



# HAPs CATALYSTS



## THE ONE-STEP SOLUTION TO MISHAPS.

### Cost-Effective Compliance For Rich-Burn & Lean-Burn Engines.

It's a hot topic these days – showing no sign of cooling down. Title III of the 1990 Clean Air Act defines no fewer than 188 Hazardous Air Pollutants (HAPs) – like aldehydes and acrolein – posing major health risks to the American breathing public. On February 26, 2004, the EPA promulgated final HAPs control rules for reciprocating internal combustion engines.

If you operate engines – rich-burn or lean-burn; natural gas, LPG, diesel, or dual-fuel – falling under the HAPs rules, non-compliance can pose hazards to your cash flow, profits and peace of mind.



▶MIRATECH's Flat-Top Bonnet™ Design  
Your Best Bet For HAPs Compliance

The good news? MIRATECH has the perfect, low-cost, no-hassle solutions: **our 3-Way, Oxidation and Diesel Oxidation Catalysts.**

Our 3-Way Catalyst delivers cost-effective, reliable, total emissions control for rich-burn engines with exhaust oxygen levels below 0.5%. MIRATECH Natural Gas Oxidation Catalysts and Diesel Oxidation Catalysts bring carbon monoxide (CO) and hydrocarbon (HC) emissions down to compliance-levels in lean-burn engines with exhaust oxygen levels above 4.0%.

All deliver ongoing HAPs compliance as well – with low cost of ownership, no impact on engine performance, and minimum distraction from your main concern – running your operation. All are available in a wide range of sizes and can be custom-tailored to fit virtually any space requirements, any brand of catalytic converter, and any budget.

In gas compression, air compression, water, petroleum or liquids pumping, power generation chillers, and a variety of other applications, it's like a breath of fresh air: an affordable, effective, no-hassle solution in HAPs control.

## CONTACT MIRATECH.

To put MIRATECH HAPs Catalysts to work for your business – or to find out more about other MIRATECH Emissions Solutions – simply give us a call. Better yet, visit our website: [www.miratechcorp.com](http://www.miratechcorp.com)

## WHY MIRATECH?

- ▶▶ Advanced Technology
- ▶▶ Cost-Effective, Comprehensive Solutions
- ▶▶ Unsurpassed Experience & Expertise
- ▶▶ Fast, Responsive, Customer-Focused Service & Support
  - Prevent Non-Compliance Fines
  - Improve Engine & Catalyst Performance
  - Cut Maintenance Costs
  - Maximize Catalyst Life

## EMISSIONS SOLUTIONS

- ▶▶ Non-Selective Catalytic Reduction
  - 3-Way Catalyst Systems
  - Oxidation Catalysts
  - HAPs Catalysts
  - Diesel Oxidation Catalysts
- ▶▶ Catalyst Housings
  - MN/MBA
  - IQ
- ▶▶ Catalyst-Silencer Combos
  - QCC/QCH
  - RCS/RHS
- ▶▶ Active Regeneration Soot Traps
- ▶▶ SCR Catalyst Systems
- ▶▶ NX Analyzers
- ▶▶ Analysis-Controlled Injection Systems
- ▶▶ Air-Fuel Ratio Control Systems
- ▶▶ Service Contracts
- ▶▶ Technical Support & Training
- ▶▶ MIRATECH Catalyst Services
- ▶▶ Replacement Parts

# HAPs CATALYSTS

## BONUS BENEFITS.

For rich-burn and lean-burn stationary, reciprocating engines of virtually all shapes and sizes, in virtually any industrial application, MIRATECH catalysts give you a reliable, low-cost, no-hassle solution in HAPs compliance. They keep your operation on the right side of the non-compliance fine-line, with easy installation and maintenance, less impact on engine performance, and fewer headaches for you and your people.

At the same time, they deliver ongoing compliance with CO, NOx and non-HAPs hydrocarbons emissions rules in rich-burn engines, and CO and non-HAPs hydrocarbons rules with lean-burners. Plus, MIRATECH catalysts work harder, last longer, and deliver installation, operational and maintenance benefits you can literally take to the bank.

## BETTER DESIGNED. BETTER BUILT.

Our Flat-Top Bonnet™ design eliminates blow-by and will even-out pressure across the catalyst face. In real-world operation, nothing prevents nesting or resists vibration and shock better than the MIRATECH catalyst's

### » RICH-BURN ENGINES

#### Existing Or New 4-Stroke

Reduce exhaust formaldehyde by 76% or more\*\* OR Limit exhaust formaldehyde to 350 ppb or less

### » LEAN-BURN ENGINES

#### New 4-Stroke

Reduce exhaust CO by 93% OR Limit exhaust formaldehyde to 14 ppm or less

#### New 2-Stroke

Reduce exhaust CO by 58% OR Limit exhaust formaldehyde to 12 ppm or less\*\*

\* For facilities built between Dec. 19, 2002 and final publication of these rules: 75% ppb (until 2007)

