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Advanced EAF Optimization Strategies Using Intelligent Tenova Technologies

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For more than two decades, off-gas analysis technology has been used worldwide, initially as an engineering tool for the design and tuning of fume systems and later as a key tool for EAF chemical energy optimization. In later years, the off-gas analysis has been used for full EAF dynamic control that addresses scrap variability that does not allow for simple EAF profiling operations. Today, with the issue of raw material variability, EAF steelmakers have a new challenge in relation to reducing CO2 emissions, as well as finding options to continue optimizing the process without compromising product quality, while reducing operating cost in a safe operating environment.
Tenova's "intelligent" EAF (i EAF®) technology uses off-gas analytical data and advanced software techniques based on Artificial intelligence ("AI") principals such as robustness, security and safety to implement full dynamic control of the EAF process, providing the functionality needed for the modern EAF steel plant. The i EAF® closes the mass and energy balance in real-time, determining the actual net energy received by the charge after energy losses and uses the net energy for real-time control of the electrical and chemical energy sources. The iEAF® uses the NextGen, a state-of-the-art analyser that utilizes laser technology that requires minimum maintenance with no calibration and with a fast response with delay time under ten seconds.
This paper will present an overview of the i EAF® system, together with Tenova's optimization strategy, steps to reduce emissions and the latest proven results.

Primary author: Mr VAZQUEZ, Armando (Tenova Goodfellow Inc.)

Presenter: Mr VAZQUEZ, Armando (Tenova Goodfellow Inc.)

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