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# AMMONIA SLIP LTD ANALYZER



Via Fiume 16  
60030 Angeli di Rosora, Ancona, Italy  
p +39 0731 8161 f +39 0731 814700  
info@loccioni.com - www.loccioni.com

## PROCESS

Ammonia Slip LTD Analyzer is the system developed by Loccioni Environment able to monitor and control the residual ammonia content (Ammonia slip) after the DeNOx reaction. The system is the best one to detect in a fast and reliable way the ammonia concentration and it is very helpful to avoid lots of problems for the power plant.

Ammonia injection in coal fired power plant is required to reduce NOx content (DeNOx process) in the flue gas before it exits the chimney.

The reduction process takes place in a dedicated part of the power plant: the Selective Catalytic Reductor (SCR).

There are several techniques, but they all have in common the use of **ammonia** or urea use as reagent.

The residual ammonia concentration after the reduction should be between 1ppm and 2ppm: the slight ammonia excess guarantees to get the maximum reduction effect, but a bigger excess in the residual ammonia concentration can lead to major problems in the power plant.

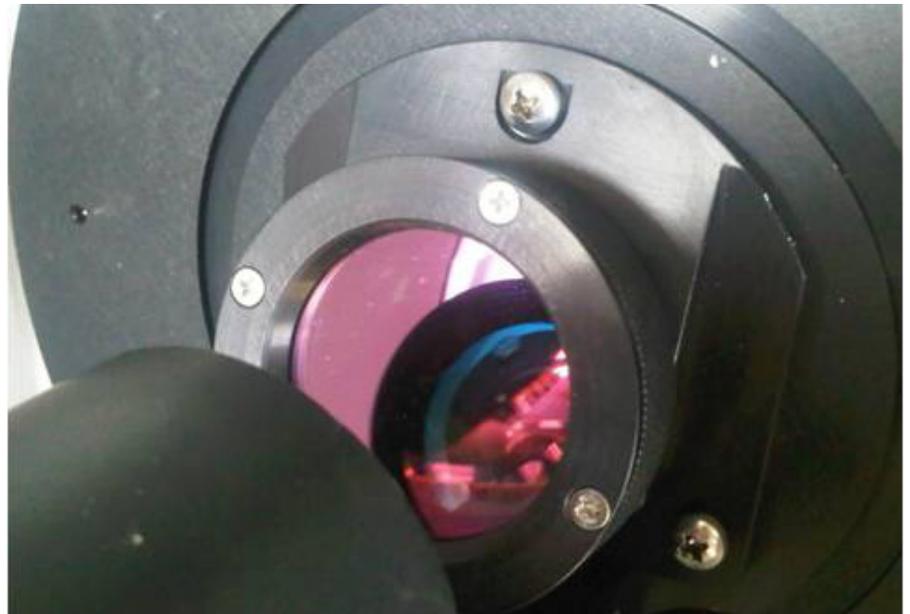
The wrong use of the reagent can produce **costly problems** for the plant such as:

- > **Corrosion**
- > **Ammonia salt formation**
- > **Reagent wasting**
- > **Pollution of fly ashes**

In order to avoid these problems can be helpful for plant to **monitor and control the residual ammonia content (ammonia slip)** after the DeNOx reaction.

One way to monitor the ammonia concentration is by mean of extractive systems, but this method has several **disadvantages** compared with in-situ system:

- > The residual ammonia can create **salt** in the sampling probe filter, causing **filter clogging** and the wrong concentration detection in the gas analyzer
- > The extractive system detects the gas concentration in a single point, **not being representative** of the real gas concentration of all the flue gas
- > The extractive system has normally a **slow response** time for NH3 (which is absorbed all along the sampling system),



3. Laser analyzer

which does not allow the operator to control the NH3 injection in a fast and reliable way.

- > In high dust concentration environment the sampling probe of an extractive system has to be frequently maintained to avoid **filter clogging**.

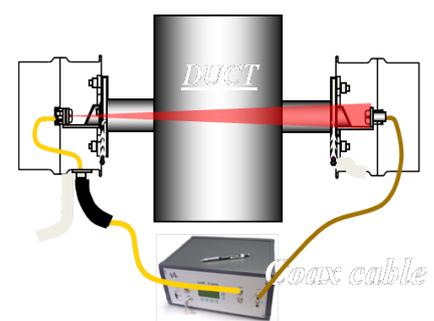
**THE SYSTEM**

**Loccioni Environment is able to monitor ammonia slip thanks to a very reliable laser system** tailored for such a kind of applications.

**This in-situ system is the best one to detect in a fast and reliable way the ammonia concentration:**

- > This approach has a **fast response** time for NH3 (which is absorbed all along the sampling system), which allow the operator to control the NH3 injection in a fast and reliable way.
- > There aren't sampling probes and filters, avoiding all kind of problems related to **filter clogging**.
- > Since normally SCR is a large structure,

the NOx reduction can take place in a different way in different SCR areas, because of non-homogeneous distribution of NOx or NH3. Therefore it is important to have a **multipoint NH3 monitoring** to evaluate the reaction efficiency in different parts of the SCR and have a representative data.



3. Measurement principle