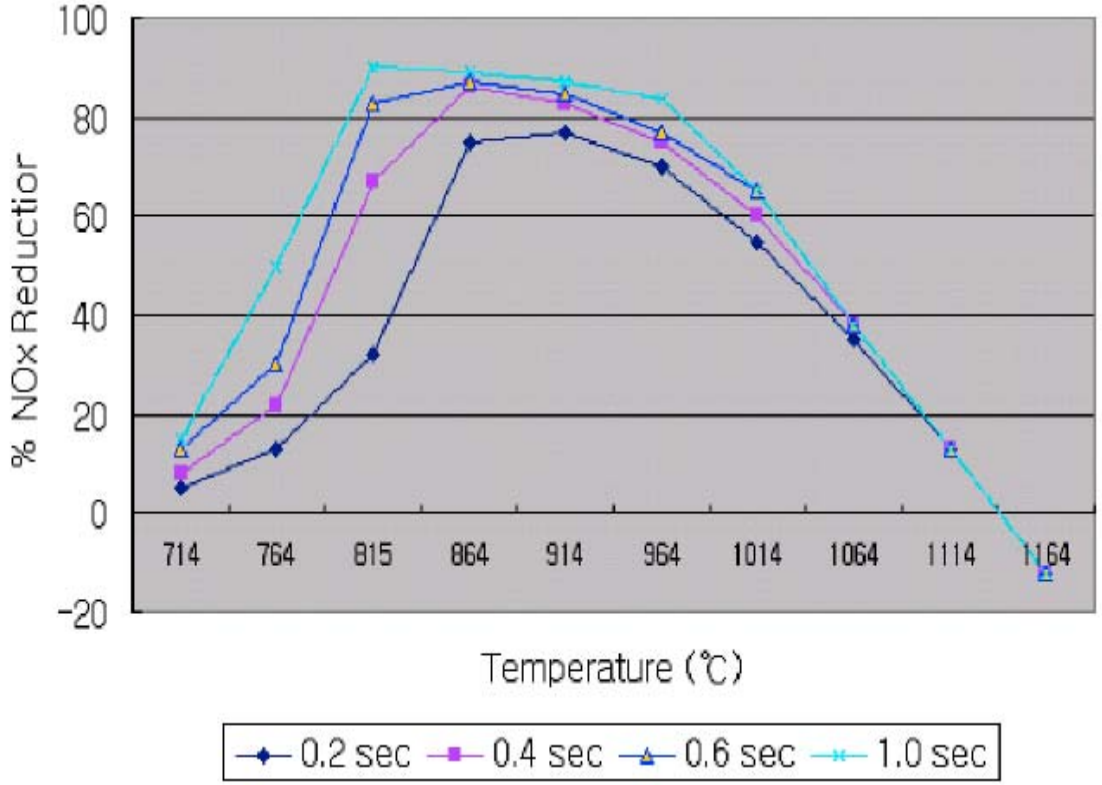
SNCR DENOX Technology

BD
Heat Recovery Division, Inc.

- The SNCR is a proven technology to convert NOx into N2 and H2O. It is a selective Reaction in the sense, that it does not react with the oxygen of the flue gas, but with the reagents itself.
- The reagents are typically NH3 (aqueous or gaseous) or Urea.
- The SNCR can achieve surprisingly high reduction rate, if the reagent is well mixed with the flue gas.
- The SNCR is the most competitive NOx reducing retrofit technology compared to other solution like Low-Nox burners or tail-end SCR.

SNCR DENOX Technology

BD
Heat Recovery Division, Inc.



