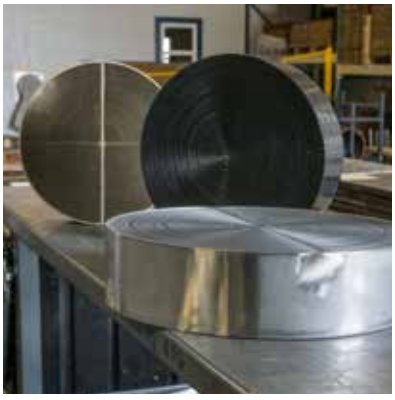
NSCR THREE-WAY CATALYSTS OVERVIEW

Powertherm Maxim Non-Selective Catalytic Reduction (NSCR) or Three-Way catalysts control emissions of Nitrogen Oxides (NOx), Carbon Monoxide (CO), Unburned Hydrocarbons (HCs), Volatile Organic Compounds (VOCs), and Hazardous Air Pollutants (HAPs) from rich burn internal combustion engines. The technique of maximizing surface exposure of the precious metals on the substrate results in a high activity catalyst that is both durable and efficient.

Powertherm Maxim can provide standard catalysts; Available in round, rectangular, oblong and octagonal configuration. No engine is too big or too small. Let us design and build a catalyst for your IC engines and run with the confidence of guaranteed compliance. Replacement elements can be made to fit any existing housing in all shapes & sizes including brand name replacements. Powertherm Maxim catalysts are proudly made in the USA.

PRODUCT DATA

- Destructive Efficiencies: up to 99%
- Pressure Drop: Variable; quoted per specifications
- Working Range: from 550° F up to 1250° F
- Catalyst Substrate:
  - Metal honeycombs up to 48” square, round or oblong
  - Cell densities from 20 cpsi to 700 cpsi
  - Catalyst module depth from 3/4” up to 6”
  - Foil thickness of 0.002"



FEATURES & BENEFITS

- Low pressure drop
- Wide operating temperature range
- Easily cleaned and reactivated
- No nesting or telescoping design
- Variety of cell densities
- Parallel flow reduces plugging
- Custom designed based on application
- Test cores for aging assessment

EMISSION SOURCES

- IC Engines
- Broilers
- Gas Turbine
- Chemical Processes

FUELS

- Natural Gas
- Diesel
- LPG
- Propane
- Biodiesel
- Dual Fuel

EMISSION COMPLIANCE

- NOx
- CO
- HCs
- VOCs
- HAPs

Plus

- Platinum Only
- Crystal Size
- Telescopic Bars
- No Brazing
- In-House Laboratory
- In-House Production
- Quality Control

CATALYSTS OVERVIEW

Powertherm Maxim catalysts are developed and manufactured under the strict direction and supervision of the most competent catalyst experts in the world. Our catalyst experts pioneered the very first exhaust catalysts in the 1970's. Our experts have over 35 years of developing and improving catalysts, 28 catalyst related patents and over 30 years of manufacturing quality catalyst products. Powertherm Maxim catalysts are proudly made in the USA.

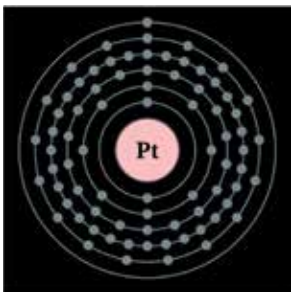
IN-HOUSE EVERY STEP OF THE WAY

In-House Design and Development
- CAD design and evaluation
- Complete laboratory with prototype development and testing
- Customizable catalyst formulations tailored to individual applications

In-House Manufacturer of Components
- Substrates - Honeycombs
- Sheet metal housings and frames
- 100% Quality inspection ensures product conformance

PLATINUM ONLY

Precious metals do the catalyzing, platinum is the most powerful and efficient. We DO NOT substitute platinum with inferior cheaper catalysts such as palladium. (palladium should only be used in special unique super high temperature situations, not as a substitute for standard products and applications)



EFFICIENCY & REDUCED COSTS

Catalyst Banding: Create, cut and bend our own metal with modern efficient equipment
- Dedicated CAD design team with all the right tools
- Abrasive Water Jet: Cuts metal with a 0.005" tolerance
- Press Brake and Shear: Complete metal forming capabilities

Catalyst Substrates: Metal crimper to form metal honeycombs
- Automated precision corrugator:
- Foil width from ¾" up to 6" and cell densities up to 700 cpsi
- Fabrication options: Anti-telescoping bars and housing reinforcements

Welding: Automated 100% in-house welding
- 6-axis OTC FD-V6L Robot
- Fusion Arc 300-L

Capabilities:
- Two 60" x 28" welding tables table
- 96" synchronized head/tail stock for larger items
- 0.003" positional reproducibility
- MIG welds at up to 45 inches per minute

Anti-Telescoping Bars: NO BRAZING! We do not use brazing to counteract the effects of backfires. R&D and field reports indicate brazing leads to brittle areas around the weld-bead. We use anti-telescoping bars, these bars grow and shrink with the rest of catalyst during thermal cycles, proving to be more reliable and less susceptible to failure.

Heat Treat and Coating: Substrates are heat treated in a large kiln and prepared for catalyst coating
- Catalyst coating applied between kiln firing stages
- Finished honeycomb catalysts can then be welded into larger arrays

Crystal Size: Common mis-belief: "More surface loading is better." The Truth: Crystal size is KEY to catalyst capabilities and efficiency. The patented crystallization process produces smaller crystals. Smaller crystals create more surface area for catalysis to occur. This results in greater and more efficient catalytic effect, on a smaller load area.