

# Grate cooler middle roller breaking wind temperature

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.

How does a grate cooler work?

The grate cooler is one of the most important devices for cement production and heat recovery, as it cools the clinker rapidly and recovers the exhaust air. The working process is as follows: high-temperature clinker from the rotary kiln falls into the grate cooler and continually moves forward carried by the grate plates.

What are the contents of the grate cooler experiment?

There are two mass transfers inside the grate cooler: clinker flow and air flow. Therefore, the contents of the experiment included the temperatures of the clinker and cooling air, and the mass flow rates of the clinker and cooling air. The production of the cement plant keeps unchanged during the experiment process.

What is the thermal efficiency of grate cooler?

Differences between the thermal efficiencies of grate cooler with different amounts of air chambers is no more than 2%. The highest thermal efficiency of grate cooler is 91.88% for system with 6 air chambers and the lowest is 89.99% for 11 air chambers. Fig. 9 Heat efficiencies of different amounts of air chambers.

What is the Heat Transfer Mode in a grate cooler?

In the latter half of the grate cooler, especially the third grate plate, the main heat transfer mode is the internal thermal conduction of the clinker particles, which is less influenced by the flow rate. This is in accordance with the cooling air distribution described in Section 2.2.

What is a grate cooler in a cement plant?

The grate cooler of the third generation is the most common one in cement plants. It is equipped with resistance grate and aeration beam and usually includes several air chambers. The cooling air flows through the moving clinker vertically as shown in .

The grate cooler belongs to the family of air quench cooler (AQC). The clinker fed into the grate cooler can be quenched from 1300-1400 °C to below 100 °C in just a few minutes. The grate ...

The technical transformation project lasted for 46 days. After more than four years of actual running, the fourth generation grate cooler with central roller crusher was better than expected, ...

The clinker cooler, also known as grate cooler or cement cooler, it is a necessary equipment of cement clinker

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production. The clinker cooler is mainly used to cool and transport the cement ...

As the clinker of the kiln keeps falling, the snowman of the grate cooler is inevitable. 3. Improper operation of grate bed structure and kiln. The structure of the grate bed of the grate cooler is ...

Temperature of clinker at the outlet of grate cooler,  $t_s$ , is under  $95 \text{ }^\circ\text{C}$ . For the clinker cooling process, when the velocity of cooling air increases, cooling air outlet ...

The grate cooler, however, is the preferred cooler for precalciner kilns and for kilns with a high output. There are to-day no difficulties in making grate coolers for large outputs up to 10,000 t/d, regardless of kiln diameter. The grate cooler is ...

The next grinding phase requires temperatures of about  $100 \text{ }^\circ\text{C}$ , so a cooling phase is performed in the grate cooler (see the right side of Figure 1). The grate cooler, in ...

After the renovation, the clinker temperature of the cooler was stabilized below  $100 \text{ }^\circ\text{C}$ , the heat recovery efficiency of the cooler was increased from 54% to 78%, the secondary air ...

Figure 4: Raw material quantity and grate cooler pressure model verification. Secondary air temperature and grate cooler pressure model formula:  $5 \times (1.39518)(1.017)(1.6287) \dots$

Partition in grate cooler. Kiln blanking area: high temperature clinker falling from the kiln falls into this area. 1. Heat recovery area: secondary air and tertiary air (kiln inlet and preheater) 2. ...

Control parameters adalah indikator yang membantu mengontrol dan monitoring clinker cooler. Main control parameters grate cooler yaitu: Pressure under grate Pressure Kiln hood Flow udara Temperatur udara ...

Coolers at PT Solusi Bangun Indonesia are driven by a hydraulic system and are also equipped with a roller crusher located in the middle of the Cooler. And the roller crusher is driven by a ...

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