



# VAIRON BF OPTIMIZER

## PROCESS OPTIMIZATION FOR BLAST FURNACES

### BF PROCESS OPTIMIZATION

Primetals Technologies is the leading supplier of automation systems for the iron and steel industries, and in particular blast furnace process optimization systems, which are currently operating in more than 70 installations worldwide—with furnaces of all sizes, ranging from 500 to 5800 m<sup>3</sup>.

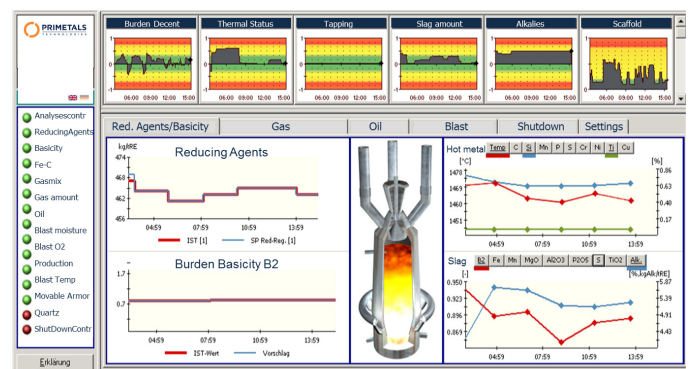
The VAiron BF Optimizer—the package of solutions for automated blast furnace operation—was developed in close collaboration with voestalpine Stahl in Linz, Austria. The technology is based on sophisticated process models, artificial intelligence, mass and energy balances, a closed-loop Expert System for fully automatic operation, and other advanced software.

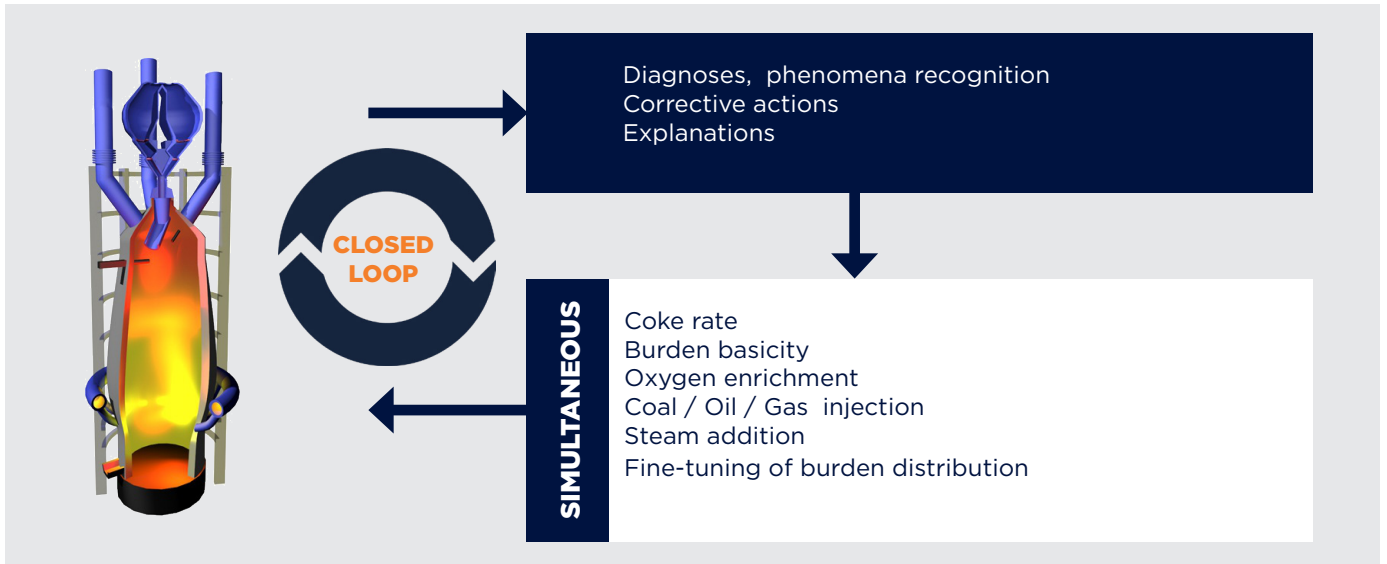
### STANDARDIZED OPERATION

The ultimate aim in blast furnace operation is to achieve stable furnace conditions and stable hot-metal quality for the lowest possible production costs. The VAiron BF Optimizer monitors the process 24 hours per day, executing corrective actions in a closed loop, if necessary. The system thus counteracts changes in the process caused by fluctuations in process parameters such as raw-material quality. In addition, the Expert System also provides explanations for its decision-making process for full transparency.

### KNOWLEDGE BASE

A vitally important component of the system is its knowledge base, which was developed in close collaboration with voestalpine Stahl and which allows steel producers to benefit from the vast experience gathered from numerous blast furnace projects. This knowledge base can be modified and extended to adapt to the customer's specific operational philosophy and practices.





Closed-loop operation is possible even for complex control actions such as the fine-tuning of burden distribution

### HIGHLIGHTS

The Expert System, which supervises and controls the blast furnace, helps to avoid heavy control actions and critical process situations by reacting quickly as conditions change, subsequently increasing furnace lifetime. Thanks to the high maturity of the system, closed-loop operation is possible even for complex control actions such as the fine-tuning of burden distribution.

Rule-based operation equalizes operational decisions over all shifts, leading to highly stable furnace conditions, consistent hot-metal quality, and reduced coke rate. As a result, the investment typically pays for itself within a matter of months.

### MAIN BENEFITS

- Typical savings for coke > 5 kg/tHM
- Quality improvement: typical reduction of standard deviation of product KPIs of 10%
- Flexible raw material utilization
- Standardized, shift-independent operation
- Increased productivity
- Typical pay-back time of less than one year

