



Introducing the Cal-Cat Retail Information Packet



“We are proud of our product, it was developed by Americans and will only be made in America, yet available to the entire world community.” PPT



California Air Resources Board EO # in Process.
Expected OCT. 2010

Cal-Cat Testimonials

"I purchased the Cal-Cat Last week for my 1999 Toyota 4Runner and Wow! Awesome performance gain. I live at the top of a steep mountain in NY and the truck now climbs it without bogging. Over the course of 5 days the performance got better and so did my mileage. I now have to fill up at 340 miles per tank instead of the 240 miles I used to. I am amazed that such a simple looking part can have such a big impact. I would highly recommend anyone purchase it, you will not be disappointed." --- Michele S. Monroe NY

"I just wanted to give a review of the Cal-Cat.

I have used this product for over a month now and I have never been happier. I drive a 2007 Dodge Caliber R/T AWD. It a good little car but is weak on the power side. Gas is ok too; sticker says 23 city/28 highway. Yeah right, it's more like 22 city/25 highway. So after purchasing and installing the Cal-Cat, all I can say is wow, the car feels like it's on HGH. The power increase is awesome; the extra horse power makes driving up steep hills and passing on the highway a breeze. I start the engine and the car just says "oh yeah". I have also noticed reduced gas consumption. I would have to say at least an extra 3 to 4 miles per gallon for me while driving on the highway. So my 25 highway miles are more like 28 -29 miles per gallon. This enhancement is amazing and I will recommend my family and friends upgrade their vehicles. Why this is not a standard part on all cars baffles me. The Cal-Cat just makes driving this little car more fun. The Cal-Cat to just simply put it; Awesome. Thank you ." --- Joe G, Highland Mills, NY

"Installed the cal-cat today. Few installation problems... my mistakes... took 2 1/2 hours instead of the estimated 1, but that is ok... not bad for a marine biologist. Did experience about 15% increase in mileage on the first run." ----- John S Australia



1999 31' Ford Diesel motor home

"I have been a heavy equipment mechanic for 25 years I can certify that my 1999 31' Ford Diesel motor home received a drastic increase in power, performance, and an unprecedented 25% increase in fuel economy. The impressive aspect of these gains was with the vehicle fully loaded and towing an 18'trailer loaded with equipment and 2 motorcycles." --- Robert K. New Jersey



"My vehicle is a 1995 Dodge Ram with 230,000 miles. It is getting better gas mileage than it did when it was new. I was averaging only about 360 miles per tank before the Cal-Cat. Now I average 450 miles a tank! It also runs like new again, has more power with hills, and everyone I've had drive it is very impressed with it." --- M.S.

"When we used to start our landscaping truck and have to run away from it to get away from the smoke cloud until it warmed up. Since we installed the Cal-Cats it does not smoke at start-up has much more power pulling trailers and loads of stones or mulch. It also seems to be using less fuel even though we do not keep track of actual mileage because we do too many start and quick stops in between lawns" --- Kenny D., New Jersey



2008 Hemi

"After seeing how well it worked on our landscaping truck I had the Cal-Cats installed on my 2008 Dodge Ram W/5.7 Hemi. I already have a program chip and a cat back dual exhaust. On my first run out I was amazed at how quickly my rpm's come up now. It is incredible; I didn't believe a simple bolt on part could give me that much of a performance boost! Keep up the good work!" --- Kenny D. New Jersey

"I bought a 1997 Honda Accord with 132,000 miles as a commuter car. The first run after getting an oil change and a new radiator was 24 MPG city/highway combined and ran very sluggish. These numbers were unacceptable for commuting purposes, so I bought a Cal-Cat. Every fill up after installation for the following weeks increased until now I am holding at 31 MPG city/highway combined for the same trip. And after 3 months, it is still going up!! In addition, the car runs as smooth as a new car, much more power especially on inclines. I couldn't be happier." --- S.D., New York

"WOW Cal-Cat has just improved my 1997 F150 4x4 by 25%. I am getting 24 to 26 MPG. Sure hope the new Cal-Cat for air-cooled engines will fit my Harley?????" --- Geoff C., Canada



Cummins Diesel Testimonials



2006 Freightliner

“I pull a car trailer with a 2006 Freightliner powered by a 500HP Cummins and run basically the same route week after week. I normally put in \$150 of fuel every Saturday but the first Saturday after installing the Cal-Cat I could only put in \$100. I believe that is a 30% improvement in fuel mileage. I used to top some of the hills on my run at 55 to 60, now I am topping them at speeds I would rather not put into print. This thing is phenomenal!!! I have no problem telling all my fellow truckers about this great product. Well worth the money.” --- Abner S.



