

Grate cooler uses wind and waste heat to generate electricity

Does grate cooler affect clinker cooling and waste heat recovery?

As an important process during the cement production, grate cooler plays significance roles on clinker cooling and waste heat recovery. In this paper, we measured experimentally the heat balance of the grate cooler, which provided initial operating parameters for optimization.

Can grate cooler be a series-connected heat exchanger network?

In this paper, we measured experimentally the heat balance of the grate cooler, which provided initial operating parameters for optimization. Then, the grate cooler was simplified into a series-connected heat exchanger network by power flow method.

Does grate cooler APC save energy?

In addition, the grate cooler APC system achieved a mean yearly saving equal to about 10% for electric energy consumption. Finally, a service factor greater than 94% was obtained after more than two years after commissioning the grate cooler APC. Table 11. Grate cooler APC system: KPI evaluation (kiln tertiary air temperature). Table 12.

What are the performance evaluation parameters of a grate cooler?

The performance evaluation parameters considered are clinker temperature, cooler loss and efficiency. This study revealed that the grate cooler efficiency estimated through heat consumption balances conformed to the designed standard. In , the nitrogen oxides (NO_x) control problem is tackled.

How efficient is generating power from waste heat recovery?

The efficiency of generating power from waste heat recovery is heavily dependent on the temperature of the waste heat source. In general, economically feasible power generation from waste heat has been limited primarily to medium- to high-temperature waste heat sources (i.e., greater than 500 °F).

What is the grate cooler control KPI?

In addition, to the best of the authors' knowledge, the grate cooler control KPI represented by the counter on the second sub-chamber pressure represents an additional technical innovation in the literature of APC systems on cement-industry clinker grate coolers.

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apture and use of heat for a thermal purpose is classified as waste heat recovery, while capture and use of that heat to make electricity is WHP. While this fact sheet focuses on WHP C ...

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The cement industry includes energy-intensive processes, e.g., clinker rotary kilns and clinker grate coolers. Clinker is obtained through chemical and physical reactions in ...

2012, Energy. Grate coolers are widely used in cement industries to recover heat from hot clinker, coming out from the rotary kiln. This study focuses on improving the energy, exergy and ...

Studied the Kiln waste heat from the preheater is 270 °C with the amount of 2.054 kg/kg of clinker and clinker cooler outlet waste heat is 270 °C with the amount of 1.457 kg/kg ...

Like geothermal, waste-heat to power can support other industries requiring emission-free power and heat-use projects. The last piece of the puzzle for how conventional geothermal and industrial waste-heat can ...

The power density of the proposed pyroelectric generator was 0.034 W/cm² to a heat-cool condition from 310 K to 340 K. Tong et al. [36] used industrial waste heat (<323 K) ...

The aim of this work is to determine the waste heat recovery by utilizing the waste exit gases from the pre-heater and grate cooler to generate electricity, furthermore estimation of cost saving ...

Energy, 2012. Grate coolers are widely used in cement industries to recover heat from hot clinker, coming out from the rotary kiln. This study focuses on improving the energy, exergy and recovery efficiencies of a grate cooling system through ...

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