



## **LP Amina LNB+SNCR Technology Wanlida Paper, Guangdong, China**

- > *Over 70% NOx emission reduction***
- > *Reduced dosage of reagent***
- > *Improved combustion efficiency***
- > *Increased coal flexibility***

## Wanlida Paper Products Co.

Guangzhou Wanlida Paper Products co., LTD., was founded in 1998 and is a large-scale Sino-foreign joint venture that is specialized in manufacturing high-grade paper and paper products. The paper industry in China is a big user of energy and heavily relies on coal-fired power generation. In 2010, in preparation for the 16th Asian Games in Guangzhou city, LP Amina collaborated with Wanlida Paper and installed an innovative De-NOx solution to help meet stricter environmental regulation. LP Amina proposed a tailor-made De-NOx technology that combined LNB and SNCR technologies in one powerful solution.

### Customer & Location

Guangzhou Wanlida Paper Products Co., LTD.  
China, Guangzhou, Zengcheng City

### Plant Equipment

Unit #4, 150 metric t/h; Unit #5, 130 metric t/h; Unit #6, 280 metric t/h.  
All the units are natural circulation, single-drum, tangentially fired coal boilers.  
Every boiler has two layers and each layer has four burners.  
Above the main windbox of each boiler there is tertiary air with high air/coal ratio.

### Reagent

Aqueous Urea

### Objectives

- NOx level after LNB needs to be below 0.24 lbm/MMbtu
- NOx level after SNCR phase needs to be below 0.16 lbm/MMbtu
- Post-retrofit boiler efficiency and UBC levels need to remain the same

### Challenges

- LP Amina proposal combined three technologies in one retrofit: Classifier, LNB and SNCR
- Each boiler required independent tailor-made approach

### LPA Solution

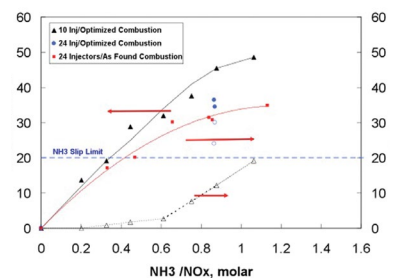
LP Amina began this project by installing an upgraded classifier that improved the fineness of the original pulverized coal particles at Wanlida. Then, the team optimized the entire in-furnace combustion system, including the burners and the SOFA. During this stage, LP Amina's team changed the size of the OFA and the auxiliary nozzles to let the remaining air go into the SOFA system. Also several adjustments to the nozzles size were made to allow easier control of NOx concentration. After these modifications were made, LP Amina installed its proprietary SOFA system, on the four walls of the boiler 5 meters above the SA windbox. At this stage, NOx emissions were lowered by almost 50%. In the last phase, LP Amina installed its SNCR technology for further NOx reduction, and successfully brought emissions below 0.16 lbm/MMbtu.



LP Amina's team on site



Ammonia Injection Grid



Ammonia nitrogen ratio and DeNOx efficiency relations

### Results

LP Amina successfully lowered NOx emission by 70% from 0.56 lbm/MMbtu to < 0.16 lbm/MMbtu. Through its retrofit LP Amina significantly improved fuel adaptability allowing Wanlida to burn more types of coal. Moreover, LP Amina's tailor-made LNB+SNCR solution also reduced the amount of reagent consumption, which led to savings in operating costs.