

## Mastering the most challenging EAF revamping project in BSE history

Revamping of two 140t DC twin-shell furnaces at Posco, Republic of Korea

**Late November 2007 Posco, the fourth largest steel-making company contracted BSE for the revamping of their two twin-shell furnaces at Gwangyang Works, Republic of Korea.**

Posco's main motivations for the revamping were various: increase of furnace shell volume thus avoiding scrap leveling, arc deflection to side wall panels and roof, redesign of bottom shell with higher liquid heel capacity, new bottom electrode, and finally improvement of all furnace kinematics.

### THE APPROACH

The design of the old furnaces with relatively high shell and small diameter was no longer state-of-the-art for an operation based on 100% scrap as input material. Based on our operating know-how and in-depth process knowledge of fast running furnaces we designed an optimal furnace size considering all crucial parameters such as input material, density, hot heel, chemical energy and maintainability.

Several rounds of fruitful technical discussions with Posco as well as computer simulations and CFD modeling resulted in an optimal furnace design. Lots of Posco's wishes have been included in our engineering making of this furnace design a **tailor-made solution** which Posco could be proud of: **That's our furnace!**

The enlargement of shell diameter and reduction of shell height, together with several other space restrictions, available clearance of clean house doors, led finally to a completely new furnace starting from the foundation level. BSE services included the basic and detailed engineering of the completely new furnaces. Most manufacturing of equipment was made in Korea under the supervision of Posco. Supply of key components such as aluminium conducting arms, guide roller units, hydraulic units and PLC automation Level 1 came from abroad. Two DC-Online monitoring systems visualizing the furnace set points, real time operating points and regulation behavior of the furnaces were also part of our delivery.

### THE CHALLENGE

The biggest challenge of this furnace revamping project was to complete simultaneously the supervision of installation on all four furnace shells.

In addition during the installation phase, Posco decided to prepone the start-up of the arc furnaces by 5 weeks due to market conditions favorable for the electric steelmaking.

Thanks to **BSE's strong project management** and **Posco's commitment**, the challenge could be met and all furnaces started early March 2009.



One of the revamped twin-shell furnaces at Posco Gwangyang Works, Republic of Korea

### RESULTS / SUCCESS

After a short time of operation, the production department of Posco was excited by the features of their new furnaces,

- ⊙ reliable mono-roof design allowing roof and centre-piece to be changed within short time
- ⊙ optimized shell volume
- ⊙ state-of-the-art and maintenance friendly equipment

were some of the first comments.

These newly revamped twin-shell furnaces will allow Posco to meet their future production targets and keep them one step ahead in the competitive steelmaking environment.

**Excellent engineering work, short stoppage period, professional project management and close cooperation with the customer made the difference!**

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