

In the operation of geothermal power plants, flue gas heat exchangers play a crucial role by extracting thermal energy from geothermal fluids for power generation [1]. However, a significant challenge encountered in this process is low-temperature corrosion (LTC), a type of corrosion that occurs at the colder sections of the heat exchanger [2]. This corrosion is ...

For example, through exhaust gas recycling, in which flue gas from natural gas boiler (containing ~4% CO_2) is recycled and used in place of air for the fuel combustion, CO_2 concentration in the flue gas can be enriched up to ~8%, making CO_2 capture less thermodynamically challenging (Vaccarelli et al., 2014).

The results showed that the molten salt heat storage scheme with the advantages of stable operation, good economy and an energy conversion rate higher than 80 % as using flue gas to heat molten salt. For these reasons, the paper focuses on the technical routine that CFPP integrated with the molten salt TES system by using flue gas as the ...

A three-dimensional physical simulation study was conducted to evaluate the thermal insulation effect and enhanced oil recovery of aerogel-stabilized flue gas foam in three-dimensional oil reservoirs. The experimental setup is illustrated in Fig. S7. The model consists of a 400 mm \times 400 mm \times 150 mm stainless steel box representing a quarter 5 ...

Steam condensation heat transfer coefficients with and without flue gas were tested, and oil recovery factor and heat transfer for steam flooding assisted by flue gas in a sandpack were studied. Finally, the flue gas treatment and injection process for the steam injection well was designed and applied in the oilfield.

Currently, there are fewer studies on flue gas as a heat source for energy storage, and more studies focus on system integration and energy/exergy analysis under static conditions. ... Flue gas temperature variations in the boiler can seriously affect the heat transfer efficiency of the flue gas-molten salt exchanger, leading to the ...

fuel oil is readily pumpable. Specific Heat Specific heat is the amount of kCals needed to raise the temperature of 1 kg of oil by 1 $^{\circ}\text{C}$. The unit of specific heat is $\text{kCal/kg}^{\circ}\text{C}$. It varies from 0.22 to 0.28 depending on the oil specific gravity. The specific heat determines how much steam or electrical energy it takes to heat oil

At the end of the sandpack flooding, the flue gas storage reached 0.26 PV, which means that 46.4% of the injected flue gas was stored in the sandpack. The storage of flue gas can be divided into two parts: the flue gas dissolved in the residual heavy oil and the flue gas trapped in the porous media. Download : Download high-res image (162KB)

Semantic Scholar extracted view of "Enhancing the thermal response of a latent heat storage system for suppressing temperature fluctuation of dusty flue gas" by Song-Zhen Tang et al. ... Effectiveness of direct contact PCM thermal storage with a gas as the heat transfer fluid. M. Belusko Shane Sheoran F. Bruno. Engineering, Environmental ...

Normally, the recovery effect of a heavy-oil reservoir gradually deteriorates after multiple rounds of cyclic steam stimulation (CSS). However, the injection of flue gas can effectively increase the utilization degree of steam heat energy, which improves the recovery effect. In this paper, an experimental method for CSS using an energy storage container was established.

1.8.2.2 Flue gas/multiple thermal fluids-cyclic steam stimulation process. Flue gas is a mixture of N₂ and CO₂. Therefore, a flue gas-based thermal recovery process usually combines the advantages of both N₂ and CO₂. In 2009, a flue gas-CSS process was first applied to improve the performance of CSS wells in the Shengli oil field, China.

Modular energy recovery and storage solution could turn flue gas waste heat into profit. ... project manager at Altek explains: "Heat pipe heat exchangers transfer energy from a hot waste heat stream to a cooler stream. Our technology differs from other heat exchangers in the sense that the heat is transferred through a number of heat pipes ...

Heat transfer enhancement in medium temperature thermal energy storage system using a multitube heat transfer array Renew Energy, 35 (2010), pp. 198 - 207, 10.1016/j.renene.2009.03.010 View PDF View article View in Scopus Google Scholar

Keywords: flue gas, cyclic steam stimulation, heat transfer, oil recovery factor, physical simulation Edited by: Kalpit V. Shah, RMIT University, Australia ... the Steam-Flue Gas Ratio. Front. Energy Res. 8:599370. doi: 10.3389/fenrg.2020.599370 ... an energy storage container was established. On this basis, a one- ...

Carbon capture, utilization, and storage (CCUS) is expected to mitigate CO₂ emissions significantly since CO₂ is captured from the flue gas emitted by power and industrial processes and then either used in manufacturing processes or sequestered into geographical formations. CO₂ capture is an energy-intensive process, and its energy consumption is ...

It is of great significance to recover the waste heat of flue gas for improving energy efficiency Brandt et al. designed a tube bundle heat exchanger driven by heat transfer oil for recovering the waste gas heat, ... In the scrap storage bin, the accumulative scrap is continuously heated by the bottom-top high-temperature flue gas with ...

The plots show the time variation of the storage temperature, the flue gas temperature at the outlet of the gas-to-oil heat exchanger and the instantaneous charging efficiency. The initial temperature of the storage medium is 200 °C for the fully mixed and stratified tank, which is the minimum storage temperature

assumed in the preliminary design.

Steam injection enhances oil recovery by reducing the viscosity of crude oil, improving oil mobility and facilitating its extraction. The utilization of flue gas in steam injection processes has a significant impact on oil recovery and energy ...

The gross calorific value of the fuel includes the energy used in evaporating this water. Flue gases on steam boiler plant are not condensed, therefore the actual amount of heat available to the boiler plant is reduced. ... Sophisticated electronic control systems that monitor all the components of the flue gas, and make adjustments to fuel and ...

Flue gas from London's Bankside Power Station, 1975. Flue gas is the gas exiting to the atmosphere via a flue, which is a pipe or channel for conveying exhaust gases, as from a fireplace, oven, furnace, boiler or steam generator often refers to the exhaust gas of combustion at power plants. Technology is available to remove pollutants from flue gas at power plants.

The integrated structure is divided into a heat storage section and a heat transfer section. HITEC molten salt (7% NaNO_3 + 53% KNO_3 + 40% NaNO_2) is used as a heat storage material (PCM) and filled in the tubes of the heat storage section. The flue gas flows across the tube bundle and transfers heat with the PCM.

Besides, the heat transfer rate in packed beds can be expressed by the effective conductivity and total heat transfer coefficient [2]. Experimental investigation and modeling of the application of latent heat energy storage method from hot gases has been done by Yagi and Akiyama [6]. In this study the working fluid was nitrogen and the range of ...

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