



Please Complete Our Customer Service Survey



About HRC

Products

Spare Parts

Services

APC Learning Center

Contact HRC



Air Pollution Control

[Home](#) > [Products](#) > [NOx Reduction](#) > SCR

### Selective Catalytic Reduction (SCR)

Selective Catalytic Reduction (SCR) is the most effective method of controlling nitrogen oxide emissions (NOx) from combustion sources. It is a commercially proven flue gas treatment technology that has been demonstrated to remove over 90 percent of the NOx contained in combustion system exhaust gas. Nitrogen oxides contribute to acid rain and smog.



Elimination of NOx creates a healthier environment and meets stringent new EPA reduction requirements. SCR technology is widely used on different types of combustion systems such as coal fired boilers, simple and combined cycle gas

- Home
- HamonUSA.com
- Hamon Divisions ▶
- Newsroom & Events
- Site Map

#### Choose your Industry:

- [Utility Power](#)
- [Petrochemical/Refining](#)
- [Metals](#)
- [Pulp and Paper](#)
- [Cement/Rock](#)
- [Products](#)
- [Glass](#)
- [Waste Incineration](#)

- [Agro-Food](#)
- [Others](#)

## [Career Opportunities](#)

»

## [Customer Service »](#)

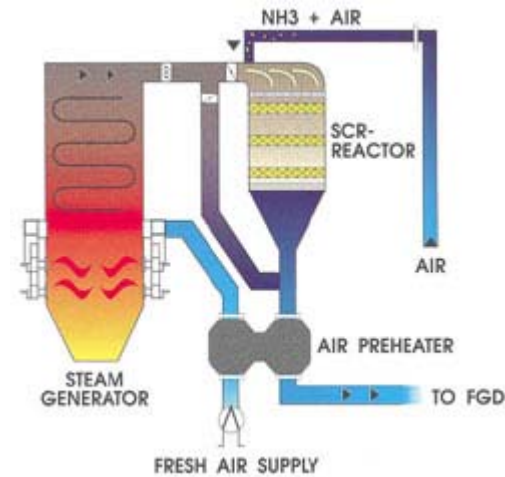
turbines, process boilers, hydrogen reformers, etc. Virtually any hot flue gas containing **NO<sub>x</sub>** can be treated effectively with the SCR process as a retrofit or on new equipment.



The catalyst is at the heart of the SCR process. It creates a surface for reacting the **NO<sub>x</sub>** and ammonia, and allows for the reaction to occur within typical flue gas temperature ranges. The active ingredient in most **NO<sub>x</sub>** catalyst is Vanadium Pentoxide ( $V_2O_5$ ) of various concentrations. For higher temperatures zeolites, tungsten or titanium matrices may be utilized as well. Catalyst configurations can be homogenous honeycomb, coated honeycomb or plate type catalyst.

The catalyst opening, composition and volume of catalyst are determined by components of flue gas chemistry, treatment temperature and amount of flue gas to be treated.

The Ammonia reducing agent is injected upstream of the catalyst. It is crucial that ammonia be evenly distributed along the face of the catalyst. This is achieved by two particular design components. First it is necessary to ensure that the flue gas flow is even with flow straighteners and mixing devices. Second, either an Ammonia injection grid or series of static mixers may be used to ensure that the ammonia is evenly distributed across the flue gas. Ammonia injection grids are desirable due to designed zones that are independently adjustable to allow for variations in local **NO<sub>x</sub>** concentration.



The reaction occurs in the pores of the catalyst bank. The catalyst bank may consist of one or more layers of catalyst for treatment. On the surface of the catalyst, the **NO<sub>x</sub>** will be selectively reduced by reacting with the ammonia in the presence of oxygen to form harmless byproducts, water and nitrogen (H<sub>2</sub>O & N<sub>2</sub>).

Typically the range of temperature for this reaction is 500-850°F (260-454°C). In clean gas applications, specialty high-temperature formulations, are able to achieve high **NO<sub>x</sub>** reduction at temperatures as high as 1100°F (593°C). This wide temperature range allows for flexibility in a retrofit situation and choices for multi-pollutant optimization in new equipment.

Selective Catalytic Reduction may be used in any industry with effluent gas at

sufficient temperature containing nitrogen oxides such as Power, Petrochemical, Steel, Metal production, Pulp and Paper, **Cement**, Waste to Energy, Glass, Nitrous Acid Production etc. It is ideal to meet the EPA's stringent requirements for **NOx** reduction in any combustion application.

Quick links to:

- [NOx Reduction - Introduction](#)
- [Selective Non Catalytic Reduction \(SNCR\)](#)
- [Hybrid SCR / SNCR](#)

Related Technical Articles (pdf):

- [Application of U.S. Pollution Control Systems in Taiwan](#)
- [Current U.S. Air Pollution Control Technologies & Future Trends](#)

[About HRC](#) | [Products](#) | [Spare Parts](#) | [Services](#) | [APC Learning Center](#) | [Contact HRC](#)

[HamonUSA sites:](#) [Heat Recovery](#) | [Air Pollution Control](#) | [Chimneys, Stacks, Silos](#)

© HAMON. All rights reserved.



Hamon USA Headquarters

[directions](#)

58 East Main Street  
Somerville, NJ 08876

Tel. +1 908.685.4000

[info.hcorp@hamon.usa.com](mailto:info.hcorp@hamon.usa.com)

[Web design by iForum](#)