1998 Dodge 5.9 Cummins

“My truck has never run this good. I was thinking of getting rid of it but now I think I will fix it up and keep it. The extra 3 miles per gallon fuel mileage is great and I can't tell you how nice it is to have all the extra power. The guys at the emissions center could not believe that the emissions dropped 76% after just adding the Cal-Cat. It is amazing!” --- Jim M.. New Jersey



2006 Mack CL700 powered by a 600Hp Cummins

“I have been driving a truck for 34 years and have been driving this truck for the company for 1 year. I noticed a significant power increase immediately after the install. The truck has more torque and pulls the heavy loads easier. I recently pulled the heaviest piece of equipment we own a rock crusher that weighs over 100,000 pounds out of a quarry and up very hilly roads back to the shop. I never had to shift out of 4th gear, it actually gained a gear pulling the hills under heavy loads very impressive.” --- James W., New Jersey



What is a Cal-Cat?

The Cal-Cat is a small fuel refinery that can be installed on any car, truck or engine that is liquid cooled.

(Cal-Cats for air cooled engines coming soon!)

The Cal-Cat works by using our patent pending catalyst that has been electroplated onto multiple sized screens. The screens are then installed into our patent pending liquid to liquid heat exchanger. Then, engine coolant is run through the center of the heat exchanger. This makes use of normally wasted heat or energy by heating our catalyst. The catalyst being electroplated on the screen allows a massive surface area for the fuel to come in contact with. When the fuel and heated catalyst combine, the large carbon chains in the fuel begin to break apart and the electrons begin to move producing a better, burnable fuel.

Catalyst's and heat are the components refineries use to turn crude oil into gas or diesel fuel. We are using basically that same concept to refine the fuel even further, therefore producing a better burning fuel.

The more fuel you burn, the less fuel you will waste, creating a Greener Car ,Truck or Boat for the Environment!

There is a more detailed description of how they work in the back of this packet

California Air Resources Board EO # in Process. Expected OCT. 2010

We have developed an aftermarket installation performance product called the Cal-Cat. In the development track, two very unique and unexpected side effects from our product were discovered. We knew the Cal-Cat increased the power and performance of the vehicle, but as with any testing of a performance product, emissions are always a concern especially with the EPA making more stringent emission laws every year. We began testing before and after emissions and to our surprise we reduced hydrocarbon emissions drastically up to 54% in our gasoline testing. In addition we picked up a 20% increase in fuel efficiency. The next logical step was to test a diesel vehicle. Through our testing we had to rethink the formula of our product to work with diesel fuel because it is a heavier fuel. In our diesel testing done by a third party we reduced emissions by 35.48% and increased fuel efficiency by an astounding 22-29% on a 427 HP tri-axle Mack dump truck with a GVW of 80,000 lbs. Other diesel vehicles we tested showed similar results; lots of added power, lowered emissions and 15-25% increase in fuel efficiency.



Cal-Cat F.A.Q.'s

Will the Cal-Cat void my vehicle's manufacturer's warranty? No, under the Magnuson Moss Warranty Act of 1975, no manufacturer may void any warranty of a vehicle due to any aftermarket part installed on a vehicle, unless they can prove first that the part is solely responsible for any damage. (see page 10)

Was the Cal-Cat designed to increase fuel efficiency? No. The Cal-Cat was designed to increase performance. Through testing we discovered it decreased emissions and in most cases increased fuel efficiency.

Is the Cal-Cat going to give you better fuel mileage? In most cases yes but, the fuel mileage depends more on the driver and the condition of the vehicle, in addition to how efficient the vehicle is from the factory.

Will it give you better throttle response and the feel of power? Yes. It will allow more of the fuel to be used during the first part of the power stroke and not wasted in the catalytic converter.

What is the difference between the diesel and gasoline Cal-Cats? Although the chambers are the same design, diesel fuel being a larger hydrocarbon requires additional and more expensive catalysts to get the desired effect.

