

## Revamping of emission control system / HTQ System

SeAH Besteel / Korea operates two 80t AC EAF's at their melt shop in Gunsan

Both Electric Arc Furnaces were equipped with identical DEC (Direct Evacuation Control) systems composed each of an elbow, a straight elbow duct, a combustion chamber, long water cooled ducts, a gas cooler with booster fan, and a pulse jet bag filter. The picture on the right shows the complexity of the old system.

Due to productivity increase and increased utilization of chemical energy, the old fume emission control system was no longer able to exhaust properly the furnaces. The main problems at the former emission control system were:

- Dust accumulation inside the ductwork
- Heat damage of water cooled parts
- Water leakage due to too high gas velocity
- High maintenance of the gas cooler
- Insufficient capacity of booster fan
- Loss of bag house efficiency due to high pressure drop

In April 2005, BSE and BCI (Bender Corporation Inc.) got the order to redesign the entire fume emission control system with the aim to achieve a modern and state-of-the-art system in compliance with future local governmental limits.



The project was divided in two phases.

1. **ON-SITE INVESTIGATION AND CONCEPTUAL ENGINEERING** to define the optimal design of the new fume emission control system.
2. **IMPLEMENTATION OF THE NEW FUME EMISSION CONTROL SYSTEM.** BSE supplied the **High Temperature Quenching System (HTQ)** for both furnaces.

All revamping work was done in August 2005 and the hot commissioning took place early September. Immediately improvements in the direct evacuation and canopy exhaust could be observed.

The main advantages of the newly designed fume emission control system with spray chamber technology can be summarized as follows:

- Reduction of water cooled duct work
- No more dust drop out in the ducts
- Low pressure loss in the DEC system
- Economical solution to avoid recombination of dioxins and furans (future governmental limits)
- Elimination of gas cooler and booster fan
- Better utilization of two of the existing bag houses
- Elimination of the third bag house

Besides being prepared to match future environmental regulations, which will certainly become more stringent in the near future in Korea, SeAH Besteel will be able to increase the planned melt shop throughput without production limitations due to their fume emission control system.



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