

EMISSION CONTROL PRODUCTS

C A T A L Y T I C
C O M B U S T I O N

EMISSION TECHNOLOGIES



Our Story

Catalytic Combustion Corporation was founded in 1950 by individuals who recognized the need for air pollution control and catalyst technology. They introduced cutting-edge technology with the development of the first ever US patented all metal catalyst to destroy volatile organic compounds (VOCs).

Catalytic Combustion has a diversified base with the following groups: Catalyst, Power Emissions, Exhaust, Air Correction and Contract Fabrication. Our catalyst products use patented technology to reduce the output of volatile organic compounds (VOCs) that are harmful to the environment and its inhabitants. We provide products to industries like food service, consumer appliances, non-automotive engines, power generation, gas compression, production painting and printing, pharmaceutical, chemical processing and a wide range of other manufacturing applications. The entire company is supported by a multi-disciplined engineering staff and a 24/7 service department.

These initiatives make Catalytic Combustion a leader in the elimination of harmful volatile organic compounds, thereby protecting our environment and its inhabitants.

Innovation

Unlike most in this business, we formulate, create and manufacture our own substrates and catalysts. Our precious metals selections and loadings are scientifically determined and field verified for optimum performance and value. We design, engineer and build the components and equipment to employ the catalysts as well.

Diversity

Engineering Capabilities:

- Chemical
- Mechanical
- Electrical
- PLC
- Programming
- Industrial
- Process
- Project Management

Products & Services:

- Catalyst Elements
 - 3-way
 - Oxidation
 - Formaldehyde and VOC
- Replacements for all manufacturers
- Converter Housing and Combos
 - Face Seal
 - Parallel Flow
 - Ground Access
- Catalyst Evaluations
 - AVTS
 - Physical properties
 - Contamination study

Call or email us about your project:

Toll-Free 888-285-5940 | 715-568-2882 | CATSales@CatalyticCombustion.com



About Us

Catalytic Combustion Corporation is known for introducing the first patented all-metal catalyst, and is also proudly acknowledged for the following achievements:

- 100,000 square feet of combined manufacturing space
- Over 1,000,000 catalysts manufactured
- Full service fabrication competency
- Utilizing the worlds most advanced CAD software and welding technologies
- Providing and sustaining turn-key installations
- Unmatched personalized service and communication
- Attention to detail in every piece of our work
- Promising to always do what's right for our customer

Contact Our Headquarters:

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888-285-5940

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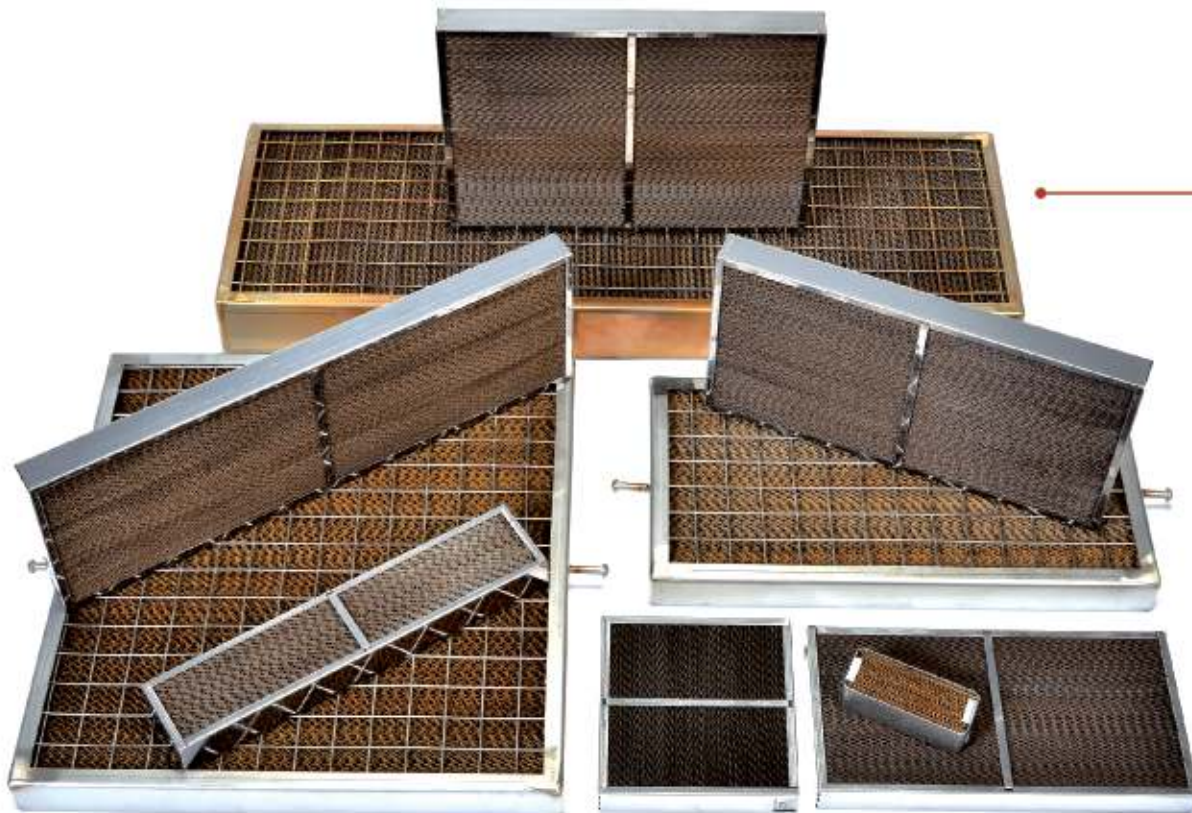
Our Substrates

