

# NEO Monitors conquers the Quasi-impossible

China is a world factory powered by its abundant coal resource. China is facing a huge environmental challenge brought together with the fossil-fired power plants. China has therefore been conducting technical retrofit to the engines of its economy, by introducing emission control facilities. Selective Catalytic Reduction (SCR) technology is one of the most widely applied emission control solutions in Chinese power industry. In this case study you can read about Qiangui Panxian Power Plant that had challenges measuring ammonia slip.



## CHALLENGES

The Power Plant in Guizhou Province in Southwest China had challenges with the precise measurement for ammonia slip:

- The size stack for SCR system of a typical 200 MW supercritical power generation units can easily surpass 5 meters; at Panxian Power Plant, the stack had a diameter of 11 meters.
- Concentration of fly ash in the flue gas can easily reach 30-40 g/m<sup>3</sup>; but at Panxian Power Plant, ash content is around 70 g/m<sup>3</sup>.
- To avoid sticky ammonia loss with the fly ash, the installation point should close to the last layer of the catalyst, where it is hot, dusty and frequent vibration from the dust blower.

## THE SOLUTION

The solution at Panxian Power Plant was with LaserGas™ II NH<sub>3</sub> SP analyzer. The analyzer consists of a sender and a receiver unit that are mounted right across from each other. This way it measures the average concentration of gas along the optical axis within typically 0,5 to 20 meters. To deal with extreme working condition, Neo Monitors' partner Wuxi Tellus Environment Technology Co., Ltd applied robust insertion tube to reduce the OPL from 6.5 meters to 1.2 meters. Precisely fabricated installation parts as well as additional flexibility introduced by them, we make sure the analyzer could have favorable performance during long operation period with very little requirement for maintenance.

**"WE ARE DELIGHTED TO HAVE A SOLUTION TO OUR DEMAND WHICH IS NEARLY IMPOSSIBLE TO BE REALIZED BY OTHER MEASUREMENTS"** SENIOR INSTRUMENT ENGINEER OF QIANGUI POWER PLANT

## GENERAL INFORMATION ABOUT NO<sub>x</sub>

To turn NO<sub>x</sub> (typically NO and NO<sub>2</sub>) to N<sub>2</sub>, ammonia is injected to the SCR system throughout its operation period. Inadequate injection of ammonia will leave large emission of NO<sub>x</sub>, which is one of the main sources for pollution like acid rain; therefore, the industry intends to introduce balanced or excessive ammonia, to make sure the emission level of NO<sub>x</sub> could meet emission standard. However, excessive ammonia (more known as 'ammonia slip') has large side effects to the operation of the power plant:

- Every year, each power plant purchases large volume of ammonia as consumable for SCR system; excessive use of ammonia results in profit loss by million-dollar level;
- Unexpected air preheater degradation and corrosion lead by ammonium bisulfate (NH<sub>4</sub>HSO<sub>4</sub>, ABS), derived from excessive ammonia largely increase the maintenance expenditure.

**"WE NEEDED INSTRUMENTS THAT WERE ROBUST AND HAD CONTINUOUS PERFORMANCE WITH LITTLE MAINTENANCE"** SENIOR INSTRUMENT ENGINEER OF QIANGUI POWER PLANT

**"WE'VE GOT EXCELLENT PERFORMANCE FROM NEO MONITORS' LASER GAS™ AMMONIA ANALYZER"** SENIOR INSTRUMENT ENGINEER OF QIANGUI POWER PLANT

## BETTER PERFORMANCE, REDUCTION OF OPERATION COSTS AND MAINTENANCE



**"AFTER MORE THAN 9 YEARS OF OPERATION IN CHINESE POWER INDUSTRY, LASER GAS™ ANALYZER PROVES IT CAN WORK UNDER HARSH CIRCUMSTANCES AND PROVIDE PRECISE DATA FOR SCR SYSTEM CONTROL"** SENIOR INSTRUMENT ENGINEER OF QIANGUI POWER PLANT



NEO Monitors is the worlds' largest provider of TDLS gas analyzers. Our innovative products can be purchased through our network of partners. Find your local distributor on [WWW.NEOMONITORS.COM](http://WWW.NEOMONITORS.COM)

Contact us today:  
NEO Monitors AS, Prost Stabels vei 22, N-2019  
Skedsmokorset, Norway  
Tel: 47 67 97 47 00. Email: [neosales@neomonitors.com](mailto:neosales@neomonitors.com)