

BIC

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YEARS

OF CONNECTING PEOPLE
IN BUSINESS & INDUSTRY

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Boiler compliance: Emissions control without compromise

Nationwide Boiler Inc.

The collective awareness and importance of environmentally sustainable operations is widespread in industry today. Although the focus has shifted toward reducing the nation's carbon footprint, NOx emission limits are still heavily regulated and have reached an all-time low of 2 ppm in some locations. For single-digit NOx performance on large industrial watertube boilers, selective catalytic reduction (SCR) is a proven solution that provides facilities with emissions compliance, without compromise.

Larry Day, Nationwide Boiler's president and CEO, was the driving force to integrate such back-end solutions into the company's fleet of rental boilers. The objective was clear: to develop an SCR system that would reliably meet and exceed stringent emission limits without compromising critical boiler functionalities. Known today as the CataStak™, Nationwide Boiler started off as an end user, operating these SCRs across its fleet of rental boilers. The CataStak offered dependable performance through repeated testing, achieving as low as 1 ppm NOx time and time again before it was applied to permanent applications.

Nationwide Boiler developed the CataStak SCR to address stringent emissions regulations specifically for its fleet of package watertube rental boilers and eventually, it applied the technology to firetube boilers, gas turbines and other fired equipment applications. The CataStak is a post-combustion, SCR system proven to achieve ultra-low, single-digit NOx performance. It provides both economical and practical benefits to users through improved operating efficiency and lower emissions, offers a reasonable return on investment and is designed to exceed emission limits beyond what is required. With a focus of reducing NOx emissions on combustion sources, the CataStak was a pivotal step toward sustainable steam solutions for the boiler industry.

The CataStak consists of SCR catalyst in a carbon steel reactor housing, a complete reagent injection skid, an ammonia injection grid and a thermocouple for monitoring flue gas temperature. The system is relatively compact and versatile and it can be designed for vertical or horizontal field retrofit; optional use of urea, anhy-



200,000 lb/hr package watertube boiler with CataStak™ SCR system and EconoStak economizer, designed and supplied by Nationwide Boiler Inc.

drous ammonia, or aqueous ammonia as the reagent; and dual-purpose emissions reduction by incorporating NOx, CO and/or VOC catalyst.

In one case study, Nationwide Boiler assisted a refinery in Southwest Texas in replacing aged equipment to lower NOx emissions and demonstrate system-wide compliance. The equipment supplied included an in-stock 200,000 lb/hr package watertube boiler with CataStak SCR System, an aqueous ammonia vaporizer, and a 10,000

gallon aqueous ammonia storage tank with forwarding pumps, unloading station and controls. A ground mounted EconoStak economizer with ladder and platforms were also supplied, in addition to a new Burner Management System built to Safety Integrity Level 2 (SIL2) standards. Nationwide Boiler designed the new equipment package to not only meet but exceed the NOx requirement at the time, providing the customer with peace of mind for future regulation changes. Overall, the solution exceeded the customer's expectations and easily achieved desired NOx levels for current and future compliance.

Today, with more than 250 installations across the country, the CataStak is a proven solution for ultra low NOx compliance on boilers, fired heaters, gas turbines and other fired equipment applications. Although it was an early innovation for emissions reduction in the boiler industry, the CataStak is just one step toward a more sustainable future for steam production.

For more information, visit nationwideboiler.com or call (800) 227-1966. ●

Proven
ULTRA LOW NO_x SOLUTIONS

CataStak™ SCR System for Guaranteed Reduction As Low As 2½ ppm NO_x

- CFD Solutions & Tight Controls to Minimize Slip
- Vertical or Horizontal Flow Configurations
- Ability to Utilize Urea, Anhydrous, or Aqueous Ammonia as the NO_x Reduction Agent
- Rental, Permanent, and Lease Options Available
- Proven in More Than 250 Installations Across the U.S.
- For Boilers, Fired Heaters, Gas Turbines, and Other Fired Equipment Applications

Learn More About the CataStak SCR:



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- Polished Vessels (up to Super Mirror #8 with electro polishing)
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Heat exchanger for chemical service

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