Is my Cal-Cat going to cause vapor lock? No. That is why it is only to be used on fuel injected engines with 15 psi fuel pressure or higher. The fuel pressure raises the boiling point of the fuel and keeps it from vaporizing until it sprays out the injector when we want as much vapor as possible.

Will a Cal-Cat fix my worn out engine? No. It will in most cases help it regain some of its power and help reduce its emissions just by the way it works. But it will not fix what is already worn out or broken.

Is the Cal-Cat a Filter? No. It will act as a filter catching dirt and deposits.



Automotive Cal-Cats

CC-1G Gasoline Cal-Cat Kit \$349.95



Gasoline Engine Requirements

.5L to 5.7L :1-Gas Cal-Cat 5.3L to 8.0L :2 Gas Cal Cats 1.5L to 8.0L :2 Gas Cal-Cat used for Off road and Racing.

Comes with 2 90° quick connect fittings and 2 straight quick connect fittings. 2 quick connect steel tubes, 2 Hose clamps, 8 fuel line clamps, 10' of fuel line, 3' of grounding wire, 2 ground terminals, 1 hose cutting tool and fuel line clamp pliers.

Comes with everything shown here, fuel line and adapters to fit most vehicles. The Gasoline Cal-Cat is for fuel injected engines from .5 to 5.7liters and works great under normal driving conditions. For vehicles 5.3L to 8.0L or if you tow, drive at high speeds, use your vehicle for working, or throttle hard regularly we recommend 2 Gasoline Cal-Cats. On any vehicle 1.5 liters and up that is used off road or for racing we recommend at least 2 Gasoline Cal-Cats.

Diesel Powered Vehicles

Diesel Cars, Pickups, to Over the Road Trucks

CC-2D Dual Diesel Cal-Cat \$799.95 shown with bracket kit A-2B \$125.00 Total as shown \$924.95



Dual Diesel Cal-Cat 10 Hp to 325Hp: A Dual Diesel Cal-Cat For 10Hp Generators passenger cars to mid-duty pick-up trucks to 325 HP.

Comes with 10' of 3/8" ID fuel line, 6-straight brass fuel fittings, 4 hose clamps, 6 fuel line clamps, 1 fuel line cutting tool and 1 fuel line clamp pliers.

The Diesel Cal-Cat chambers may look the same but the amount and types of catalyst needed to work with diesel fuel are totally different and they are scaled to the amount of fuel flow per horsepower. The Diesel Cal-Cats must be installed between the fuel filter and the injector pump.

CC-3D Triple Diesel Cal-Cat \$1,199.95 shown with bracket kit A-3B \$165.00 Total as shown \$1364.95



Triple Diesel Cal-Cat

325Hp to 500Hp: Mid-Duty, Heavy-Duty work trucks and other diesel engines up to 500 HP. Comes with 10' of 3/8" ID fuel line, 8-straight brass fuel fittings and 8 fuel line clamps, 1 fuel line cutting tool and 1 fuel line clamp pliers.

The Diesel Cal-Cat chambers may look the same but the amount and types of catalyst needed to work with diesel fuel are totally different and they are scaled to the amount of fuel flow per horsepower. The Diesel Cal-Cats must be installed between the fuel filter and the injector pump



CC-4D Diesel Cal-Cat \$1600.00 shown with bracket kit A-4B \$265 Total shown \$1865.00



Quad Diesel Cal-Cat

425Hp to 900Hp: Heavy-Duty work trucks, over the road trucks and other industrial diesel engines up to 900 HP. What else is there to say? You need a Quad Diesel Cal-Cat because you drive a Monster. Comes standard with 10' of 3/8" fuel line 8-straight brass fuel fittings 10 fuel line clamps, 1 fuel line cutting tool and 1 fuel line clamp pliers ***Note -When purchased with Bracket Kit comes pre-assembled.

Note: On larger horsepower engines the inside diameter of the fuel fitting needs to be checked. If the inside diameter of the fuel line fitting at its smallest point is larger than .400" a Cal-Cat from our industrial line will have to be installed. Please contact us for industrial pricing.

A-2B Dual Cal-Cat Aluminum Bracket Kit \$125.00



Dual Cal-Cat Bracket for Diesel or Gasoline Cal-Cats: Custom machined billet aluminum, comes with 2-straight and 2- 90° fuel fittings, loop coolant hose, 2 hose clamps and 6 fuel clamps. Makes installs neat and professional looking in addition to providing bragging rights! ***Note, When purchased with the Cal-Cats as a complete unit comes already pre-assembled, just mount, add coolant hoses, and fuel lines and your done!

