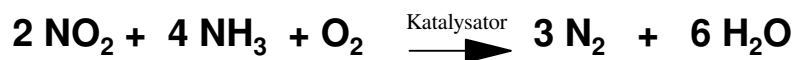
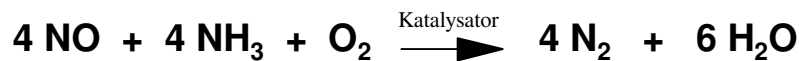
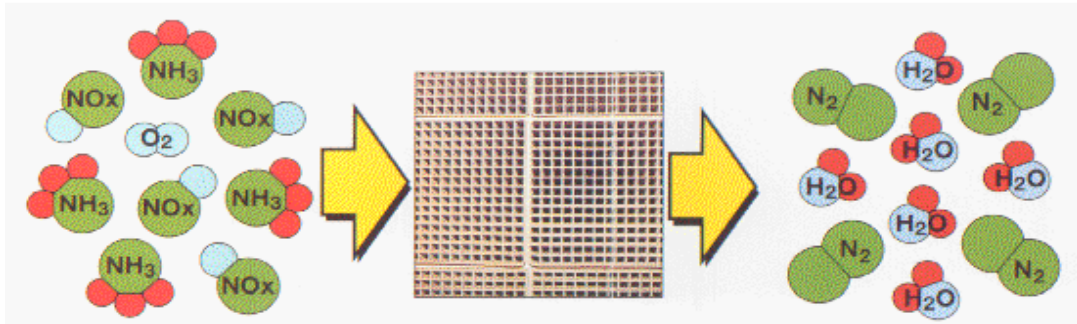


Since 1988 ELEX has been supplying SCR-DeNO_x plants for various industrial applications. SCR stands for „Selective Catalytic Reaction“. Reduced will be mainly nitrogen oxide = NO_x which is formed in high temperature combustion processes and is regarded as a harmful and toxic gas for both the environment and people. SCR-systems can achieve high NO_x reduction rates of > 90% without creating residual products. Furthermore SCR-systems have the capability to remove other dangerous matters from gas such as Dioxin/Furan or hydrocarbons by reduction or oxidation.

Basic chemical reactions in the SCR process for NO_x:



This chemical reaction starts at temperatures > 700 °C in case no catalyst material is present. The only task of the catalyst consists of bringing this reaction temperature down to reasonable temperature levels for process engineering (150 - 400°C). With the presence of the catalyst material only, this significant reduction of the initial reaction temperature is achieved, the catalyst material itself neither takes part in the reaction nor is it used. The catalyst consists of active metals and substrates. The combination of V₂O₅ -TiO₂ shows the best achievement and service life.

For our applications, catalysts with a honeycomb structure are usually used. For easier handling a multiplicity of individual elements are added up to a module. These modules are placed in a reactor on several levels. Openings in this reactor allow to remove and replace each module during a shut-down.



The ammonia required for the reaction is determined by the NO_x-level continuously measured in the gas. The ammonia is then injected in the gas stream upfront of the reactor and evenly distributed in the flue gas before reaching the catalyst elements.

The flue gas itself is also distributed evenly in the catalyst reactor casing by means of distribution plates and then passes through sometimes several catalyst layers, which permit an optimal use of the ammonia. The injected ammonia is first stored in the micro-pores of the catalyst and can then react with the nitrogen oxide molecules present in the flue gas.

If needed, the SCR-reactor is equipped with an online cleaning system (dust blowers) which cleans the catalyst layers periodically.

Field of applications

- Incineration of Waste and Refuse
- Cement
- Production of Energy from Biomass
- Other Combustion Processes

General range of applications for incineration of waste and refuse

- Gas volumes: 15'000 - 200'000 m³/h
- NO_x raw: 200 - 600 mg/m³
- NO_x clean: 50 - 100 mg/m³
- NH₃ Slip: under 5 mg/m³
- Reducer: e.g. ammonium hydroxide 25%

General range of applications for DeNO_x plants in cement kilns

- Gas volumes: 100'000 - 500'000 m³/h
- NO_x raw: 800 - 2000 mg/m³
- NO_x clean: < 100 - < 200 mg/m³, based on current O₂-Concentrations
- NH₃ Slip: under 5 mg/m³, based on current O₂- Concentrations
- Reducer: e.g ammonium hydroxide 25%

