

Steelmaking BOS Sublance End-Blow Model



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POST-SUBLANCE CORRECTION OF OXYGEN AND COOLANT TO REACH TARGET END-POINT

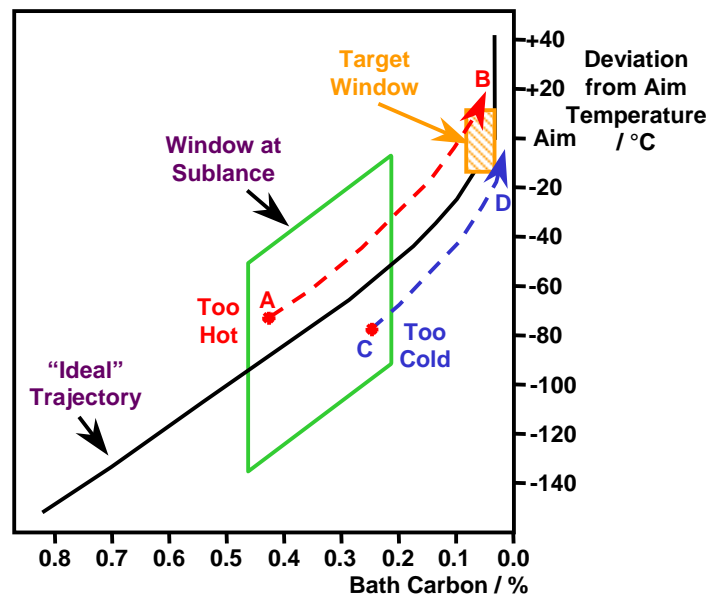
CONCEPT:-

After the sublance gives a temperature and carbon estimate towards the end of the blow, the model calculates the oxygen volume and coolant adjustment needed to achieve the target end-point carbon and temperature.

DETAILS:-

Using the sublance sensor readings as a starting point (typically at 85-90% of the initial downloaded oxygen figure), the End-Blow Model first calculates the oxygen needed to reach the target carbon content and the resulting temperature rise. If the predicted temperature is above the aim, the weight of coolant (e.g. ore) needed to adjust is calculated, while if the charge is over-cooled, additional oxygen to adjust for extra heat is needed.

CARBON-TEMPERATURE FLIGHTPATH



The model is integrated into the plant process control computer system, and is triggered automatically on receipt of the signal data from the sublance PLC. The new oxygen and coolant figures can be downloaded directly to the plant PLCs so that the final adjustment is made under fully closed-loop control.

The model is based on fundamental thermodynamic principles, backed up by statistical tuning to meet local conditions, and constraints built in to ensure safe operation even if bad quality data is received. Self-tuning adaptive factors are automatically updated each heat to keep model predictions in line with changing conditions in the converter.

The system also includes routines to validate the sensor signals, and to calculate the carbon from the liquidus temperature or the oxygen activity readings, depending on the type of probe used.

BENEFITS:- Include:

- Minimum reblows for temperature and carbon,
- Reduced converter cycle time,
- Maximum yield through reduced slag Fe losses,
- Maximum alloy and deoxidant yield through reduced bath oxygen,
- Increased converter life,
- Tailored to meet local plant policy and operating conditions,

STATUS:- Installed and operating at three Corus BOS shops.