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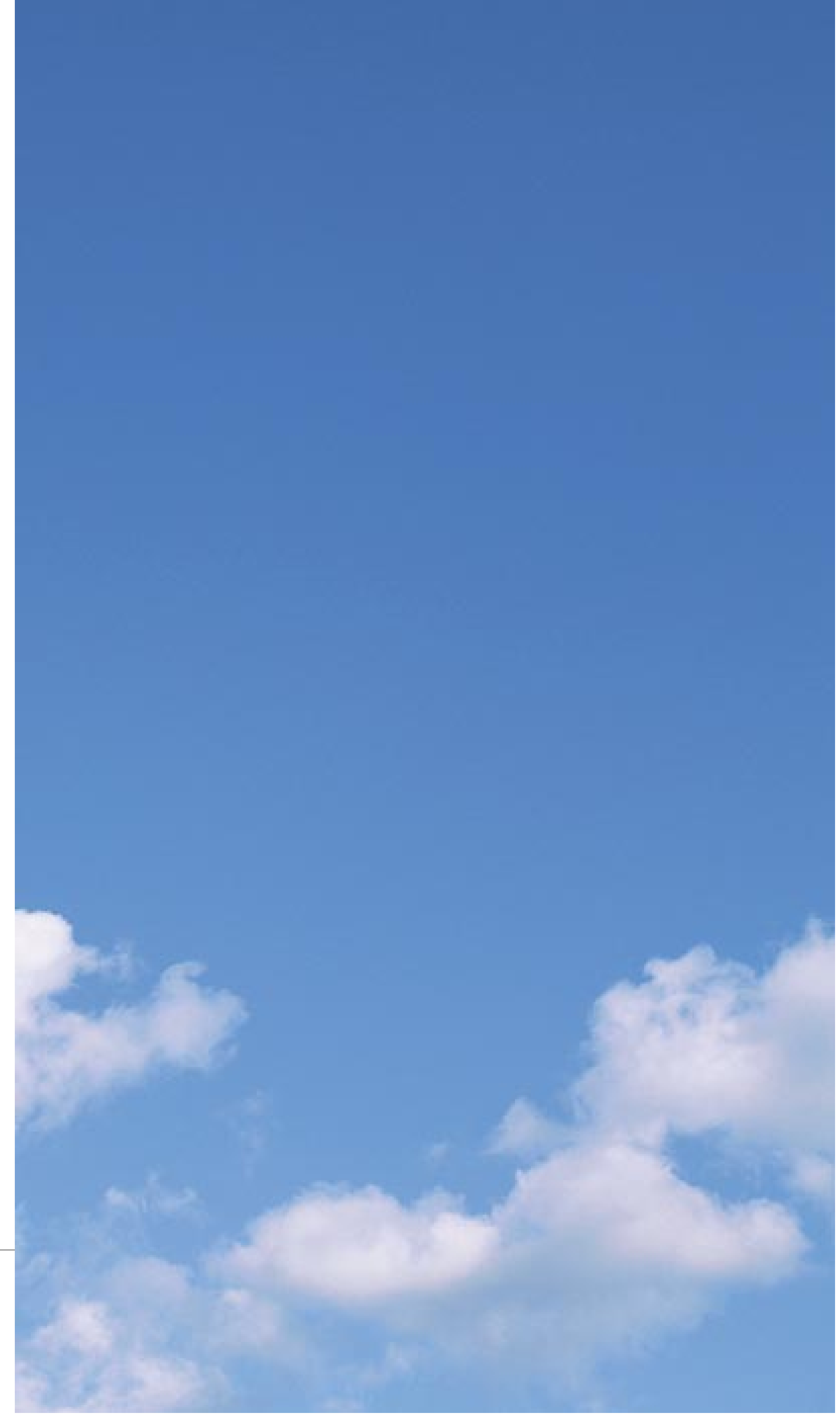

mg engineering
Lurgi Lentjes Bischoff

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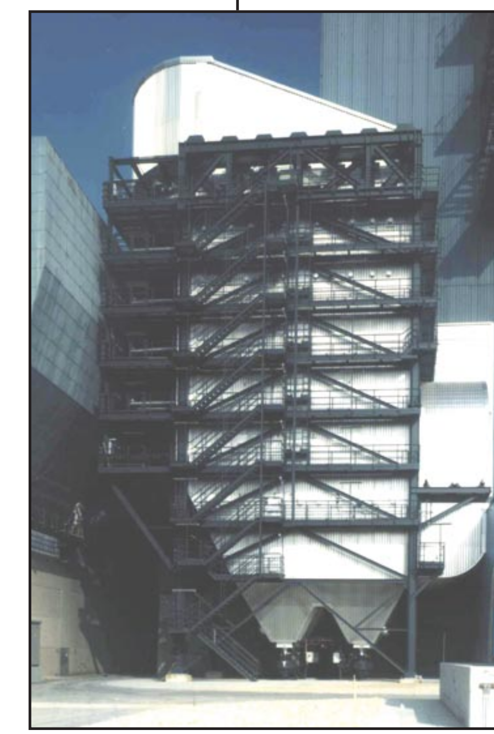
De-NOx SCR