Foundations of Quality Catalysts

A strong foundation is vital to a successful outcome in anything you do; a catalyst's substrate is no different. We only offer our larger round elements in a brazed foil format to ensure that they stay together in the demanding service of an industrial engine. Our smaller round elements can be either brazed construction or produced using our proprietary foil folding technology. For rectangular elements our folded catalysts have provided trouble free service for over a decade. To improve performance we use a Herringbone foil pattern and have cell density choices from 75 CPSI to 600 CPSI.

Singular Catalyst Substrates

Catalysts made out of our unique substrates offer many performance advantages. The size and number of openings can be tailored to meet your needs, and our metal mesh catalyst substrates can be produced in an almost endless number of shapes and sizes. Furthermore, the fact that both of these substrates are metallic means they have low thermal mass, are able to heat up quickly, and provide accelerated performance.



Wire Mesh

Catalysts made with a wire mesh substrate offer many performance advantages. The size and number of openings can be tailored to meet the appliance's airflow conditions. Wire mesh catalysts can be produced in an almost endless number of shapes and sizes, again specifically tailored to meet your needs. In addition, the fact that the substrate is metallic means it has low thermal mass so it heats up quickly providing accelerated performance.



Honeycomb

Ceramic honeycomb catalyst have been widely used since the 1980's. They can be extruded in a variety of shapes and cell densities. Ceramics are often used where the required catalyst volume is more than is practical for wire mesh catalysts. Ceramics make for very dimensionally stable catalyst support over the range of operating temperatures. Ceramic substrates can carry a heavier amount of coating that metallic supports, which gives ceramics the advantage in applications where catalyst deactivators are present or where high levels of precious metals are needed to reach the desired performance.

We also have an excellent relationship with a world-class manufacturer of ceramic substrates if ceramics offer advantages that your product requires..

Metal Foil

Metal foil, as a catalyst substrate, has some of the properties of both wire and ceramic materials. It can be formed into an endless variety of shapes, sizes, and cell densities, enabling it to make larger volume pieces. Metal foil has low thermal mass, relative to a comparable ceramic, so it heats up quickly. Metal foil can also be expanded to form a wire mesh-like material where the openings can be specifically tailored to meet your needs.



Customizing Catalyst Elements

Toll Coating Formulation

Catalytic Combustion understands there may be times when a company has a suitable substrate to use for their application, but need supportive expertise to apply the catalyst coating. Through our various proprietary catalyst coating techniques, we can offer toll coating as an option to you. We provide various wash coat and precious metal catalyst formulations and will consider other types of coatings including base metal catalysts. You can ask Catalytic Combustion to recommend a coating formulation for a particular application or you can specify your own proprietary formulation

Custom Shapes

Catalytic Combustion customizes elements for brand new catalyst and existing or aging catalysts. Whether your converter or combo housing is new or older, we can make a replacement element for it. We've made elements as small as 4" in diameter, as large as 48". If we've not made one already, we can develop the parameters with you to provide a custom element.

Non-Round and Rectangular Elements

Non-rounded elements pose special challenges to manufacture. Originally conceived so you had to go back to the housing company for replacement elements. They have historically been poorly constructed and are subject to frequent failures. Using a brazed round element as a starting point, we can cut away the sections not needed to create a monolithic form that is one solid brick. These are then coated to provide you a catalyst that achieves the best performance possible in these legacy housing designs.

