

## Optimising the output with the right input – 10% performance boost by chemical energy input

Successful installation of Chemical Energy System at Kalyani Carpenter Special Steels (India)

In February 2011, Kalyani Carpenter Special Steels Ltd. and BSE signed a contract for the supply of a tailor-made Chemical Energy System for the 35 tons AC-EAF at the meltshop in Pune, Maharashtra. By the installation of the system, featuring hard- and software for oxygen and carbon injection, Kalyani intends to increase the production with lower investment rather than revamping the complete furnace.

### THE CONCEPT

The concept comprises a multiple point installation of Virtual Lance Burners (VLB) and carbon injectors (CarbJet), media supply for the injection tools by new valve racks for oxygen and natural gas as well as hard- and software for measurement, control and analysis.

In order to optimise the start-up procedure and to pave the way for a smooth and efficient operation later on, it was also agreed to execute a special training seminar for Kalyani personnel at BSE/BSW in Germany before the actual installation.

### BSE SCOPE OF SUPPLY

- ⊙ Two VLB complete with check valve safety devices
- ⊙ Two CarbJets
- ⊙ Water cooled side wall copper box for VLB & CarbJet
- ⊙ Holding frame for VLB copper box
- ⊙ Oxygen valve rack including connection of future main oxygen line for Lance Manipulator
- ⊙ Electrical equipment
- ⊙ Supervision of installation and start-up

### TRAINING AT BSE/BSW

A one-week training seminar of Kalyani's operation and maintenance personnel took place at BSE/BSW premises in October 2011. At class room training as well as during live observation at BSW steelplant production and maintenance downtime the following topics were covered:

- ⊙ Oxygen / carbon injection and its influence on furnace chemical processes
- ⊙ Operational instructions for efficient exertion of the new system
- ⊙ Assembly of hardware and its maintenance routine

### RESULTS / BENEFITS

In October / November 2011, the new system was installed and successfully set into operation. Within shortest time (just one day) the expected performance figures were achieved – and in case of electric consumption even exceeded. Hence, the new system has effectuated each a **reduction of electric consumption and power-on time by approximately 10 %**.

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**Kalyani's personnel perfectly satisfied with the handling and performance of the new system**

Delta	Expected	Achieved
Electric consumption	-35 kWh/t	-48 kWh/t
Power-on time	-6 min	-6 min

### FURTHER PROJECTS

Beside the oxygen project, Kalyani decided to go with BSE for further projects: Partly revamping of EAF equipment in combination with a state-of-the-art electrode regulation system and revamping of the existing offgas system by implementing a BSE High Temperature Quenching system providing a more efficient offgas cooling.



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