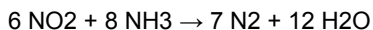


# GASMET™ in Emissions Monitoring Applications

## SCR/SNCR DeNox

**Process**

NO and NO<sub>2</sub> can be effectively reduced from stack gases by reacting them with Ammonia:



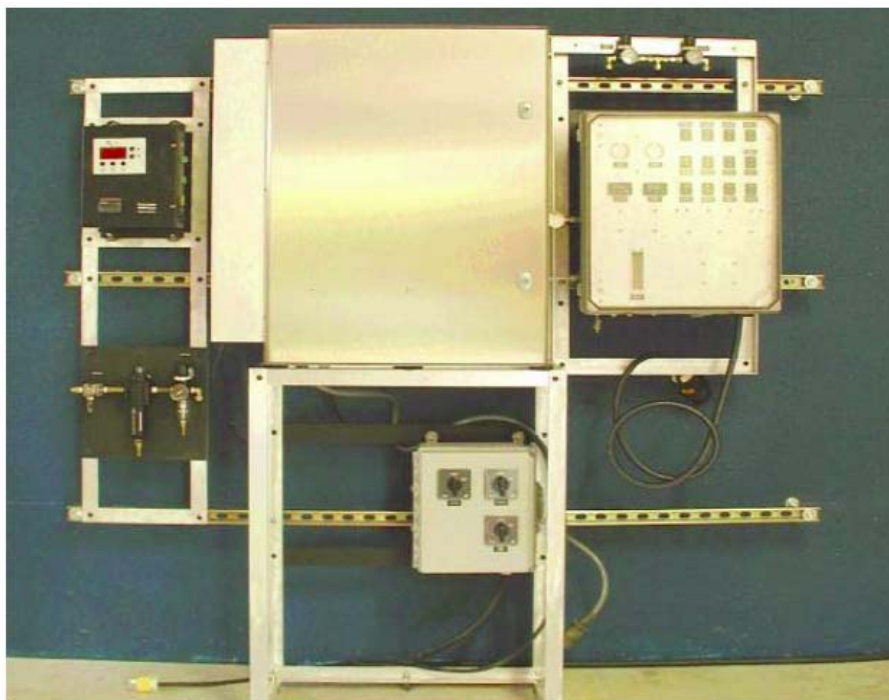
**Measurements**

**Emissions:**

- Ammonia causes fine particulate (pm 2.5) in the atmosphere.

**Process control:**

- Ammonia is expensive.
- Excessive Ammonia use increases salt formation, blocked heat exchangers and downtime.



