

Slag Module

Controls Slag Composition and Foaming

SmartFurnace®

The SmartFurnace® System enhances productivity and reduces energy use per ton of steel. As an advanced AI-driven expert system, based on the SmartKnB® platform developed by AMI, it dynamically adjusts electrical and chemical energy inputs based on real-time heat conditions. Recognizing that every EAF is unique, we provide the tools and expertise needed to optimize performance. With a modular design, the system enables coordination between energy input controls, while its open architecture allows for seamless customization, ensuring maximum efficiency.

Slag Module

Implements an online mass balance to model slag composition, recommending and controlling flux additions to achieve target basicity and MgO saturation for optimized EAF operations.

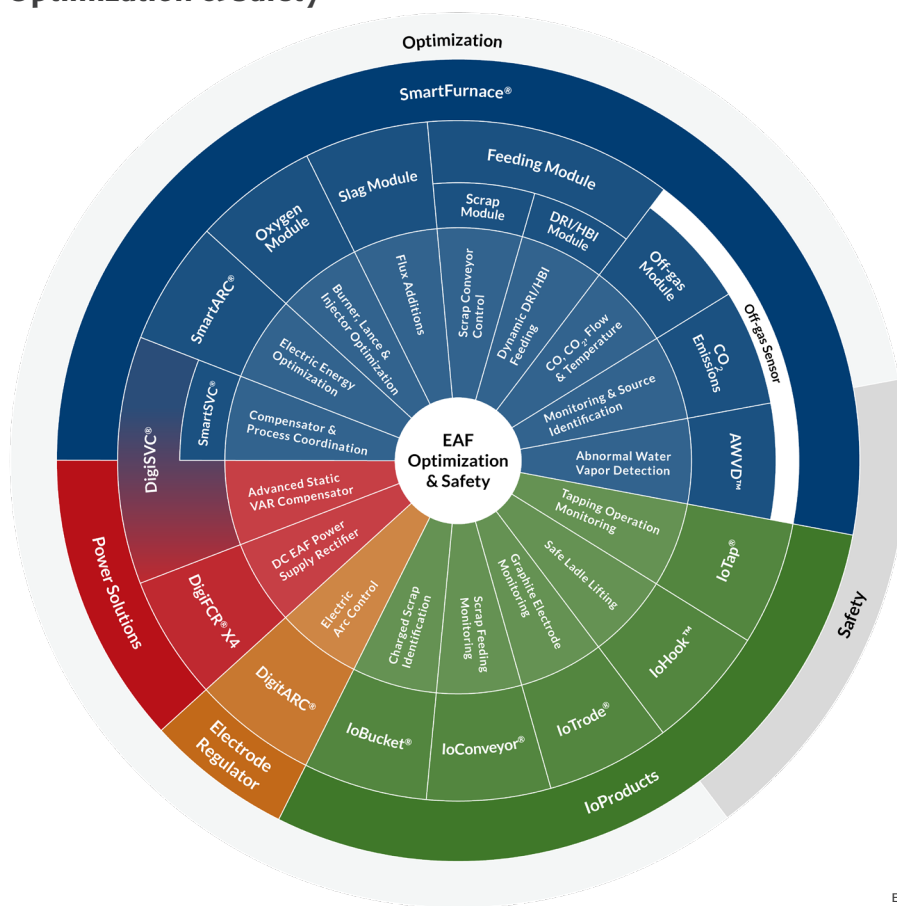
Key Features

- ▶ Real-time slag monitoring for FeO levels, basicity, and MgO saturation.
- ▶ Dynamic control of carbon and oxygen injection for stable foamy slag formation.
- ▶ Online mass balance model for slag composition management.
- ▶ Flux addition recommendations and control to meet slag targets efficiently.
- ▶ Slag endpoint prediction to improve consistency and timing.
- ▶ Integration with the Oxygen Module for post-combustion and slag conditioning optimization.
- ▶ Supports stable arc operation, reducing fluctuations during the heat.

Benefits

- ▶ Improves yield by reducing Fe losses through better FeO control.
- ▶ Reduces energy losses and refractory wear with stable foamy slag.
- ▶ Enables precise metallurgical control to achieve target basicity and MgO saturation.
- ▶ Optimizes flux usage, reducing material costs.
- ▶ Produces higher-quality steel by facilitating impurity removal.
- ▶ Supports consistent foamy slag formation, increasing productivity.
- ▶ Lowers carbon, oxygen, and gas consumption per ton.
- ▶ Shortens decarburization and power-on time with better injection control.
- ▶ Reduces waiting times due to unmelted scrap and cross-arc issues.
- ▶ Supports overall production cost reduction through efficient energy and material use.

Electric Arc Furnace Optimization & Safety



EAF OPTIMIZATION & SAFETY DIAGRAM

Electrode Regulation System

The DigitARC® PX3 Electrode Regulation System is the core of AMI's EAF optimization solutions. With over 35 years of expertise and implementation in 275+ Furnaces worldwide, it delivers proven reliability and efficiency for even the most demanding EAF and LF applications. Our advanced electrode control technology ensures optimal arc stability, real-time performance monitoring, and seamless operator interaction through an intuitive interface. Today, more than 80% of the North American EAF steel capacity is melted with the AMI regulation systems.

IoProducts

Advanced solutions for monitoring and controlling critical aspects of the steelmaking process. Built on the SmartKnB® graphic development platform, they provide advanced customization within an open, user-friendly architecture. By integrating Artificial Intelligence, and Image Processing, these modules accelerate digitalization, improving efficiency, safety, and overall process optimization.

Power Solutions

We provide power electronic solutions that play a key role in enhancing Meltshop performance. The DigiFCR® X4 is our Firing Circuit Replacement system, designed to fully upgrade the controls of existing DC EAF power rectifiers. It improves current regulation while also extending protection for the furnace. Meanwhile, the DigiSVC® is our advanced Static VAR Compensator that stabilizes voltage, improves power factor, and compensates for reactive power in industrial electrical systems. Both solutions can be delivered with new power electronic hardware or as retrofits for existing systems, regardless of the original manufacturer.

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