A-3B Triple Diesel Cal-Cat Aluminum Bracket Kit \$165.



Triple Cal-Cat Bracket: Custom machined billet aluminum, comes with 2- straight and 4-90° fuel fittings 2 loop coolant hoses, 4 hose clamps, 6" of fuel line and 8 fuel clamps. A must when installing Triple Diesel Cal-Cats. Has been proven to save up to 2 hours of install time or more while looking professional on your rig. ***Note, When purchased with the Cal-Cats as a complete unit comes already pre-assembled, just mount, add coolant hoses, and fuel lines and your done!



A-4B Quad Cal-Cat Bracket Kit - \$265.00



Make it easy on yourself buy the bracket kit when you purchase your Cal-Cat and we will pre-assemble it for you at no extra cost to do so! But if you choose to do it yourself here it is sold separately. Comes with a custom machined billet aluminum bracket, 2-straight brass fuel fittings, 6-90° brass fuel fittings, 8-hose clamps, 3 hose loops 10- fuel line clamps and 10' of 3/8" ID fuel line

LARGE DIESEL

Our new stainless steel line of industrial Cal-Cats were designed for mid size and large tier one engines. All of the new stainless steel Cal-Cats use our patent pending Catalyst along with our patent pending catalyst fuel swirl system. This allows better mixing of the fuel and allows more of the fuel to be able to come in contact with the heated catalyst. We have found for installation purposes you will need to order 2 hoses (Napa # 10965 - 15/16" to 5/8" x about 24") to make hookup to the heater hoses much easier. The 14" stainless steel Cal-Cat was designed to be used on large over the road trucks and any place where salt & ice melting substances are used such as large snow plow trucks, heavy equipment, doc machinery and equipment.

CC-SS-8 1400.00



The 8" Diesel Stainless Steel Cal-Cat has 5.5 times the catalyst surface area of a single Cal-Cat unit. With our patent pending catalyst swirl system equating to a whopping total of 432 Sq inches of catalyst. It is constructed out of 304 stainless and has 3/8" NPT fuel fittings. This unit is perfect for diesel engines 275-500 Hp

CC-SS-14 Price as Shown \$1800.00



This Cal-Cat is good for 400-1200HP diesels. The SS-14 Cal-Cat has more than 6x the catalyst that is in a standard dual diesel Cal-Cat, not to mention the extra catalyst used in the catalyst fuel swirl system. This Cal-Cat has 3/8 NPT fittings for a larger volume of fuel flow. There is no need to purchase a mounting bracket, it's already there.



Marine Applications

MCC-SS-8

\$ 1400.00



The 8" Stainless Steel Marine Cal-Cat has 5.5 times the catalyst surface area of a single Cal-Cat using the patent pending catalyst swirl system for a whopping total of 432 Sq inches of catalyst. It is constructed out of 304 stainless and has 3/8" NPT fuel fittings. This unit will handle marine engines up to Up to 500 Hp

MCC-SS-14

\$1800.00



The 14" Stainless Steel Cal-Cats use our patent pending Catalyst along with our patent pending catalyst fuel swirl system. This allows better mixing of the fuel and allows more of the fuel to be able to come in contact with the heated catalyst. This marine unit will handle engines 500-1000HP

MCC-SS-18

\$2100.00



The 18" It should say it all but we can tell you if you are using this bad boy then you are operating some serious machine out on the open water. This Cal-Cat uses our patent pending Catalyst along with our patent pending catalyst fuel swirl system. This allows better mixing of the fuel and allows more of the fuel to be able to come in contact with the heated catalyst. This marine unit will handle engines 1000HP and up.



