

FACT SHEET – Clinker Cooler

What is the purpose of a clinker cooler?

The pyroprocessing system transforms the raw mix into clinker, which is made up of gray, glass-hard, spherically shaped nodules about the size of marbles. In the clinker cooler the clinker is cooled from about 1,100 degrees C to 93 degrees C (2000 F to 200 F) by ambient air supplied by a forced draft or natural draft supply system that passes through the clinker and into the rotary kiln for use as combustion air.

In the reciprocating grate type of cooler, lower clinker discharge temperatures are achieved by passing an additional quantity of air through the clinker. Because this additional air cannot be utilized in the kiln for efficient combustion, it is vented to the atmosphere, used for drying coal or raw materials, or used as a combustion air source for the precalciner.

What Pollutants are emitted?

HAP metals (arsenic, cadmium, chromium, lead, manganese, mercury, nickel, selenium)

How are Emissions Characterized?

The dust content of the cooler exhaust gases is affected by the granular distribution of the clinker, the degree of burning of the clinker, the bulk density of the clinker, and the flow rate of the cooling air. Often a clinker breaker (i.e., hammermill) is located at the discharge of the cooler and may increase the dust burden.

What are the Equipment Control Options?

Clinker cooler systems are controlled most frequently with pulse jet or pulse plenum fabric filters. A few gravel bed filters have also been used to control clinker cooler emissions. Typical outlet PM loadings are identical to those reported for kilns.