

## FORMULATIONS

# SCR Selective Catalyst Reduction System



### WHY THE MIRATECH SCR SYSTEM?

- NOx Reduction For Tier 4 Compliance
- Up to 99% NOx Reduction
- Noise Reduction: up to 52 dB(A)
- Global Experience
  - Over 2,000 SCR Systems Installed
- U.S. Based Service & Support
  - Fast Response Field Service & Technical Support
  - U.S. Based Engineering & Product Support

### APPLICATIONS

- Stationary Reciprocating Engines
  - Lean-Burn Natural Gas
  - Diesel and Dual-Fuel
- Power Generation
- Gas Compression
- Greenhouse CO<sub>2</sub> Augmentation

### FEATURES & BENEFITS

- Two-Stage System: SCR & Oxidation
  - Compliance Levels For All Emissions: NOx, CO, HAPs, VOCs
  - Three Stage System: DOC/DPF + SCR NOx, CO, VOC, HAPs, PM
- Efficient Reactant Atomization
  - Choice Urea or Ammonia Reductant
  - Purge Lines & Air-Assisted Injection Nozzle
- Designed for Serviceability
  - Easy Access to Injector for Cleaning & Maintenance
  - Catalyst Access Door
- Designed for Durability
  - Carbon or Stainless Steel Housing
  - Aluminum or Galvanized Insulation Sheathing
  - Simple, Quick Bulkhead Connections for Wiring & Plumbing
- Designed for Easy of Use
  - Advanced, User-Friendly Controls
  - Safety Shutdown & Alarm Controls
  - Data Storage
  - Data Transfer
  - Network Communications

### PRODUCT ADVANTAGE

Where NOx control is a challenge, MIRATECH delivers the best SCR system, service and product support, for both diesel (Tier 4) and natural gas engine applications.



SCR Installation

### DESIGN, DELIVER, SUPPORT Experience

Along with unsurpassed technical expertise, vast real-world experience goes into every MIRATECH SCR project gained in nearly two decades of SCR experience, with more than 2,000 units installed worldwide in power, water pumping and gas compression applications. If there's a problem, or a potential problem—MIRATECH probably has already solved it. If a new issue arises, no one will get to the bottom of it faster.

### Bottom-Line Value

When you install MIRATECH's SCR system equipped with advanced injection control, your engine will run efficiently, with low fuel costs, and ongoing compliance assured every step of the way. Your catalyst will work harder, longer, with greater flexibility to handle varying loads, and with less risk of non-compliance fines or operational shutdowns.

### World-Class Technology

It starts with the world's best SCR technology. MIRATECH, an acknowledged world leader in the field, provides customers with all the benefits of best available control technology.

- Consistently set the standards for Best Available Control Technology (BACT)
- Simple, user-friendly control and communication technology connects to any building's communication systems
- U.S. based Service & Support
  - Fast-response field service and technical support
  - Replacement components stocked in Tulsa, OK
  - In-house engineering and custom product support

