

The Fons Delta Level Transmitter

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Fons Technology proudly presents The Fons Delta Level Transmitter, which measures clinker height throughout the clinker bed. This technology is designed to assist cooler operators in sustaining a consistently stable clinker bed and kiln operation.

In a cement plant, clinker is discharged from a rotary kiln into a clinker cooler to cool down from 1350°C to around 100°C. During this operation, cooling air from under the grate compartment of the clinker cooler follows a path throughout the grate plates to the discharged clinker and some portion of the cooling air is used as heat recuperation air, which is fed back to the kiln for the burning process.

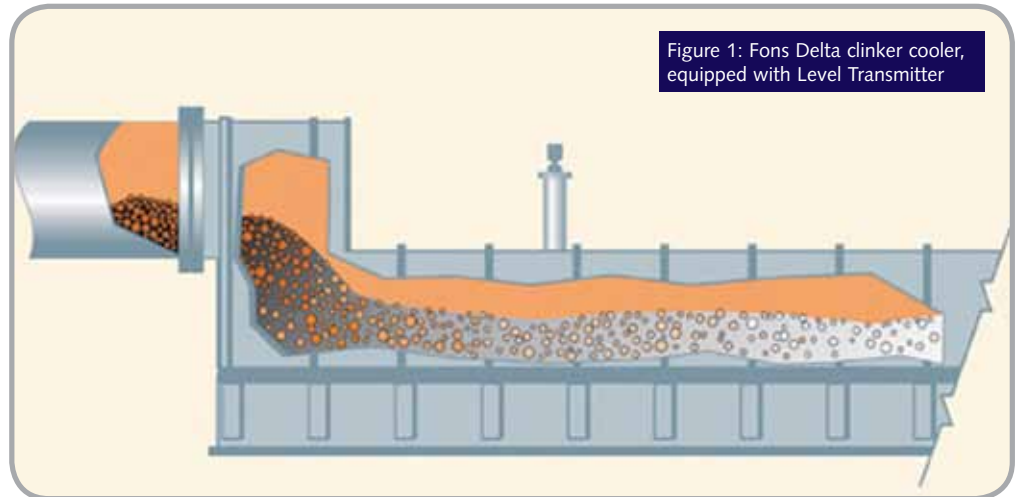
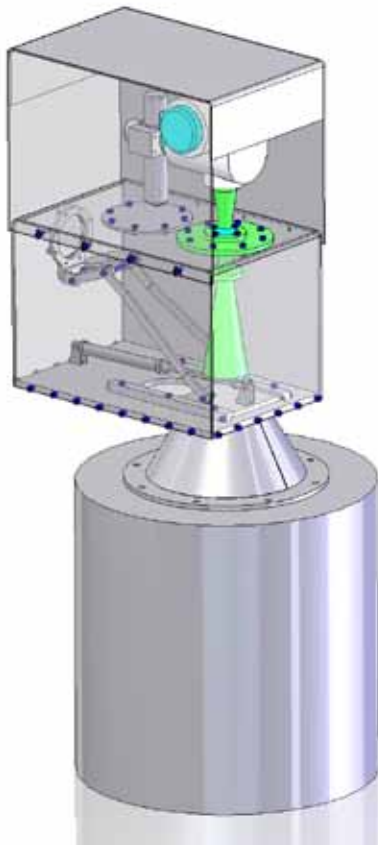


Figure 1: Fons Delta clinker cooler, equipped with Level Transmitter

Figure 2: Fons Delta Level Transmitter installation



Stable cooler operation

The target is to keep the kiln operation stable, thereby enabling stable air temperature recuperation.

A stable and high recuperation temperature can only be achieved with a stable clinker bed height in the cooler. The kiln discharges clinker unevenly over time. Traditionally, the clinker bed height is estimated/calculated by measuring a secondary effect. The two most common secondary measurements are:

1. the cooling air pressure in the chambers: the higher pressure shows the increased bed height above the compartment
2. the hydraulic pressure of the grate drive or electricity consumption of the mechanical drives: the higher hydraulic pressure drive/ higher electricity consumption of the mechanical drives indicates the increased bed height.

Common problems

However, the following problems are commonly observed due to secondary measurements:

- slow response time, because of low progress of the evaluation of the

measurement in the control device

- unreliable accuracy, because the measurements are generally not linear and repeatable due to the uneven process and material granulometry.

Instrumentation suppliers have developed level transmitters to obtain a direct measurement for the clinker bed height to overcome these problems.

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Clinker bed measurement

The main principle of the level transmitter is to measure the clinker bed level above the grate line of the clinker cooler. The measuring point is considered a few metres from the kiln dropping point. The level transmitter is mounted on the top roof of the clinker cooler casing (Figure 1). The main target of measuring the

clinker cooler bed level is to control the clinker cooler speed and thereby achieve a constant clinker bed level in the cooler, disregarding uneven discharge of clinker from the kiln.

For example, if the clinker bed level is optimised to 800mm by the plant production team, the clinker cooler target must be to keep the 800mm bed for stable high heat recuperation. If the clinker bed height starts to decrease, the clinker cooler drive speed will decrease, until reaching the desired 800mm bed height again and vice versa.

Smart design

This beneficial piece of equipment is a well-proven technology. The smart design ensures that the product will not suffer from overheating once installed. The upper casing (see Figure 2) of the level transmitter casing is designed with an automatic cooling air system (using compressed air from the plant) to protect the level transmitter from very high

Advantages of Fons Delta Level Transmitter

The following advantages are gained by operating the cooler with The Fons Delta Level Transmitter:

- keeping the clinker bed level stable will create stable high heat recuperation
- the kiln operation will not depend on the performance of the operator
- increased heat recuperation will lower the calorific heat consumption
- a stable kiln temperature will increase the lifetime of the clinker cooler and kiln refractory
- unwanted clinker outlet temperatures will be prevented
- not only the production rate of the cement plant, but also the quality and consistency of the product will be positively affected due to stable clinker bed height above the grate line of the clinker cooler grate.

temperatures. In case of insufficient cooling air, the level transmitter is still protected by automatically closing a gate between the device and the cooler.

This smart design brings a very stable

and reliable operation to The Fons Delta Level Transmitter. Even in the event of electricity or compressed air shutdown, the device will not overheat.