Flue Gas

Denitrification

Selective Catalytic Reduction



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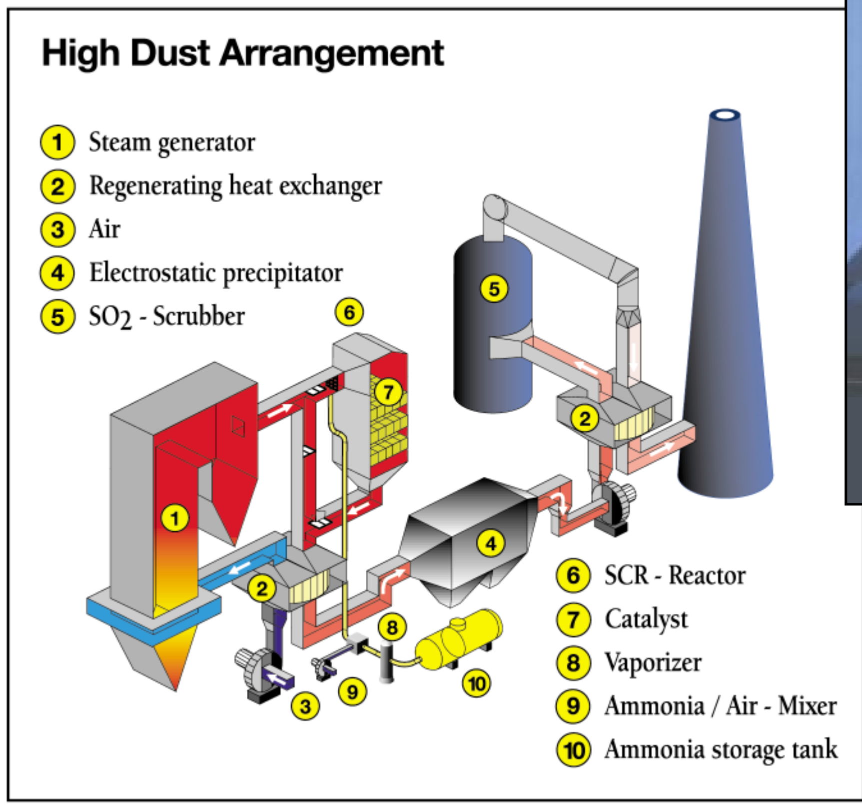
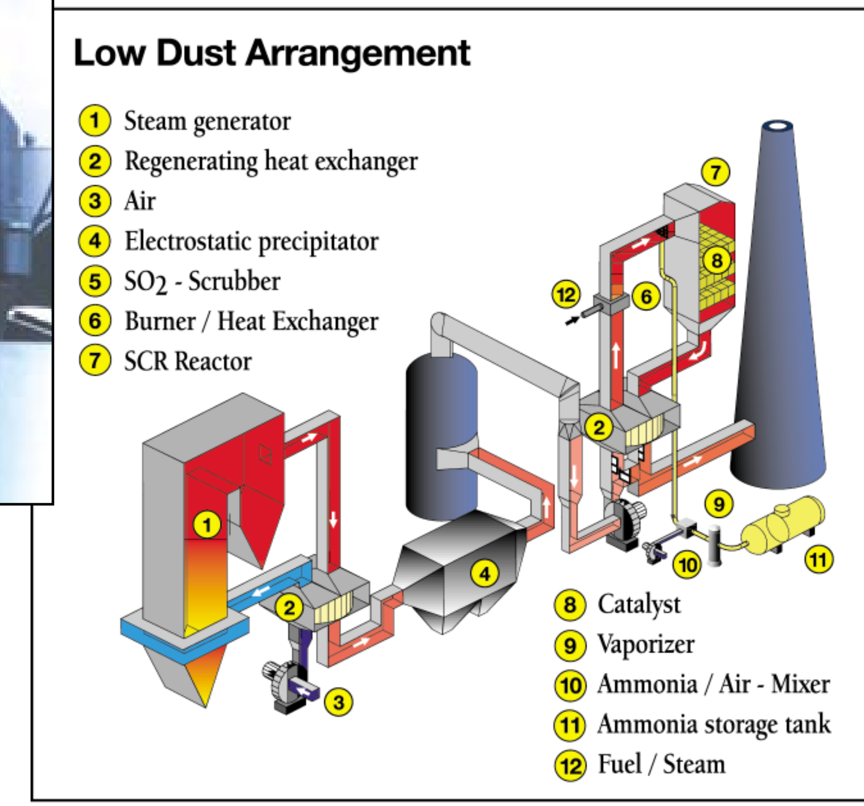
Air Pollution Control Technologies

Denitrification





Selective Catalytic Reduction SCR Process

Flue gas denitrification processes for the reduction of nitrogen oxides emissions can be divided into primary and secondary measures.

Primary measures are combustion and furnace processes such as burner and furnace fuel/air staging or flue gas recirculation. If fuels are used with a high content of chemical bound nitrogen or if the combustion temperatures are high, primary measures are often not sufficient to reduce nitrogen oxide emissions so that secondary measures have to be taken.

Secondary measures are reduction processes in which predominantly ammonia is used as reduction agent converting NOx to nitrogen and vapor.

A selective reduction of NOx with NH_3-based reagents can take place in a high temperature range between 700° and 1,100° C without catalyst. These Selective Non-Catalytic Reduction (SNCR) processes are, however, high in ammonia consumption and limited in efficiency.

The SCR Process

The SCR process is the most often used denitrification process downstream of wet or dry bottom utility boilers in power stations, burning hard coal, lignite or oil. The effective reduction temperature is decreased to 300° to 450° C by means of special type catalysts. The temperature depends on the catalyst selected and on the location of the SCR reactor within the flue gas treatment plant. By means of these catalysts, an almost complete conversion can be achieved.

Characteristic features of the Lurgi Lentjes Bischoff process are:

NOx conversion rates up to 95%

Stoichiometric ammonia consumption

Reactor arrangement in High-Dust Configuration between economizer and air preheater; Low-Dust Configuration downstream of the FGD plant

Catalyst elements in modular design (honeycomb or plate-type design)

SO_2 to SO_3 conversion rates below 1%

Ammonia slip below 2ppm

Gas distribution devices for homogeneous gas flow in the reactor

Use of aqueous ammonia or pure ammonia depending on technical and evaluated economic conditions, as well as the respective safety requirement