



Selective Catalytic Reduction

# SCR

STATIONARY SOURCE EMISSIONS CONTROL

*Maximum NO<sub>x</sub> Control for  
Stationary Diesel and Gas Engines*





### Leading the Industry in Innovation, Emissions Solutions and Experience

When it comes to effective, efficient and high-performance NOx control for stationary diesel and gas engines, it's not enough to just be good. You want—and need—the best Selective Catalytic Reduction (SCR) solution...from the leader in catalyst technology—Johnson Matthey.

No other company offers the engineering experience and innovation, corporate longevity, reputation, financial resources and superior customer service. We have provided emissions solutions to control air pollution for over 40 years. At Johnson Matthey, our principal R&D, engineering, manufacturing and technical support are based in the U.S.

What's more, Johnson Matthey's Stationary Source Emissions Control (SSEC) group has been installing SCR systems on stationary diesel and gas engines since 1993. We design and supply catalysts and catalytic systems for controlling NOx, CO, HC, VOC, HAPs and PM.

### Engineered to Be the Best

Johnson Matthey's SCR technology delivers an economical—and extraordinarily effective—solution that has achieved an impressive 15,000-plus hours of operation before any routine maintenance is required. Incorporating the highest quality components, the JM SCR System is designed to last, and is the most reliable technology available today. It will meet the most stringent air emissions standards and is the most reliable and durable emissions control solution you can buy for your lean burn engine application, including:

- Emergency Backup Power
- Prime Power
- Cogeneration
- Pumping
- Gas Compression

Designed for flexibility and adaptability, the Johnson Matthey SCR System offers three NOx control options:

- Load-based curve
- Closed-loop feedback
- Load-based curve with NOx trim

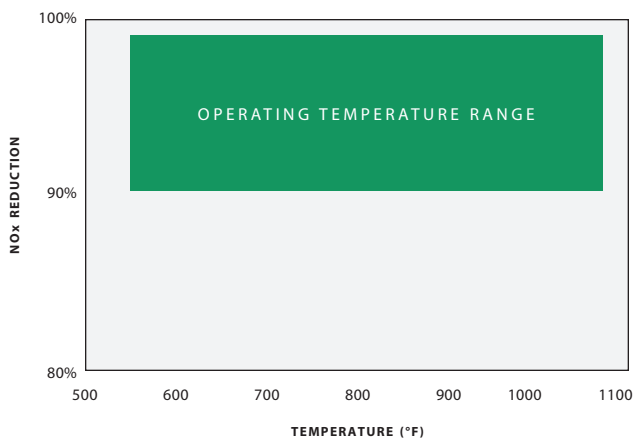
Using urea (or aqueous ammonia), Johnson Matthey's SCR systems achieve NOx reductions of 90%+ for diesel or gas engines. Urea serves as the ideal reducing agent since it can be shipped and stored easily and is colorless, odorless, nontoxic and bio-friendly.

At Johnson Matthey, when we say that our SCR system is engineered to be the best, we back it up with services to prove it. We provide turnkey project engineering—from design and engineering to installation and commissioning. No matter how complex the project is, our engineers are up to the challenge.



An installed SCR system.

### NOx Reduction vs. Temperature (large operating temperature range, 550°F–1070°F)



#### At higher temperature the catalyst formulation is adjusted for:

- Stronger NH<sub>3</sub> adsorption
- Lower NH<sub>3</sub> oxidation rate
- Higher DeNOx rate
- Lower sintering rate

#### Catalyst supported on:

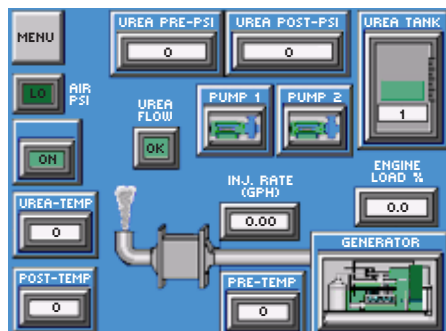
- Metal monolith
- Extruded ceramic monolith
- Various cell densities

### Building on Experience... Built for Performance

Our experienced engineers will help you select the best NO<sub>x</sub> Control option to meet your requirements. Since every Johnson Matthey SCR System is built on cutting-edge technology, your SCR System can be customized to ensure the most effective and efficient performance while allowing for easy upgrades if conditions should change in the future.

The standard SCR System includes SCR catalyst, durable housing, mixing duct, injection system components and control panel or an optional fully-integrated skid-mount package. The skid-mount option includes a converter, injection system components, electronic controls, urea day tank, compressor and freeze protection. In addition, the skid is assembled at the Johnson Matthey plant and is delivered ready for installation, minimizing installation labor and time. The JM catalyst housing is much more compact than others in the marketplace. So, while the Johnson Matthey SCR catalyst packs maximum punch in performance, its smaller size makes it much easier to install, especially in tight spaces.