Industrial Applications

ICC-SS-8

\$1400.00



The 8" Industrial Stainless Steel Cal-Cat has 5.5 times the catalyst surface area of a single Cal-Cat unit for a whopping total of 432 Sq inches of catalyst. It is constructed out of 304 stainless and has 3/8" NPT fuel fittings. This unit is perfect for job site industrial engines 275-500 Hp

ICC-SS-14

1800.00



The 14" Industrial Stainless Steel Cal-Cats uses our patent pending Catalyst along with our patent pending catalyst fuel swirl system. This allows better mixing of the fuel and allows more of the fuel to be able to come in contact with the heated catalyst. Comes with 3/8" NPT fuel fittings. This Industrial unit is ideal for industrial motors and will handle engines 400-1200HP

ICC-SS-18

\$2100.00



The 18" Industrial Stainless Steel is designed using our patent pending Catalyst along with our patent pending catalyst fuel swirl system. Made from 304 stainless steel this unit is perfect for large industrial motors operated in harsh environments where corrosion is a factor. This Industrial unit will handle engines 400-2000 HP



ICC-18

\$1800.00



The 18" Industrial Steel Cal-Cat has 4 times the Catalyst surface area of our triple unit with our patent pending catalyst swirl system. For diesel engines 400- 2000HP. These Units come powder coated green, but can be painted any color desired for an extra \$25 dollars

Loco -Cat

The Loco- Cat is 32" long and has our patent pending Catalyst swirl system designed for large diesel and locomotive engines 3000-4000HP it has the equivalent diesel catalyst of 24 Single Cal-Cats.

LCC-32

Contact your distributor for applications and pricing.





The Gasoline Cal-Cat How It Works

A Cal-Cat is a coolant to catalyst fuel modification system. The metal tubes are configured to treat hydrocarbon liquid fuel to pass through while being in contact with a proprietary blend of different catalyst that are heated from the engine coolant. A catalyst is a material that helps assist in a chemical reaction but does not get consumed in the reaction. This process is designed so the hydrocarbon fuel will mix and help break up large hydrocarbon chains by direct contact with the catalyst to allow more of the fuel to become burnable to produce power.

This is very similar to how a refinery works. The refinery takes crude oil and heats it to varying temperatures over catalyst to basically sort them into 1,2,3,4 and so on hydrocarbon chain molecules. One carbon is natural gas, seven carbon is heptane, eight carbon is octane, ten carbon is decane. Lower carbon count fuels vaporize too early and reduce power, higher carbon counts may never vaporize until in the exhaust manifold or catalytic converter. In either case they can become wasted fuel that does not contribute to power. In addition, as refined fuel sits in storage tanks it begins to degrade, as well as combine to larger carbon chains that are harder for your vehicle to convert into usable power.

The Cal-Cat basically acts as a little refinery on your car, truck, motorcycle, boat etc. As the fuel passes through the Cal-Cat, heat that would normally be wasted heats up the fuel and the catalyst in the catalyst fuel chamber. The heated catalyst works with the heated fuel to basically re-break the hydrogen-carbon bonds in the fuel allowing more of the fuel to be usable during the first part of the power stroke, this equals the same power with less fuel, which allows cleaner emissions because less fuel is needed. More of the fuel already injected into the cylinder is being used. The other benefit is less carbon buildup in the cylinder because more of the fuel is being burned releasing heat where it counts.

In a normal gas engine out of 100% of the fuel injected into a cylinder only about 20% of the fuel is used during the critical time of power stroke (also known as critical crank angle) this is the first ½ of the power stroke. In order for fuel to burn, it must be in a vapor form. The lower boiling point of gasoline hydrocarbon chains is around 165°F at sea level the higher hydrocarbon chain boiling point is around 445°F. Fuel injection sprays liquid fuel into the engine at the back of the intake valve, at that point the fuel and air enter the cylinder where the fuel starts to vaporize. During this time once the intake valve closes, the piston comes up, the spark plug fires and the fuel that is vaporized starts burning first, the heat from the fire vaporizes more fuel but about ½ the way down the cylinder the pressure is no longer pushing on the piston, because the piston outruns the expanding gases in the cylinder. At this time the extra fuel is wasted in the exhaust manifold or the catalytic converter generating wasted heat instead of power pushing down on the piston.



If a 4 cylinder, 4 stroke engine is rotating at 1200 RPM that means there are 600 power strokes per cylinder per min or 10 power strokes a sec. The fuel must be sprayed from the injector as a liquid and turn into a vapor so it can burn in less than 6/10ths of a second. At 2400 RPM it has 3/10ths of a second. The Cal-Cat helps to molecularly change this fuel so that it can lower its vapor point , more of the fuel can become vapor and be used during the first part of the power stroke.