# SCR Selective Catalyst Reduction System

## EMISSIONS: CONTROLLED

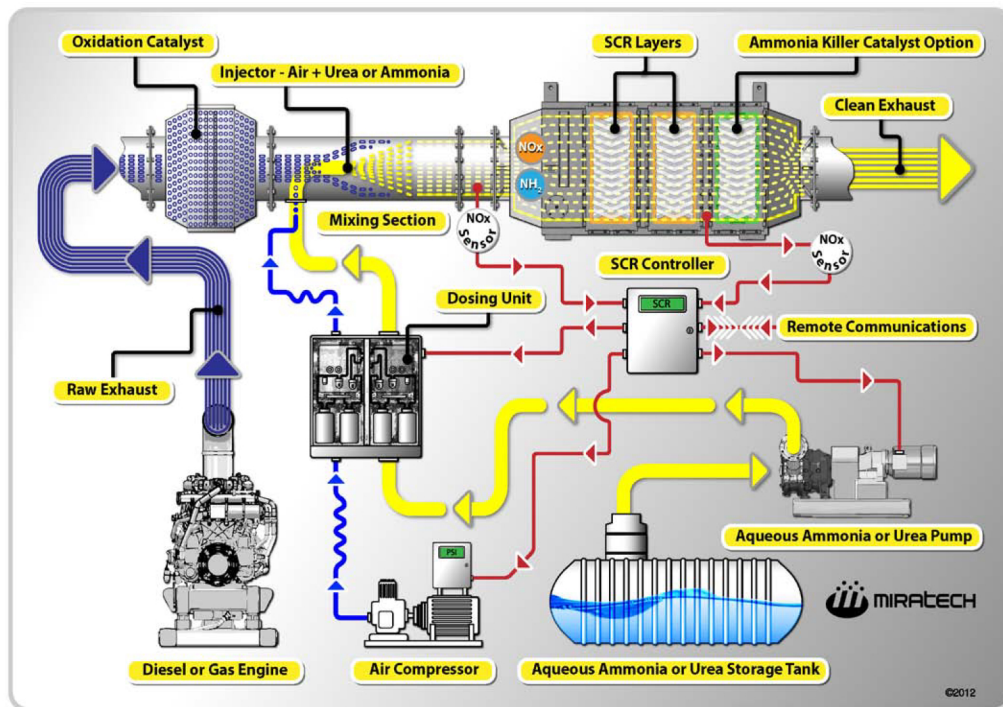
MIRATECH's SCR catalytic converters reduce regulated exhaust pollutants for stationary reciprocating diesel, dual-fuel and lean-burn natural gas engines. These pollutants include oxides of nitrogen, (NO<sub>x</sub>), carbon monoxide (CO), and unburned hydrocarbons (HC) comprising Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs). The MIRATECH SCR systems work in two efficient stages: the NO<sub>x</sub> Reduction Stage and the Oxidation Stage for CO and HC reduction. Both stages work together, drastically reducing harmful emissions to satisfy the strictest regulatory requirements. In the mixing section, either ammonia or aqueous urea is injected into the exhaust stream. Urea is often used instead of ammonia; since it's much less toxic than ammonia, it's generally easier to transport and store, and it allows easier permitting. This urea is hydrolyzed and breaks down in the exhaust stream to form

ammonia. Ammonia, whether injected directly or formed from urea, reacts with NO<sub>x</sub> at the SCR catalyst to form harmless water and nitrogen. The Oxidation Stage uses oxidation catalyst elements, with surface coatings impregnated with precious metals, to reduce CO, HAPs, and VOCs—oxidizing these pollutants to form water and carbon dioxide.

## COMPLIANCE AND MORE

Most important of all, MIRATECH's SCR solutions give you assured compliance with less cost, less disruption of your operation and full support you can count on over the long haul. With MIRATECH's SCR system, you don't have to deal with complex controls assembly; panels include microprocessor-controlled hardware. MIRATECH's SCR systems give you a choice of reactant, ammonia or urea, for efficient atomization. And MIRATECH's SCR gives you a level of operations control that's simply unique to the industry.

## PROCESS DIAGRAM



**Learn More:** Phone • Email • Web • “The Emissions Monitor” Subscription

NSCR • SCR • DPF • Silencers • AFR • NESHAP CPMS • Field Service • Training • Turnkey



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## WHY MIRATECH?

- Advanced Technology
- Product Range: 20 to 20,000+ hp
- Innovative, Cost-Effective, Comprehensive Emissions Solutions
- RICE NESHAP Compliant
- Turnkey Projects
- Unsurpassed Experience & Expertise
- Fast, Responsive, Customer-Focused Service and Support
  - Prevent Non-Compliance Fines
  - Improve Engine & Catalyst Performance
  - Cut Maintenance Costs
  - Maximize Catalyst Life
- Full Service Catalyst Wash & Repair
  - ‘Free Wash for Life’ on Next® & Vortex® Substrates
- Project Management
- Onsite Services
  - Supervision
  - Technical
  - Skilled
- Product O&M Training
- Replacement Parts

## EMISSIONS SOLUTIONS

- Catalysts
  - 3-Way
  - Oxidation (Natural Gas & Diesel)
  - HAPs
  - Selective Catalytic Reduction (SCR)
  - Urea Hydrolysis
  - DPF
- Housings
  - NX Series
  - IQ
  - NR
  - Silencer Combinations
    - VX Series
    - RX Series
    - ZX Series
    - Ground Access
- Controls
  - SCR
  - Active DPF
  - Air Fuel Ratio (Rich & Lean Burn)
  - Monitors
    - RICE NESHAP
    - DPF