

Monitoring and optimizing metal and steel production with the **emission measuring instrument testo 350**.



In a market characterized by increasing demand, constantly growing quality demands and a multitude of environmental protection regulations, metal and steel producers must work not only efficiently but also in impeccable quality. In order to be successful in this field, the use of the most modern

measurement technology such as the emission measuring instrument testo 350 is indispensable. Because this is the only way to optimize production processes and ensure uncompromising quality.

The challenge.

In raw iron production

Raw iron is produced by reduction (oxygen withdrawal) of iron ore in a blast furnace, or by direct reduction. Coke, natural gas or coal are used as reduction materials. In the blast furnace process, the prepared ore (pellets, sinter) and the additives are charged into the blast furnace from the top, together with coke. A hot blast flows in from below as a further energy carrier. The mixture of hot blast and reduction gases climbs up in the opposite direction to the sinking raw materials, and is drawn off at the top as stack gas. The liquid raw iron collects on the floor of the furnace together with the slag, and is regularly drawn off, and usually transported to a steel works for further processing.

The composition of the stack gas during the entire process is a crucial factor influencing the quality of the combustion in the air heaters.

In coking plants

Coking plants are thermal refinement plants for mineral coal, in which the coal is heated to at least 800 °C in dry distillation under exclusion of air (pyrolysis). The objective of this coking is the production of coke for industrial use, in particular in metallurgy.

Coke is characterized by a very high carbon content (>97 %) and only very few volatile components. During the process, coke oven gas is produced, which is used further. The specially suitable coal is dry-distilled ("cooked") over approx. 15 hours in a coke oven, and then transferred to a cooling process. The previously common wet cooling has been largely replaced by dry cooling in a slag cooler. This allows the recovery of heat via a heat recovery boiler, and a reduction of pollutant emission.

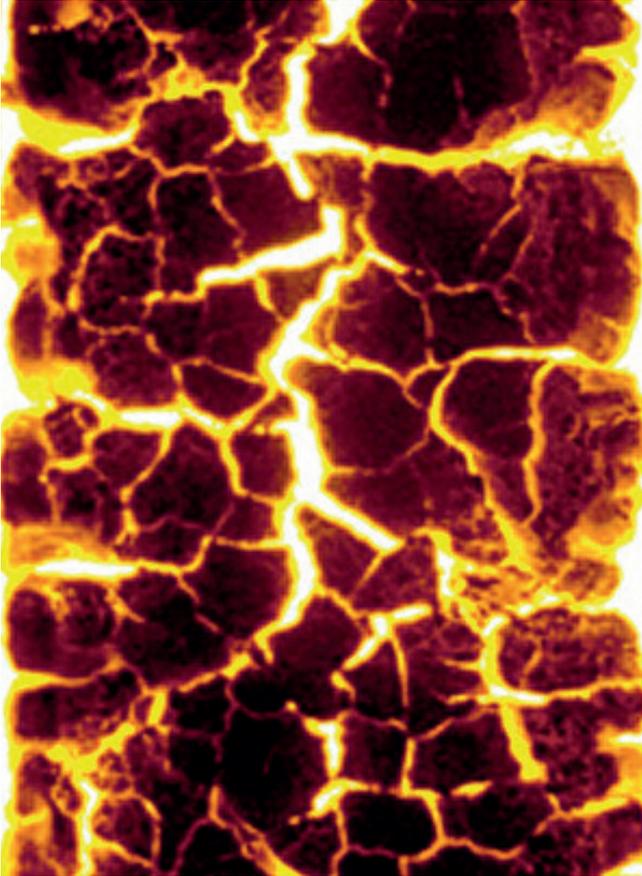
Relevant pollutants which occur in coke production are, in addition to dust, above all SO₂, NO_x, CO and organic components. With regard to permitted limit values, the exhaust gases are subject to certain limit values, and their composition allows conclusions to be drawn on the monitoring and optimization of the production process.



Tapping a blast furnace.



Freshly produced steel.



Coke production.

The solution.

In raw iron production

With the emission measuring instrument testo 350, the components carbon monoxide (CO) and carbon dioxide (CO₂) can be determined quickly and easily. The measurement is taken at the stack gas exit after the dust bag, in the blast furnace flue as a command variable for furnace operation, and in the downpipe before the dust bag for the plant balance.

The testo 350 can additionally be positioned in order to prevent the danger of fire in the CO dust bag, by use of a measurement.

In coking plants

Within the coke production process, the testo 350 can be used to measure SO₂, NO_x (the sum of NO and NO₂), CO and O₂. The emission measuring instrument has six slots, and can hold five gas sensors in addition to O₂. Since the CO value in the blast furnace provides information on the combustion efficiency of the furnace, it is one of the most commonly measured parameters. CO concentrations of 50,000 ppm can be reached here, which can be measured using the testo 350 and the optimally integrable dilution. The testo 350 allows you to measure and record all emission parameters easily and securely.

All measurements in both applications can be conducted confidently and without any problems; the measurement results are always precise and reliable. In addition to this, it is possible with the emission measuring instrument to visualize load changes on components as a time progression, thus allowing targeted plant downtime prevention. An optimization of time and costs during the production of steel, metal and coke is also benefited by the use of the testo 350.



testo 350 – all the advantages at a glance:

- Guided operation with helpful instrument pre-settings – for even easier measurements
- Large colour graphic display – for increased convenience in bad light conditions
- Insensitive to impact and dirt – ideal for use in tough surroundings

More information.

More information on the testo 350, and answers to all your questions concerning emission measurement at www.testo.com.



The emission measuring instrument testo 350.