, often referred to as a pumpjack, is a mechanical device used in the oil and gas industry to extract crude oil from a well. It operates on the principle of reciprocating motion and is commonly seen in oil fields.

A review of beam pumping energy-saving technologies

The development direction of the beam pumping units included the following characteristics: the large-scale pumping units for deep well or heavy oil, the low energy consumption, the precise ...

Current Situation and Prospects of Lifting Technology for ...

Keywords:Hydraulic Pumping Units · Hydraulic System · Energy Saving · Intelligent · Lifting Technology 1 Introduction ...

Energy-saving mechanism research on beam ...

Aiming to solve the problems of long transmission chain, large movement inertia of components and high energy consumption of pumping units, this proposes a new pumping unit with direct balance and ...

Hydraulic energy-storage oil pumping unit

Provided is a hydraulic energy-storage oil pumping unit. According to the work characteristics of the oil pumping unit, the hydraulic energy storage principle is adopted, hydraulic oil is used as ...

Analysis on Energy-saving Technology of Oil Field Pumping Unit

Abstract In this paper, the energy saving technology of pumping unit is studied. According to the actual use of pumping unit, the principle of energy saving is studied. There ...

High-Quality Fuel Oil Pumping & Heating Units from Shivshakti

Shivshakti provides high-quality fuel oil pumping and heating units designed to meet your specific needs. Our pre-engineered systems are built with top-grade components and packed for ...

Pumped Thermal Electricity Storage: A technology overview

A large penetration of variable intermittent renewable energy sources into the electric grid is stressing the need of installing large-scale Energy Storage units. Pumped Hydro ...

Energy storage control cabinet for oil pumping unit

The parameters of energy-saving control process of beam-pumping unit are measured using multi sensors, and then the system can control the working state of beam-pumping unit real-time.

Review of energy saving technologies for beam pumping units

Based on the background of offshore oil exploitation and shale oil and gas exploitation, through summarizing and analyzing various technical schemes, it is proposed that adding energy ...

Design, system modeling and energy management for a novel ...

Compared to conventional pumping units with low efficiencies and general hydraulic pumping units using hydraulic accumulators to recover and reuse energy, this article ...

Design and experimental research on flywheel ...

The current power consumption of beam pumping units in service exceeds 50% of the total power consumption of oil field production, and their overall efficiency is often less than 30%. The low efficiency of the pumping unit ...

A review of energy storage technologies in hydraulic wind turbines

This paper summarizes the principles of storage and conversion of several kinds of energy in hydraulic wind turbines after the addition of hydraulic accumulators, compressed ...

Hydraulic energy-storage oil pumping unit

Compared with other oil pumping units, electric power can be saved by more than 40%, and substantial economical benefits can be achieved in tens of thousands of oil wells of oil fields.

Analysis on Energy-saving Technology of Oil Field Pumping Unit

In this paper, the energy saving technology of pumping unit is studied. According to the actual use of pumping unit, the principle of energy saving is studied.

Energy-saving mechanism research on beam-pumping unit ...

On the whole, the reliability and durability of some new artificial lift devices are still worse than conventional pumping units. So most of the researches on the energy-saving technology of ...

Oilfield Pumping Unit

A pumping unit is a piece of equipment used to extract petroleum products from a well in an oil field. Reciprocating piston pumps are commonly used for this purpose and many people associate the distinctive "nodding donkey", ...

Design and analysis for a new energy-saving hydraulic pumping unit

In terms of energy-saving and working efficiency, hydraulic pumping units outperform conventional pumping units. In this paper, a novel hydraulic pumping unit is ...

Energy-saving mechanism research on beam-pumping unit ...

Aiming to solve the problems of long transmission chain, large movement inertia of components and high energy consumption of pumping units, this proposes a new pumping unit with direct ...

Analysis on Energy-saving Technology of Oil Field Pumping Unit

There are many energy saving methods for pumping units, but each method has its limitations. Combined with the development of new energy utilization technology, this paper ...

A review of beam pumping energy-saving ...

Beam pumping units have the advantages of simple structures, reliability and durability [5] and are still one of the main oil recovery methods for oil production in oil fields.

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