Drawing on our experience in making catalysts for other industries, we manufacture rectangular elements using our folded foil technology. This yields an element that is structurally solid that won't telescope or open bypass channels. This technique of manufacturing elements is very flexible so any square or rectangular element can be produced on short notice.



Our Metals

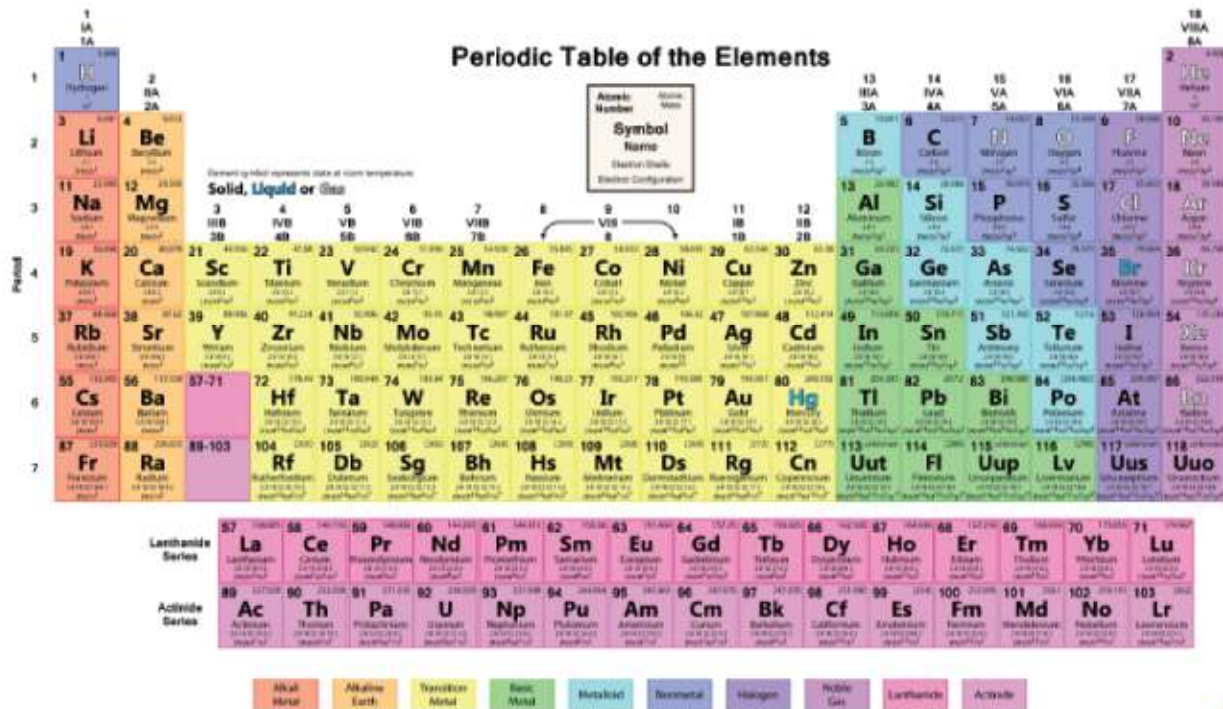
It's Elementary: Metals Matter

Controlling the emissions from an engine fall solely upon the achievement of the catalyst element. The role that it plays in permitting an engine to operate is underappreciated and discounted in the tug of war between price and value. Yet when an engine falls out of compliance unexpectedly, how much money is needlessly spent to get it back up and running?

Far too often the catalyst is shrouded in mystery, which simply comes from lack of knowledge. When the composition is unknown to the people who have to use it, improper decision in the context of troubleshooting, and even daily functionality, are the likely outcome. Catalytic Combustion is a different type of catalyst company in that we strongly believe that the user should know enough about the catalyst to make an informed decision. We don't have to hide the amount of precious metals on our catalyst under the cloak of "proprietary information" as others do. We'll work with you to evaluate your performance requirements and lifespan you want to see from the catalyst, then provide you choices on what catalyst to use.

Precious Metals

The development of catalytic converters for cars teaches us that the precious metals Platinum, Palladium and Rhodium outperform other catalytically active elements in conversion efficiency and durability, and offer a wide range of versatility for controlling engine exhaust pollutants.



Catalyst Housings

Parallel Flow

With the ever tightening regulations limiting the amount of NOx, CO, and VOC's that can be emitted, you can't afford to have any bypass leakage threaten your operation. The best catalyst in the world is ineffective if pollutants do not come in contact with the coating.

