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COMBUSTION GAS BLENDING CONTROL IN HOT-ROLLING MILLS

Task

"Further use instead of flaring": according to this principle, steel mills are increasingly using energy-rich process gases from their own plants instead of natural gas as combustion gases in the hot-rolling mill. However, these gases often fluctuate by up to 20 % in heating value and air requirement, which complicates their use and can lead to pollution problems. The addition of natural gas, which is required for heating value reasons, further exacerbates this problem. For the correct handling of these gases as required by the process, a fast, reliable gas measuring technology is therefore needed..

Solution

A heating value measurement of the gas mixture together with a measurement of the natural gas fraction provides the solution. A device system consisting of two calorimeters of the CWD2005 / 2005 PLUS device series, expanded to include integrated gas analysis for measurement of hydrocarbons and CO and a special measured value processing, supplies the needed setpoint for the blending control. An important variable for this is a special algorithm that takes into account the blending operations on the gas path between the natural gas addition and entry into the hot rolling plant. This enables the CARI (Combustion Air Requirement) error that is critical to the process to be reduced to less than 1%. The system operates with the short response time required for the control.

User Benefit

The system solution used here enables use of previously flared process gases in the hot rolling mill without the risk of a possible loss of quality. The danger of a plant shutdown due to violation of the CO limit is also reduced. This means process optimization that provides quality assurance, energy efficiency and minimal environmental impact.