\*\* For facilities built between Dec. 19, 2002 and final publication of these rules: 17 ppm (until 2007)

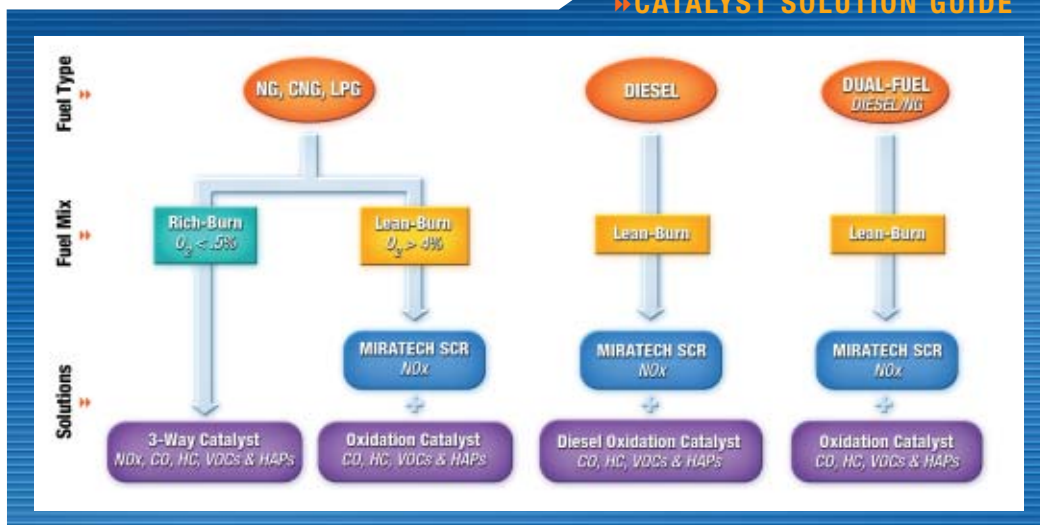
corrugated metal foil construction – with the multi-layered honeycomb design adding durability. Chemisorption catalyst impregnation produces a cost-effective, long-lasting element that resists masking and catalyst “poisoning.” And the patented MIRATECH banding and pinning process is your assurance of superior mechanical strength and high-temperature tolerance.

Each element is wrapped in tough, 304 stainless steel for virtual indestructibility, as well as personnel safety. The hard outer band, with its “Easy-Grab” lift-shelf, protects workers from injury and makes element insertion and removal quick and easy.

## MIRATECH REPLACEMENTS.

MIRATECH manufactures replacement elements for our MBA, EQ and IQ catalytic converters, as well as our RCS/RHS Catalyst-Silencer combos. Custom designs to replace elements from other manufacturers – with the hallmark quality, performance and value of MIRATECH 3-Way, Oxidation and Diesel Oxidation Catalysts – are also available.

### » CATALYST SOLUTION GUIDE



O<sub>2</sub>: Oxygen / CO: Carbon Monoxide / NO<sub>x</sub>: Oxides of Nitrogen / HC: Hydrocarbons / VOCs: Volatile Organic Compounds / HAPs: Hazardous Air Pollutants

## EMISSIONS SOLUTIONS: CONTACT MIRATECH.

For details on additional requirements concerning inspection, testing, and catalyst operation, contact MIRATECH – or visit our website: [www.miratechcorp.com](http://www.miratechcorp.com). Ask for your FREE subscription to our useful, fact-filled electronic newsletter, *THE EMISSIONS MONITOR*.



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## WHY MIRATECH HAPs CATALYSTS?

**Cost-Effective, No-Hassle, HAPs Compliance. Simultaneous Non-HAPs Compliance.**

- » Rich-Burn: CO, NOx, HC, VOCs
- » Lean-Burn: CO, HC, VOCs
- » Better Designed, Better Built, Better Value

## APPLICATIONS

- » Rich-Burn & Lean-Burn Stationary Engines
- » Natural Gas, LPG, Diesel, Dual-Fuel
  - Gas Compression
  - Air Compression
  - Power Generation
  - Chillers
  - Water Pumps & Irrigation

## FEATURES & BENEFITS

- » Prevent Non-Compliance Fines
- » Minimize Catalyst Cost Of Ownership & Operation
- » Quick & Easy Element Insertion & Removal
- » Flat-Top Bonnet™ Design Eliminates Blow-By & Enhances Catalyst Efficiency
- » Low Pressure-Drop
- » Resists Vibration & Shock
- » Minimize Impact On Engine Performance
- » Durable & Long-Lasting
- » 304 Stainless Steel Metal Monolith
  - Virtually Indestructible & Safer For Workers
- » Patented Banded & Pinned Construction
  - Superior Mechanical Strength & Thermal Durability
- » Independent Corrugated & Flat-Foil Construction Honeycomb Design
  - Prevents Nesting, Masking & “Poisoning”
- » One-Year Warranty