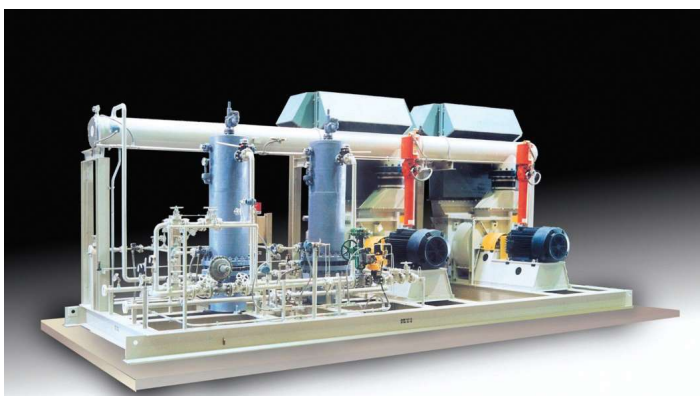


# Need a cost effective NO<sub>x</sub> reduction solution?

CECO Environmental is a global diversified energy technology company that provides solutions for air pollution control, fluid handling and filtration. Within the CECO Environmental group of companies are Peerless Manufacturing and CCA Combustion Systems who both specialise in NO<sub>x</sub> reduction technologies.

## Peerless Manufacturing – Unparalleled Experience in Ammonia Systems

Peerless is an industry leader in the supply of ammonia storage and handling systems for Selective Catalytic Reduction (SCR) installations. We offer comprehensive design and engineering expertise in vaporization, ammonia flow, ammonia injection and process control systems.



Since the formation of the DeNO<sub>x</sub> division was in 1988, Peerless has supplied ammonia systems for over 900 SCR installations. The systems have ranged in size from 1 kg/hr up to 2000 kg/hr, and include both aqueous and anhydrous ammonia.

Numerous factors must be considered to achieve smooth operation and avoid significant problems in an ammonia system. These factors include the type of ammonia to use, storage volume, vaporizer location, vaporizer heat source and control method. Our vaporizers use heat sources including electric heaters, steam, hot water, glycol, flue gas and gas burners.

Peerless can supply the complete turnkey system including:

- Tanker Truck and Rail Cart Unloading Stations,
- Reagent Storage Tanks,
- Ammonia Vaporizing Systems,
- Ammonia Flow Control & Dilution Air Systems,
- Ammonia Distribution and Injection Systems,
- Ammonia Leak detection, Alarm and Safety System.

Purchasers and/or operators of an SCR system need a partner with the experience and understanding to know how essential it is for the ammonia system to fit into the overall system design and operational requirements.

## CCA Combustion Systems – State of the Art Selective Non-Catalytic Reduction (SNCR) Systems

CCA is a global provider of combustion control technologies to reduce NO<sub>x</sub>, particulate matter (PM), unburned carbon and CO emissions from various types of combustion facilities including utility power plants, pulp & paper mills, chemical/petrochemical plants and oil refineries.

Within the CCA product range is its state of the art SNCR technology, which is a cost-effective NO<sub>x</sub> reduction technology capable of achieving NO<sub>x</sub> emission reductions up to 60%.

The SNCR process involves injecting a reagent (urea or ammonia) into the flue gas in the appropriate temperature window. The reagent reacts with NO<sub>x</sub> to form harmless nitrogen and water. The design, arrangement, and location of the reagent injectors is critical to the performance of the SNCR system.



CCA utilises in-house CFD modelling capabilities to optimally locate the injectors to provide for complete mixing of the reagent with the flue gas across the injection plane. Depending on the application, multiple levels of injectors along with other proprietary techniques are used to ensure the reagent is injected in the optimal temperature window across the operating range of the unit. The modelling results also provide design information related to reagent flow requirements and design aspects to minimize ammonia slip.

A unique offering of CCA is its automatic tilting injector technology. Installing these advanced unique injectors can provide the following benefits compared with conventional not tilting designs;

- Reduces or eliminates the need for multiple levels of injectors,
- Targets optimal temperature zone throughout load range,
- Optimizes NO<sub>x</sub> reduction and chemical usage.