

Cost effective NO<sub>x</sub> removal  
in exhaust gas

# SCR NO<sub>x</sub> removal Catalyst and Systems

## Features

- Ammonia reacts with NO<sub>x</sub> emitted from combustion and makes the NO<sub>x</sub> emissions harmless.
- Incorporates a high-density, lightweight, thin ceramic plate honeycomb structure that reduced the volume of the catalyst and realized the downsizing of the reactor.

## Overview

(Technical principles, actions, etc.)

### Selective Catalytic Reduction(SCR)

In order to NO<sub>x</sub> reduction in exhaust gas emitted as a result of combustion, appropriate amounts of ammonia, aqueous ammonia or urea as reductants are injected through an injection grid into the exhaust gas and mixed.

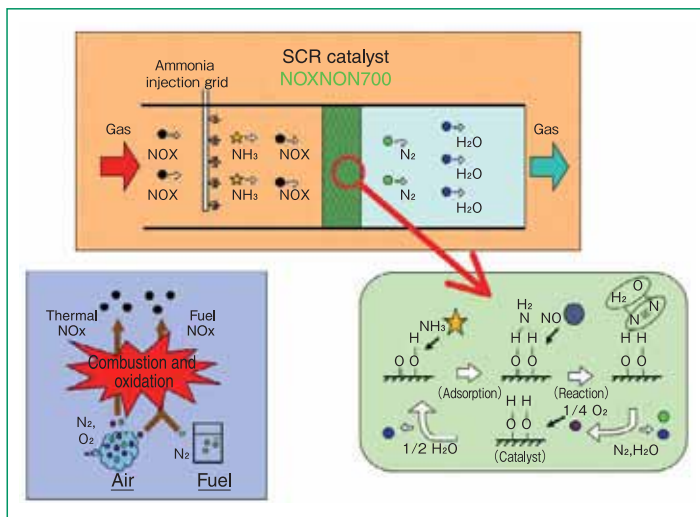
A NO<sub>x</sub> removal system uses selective catalytic reduction (SCR), where a catalyst lets NO<sub>x</sub> and ammonia react with nitrogen and water.

### SCR System Configuration (Example of reductant: Ammonia)

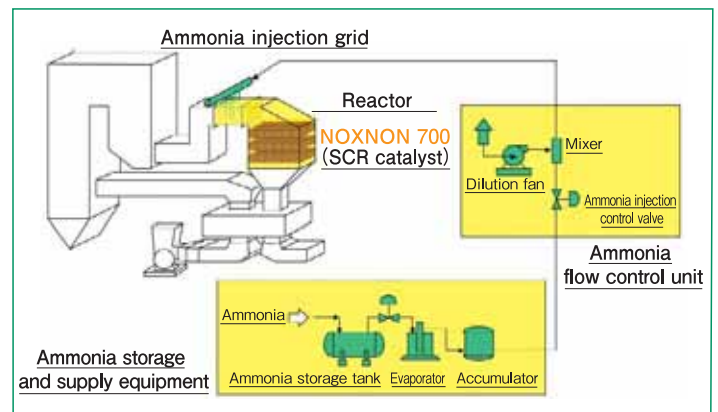
Hitachi Zosen provides a total SCR system that mainly consists of a catalyst, reactor, ammonia injection grid, ammonia flow control unit, and ammonia storage and supply equipment.

### Engineering

The production know-how, experience, and track records of Hitachi Zosen as a SCR catalyst manufacturer and plant engineering company in combination construct systems that respond to a variety of customer requests.



Outline of SCR



SCR system configuration (Example of reductant : Ammonia)

## Introductory Track Record

- Hitachi Zosen commercialized its first denitration catalyst in 1973. Since then, Hitachi Zosen has delivered SCR catalysts for over 330 stations applied to a wide range of NO<sub>x</sub> generation sources (e.g., various types of boilers, gas turbines, diesel engines, incinerators, ethylene cracking furnaces, oil reforming furnaces, and incinerators) not only in Japan but also other countries including the USA, China, Korea, Taiwan, and countries in the Middle East.

## Effects

- Hitachi Zosen manufactures SCR catalysts for a variety of gas emission properties, and offers optimum SCR catalysts to meet the client's specified NO<sub>x</sub> removal rate, ammonia leakage, pressure drop, and SO<sub>2</sub> oxidation rate.
- The catalyst in existing SCR reactor can be replaced with a lightweight, high-density catalyst that is larger in surface area without modifying the SCR reactor. Lightweight, high-density catalysts can replace old catalysts that are overdue. Furthermore, lightweight and compact reactors make it possible to retrofit new SCR reactor to existing facilities.

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