As you can see the time that gasoline has to turn from liquid to vapor and then burn in a normal gasoline engine is fractions of a second. The gasoline make up is very important at this point. Modern gasoline engines operate most efficiently at + or- 200°F. Gasoline that is made of seven carbon chain molecules are already vapor before they make it into the cylinder this is a good thing unless it starts combusting before the spark plug ignites it, also known as pinging. Seven carbon and lower carbon chain fuels are mainly what cause spark knock or pinging. Eight carbon chain fuels vaporize around 200°F + or – that is why they are best for gas engines. Fuel with hydrocarbon chains of ten do not vaporize until 400°F +or- so they don't even start to vaporize until the piston is already on its way down after the spark event. The Cal-Cat blend of catalyst is designed to work with these ten carbon chains to make them into eight and nine carbon chains so they can vaporize and burn in the first part of the power stroke. Warming the fuel under pressure helps to bring the fuel closer to its vapor point before it is sprayed into the engine allowing faster vaporization of the fuel, which also aids in more fuel being able to burn at the start of the power stroke.

With the Cal-Cat heating the fuel and the catalyst in the catalyst chamber helping to break down the large hydrocarbon chain molecules it enables the engine to produce more power from the fuel injected in the cylinder, by using the fuel that normally is wasted to produce power. The driver notices that they do not have to push as far down on the pedal to maintain the speed they desire, in addition they get up to speed with less throttle angle. This will decrease the amount of fuel used. Also by burning more of the fuel in the engine cylinder on the power stroke there is less fuel and emissions entering the exhaust system and less harmful gasses making it into the environment. Better Emissions in testing done by Panther Performance Technologies and other third party testing has shown the Cal-Cat can reduce hydrocarbon gasses over 50% and carbon monoxide by 25% or more. All these emission tests were taken in front of the catalytic converter to get a true emission reading of the Cal-Cat performance. By reducing these gasses before entering the catalytic converter it will help keep the catalytic converter cleaner and last longer which in turn can also help save money.



Diesel Cal-Cat How it Works

A Cal-Cat is a coolant to catalyst fuel modification system. The metal tubes are configured to treat hydrocarbon liquid fuel to pass through while being in contact with a proprietary blend of different catalyst that are heated from the engine coolant. A catalyst is a material that helps assist in a chemical reaction but does not get consumed in the reaction. This process is designed so the hydrocarbon fuel will mix and help break up large hydrocarbon chains by direct contact with the catalyst to allow more of the fuel to become burnable to produce power.

Diesel Fuel is an oil fuel containing 12-22 hydrocarbon molecules. Diesel engines are naturally more efficient than gasoline engines because they operate at higher compression and pump a large volume of air. The air is drawn into the cylinder of a diesel engine and is compressed by the moving piston at a compression ratio as high as 25:1, which is much higher than needed for a spark-ignition engine. The Fuel is ignited specifically by atomizing it at the exact time the piston is at the determined point of the combustion stroke by injecting it under high pressure through the injector atomizing nozzle. The contact with the compressed hot air causes the fuel to ignite from temperatures that reach 1300-1650 °F. The combustion causes the gas in the chamber to heat up rapidly, which increases its pressure, which in turn forces the piston downward, the connecting rod transmits this motion, which delivers rotary power at its crankshaft.

Cetane is an un-branched open chain carbon molecule which ignites very easily under compression. The ability of the diesel fuel to auto ignite is measured by its cetane number. The higher the cetane number the quicker the fuel starts to burn. Generally diesel engines run well with a cetane number of 40-55. Fuels with a higher cetane number have shorter ignition delays which provide more time for the fuel combustion process to be completed. This is why high speed diesel engines run best with higher cetane fuels. With the typical cetane in North America of 40-45, and in European countries including Norway, Iceland and Switzerland a cetane value of 46-51 there is still room for improvement. Diesel fuel that is 55-60 cetane gives the best performance and cleanest emissions.

After the refining process while fuel sits in storage it begins to naturally degrade. As It degrades it forms larger chain carbon molecules that lower the cetane number and over all fuel quality. Lower cetane and lower fuel quality equals fuel that does not combust properly, hampering the engine from generating optimal power which in turn, more fuel is needed for the load demand of the engine. When the extra left over burning fuel begins to quickly cool as it enters the exhaust they quench their burn and begin to form solid soot particles, that create smoke. The soot particles are wasted fuel and other contaminants that enter the environment. Diesel fuel combusts the most efficiently and cleanly when in the 12-16 carbon chain molecules which is also the highest cetane content. The larger 18 to 22 carbon chain molecules normally do not completely combust in time to generate optimal power and contribute to soot and the other contaminants found in the exhaust.



