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PROMECON at AISTech 2023
Detroit, Michigan, USA
May 8 – 11, 2023
Booth 2456

PROMECON at METEC 2023
Düsseldorf, Germany
June 12 – 16, 2023
Hall 4 / Booth E40

PROMECON PRESS RELEASE

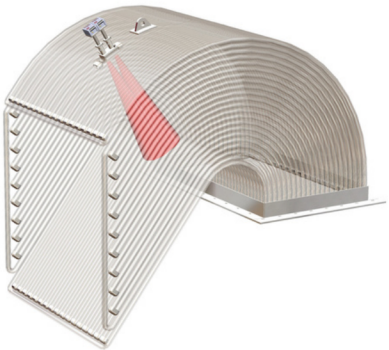
Off-gas analysis at electric arc furnaces in real time and with minimum maintenance

Non-intrusive online measurement methods enable rapid measurement of off-gas composition, gas temperature and flow velocity.

Barleben, Germany. PROMECON will present the McON IR system for rapid in-situ measurement of the composition and volume of off-gas at electric arc furnaces. The measured values can be used to improve the utilization of the chemical energy in the off-gas and minimize thermal off-gas losses. They can also reduce the energy requirements of the furnace, enabling optimization of the complete process.

Until now, measuring the off-gas from electric arc furnaces involved intrusive sensors or extractive measurements in the exhaust gas channel, which only provided the measured values with a delay or required high maintenance. In contrast, the new McON IR sensors operate on an infrared basis and do not require lances protruding into the off-gas duct. They measure chemical composition as well as the velocity and temperature of the off-gas stream directly at the off-gas manifold.

The system's infrared detector captures a large portion of the cross-section of the off-gas duct. The sensor measures the active infrared emission of individual gas molecules and uses this to determine the concentration of gases such as carbon monoxide, carbon dioxide and methane; it also detects water in the exhaust gas stream - an aspect that is playing an increasingly important role in safety at the melting furnace. A second pair of sensors measures the flow velocity and temperature of the off-gas.



The sensors are installed immediately after the ventilation slot (4th hole) on the manifold - very close to the furnace. Since no components protrude into the cross-section of the pipe, installation between the water-cooled piping is very simple. The optics are purged with nitrogen, and the sensor electronics are cooled. The protected cable routing with additional flame protection help the sensors achieve service lives of up to twelve months. Also due to low maintenance requirements, the new sensors have a significantly higher availability compared to other intrusive systems.

Hans Georg Conrads, Managing Director at PROMECON, sees great potential for minimizing the energy requirements of electric arc furnaces with the new system: "The new McON IR sensors work so fast that the measurement results can be used for real-time control of the furnace, for example with the oxygen lances or the gas burners."