The housing that holds the catalyst has to be user friendly and yet capable of giving years of service in some of the most demanding installations in the world.

With this in mind, Catalytic Combustion took the time to ask questions and listen to users and operators like you to understand what you wanted in a catalyst housing.

With our Face Seal, Parallel Flow, and Perimeter Seal housings, your catalyst stays fully protected.

The catalyst's retention system is completely internal to the housing so there are no places for air to bleed into the housing to affect the performance of the catalyst. The system is designed to easily remove when it is time to replace the catalyst to get you back into operation quickly.

Catalytic Combustion Offers Best-In Class

Parallel Flow housings. Our Hinged "Quick Cover" design affords fast and easy access to catalyst, saving time and money during in-the-field service.



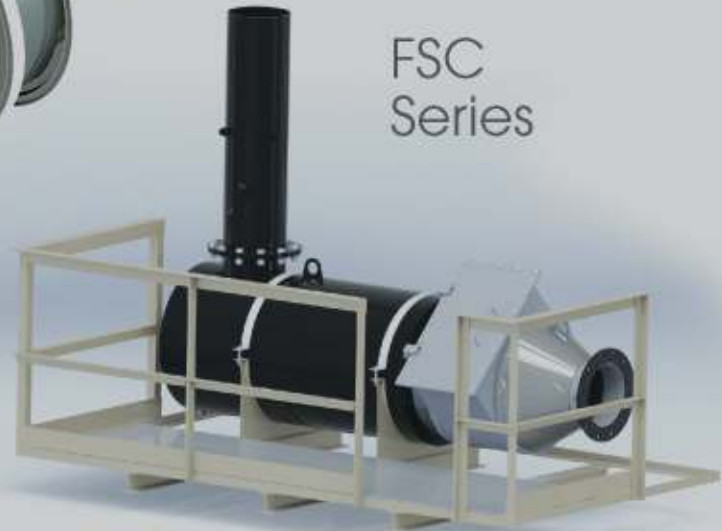
Band Clamp Series



PSC Series



FSC Series



Features

- Carbon or stainless steel construction
- Industry's longest lasting housings built to customers' specifications
- 12 Possible combinations of rectangle catalyst configurations
- Improved emission control using three rectangular catalysts in strategic placements.
- Double Bulb Gasket (DBG) Sealing Technology
- Innovative Double Bulb Gasket provides the best seal for removal and bypass prevention
- All installation hardware included
- Fastest installation in the market for parallel flow application
- Hinged "Quick Cover" catalyst access panel
- Easiest catalyst element change
- Two lifting eyes pre-installed
- No field assembly or modification required
- Catalytic Combustion manufactures "Quality 4" plate
- Validates date of manufacture and quality assurance with full tracking capabilities
- Catalytic Quality Craftsmanship Guarantee
- Industry leading 12-month craftsmanship warranty

Housing & Silencers

Face Seal Series

Catalytic Combustion took the time to ask questions and listen to users and operators like you to understand what you wanted in a catalyst housing. The result of this effort is our Face Seal Series of converter housing and combination converter/silencer units.

Our unique Face Seal design provides a positive sealing concept and catalyst retention system. It utilizes a double face, metal core gasket to fill any surface irregularities and stop leakage from occurring. The catalyst elements are retained with double locking arms that provide six points of pressure around the circumference to securely hold the catalyst in place.

FSC: Converter Housings

For locations that have existing sound silencers, we offer a catalyst-only housing that can be fitted between your engine and the silencer.

FSCX: Combo Units

For locations where the existing silencer needs to be replaced or the level of sound attenuation requires upgrading, we have attenuation levels from Industrial to Hospitals available.

One thing that sets us apart from the pack is that we provide a silencer design that is matched to your engine so it delivers the expected attenuation. This demands that the silencer's volume and internal construction be specified based on the displacement, speed, and fundamental sound frequency of the engine and not just the exhaust piping diameter and exhaust flow rate.





