BSE BADISCHE STAHL-ENGINEERING GMBH

Excellence Story

Seventh' EAF at Hyundai Steel Inchon Works equipped with VLB Technology

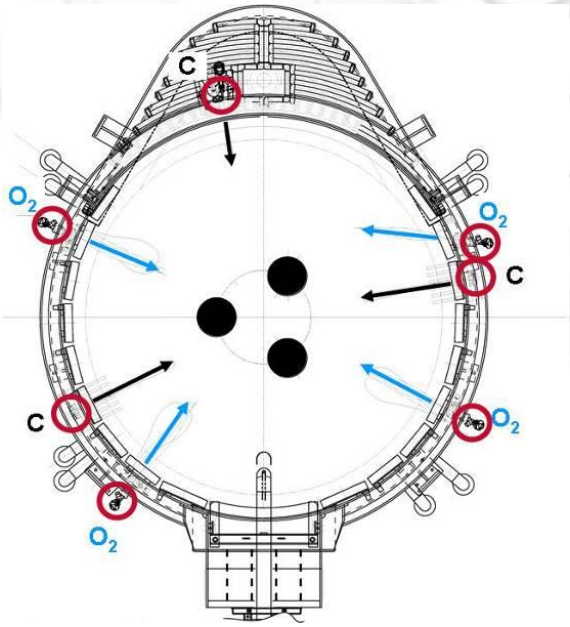
BSE Chemical Energy Installation and Successful Process Optimization in South Korea

With its latest Chemical Energy project in South Korea, BSE once again has proven, that only the combination of excellent hardware and detailed process know-how guarantee an outstanding performance for every electric arc furnace.

Hyundai Steel Company planned to restart their 70t AC EAF, which had been shut down in 2002, at their steelmaking facilities in Inchon (South Korea). On this occasion Hyundai Steel and Badische Stahl-Engineering (Germany) agreed on the supply of a tailor-made Chemical Energy system, consisting of a multiple point installation of Virtual Lance Burners (VLB), post combustion injectors and carbon injectors as well as media supply for the injection tools by new valve racks for oxygen and natural gas and a new carbon dispensing machine.

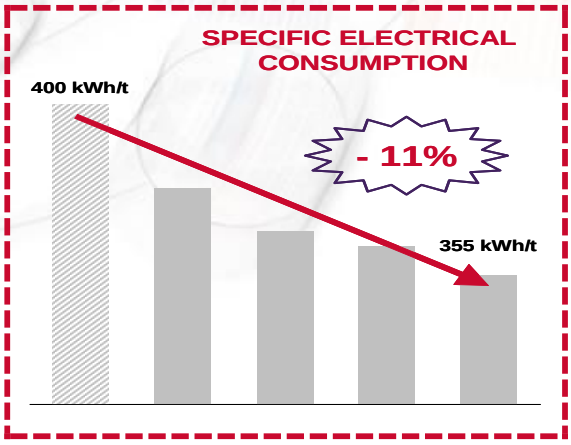
BSE CONCEPT

- 4 VLB's mounted in side wall
- 3 Post combustion injectors
- Valve racks for oxygen and NG for VLB's and PC-injectors
- 1 CarbJet mounted in the EBT; reuse of 2 existing carbon lances
- TopArc function for automatic carbon injection and oxygen optimization
- Carbon Injection Device
- Supervision services and process optimization for the complete system



RESULTS/BENEFITS

The installation of the new system respectively the following re-start of the furnace took place in May 2008.
As shown below the specific electric consumption was reduced with the new installation and process optimization by BSE from 400 kWh/t (average value in 2002) to 355 kWh/t – **just within one week!** Also the yield improved from approx. 87% to 88,9%.



These results underline the **approach of BSE**:

Due to the dynamic operation mode of the VLB and CarbJet system BSE does not focus only on reduction of specific electric consumption but also on increasing the yield. The aim is to adjust the **optimum between consumptions of energy, oxygen, fuel, alloys and yield**.

BSE is proud for having delivered its technology and process know-how to Hyundai Steel and therewith carry on the excellent long-lived mutual partnership and cooperation between the two companies.

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We are Steelmakers!

Since 1983, the Badische Stahl-Engineering GmbH (BSE) has been acting as a service provider for increasing the efficiency and productivity in the electric steel industry world-wide.

BSE is a sister company of the Badische Stahlwerke GmbH (BSW), one of the world's most efficient Electric Arc Furnace steel plants.

This unique partnership between BSW and BSE ensures that all products and services provided by BSE are not just based on mere theory, but on more than 4 decades of own proven operational experience.

BSW and BSE – a unique partnership that will help you to reach even ambitious goals.

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From Steelmaker to Steelmaker