LP Amina LNB+SOFA Technology
Datang Heshan, Guangxi, China

- *NOx emissions reduced from 0.56 lbm/ MMbtu to to less than 0.32 lbm/MMbtu*
- *LP Amina's proprietary SOFA system installed*
- *CO emissions < 100 ppm*
- *UBC reduced from 6% to 4%*

LPA SOLUTION:
LNB+SOFA

LP AMINA | Energy and Environmental

Datang Guiguan Heshan Power Plant

Datang Guiguan Heshan power station is 1,330MW coal-fired power plant in Guangxi Zhuang Autonomous Region, China. The power plant is owned and operated by China Datang group, and is considered to be one of the main suppliers of the electricity in the local community. In July 2014 LP Amina was brought in for a retrofit of Heshan's Unit 1 with a very bold objective - lower NOx emissions in half through an in-furnace boiler optimization, increase fuel flexibility of the unit and complete the entire project just under 3 months.

Customer & Location

Datang Guiguan Heshan Power Generation Co., LTD
China, Guangxi province, Heshan city

Plant Equipment

Installed capacity of 330MW, condensing steam turbine
Boiler at full load: 1004 metric t/h
Natural circulation, single drum, T-fired coal boiler

Objectives

- At or below BMCR, NOx emissions < 0.32 lbm/MMbtu; CO emissions < 100 ppm
- Maintain efficiency of boiler higher than 91%, UBC less than 4%.
- The pressure drop of primary air and secondary air system remains the same.
- Life time of spare parts of burners more than 100,000 hours
- LP Amina classifier installed. Coal particles' guarantee: R90<13%; R200<2%;

Challenges

- LP Amina's De-NOx design had to be applicable to various types of coal
- Very tight project schedule. It took only 3 months from design to commissioning.

LPA Solution

To tackle the emission challenges at Heshan power plant, LP Amina proposed to install its proprietary LNB technology. LNB technology consists of burner retrofit and installation of LP Amina's proprietary SOFA system, which together can effectively reduce NOx by 40%-60%.LP Amina re-designed PA (primary air) and SA (secondary air) nozzles on each level of the burner to improve combustion performance. This is also allowed to maintain the original structure of the boiler and its combustion levels, as well as overall shorten the outage period. Then, LP Amina's team removed the TA (tertiary air) nozzles at the bottom level and re-designed the TA nozzles and levels on the top to improve the steam temperature. In addition, SOFA nozzles (tilting) were installed on the four sides of the water-wall. This new design of the SOFA system helped to improve the reaction between the combustible gas and residual carbon, lowering NOx even further.

Heshan power plant

Classifier

SOFA nozzle inlet

SOFA air duct

Results

LP Amina successfully met the contract guarantees, lowering NOx emissions by 43% by offering a very affordable solution in just 3 months. At or below 100% BRL load, NOx emissions were reduced from 0.56 lbm/MMbtu to 0.32 lbm/MMbtu. The CO emissions are controlled as guaranteed to be less than 100 ppm. Post-retrofit boiler efficiency is higher than 91%. UBC amount is less than 4 %.