Boiler flue gas solar energy storage

Should steam and flue gas be used as heat sources for thermal energy storage?
Therefore,from the safety and flexibility perspectives,it is reasonablethat the steam and flue gas are used as heat sources for thermal energy storage. The thermal energy carried by the steam and flue gas should be stored in appropriate proportions under several constraints.

Can solar energy be used for heat recovery after flue gas treatment?
The concept might be applied not only to coal-fired power plants,but also to other heavy polluting industries such as steel plants,coking plants,cement plants,fertilizer plants and various chemical plants where solar thermal energy could be utilized for heat recovery after flue gas treatment.

Can solar-aided flue gas treatment be used for fossil fuel power generation?
In this paper, an advanced concept of coupling solar-aided flue gas treatment (SAGT) and solar-aided power generation (SAPG) is proposed to realize the low energy consumption flue gas treatment for fossil fuel power generation systems.

Can flue gas be heated outside a boiler?
An improved flue gas treatment sequence outside boilers is proposed in SAGT,where denitration is configured downstream of flue gas desulfurization (FGD). By using a parabolic trough collector (PTC) solar field,flue gas can be heated up to 550°Cin the collectors.

Can a multi-purpose system capture and utilize waste heat from boiler flue gases?
This study introduces a multi-purpose system designed to capture and utilize waste heat from boiler flue gases at the Tous power plant for simultaneous power generation, cooling, and heating.

What is the optimal temperature for boiler flue gas & incoming natural gas?
In the final multi-objective optimization,we determined optimal values for boiler flue gas and incoming natural gas temperatures (532.5 Kand 285 K,respectively) and optimal pressures for the fluids entering the first and second turbines (2.54 MPa and 14.62 MPa,respectively).

Storage of electrical energy is a key technology for a future climate-neutral energy supply with volatile photovoltaic and wind generation. Besides the well-known technologies of pumped hydro ...

The Flue Gas Desulfurization (FGD) plant is designed to remove sulfur dioxides (SO2) from flue gas that is produced by boilers, furnaces, and other sources. Mitsubishi Power has developed ...

As an indispensable component of coal-fired power plants, boilers play a crucial role in converting water into high-pressure steam. The oxygen content in the flue gas is a ...

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Two dynamic simulations were performed for a 340 MWe CFB boiler and one with 1500 t/h steam production capacity. The transient effect of the fuel feed rate, air inflow, particle size, solid recirculation rate, and bed height ...

Chongqing area and reviews the progress of research on solar energy-assisted heating systems in flue-cured ... coal heating, and gas heating [3]. Due to the severe environmental pollution, ...

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. ...

To improve the recovery of waste heat and avoid the problem of abandoning wind and solar energy, a multi-energy complementary distributed energy system (MECDES) is proposed, integrating waste heat and surplus ...

All regular boilers, combination boilers and system boilers must have a flue fitted, and most flues are fitted in a horizontal position directly affixed to the boiler itself, through an external wall, leading to the outside. In some ...

Although appropriate temperature can be easily obtained inside boilers, unfavorable factors such as sulfur poisoning [15], ash erosion and pore plugging [9] still bring ...

For example, through exhaust gas recycling, in which flue gas from natural gas boiler (containing ~4% Co2) is recycled and used in place of air for the fuel combustion, Co2 concentration in the flue gas can be enriched up ...

6 ???· In this study, a multi-objective optimization approach was employed to enhance system efficiency while minimizing operational costs. The key parameters optimized include the boiler ...

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