



Getting the most out of the EAF

The plant of FERALPI STAHL in Riesa, Germany is using the new EAF off gas measurement system McON IR by PROMECON

THE TASK

The 100-t electric arc furnace consumes more than 1.5 GWh of electrical energy every day the production runs. With the current high market prices, electricity costs can easily rise to more than 150,000 euros per day. Hence, a major goal is to save energy by optimizing the melting process in the furnace.

THE SOLUTION

At the EAF, one of the key performance indicators is the off-gas composition, particularly the CO₂/CO ratio. The CO₂/CO ratio in the off-gas and the energy consumption of the EAF are correlated. Thus, quick off-gas measurement and analysis is an indispensable prerequisite for the reliable control of the EAF parameters, e.g. by actuation of the oxygen lance, the gas burners and coal injection.

PROMECON has introduced a new patented measuring technology for measuring no less than the CO₂, CO and water contents, gas velocity, gas temperature and enthalpy flow. The sensors are mounted directly on the duct wall, do not protrude into the duct and sit 100% flush with the duct. They cover a large part of the duct cross-section and can easily measure through the cold post-combustion air layer. Thus, a large part of the off-gas stream is monitored.

THE RESULT

After installing the sensors at the EAF in Riesa, the new measuring system showed the results expected. Adding foaming coal to the heat can now be observed as a change in CO₂/CO content with minimum delay. Plant operators can now optimally adjust the CO₂/CO ratio by means of free variables, namely the oxygen at the burners and the lances, and the injection of foaming coal.

THE BENEFITS

The collaboration between PROMECON and FERALPI STAHL has been very productive throughout the project, and the system has proved to be much more robust in service than the previous technology. The signals can be used by the operators to optimize the gas burners and oxygen lancing to achieve cost savings. The plant operator is convinced that this will result in a short ROI.



Installation situation at FERALPI STAHL in Riesa



CUSTOMER FEEDBACK

"The system has worked very well from the first weeks of its installation. Knowing the off-gas composition gives us a reliable picture of the EAF's chemical profile. In the past, sampling with an extractive system was very complicated and the values were only available after a few minutes, plus we had major maintenance problems. Now we instantly see the values and our melt shop staff do not have to check the system every day."

DARIUSZ SOSIN | Production Manager, FERALPI STAHL, Riesa

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