- **The reagents needs to be injected in a ideal temperature range of 900-1050 °C.**

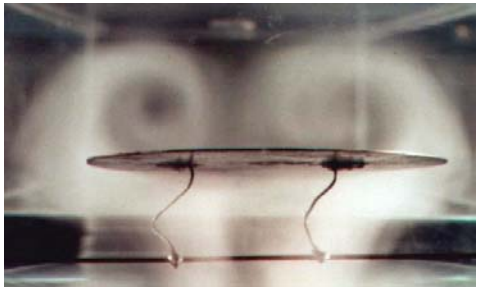
SNCR DENOX Technology

- In order to avoid slipping and achieve high reduction rates, it must be ensure a very well mixing of the reagent (for example NH3) with the flue gas.
- The mixing shall occur in a very short distance as the space is generally restricted.
- Any additional devices should have low pressure drop in order to minimize Fan work and potential production shortage

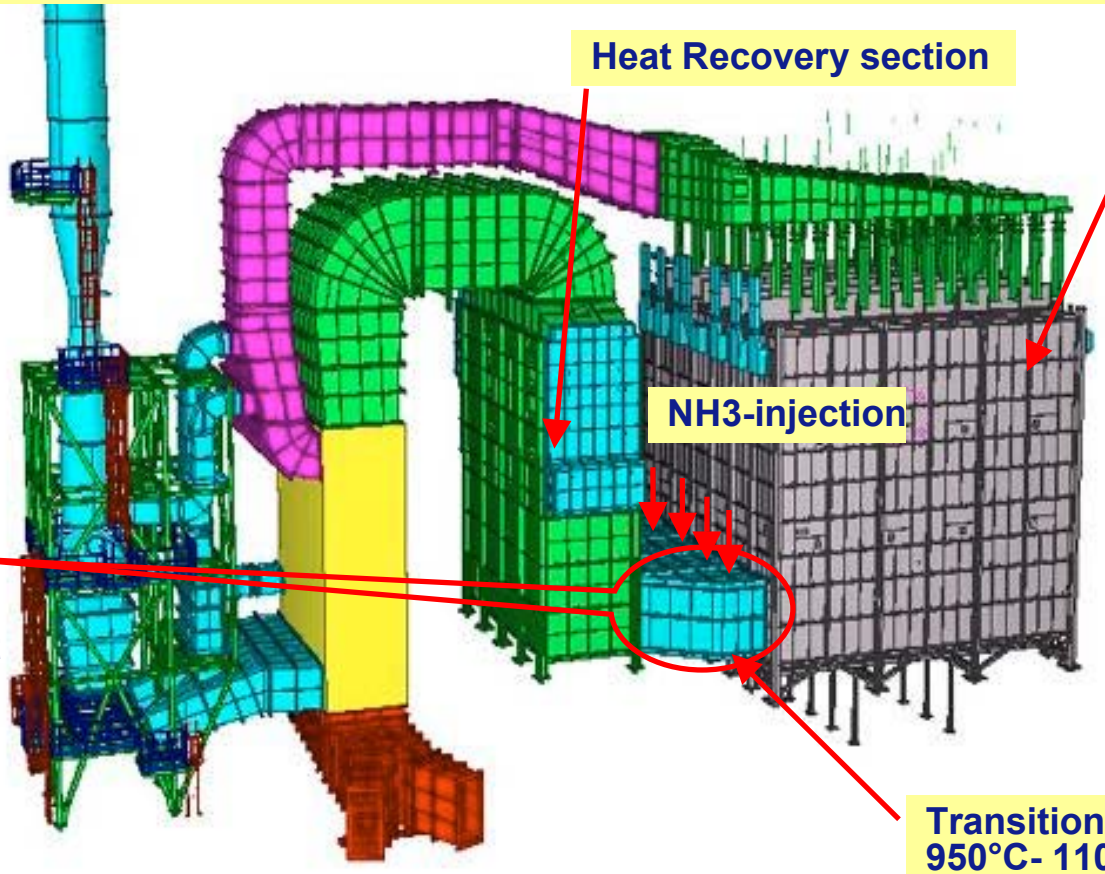
SNCR DENOX Technology

BD
Heat Recovery Division, Inc.

- The injection of NH3 can occur in the transition section, where the temperature is high enough.

