

Reduces the NOx level in emissions highly efficiently at low cost.

# Flue Gas NOx Removal Equipment (SCR and SNCR)

## Features

- **SCR (selective catalytic NOx removal equipment):** A NOx removal system that can effectively remove toxic nitrogen oxides.
- **SNCR (selective non-catalytic NOx removal equipment):** The simplest removal system based on sound operational achievement.
- **SNCR:** The simple structure allows easy and low-cost installation in both existing and new facilities.

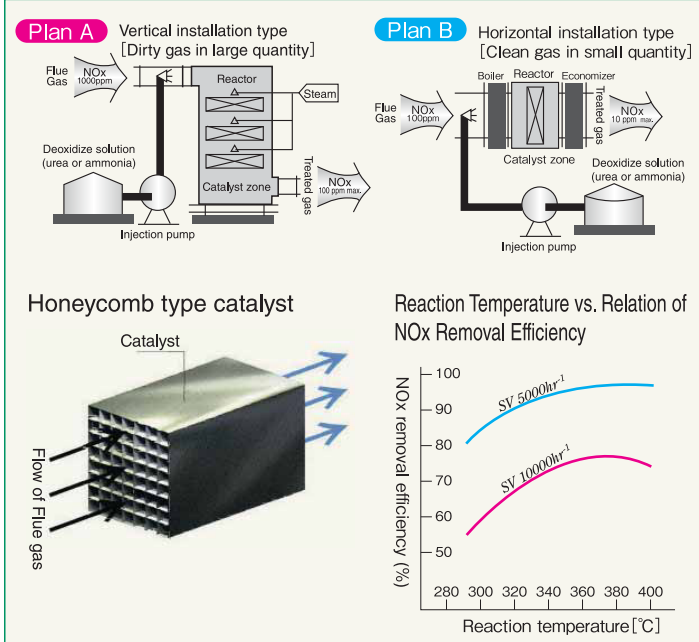


SNCR denitration equipment (Urea solution system)

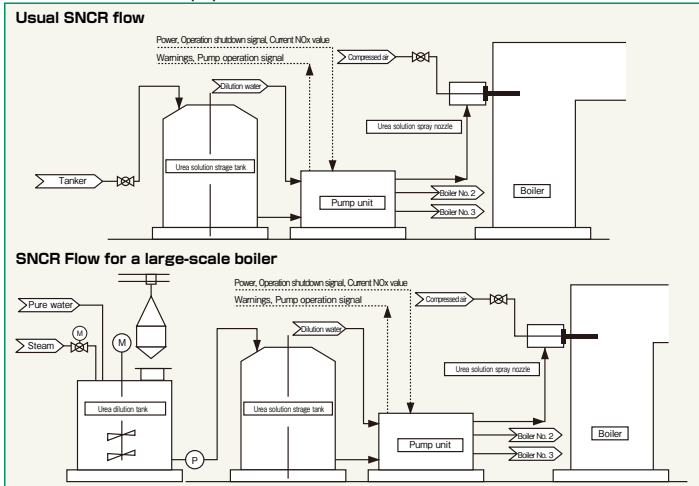


Appearance of Gas Denitrogenization Equipment (SCR Reactor)

### SCR Denitrogenization process



### SNCR denitration equipment



## Overview

(Technical principles, actions, etc.)

### Process

Ammonia solution and urea solution are injected as reducing agents to remove NOx in the exhaust gas, while nitrogen oxides are decomposed into non-toxic nitrogen (N<sub>2</sub>) and water (H<sub>2</sub>O).

- SCR (selective catalytic NOx removal) delivers high efficiency removal rate of 90% or higher due to the function of the catalyst in the reactor vessel.
- SNCR (selective non-catalytic NOx removal) delivers a 30% to 50% NOx removal rate depending on the installation conditions by supplying reducing agents to the high-temperature zone of an incinerator.

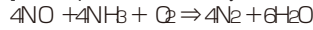
The amount of reducing agent injected can be adjusted based on the combustion load and NOx concentration.

### Main reaction formulas

[Decomposition of urea solution to ammonia]

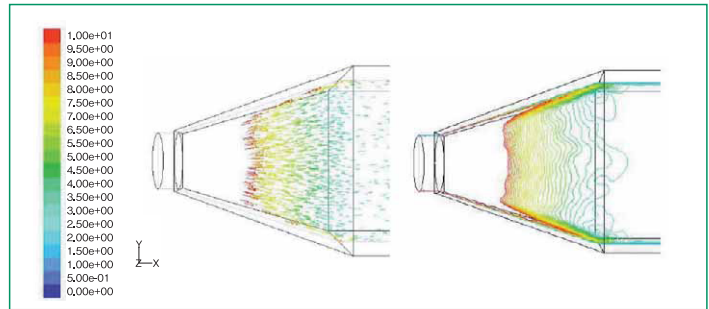


[Decomposition of NOx by ammonia]



### Catalyst (SCR)

The process uses a lattice-shaped honeycomb catalyst made of titanium dioxide. So, pressure loss of reactor is very small because openness rate of pass through area is enough. And we select the type of reasonable catalyst according to operation condition (gas temperature, quantity of dust, quantity of SOx etc.)



Example of Gas Stream Simulation

## Introductory Track Record

### Number of SNCR and SCR shipments

- **Japan: More than 100 locations**
- **Overseas: Several locations**

## Effects

The equipment eliminates nitrogen oxides, thus suppressing the generation of photochemical smog.

- ◎ **SCR (selective catalytic NOx removal)** delivers a high NOx removal effect of more than 90% and allows stable operations with dirty gases containing SOx and dust.
- ◎ **SNCR (selective non-catalytic NOx removal)** is relatively easy to install and delivers NOx removal rates of 30% to 50%. It is suitable as a NOx removal system for existing spray systems.

Applicable field  
Privately owned electrical power facilities and incineration facilities

Water

Energy saving/Energy recovery

Energy storage/Energy creation

New energy

Waste disposal/  
Recycling/  
Resource saving

Air

Soil

Other