



Hot Coke Clinker Alarm

Detecting Hot Coke Clinker on Conveyor Belts

Q

Question

How do you monitor the temperature of coke as it is pushed off the wharf, so hot clinkers do not burn the conveyor belt?

A

Answer

Situation Analysis

The hot coke is placed on a large wharf and allowed to cool, where hot clinkers are quenched by an operator who sprays them with water. But often the clinkers are not seen by the operator and they are pushed onto the conveyor belt to be transported to the storage bunkers. The problem is that hot clinkers with temperatures above 300°C (600°F) can set the belt on fire and destroy it. The cost of replacing the belt can be very high and of course, there is the downtime for the repair. An infrared thermometer with a wide-angle lens can measure the average temperature of the coke and can also detect the presence of hot spots. The instrument can be set up to measure a spot 450mm (18in) in diameter and can detect hot spots as small as 50 MM (2in) and temperatures as low as 300°C (600°F). If the belt is wider than 18 inches, then two instruments side-by-side are required.

Two rows of instruments are recommended, so that if the first row misses a hot spot, the second row will insure it is detected.



A

Answer

Solution and Improvements

The solution is to use at least 2 rows of two Ircon Modline[®] 7,76series, with on/off control. These instruments will provide the average temperature of the coke on the conveyor and also indicate the presence of any hot clinkers. They will not provide the actual temperature of the hot spot, but with the on/ off control, a water quench can be turned on to cool the hot clinker. The Modline 7 sensor can see a target of 18 inches in diameter and detect targets as small as 2 inches. It has a fast response time of 20mSec, so the speed of the conveyor is not a problem. A linear 4-20 mA output is provided to allow the operator to record the temperature of the coke for future analysis.

Ircon Product

Modline 7, 76

Accessories

- PA-7 Air purge

Benefits

- Reduced maintenance and downtime