VALUE ADDED INNOVATION

Increased lifetime and performance of CFBC boilers

Background Situation

Our customer, a large power producer in India, was facing many refractory-related problems in their boilers and was looking for a reliable partner to implement a sustainable solution. Calderys partnered with the customer to deliver a best-in-class project.

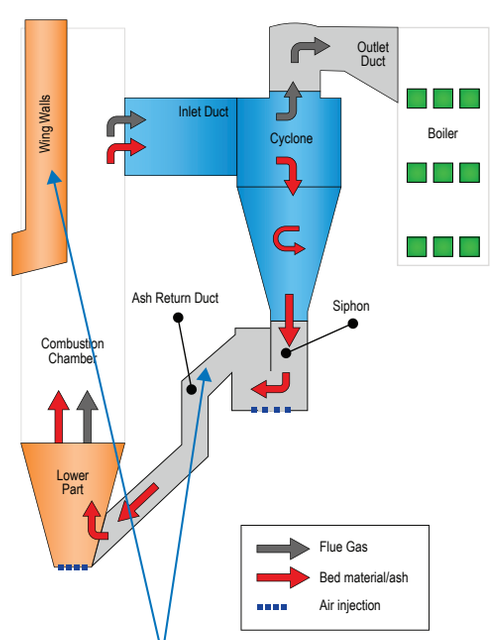
Problems

- Constant refractory failure of all CFBC boilers since commissioning
- Frequent stoppages of boiler due to refractory failure
- Refractory cost and inventory increase due to unpredictable refractory performance
- Unstable operating conditions

Goals

- Decrease in boiler downtime
- Improve refractory design and performance
- Consistent boiler performance
- Decrease in refractory costs

Actions Taken



Identified Areas

Calderys approached the customer with a very innovative solution in order to solve all of the existing problems.

To make the customer comfortable with the new approach we showcased our technical expertise on multiple occasions through presentations and practical demonstrations.

Before we started the project we presented a comprehensive design and engineering solution to our customer, including:

- Detailed refractory failure analysis
- Selection of refractory materials to suit their existing operating conditions
- Improved boiler design in line with Calderys global best practices
- Enhanced anchor design in line with CASS

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The solution we implemented consisted of the following elements:

- Change of Calcium Silicate Blocks in the back up (100 mm thick).
- Removal of Insulating brick above Calcium Silicate Blocks (75 mm thick) and application by gunning the new back lining of insulating castable.
- Installation of anchors as per CASS (Calderys Anchoring System): flexible round anchors instead of fixed flat anchors.
- Replacement of the hot face castable with ready to use plastic.This was done considering high percentage of Alkali and Iron impurities in the coal from washeries (Indian coal contains very high levels of ash which forces the user to remove impurities by washing. The remaining residue contains fine coal particle as well as other impurities used as fuel).
- Relining of all other areas with regular refractory damage – Cyclone Inlet, Bull Nose, Strike Area, Combustor Opening, and Loop Seal.

Results

Time, quality and safety were our top priorities while executing this project. We started with the installation of one boiler and after 6 months without any stoppage caused by refractory, our customer decided to proceed and implement Calderys' solution across all of their boilers. We achieved more than the guaranteed performance for all 4 boilers.

Our proactivity and innovative mind-set helped establish trust between Calderys and our new customer which opened the door for future collaborations like the introduction of our shotcreting technology for the first time in a CFBC boiler in India. To show their appreciation for Calderys know-how and services, the customer awarded us with a Letter of Appreciation for Safety & Execution.

Benefits to the customer

There were multiple benefits for our customer that stemmed from this first project, the most important ones being:

- Increased efficiency of the plant due to continuous running of all boilers
- Significantly reduced costs related to the decrease of both refractory consumption and equipment downtime
- Premium access to the most innovative refractory solutions on the market ensuring the constant improvement of performance and costs