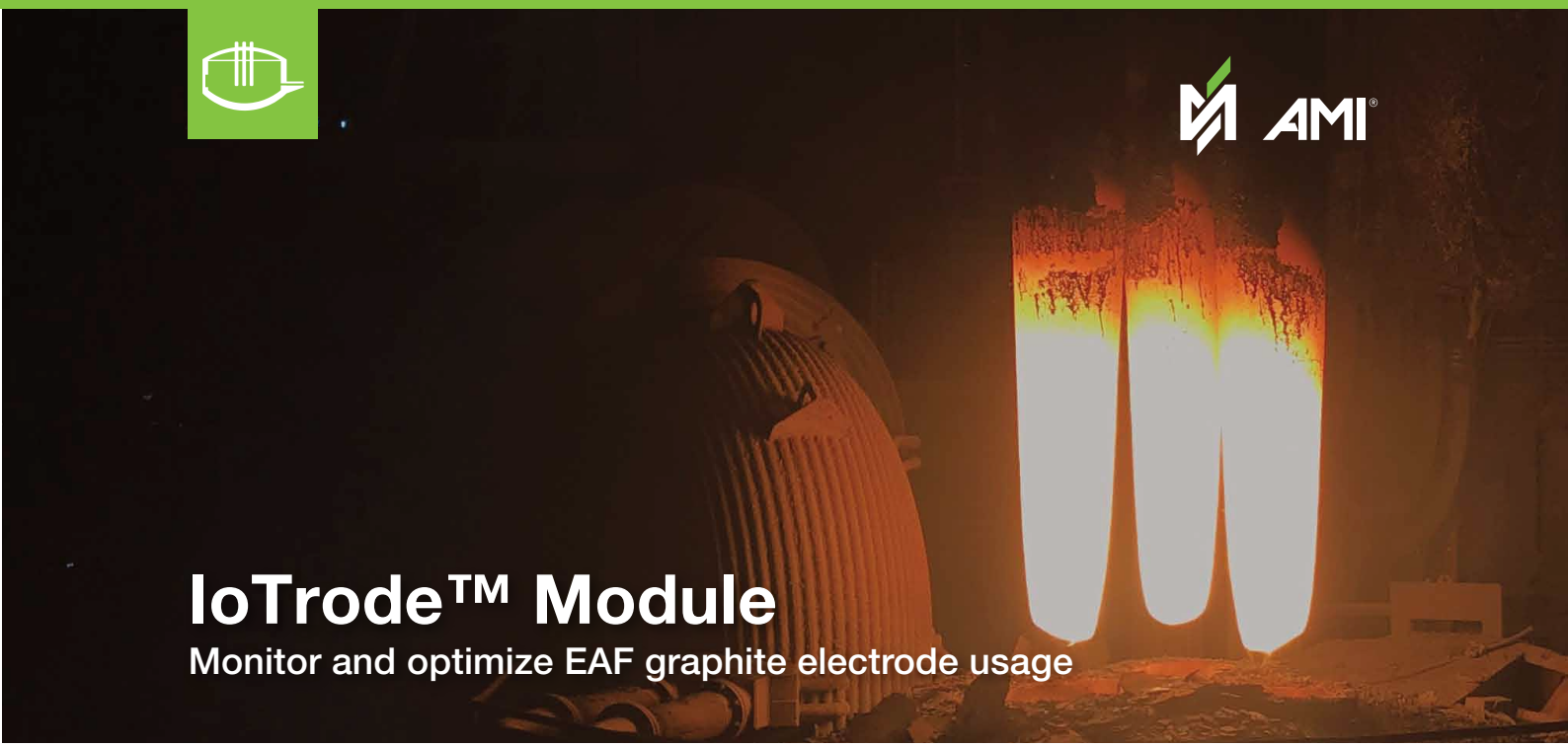


IoTrode™ Module

Monitor and optimize EAF graphite electrode usage

IoTrode™ Module

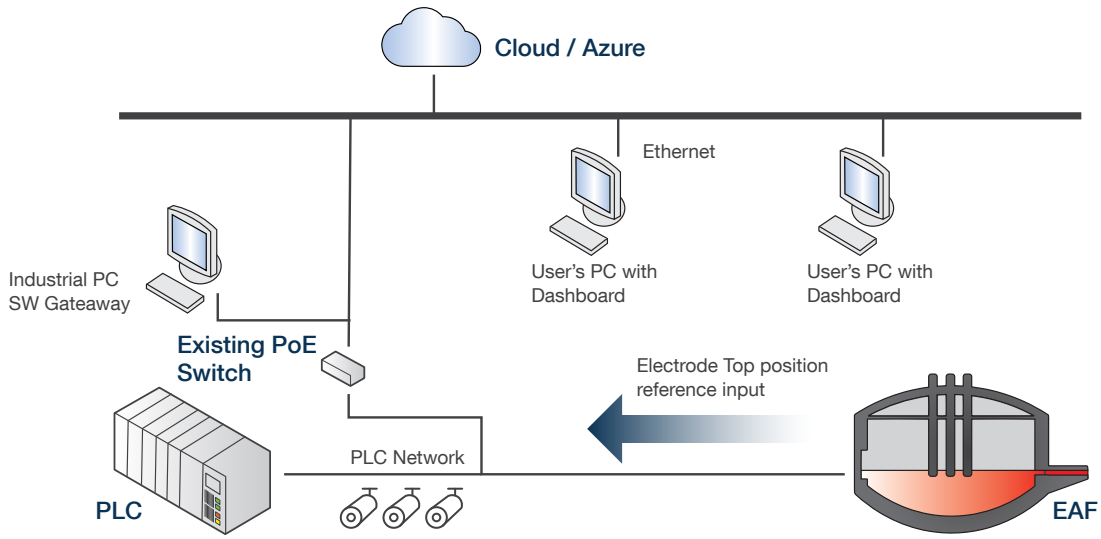
IoTrode™ Measures, Controls, and Optimizes the consumption of graphite electrodes using advanced digital technologies and the tools of Industry 4.0.

IoTrode™ includes:

- Real-Time electrode consumption visibility.
- Real time measurement of consumption and of quantification of graphite electrode performance.
- Automation/Control module to reduce consumption and improve performance in use. This complete system contains the best technology in the market that fulfills the functionality and operational benefits that EAF steel producers need and the most forward thinking operators.

Core Modules:

- The IoTrode™ system consists of modules that using Industry 4.0 techniques and tools creates a “Digital Twin” of graphite electrode usage in an EAF Melt Shop.
- VCM: Visualization and Consumption Measurement.
- ORP: Oxidation Reduction Performance and Real Time Modeling.



Our Meltshops Solutions including SmartARC™, DigitARC™ and SmartFurnace™, will reduce your electrode consumption and make your EAF run better. We don't build EAF's we make them run more efficiently using AI algorithms to ensure that our customers EAF's run in an optimized fashion.

AMI Automation melt shop optimization hardware and software are used in over 90% (by tons poured) of the leading EAF melt shops and is supported by the largest technical team in the America's exclusively dedicated to EAF optimization. AMI offers flexible and friendly modular control systems designed to make your electric arc furnace run more efficiently and help your operator obtain the best performance in your furnaces.

SmartFurnace™

