

## SUCCESSFUL EAF Revamping at AMSTEEL2/Malaysia

First project at Lion's Group to be in time, in budget and with 100% satisfaction

**BSE have demonstrated once again its outstanding project management and overall capability to revamp existing facilities by meeting 100% satisfaction of customer. A new EAF has been set up!**

Amsteel Mills SDN BHD, Banting/Malaysia, is operating a DC furnace with 160t tapping weight. The EAF was originally designed as a shaft furnace with 40m shaft of two finger levels.



### THE CONCEPT:

**From high shaft to conventional DC-EAF with two bucket charging.**

BSE has been awarded to set a concept for revamping of the existing shaft furnace to a conventional DC-EAF with two bucket charging. Main focus was set on low investment, low maintenance costs and high equipment availability and productivity. BSE has been asked to determine the concept with an on-site investigation prior to contract awarding.

## **BSE SERVICES:**

### **A. Engineering & Revamping**

BSE delivered detail engineering. Manufacturing of equipment has been made as much as possible locally in Malaysia and partly in Germany. The equipment has been preassembled and tested on site prior to the shut-down. Amsteel2 has nominated their experienced 'on site work force' for the installation work while the supervision was made by BSE personnel.

BSE executed all work, from A to Z including the following equipment modifications:

- **Alloy System** - modifications to the alloy feeding system into the ladle allowing an intermediate storage of up to three different alloys for the respective heat and a continuous feeding into the ladle.
- **Civil Works** - the new furnace concept started at the ground level with new foundations
- **Control System** – a new EAF PLC was integrated into the existing PLC network and a state of the art HMI system with multiple operating stations was installed.
- **EAF** - new EAF tilting platform, upper & lower shell, roof & elbow and electrode & roof lifting system
- **Electrode Arm** - New Current conducting electrode arm made out of Aluminium has been supplied
- **Electrode Regulation** - new Electrode Regulation with DC-Online
- **Hydraulic** - redesign of valve stands of the hydraulic system for the EAF movements
- **Level 2 Automation** – a new Level 2 automation system was installed that includes the BSE Delay Recording System and an interface to the existing Level 3 system
- **Off-Gas System** - the off-gas system has been redesigned and simplified with a new settling chamber and water cooled duct connection to the existing system and elimination of scrap catcher and after burner.
- **Scrap Yard** - new transfer cars and buckets
- **VLB System** - BSE oxygen and carbon injection technology (side wall) was introduced

### **B. Supervision of Commissioning and Start-up**

The commissioning and start-up was made under the supervision of BSE. A stable operation has been achieved already after the first couple of days. Further optimization of the operating pattern and the fine adjustment of the BSE oxygen technology have shown a very promising behaviour and the capability of new production records.

## **TIME FRAME**

Within less than a year from awarding of contract, BSE has successfully commissioned the new EAF in Malaysia.

|                                |                      |
|--------------------------------|----------------------|
| Contract Signature             | End August 2004      |
| Delivery of Detail Engineering | End of February 2005 |
| Stoppage of EAF                | June 2005            |
| Duration of Revamping          | 32 days              |
| Start up of new EAF:           | 8th July 2005        |

## **5. RESULTS/ PROJECT SUCCESS**

The project has been executed to the full satisfaction of Amsteel2. After short time of operation the following results has been recorded: Average Power On time: 47 min, Electrical Energy Consumption: 401 KWh/t, Average Tapping weight: 158 t.

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