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FSC Series

Catalytic Converter—Features & Benefits

Internal Catalyst Retention System

Eliminates the possibility of oxygen intrusion that can compromise the catalysts performance

Face Seal Gasket Design

Prevents bypass leakage that throws the engine out of compliance

Dual Catalyst Capacity

Built in ability to gain performance to comply with stricter rules in the future

Sizes to Fit a Wide Range of Engines

Catalyst diameters from 17.5" to 35.5"

Rugged Construction

Available in either painted Carbon Steel or Stainless Steel to fit your needs

Catalytic Converter/Silencer

Features & Benefits

Critical or Hospital Grade Silencing

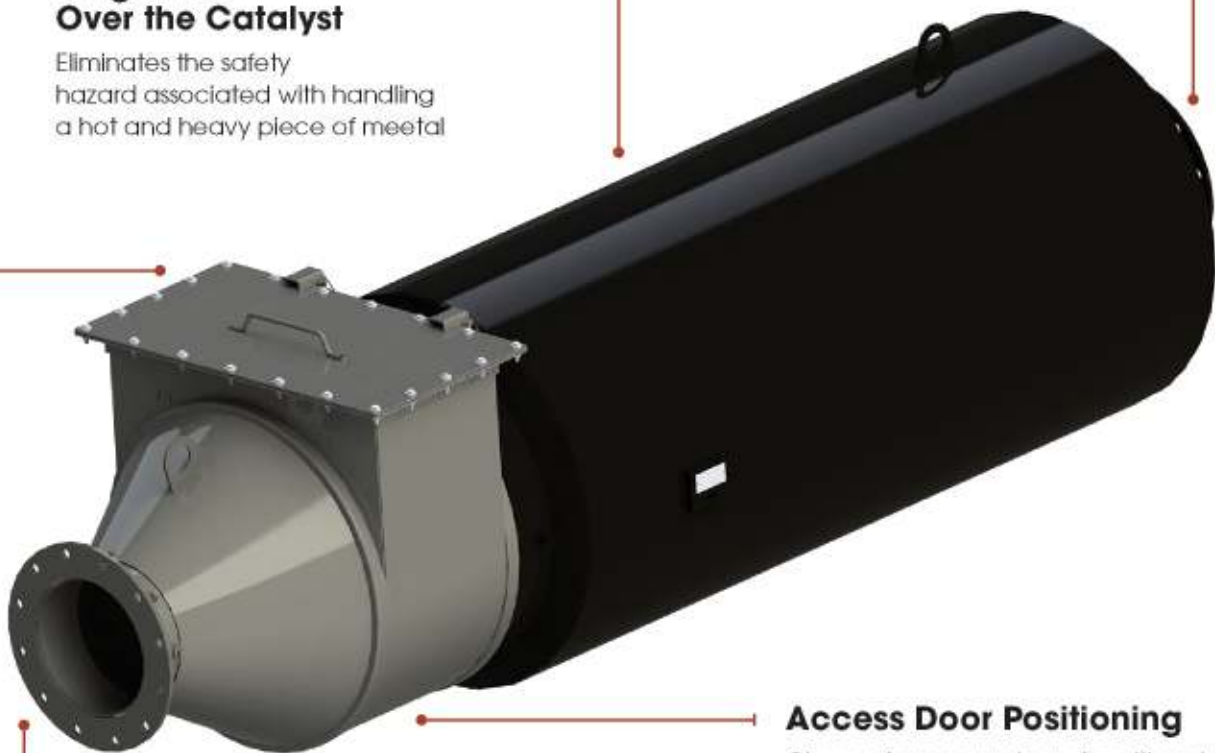
Choose the level of sound control needed to achieve site requirements

Top or End Outlet Configuration

Easy access to test parts for emission sampling

Hinged Lid Over the Catalyst

Eliminates the safety hazard associated with handling a hot and heavy piece of metal



Access Door Positioning

Choose from a number of positions to improve the ergonomics and safety with inserting and removing the catalyst

