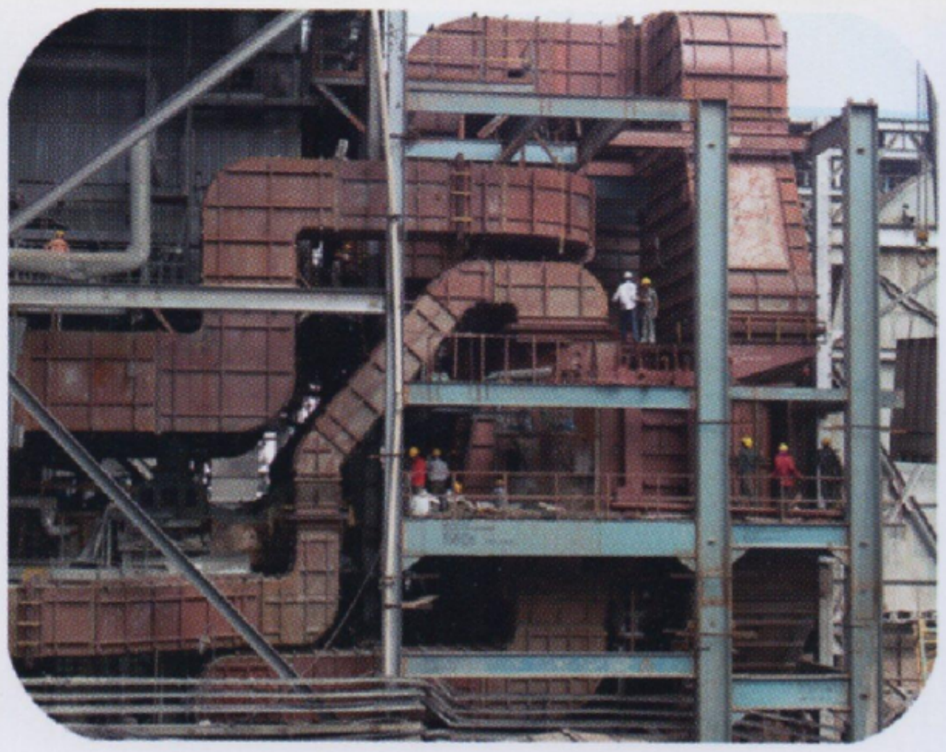
GEECO

Replacement of underperforming Air Preheaters at Bharat Aluminium Company Limited, Korba, India

Bharat Aluminium Company Limited at Korba, CPP-II, in Chattisgarh State, India is having 4 x 135 MW boilers. Two numbers of 24 VISMT 1833 size air preheates were installed in each boiler. Within few years of operation, the boiler struggled to generate its full capacity, due to the deficiency in thermal performance and more leakage in rotary air preheaters. Due to high pressure drop in Primary Air side, an additional PA fan was installed.



GEECO was asked to study the problem. On assessing the condition of air preheaters, it was pointed out that the existing air preheater size is insufficient to give the predicted performance.

GEECO recommended that the existing air preheaters can be completely replaced with 2 numbers of 25.5 VIMT 1900(2100) size.

Also it was found that the existing air preheaters space is not sufficient to accommodate this bigger size air preheaters. Hence, it was decided to erect the new air preheater in the 3rd pass (between Economiser and ESP).

Technically convinced, Customer placed the order for 'Engineering, Manufacturing, Supply and Commissioning of air preheaters', along with the supporting structures, ducts, expansion bellows and dampers. Enormous effort was taken to engineer the structures and ducts to accommodate in the existing limited space. CFD analysis was done to optimize the duct layout. To reduce the boiler downtime, it was planned to erect the air preheaters in the separate bay, while the boiler is running. After the completion of the erection, the boiler was taken for a short shut down and the new air preheaters were connected.

Based on GEECO's long experience, the air preheater was designed by incorporating the latest technology. The special features of newly supplied air preheaters are:

- *Modular design — to reduce erection time.*
- *Double sealing — to reduce leakage.*
- *Machined T bars — to reduce leakage.*
- *Side covered Baskets — to improve the thermal performance.*
- *Soft Touch Seal — to reduce the leakage.*
- *Peripheral drive with overrunning clutch on electric motor side.*
- *Increasing PA angle opening to 72 deg.*

The air preheater was totally manufactured at GEECO plant and supplied in various stages to Balco during 2011. Unit #2 was selected for carrying out this replacement. Unit # 2 was commissioned in August 2005. Prior to shut down, the structures, the ducts, expansion bellows and air preheater erection was done in 37 days, after the shut down, the erection activities were done for 25 days. After commissioning the New Air Preheaters, unit #2 boiler was lighted up in January 2012.

Highlights:

- Additional PA fan withdrawn
- MW generation increased
- Fan loading reduced
- Now possible to fire with low Calorific value fuel
- For one APH -12 modules with baskets are erected in record time of 8 hrs.
- For the entire execution of this replacement, the boiler was shutdown 25 days only.

In most of the underperforming air preheaters like this, it is possible to improve the efficiency and reduce the leakage by replacing the air preheaters either with the equal size or with increased size.

NEW AIR PREHEATER

GEECO Enercon Pvt Limited

D/C.6, SIDCO Industrial Estate,
Thuvakudy, Tiruchirapalli - 620015
Tamilnadu, India

Ph: +91 - 431 250 1239, 250 1312
Fax : +91 - 431 250 0705
e-mail : geeco@geeco.in
web : www.geeco.in

ISO 9001:2008
BUREAU VERITAS
Certification

APH/CS/03