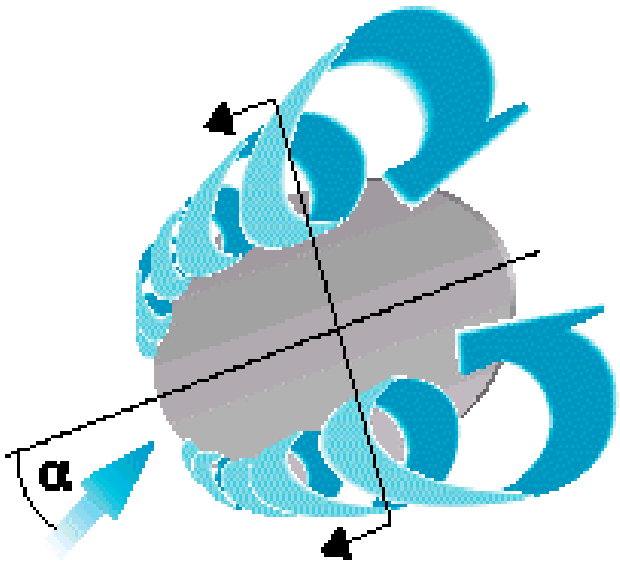


The SGM achieves high quality mixing in a very short space and a low pressure drop (about 1mbar).



SNCR DENOX Technology

BD
Heat Recovery Division, Inc.



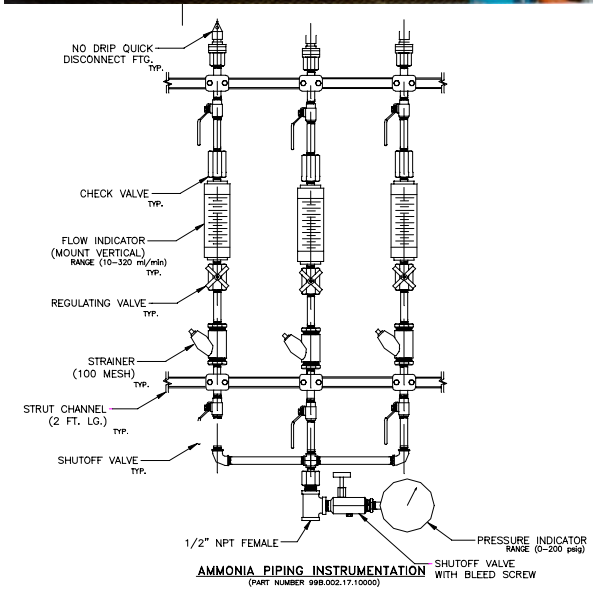
DP = 0.5 -1.5 mbar

SGM:

- The SGM relies on the physical phenomenon of vortex creation at a sharp edge of a plate.
- The counter flow rotating vortexes are working like a swirl.
- The exact dimensions of position in the duct is established in a physical 3D model flow test.
- A high mixing ratio of NH3/NOx can be achieved within a very short space.
- The ammonia slip is reduced to a minimum value.

SNCR DENOX Technology

BD
Heat Recovery Division, Inc.



NH3 Feed control

- The ammonia can be injected in gaseous or in aqueous form.
- In Ammonia plant, gaseous ammonia will be preferably used.
- Simple injection technology can be used.
- A NOx monitoring system is required to control the amount of NH3 to be injected.

SNCR DENOX Technology

BD
Heat Recovery Division, Inc.

BD-Heat's possible scope:

- 3D Modell flow test
- SGM Design
- Control loop design
- Supply SGM, injection lances
- Supply of control valves on a skid.
- Supply of NOx monitoring system
- Supervision of installation
- Commissioning

BD-Heat's exclusion:

- Installation work
- Cabling
- Programming work in DCS

SNCR DENOX Technology

BD
Heat Recovery Division, Inc.

Advantages

- NOx Reduction with few components.
- Easy technology.
- Minimum ammonia slip, hence no risk of formation of ammonium bisulfate on downwards components.
- No new space requirement.
- Short installation time (max. one week work).
- No operating costs.
- Mixing is visualized in physical model testing prior to installation.