

Combustion
Components
Associates, Inc.

**Diesel Engine
SCR Solutions**



www.cca-inc.net



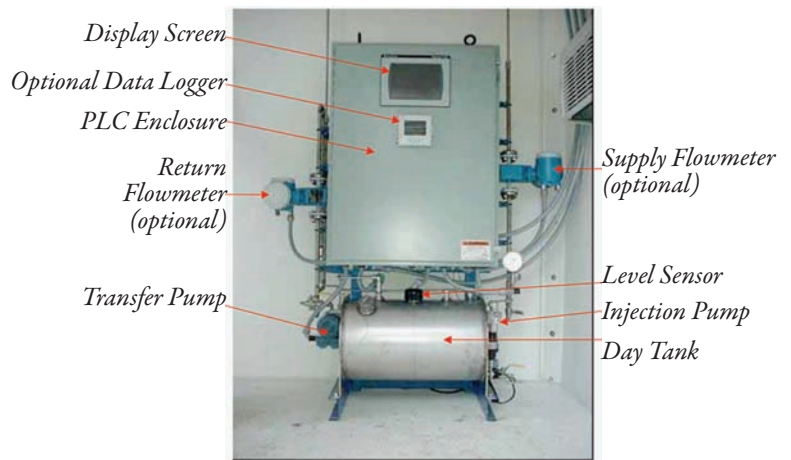
Combustion Components Associates (CCA) SCR Solutions

CCA's breakthrough Selective Catalytic Reduction (SCR) system provides a cost effective method for reducing nitrogen oxides (NO_x) emissions from stationary reciprocating engines and small fossil-fuel fired boilers. This advanced reagent injection system couples a urea-based SCR technology with programmable electronic controls to achieve up to 95% NO_x reductions at a very low capital and operating cost.

Innovative & Simple Design

The CCA SCR system meters precise amounts of a safe urea-based reagent into the exhaust stream of a diesel engine, a lean burn natural gas engine, or a boiler just upstream of a catalyst. When injected into the exhaust gas stream, the urea decomposes to ammonia (NH₃) which reacts with NO_x compounds to form nitrogen, water vapor, and carbon dioxide to effectively reduce the NO_x emissions.

The integrated CCA SCR system comprises just four primary components. These include a day tank (on which the pump, filter, level and urea pressure sensors are typically mounted), injector(s), the catalyst/housing, and a control cabinet with a Programmable Logic Controller (PLC), system status indicators, and touch screen display panel.



*Typical CCA Injection Skid:
PLC Panel, Day Tank,
Pumps and Hardware*

End-use Applications

A wide variety of applications utilizing diesel and natural gas fired engines can be retrofitted with the CCA SCR system. In addition, SCR systems have also been successfully installed on fossil fuel fired boiler applications ranging from 10-25 MW in size. Some specific applications include:

- Power (Co-generation, Demand Response, Prime Power, and Stand-By)
- Gas Compression
- Liquid Pumping
- Chillers
- Air Compression
- Marine Boilers and Engines

The CCA SCR system is licensed under Clean Diesel Technologies, Inc. and Tenneco, Inc. SCR patents.

Unique Airless Injector



*Non air-assisted
urea injector
(patents issued & pending)*

The CCA SCR system has a unique and proprietary injection system, with a low cost, single fluid atomizer designed for optimum distribution of urea. The standardized injector is self cooling and is capable of operating with high turndown. One of the unique advantages of CCA's injector design is that it is capable of providing an optimum 60-65 micron droplet size distribution required, without an atomizing medium, such as steam or compressed air. The injector PLC is programmed to control the urea injection rate as a function of engine parameters related to NO_x emissions, such as load and temperature. It can also be operated as a closed loop system based on a NO_x output signal. Injector cycle frequency is factory set, and the period of time that the injector remains open is controlled by modulating the signal to a solenoid actuated injector valve. These features significantly reduce the lifecycle cost of the system.

Major features and benefits of CCA's integrated SCR system include:

- **Proprietary Injection System** to achieve optimum droplet size and urea distribution in the flue gas
- **Airless System** without an atomizing medium such as steam or compressed air
- **Programmable Electronic Controls** that control the urea injection rate as a function of engine parameters through a PLC computer with touch screen display
- **System Optimization** and performance testing using portable NO_x monitors during start-up
- **Carbon Monoxide (CO), Hydrocarbons (HC) and Particulate Matter (PM)** reductions as optional design features

U.S. Based Technical Support

CCA's innovative emission control solutions help our customers meet stringent emission control regulations in a cost-effective and reliable manner. Our products and solutions are backed by an experienced, U.S.-based engineering field service and technical support team. Consulting and technical services available from CCA include:

- On-site Assessment
- SCR System Engineering & Design
- SCR Catalyst Selection
- Installation Review
- Turnkey Implementation
- Commissioning & Start-Up
- Training & Procedures
- Troubleshooting & System Maintenance

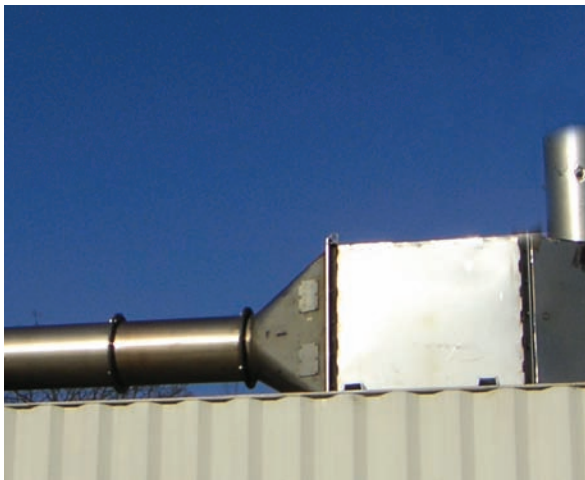


SCR catalyst

Clean Air Solutions

With over 200 installed SCR systems in the field, the CCA SCR system is your best option for lowering NO_x and other regulated pollutants from lean-burn internal combustion engines or small fossil-fuel fired boilers.

CCA brings expert understanding of the combustion process that enables us to design and implement comprehensive low-cost NO_x solutions for our customers. Our advanced SCR design and support services guarantee results, ensuring that our customers stay in compliance in a cost-effective and reliable manner. For more information on CCA's proprietary SCR technology, simply call us at 203.268.3139 and ask for a CCA emission specialist.



Our SCR system reduces NO_x from combustion sources without impacting engine performance

Contact Information

Corporate & Engineering Offices

CCA

884 Main Street

Monroe, CT 06468

Tel: 203-268-3139

Fax: 203-261-7697

Manufacturing Plant

Holmes Tool & Engineering Inc.

1019 N. Waukesha Street

Bonifay, FL 32425

Tel: 850-547-4417

Fax: 850-547-9329

Web: www.cca-inc.net

Email: info@cca-inc.net

