

Evaluation of solar container utilization in abandoned wells

<div class="df_qntext">Can abandoned oil wells be used as boreholes?

Ground-source heat pump systems, potentially more efficient than typical air-source heat pumps, can utilize abandoned oil wells as boreholes. Abandoned wells with greater depths contain abundant geothermal energy for heating and cooling applications (Nian et al., 2019).

<div class="df_qntext">Can geothermal energy be used for abandoned oil wells?

There are numerous uses for abandoned oil wells, which greatly increase the versatility and efficiency of energy use. One primary application of geothermal energy will be in electricity generation, where it can offer a reliable and constant power supply, unlike intermittent renewable sources such as wind and solar.

<div class="df_qntext">How many abandoned oil and gas exploratory wells are there?

Globally, researchers have identified several million abandoned or orphaned oil and gas exploratory wells. In the USA, there are about 310,000 to 800,000 or more abandoned oil wells in the country (Liu et al., 2023).

<div class="df_qntext">What are the different uses of abandoned oil wells?

Overall observations of different uses of abandoned oil wells Among the various uses of abandoned oil wells, power generation, district heating, and cooling are particularly well-suited due to their adaptability to varying physical conditions.

<div class="df_qntext">Can abandoned wells be used for compressed wind energy storage?

Quin et al. (2021) have developed a study on compressed wind energy storage using abandoned wells, which not only eliminates the need for storage vessels but also facilitates the implementation of an isothermal process for compressed air storage, resulting in improved round-trip efficiency.

<div class="df_qntext">Can abandoned oil wells produce fresh water from seawater?

This heat is transferred to the heat exchanger in the desalination units. The findings of this study demonstrated that, in comparison to conventional desalination systems, a single abandoned oil well may produce 565 m³ of fresh water from seawater and significantly lower emission generation.

The utilization of the abandoned oil and gas wells for geothermal energy generation can save drilling costs, reduce energy problems, and manage the pollution of wells' residual oil [8].

Every year in China, a significant number of mines are closed or abandoned. The pumped hydroelectric storage (PHS) and geothermal utilization are vital means to efficiently repurpose resources in ...

Therefore, increasing the heat transfer is one of the major concerns in the utilization of abandoned oil well for geothermal energy extraction. This study is conducted to evaluate the heat ...

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However, deeper, and more accurate geologic and geophysical data from seismic and well logs of abandoned oil wells in the offshore area of HF are utilized in this paper to better assess ...

These issues can be addressed by repurposing abandoned wells for the utilization of geothermal energy systems, leading to an increase in the number of geothermal systems ...

To enhance dispatch capability and reduce geothermal utilization costs, this paper proposes a novel scheduling model for a solar-geothermal combined heat and power system considering abandoned ...

Alternatively, other renewable energy sources (e.g., solar, biomass) could be used to upgrade the geothermal well. This techno-economic analysis shall serve as a preliminary assessment ...

One of the key impediments to the further development of A-CAES is its higher initial investment and the need for a large volume capacity in high-pressure containers for highly efficient air ...

An analysis model for geothermal power generation based on the transient formation heat conduction of abandoned oil wells is presented in this paper. For abandoned oil wells with ...

This study serves as a reference for selecting optimal well types and retrofitting strategies when converting abandoned wells into geothermal wells, providing valuable guidance for ...

The influencing factors include permeability of the abandoned well, thickness of the confining zone, distance between the abandoned well and the injection/production well, permeability ...

M. Macenic, T. Kurevija, Revitalization of abandoned oil and gas wells for a geothermal heat exploitation by means of closed circulation: Case study of the deep dry well Pcelic-1.

The escalating number of abandoned oil wells in the United States presents a dual challenge and opportunity in the realm of renewable energy. The global utilization of geothermal ...

ate-of-the-art review on abandoned wells for thermal and power generations is conducted. In order to overcome the disadvantages of geothermal energy systems, such as high initial investment, high labor ...

The objective of this study is to demonstrate the feasibility of acquiring geothermal energy from existing abandoned oil and gas wells. The equations describing the heat exchange ...

Every year in China, a significant number of mines are closed or abandoned. The pumped hydroelectric storage (PHS) and geothermal utilization are vital means to efficiently ...

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Discussions on real applications have been conducted and future prospects presented, from perspectives of lifetime system performance, techno-economic feasibility analysis, and potential ...

These wells, which are dry holes that never strike oil [10], are normally considered as permanent liabilities that require high costs to plug and abandon; but, their existing wellbore is a way ...

Abstract: Every year in China, a significant number of mines are closed or abandoned. The pumped hydroelectric storage (PHS) and geothermal utilization are vital means to efficiently repurpose ...

In this paper, the potential seven sets of geothermal resources in the Sichuan Basin were evaluated by using a method for rapidly calculating geothermal resources in the sedimentary basins by multi data ...

The objective of this research is to explore the feasibility of integrating abandoned oil and gas wells (AOGWs) into CAES development. The presented system can enable the leverage of ...

With the efficient exploitation of global oil and gas resources, the number of abandoned oil and gas wells has been increasing year by year. According to statistics, by 2021, approximately ...

In recent years, many researchers focused on the utilization of geothermal energy from abandoned well [25]. Kujawa et al. [27] introduced a coaxial BHE to extract heat from ...

In the academia, typical systems for renewable integrations include solar-geothermal energy systems [4], building integrated photovoltaic/thermal (BIPVT) systems and earth-air heat ...

Request PDF | On Mar 1, 2024, Yinhui Zuo and others published Geothermal resource evaluation in the sichuan basin and suggestions for the development and utilization of abandoned oil and gas wells ...

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