The SmartFurnace™ System utilizes several individual modules to adapt and optimize every aspect of the furnace operation. The open architecture allows the user to customize the operation and enhance the EAF performance.

Modules

- **SmartARC™**
  Decides the best operating points based on the heat stage, slag level, arc stability and scrap mix for transformer and reactor tap reference.

- **IoTrode™**
  Measures, Controls, and Optimizes the consumption of graphite electrodes using advanced digital technologies and the tools of Industry 4.0.

- **Oxygen**
  Utilizes electrical data from the PX3 and SmartARC™ to become more than a burner control program. The SmartFurnace™ Oxygen Module controls the rates of gas, oxygen and carbon considering the conditions of the heat the composition of the bath and additional inputs to provide accurate end point prediction and control.

- **Slag Optimization**
  For carbon steel producers this SmartFurnace™ Module implements an online mass balance to model the slag composition and recommend and control flux additions to achieve the target basicity and MgO Saturation.

- **Off-Gas**
  The Off-Gas Module saves energy. The main goal is to optimize the chemical energy into the EAF. The EAF control system is capable of analyzing on real time the EAF off gas using the TDLAS technology with a laser beam.

- **AWVP (Abnormal Water Vapor Detection)**
  One of the most advanced SmartFurnace™ Modules AWVD utilizes *AI* and machine learning to compare the many normal sources of water in a furnace vs an abnormal water vapor condition.

- **DRI/HBI Feed**
  Optimize the time to start the DRI/HBI feeding and control the steel temperature using advanced metallurgical modeling to avoid accumulation of un-melted material in the furnace.