At the heart of the SCR System is a PC-based control system that is exceptional for its performance, construction and versatility. With no moving parts, the risk of a breakdown is minimal. The software logic in the Johnson Matthey SCR system is the most efficient self-diagnostic software available. It continuously monitors process parameters such as urea flow, pressure, temperature and performance with the optional NO<sub>x</sub> analyzer. If a problem is diagnosed, the software is designed to make adjustments, fix the problem and safeguards against urea plugging. Upgrades are done simply by modifying the software, which means quick and easy compliance with new EPA, ARB or local air agency requirements.

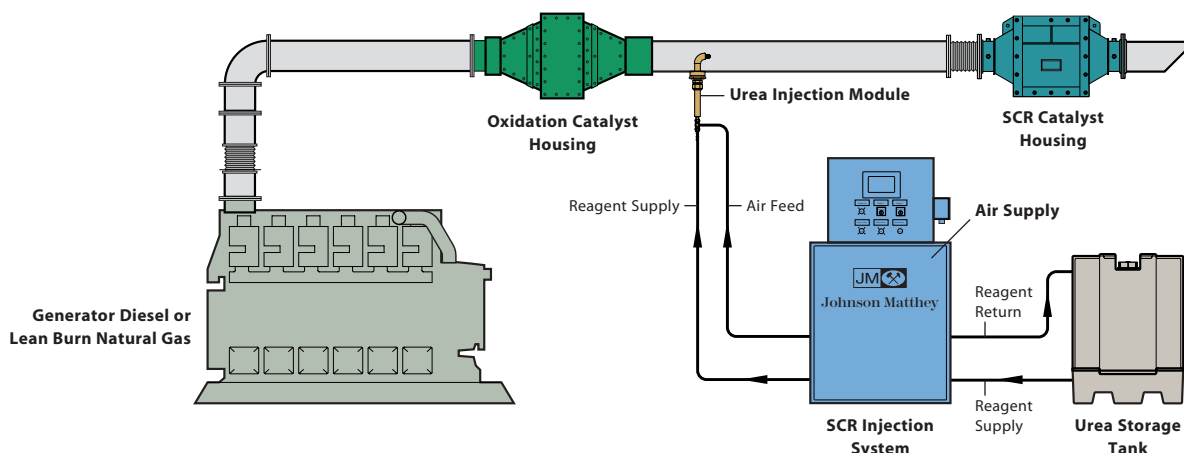


Urea injection control panel touch screen.

### Highlights of the Johnson Matthey SCR Control System

- Urea or ammonia compatible
- Reagent injection based on Load Tracking or Continuous Emissions Monitoring (CEM) feedback control
- Intel-based processor
- Touch-screen operator interface panel—for programming and monitoring with instant feedback
- Modem and SCADA capability for remote monitoring, upgrades or diagnostics
- Ethernet and other network communication protocols (available)
- Stainless steel modular watertight enclosure
- UL Listed<sup>®</sup> Open Industrial Control Panel No. BJ-661076

### Typical Oxidation Catalyst and SCR System Flow Diagram





**Urea Injection Nozzle**

The Johnson Matthey urea injection nozzle is designed and built for accurate, plug-free performance and reliability. The self-checking nozzle delivers injection control of either urea or aqueous ammonia, with the following benefits:

- Air atomizer injection
- Controlled droplet size for good distribution and optimal NOx reduction
- Self-cleaning (air/water purge) nozzle to prevent deposit buildup
- Insulation around air pipe to prevent urea crystallization
- Injection module complete with connection fittings
- Injection rate control bias
- Redundant delivery pump included
- Reagent day tank level monitoring and control
- Minimal field terminations required which reduces installation costs significantly

**A More Advanced Injection Nozzle**

One of the superior features of this nozzle is its ability to be quickly disconnected for change-out or for routine cleaning. Unlike other urea injectors, which require the nozzle to be unbolted, the Johnson Matthey unit simplifies routine maintenance and saves time.

**Flexibility to Meet All of Your Emissions Control Needs**

The SCR System can be combined with an Oxidation catalyst to oxidize HC, CO, VOC and HAPs for all lean burn diesel or gas engines...reducing emissions to meet the most stringent regulations. If you need to reduce particulate matter (PM) as well as HC and CO in a stationary diesel engine—at a consistent rate of 90%+ —the SCR System can be combined with Johnson Matthey’s patented Continuously Regenerating Technology (CRT®) particulate filter system. This level of design flexibility makes the Johnson Matthey SCR System ideal for retrofit or for new lean burn engines.

*Additional options for the SCR System include:*

- Reagent freeze protection devices and programming
- Catalyst differential pressure monitoring
- Downstream SCR catalyst temperature monitoring
- Ability to monitor and transfer reagent from bulk storage tank to the day tank

SCR



**Johnson Matthey**

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Injection lance.