**Gasmet FXS CEM & Process FTIR System**



**Gasmet CEMS –system:**

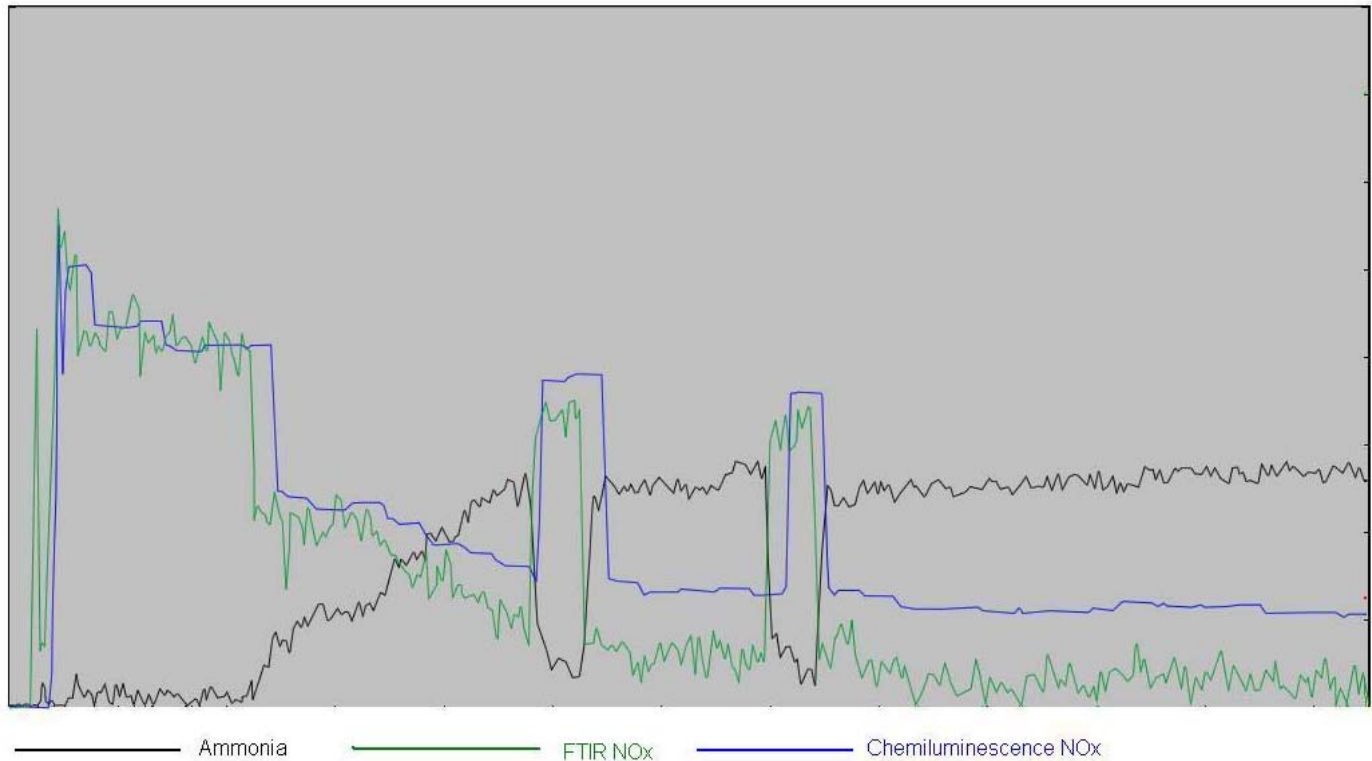
- CX4000
- Gasmet sampling unit
- Gasmet PC; analog outputs or ModBus
- Heated probe
- Heated lines
- Optional ZrO<sub>2</sub> analyser

**Typical application**

H <sub>2</sub> O	0-25 %	NH <sub>3</sub>	0-20 ppm
CO <sub>2</sub>	0-20 %	SO <sub>2</sub>	0-1000 ppm
CO	0-500 ppm	CH <sub>4</sub>	0-100 ppm
NO	0-200 ppm	HCl	0-20 ppm
NO <sub>2</sub>	0-200 ppm	HF	0-20 ppm
N <sub>2</sub> O	0-100 ppm		

**Case study:****Monitoring Selective Catalytic Reduction (SCR) NO<sub>x</sub> Control Systems**

Measurements at: *Austin Energy, Sand Hill Energy Center Combustor: Simple Cycle Gas Turbines*. Data published at AWMA 2003 Annual Conference, San Diego, CA USA: *GT-SCR PERFORMANCE MONITORING SYSTEM DEMONSTRATION PROJECT* by Bob Breeze, Markham R. Nelson and Aron D. Gaus

NO<sub>x</sub> measured with FTIR and Chemiluminescences vs. Ammonia

The above figure presents NO<sub>x</sub> measured with FTIR and Chemiluminescence analyzers and Ammonia measured with FTIR. NO<sub>x</sub> levels decrease when Ammonia is introduced to the scrubber. Chemiluminescence analyzers typically have some positive Ammonia bias, and an increase in the input of Ammonia can cause too high readings of NO<sub>x</sub> in the Chemiluminescence analyzer. This may lead the operator to increase the Ammonia input even further to reduce the NO<sub>x</sub> reading. On the other hand, FTIR gives simultaneous and separate readings for NO<sub>x</sub> and Ammonia, which gives an accurate picture of the process. This helps the operator to optimize the amount of Ammonia used so that NO<sub>x</sub> scrubbing is effective but Ammonia use is not excessive.