End or Side Inlet Configuration

Choose which style is the most convenient for hooking up to the engine

Washing & Cleaning

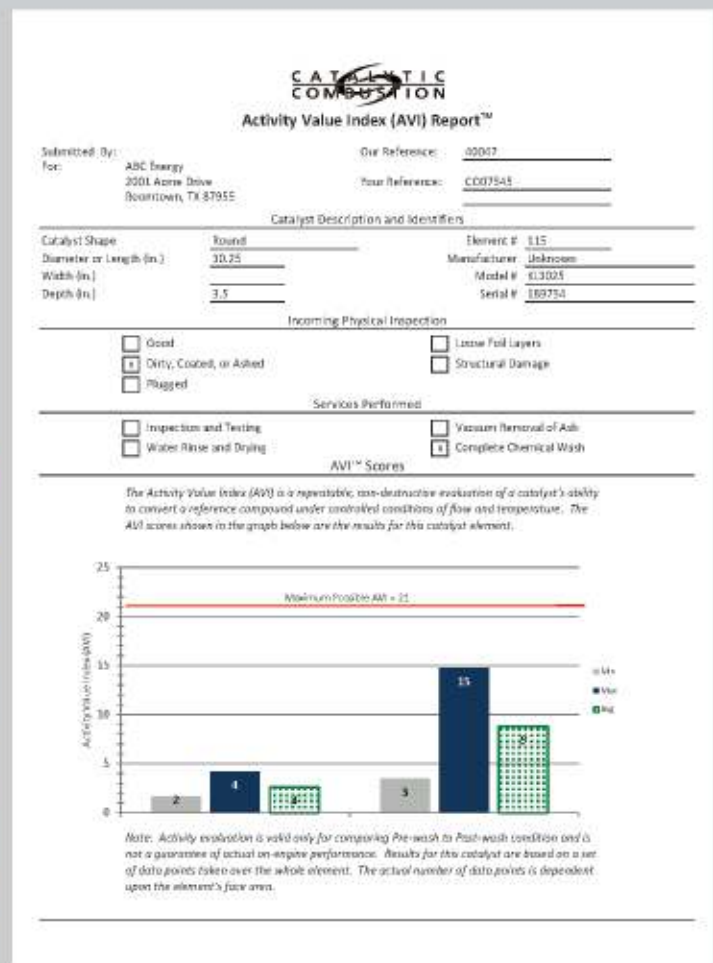
How Good Is My Washed Catalyst?

Finally, there is a way to know. Catalytic Combustion Corp. (CCC) has developed the Activity Value Test System (AVTS™) that provides the ability to:

- Determine if a washed catalyst has any catalytic activity remaining
- Know how much improvement was gained by the washing process
- Decide if a washed catalyst is worth the time to re-install in your engine
- Save time and money before re-installation instead of scrambling to replace a washed element that does not perform as needed

AVI™ Reporting and Interpreting AVTS Data

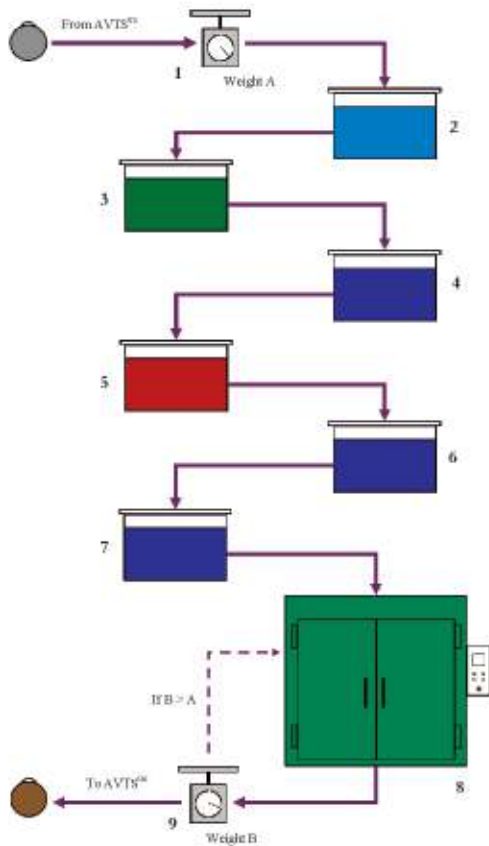
Understanding AVTS results is a critical part of this innovative and proprietary testing process. The Activity Value Index (AVI) Report provides an AVI score that can be used in correlation with your field results in order to determine a minimum acceptable AVI score that means a catalyst is worth re-installing per your needs and equipment.





Industry Leading Nine-Step Process

Catalytic Combustion's advanced catalyst washing service includes a thorough physical exam of the element and the rigorous nine-step cleaning process that is highly effective in removing lubricating oil, ash, dirt, rust and carbon char.



Catalysts that pass inspection and/or testing advance through our standard chemical washing process:

- Step 1:** Record catalyst's initial weight
- Step 2:** Pre-rinse to remove loose material
- Step 3:** Bathe in a constantly agitated caustic solution
- Step 4:** Rinse in a distilled water bath
- Step 5:** Bathe in a constantly agitated acidic solution
- Step 6:** Rinse in a distilled water bath
- Step 7:** Bathe in a distilled water final bath to remove final trace elements of cleaning solutions
- Step 8:** Dry in a high temperature convection oven
- Step 9:** Record post weight. If B weight is greater than A weight, return to oven.

CATALYTIC COMBUSTION

EMISSION TECHNOLOGIES



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- ★ Field Office
- ★ Sales Office

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