Heating the fuel alone does not necessarily help it burn more efficiently. The Diesel Cal-Cat acts like a small onboard refinery employing the wasted heat from the engine coolant to heat the fuel in the catalyst chamber to activate a proprietary blend of seven different catalyst. This process re-breaks the larger 18 to 22 hydrocarbon molecules into 12-16 carbon chain molecules making lower quality lower cetane fuel, into high cetane high quality fuel. The proprietary catalyst blend in the diesel Cal-Cat is specifically designed to break these bonds as the fuel is continually re-circulated through the Cal-Cat and the fuel system. Each time the fuel circulates through the Cal-Cat it continues to improve and help keep its quality.

There is also evidence of this process enhancing the lubricity and cleaning of the injectors, combustion chamber, and exhaust system. In addition, cold starting duration is also enhanced from the fuel warming in the catalyst chamber which contributes to fuel savings. In our test vehicles the opacity smoke test show a drop of smoke particulate of 35% or more with a noticeable appearance of exhaust system cleaning. As the Cal-Cat helps to make more un-branched open chain fuel molecules more of the fuel combusts efficiently, which in turn more of the fuel that is being injected into the cylinder is being used to produce power and less is wasted as waste heat and particulate matter.

By reducing exhaust particulate through enhanced combustion this means there is less soot particles, which not only cause air pollution but also contribute to oil contamination in the engine, resulting in increased oil change frequencies in addition to contributing to the clogging of Diesel Particulate Filters (DPF) and Diesel Oxidation Catalyst (DOC). Further evidence shows there is benefits to vehicles equipped with Diesel Regenerative Systems and Diesel Particulate Filters. Extending the replacement duration of a Diesel Particulate Filter and fleet oil changes is another way for a fleet to save money. Current testing is being done on the performance enhancement of the Cal-Cat in reducing Diesel Regenerative Systems cycles and vehicle down time, actual data will be published within next coming months.



The Magnuson-Moss Warranty Act (15 U.S.C. 2302(C))

US Code - Title 15, Chapter 50, Sections 2301-2312

“Legally, a vehicle manufacturer cannot void the warranty on a vehicle due to an aftermarket part unless they can prove that the aftermarket part caused or contributed to the failure in the vehicle (per the Magnuson Moss Warranty Act (15 U.S.C. 2302(C)) . For best results, consider working with performance-oriented dealerships with a proven history of working with customers. If your vehicle manufacturer fails to honor emission/warranty claims, contact EPA at (202) 260- 2080 or www.epa.gov. If federal warranty protection is denied, contact the FTC at (202) 326-3128 or www.ftc.gov.”

(15 U.S.C. 2302(C))

This federal law regulates warranties for the protection of consumers. The essence of the law concerning aftermarket auto parts is that a vehicle manufacturer may not condition a written or implied warranty on the consumers using parts or services which are identified by brand, trade, or corporate name (such as the vehicle maker's brand) unless the parts or service are provided free of charge. The law means that the use of an aftermarket part alone is not cause for denying the warranty. However, the law's protection does not extend to aftermarket parts in situations where such parts actually caused the damage being claimed under the warranty. Further, consumers are advised to be aware of any specific terms or conditions stated in the warranty which may result in its being voided. The law states in relevant part: No warrantor of a consumer product may condition his written or implied warranty of such product on the consumers using, in connection with such product, any article or service (other than article or service provided without charge under the terms of the warranty) which is identified by brand, trade or corporate name... (15 U.S.C. 2302(C)).

Clean Air Act Warranty Provisions (42 U.S.C. S 7541 (C) (3) (B))

The federal Clean Air Act requires vehicle makers to provide two emissions-related warranties -- a production warranty and a performance warranty. The **production warranty** requires the vehicle maker to warrant that the vehicle is designed, built and equipped so that it conforms with emissions requirements at the time of sale. The **performance warranty** requires the vehicle maker to warrant that the vehicle will comply with applicable emissions requirements as tested under state vehicle emissions inspection programs for the warranty periods specified in the law (for model year 1995 and later vehicles, the warranty is 2 years/24,000 miles for all emissions-related parts and 8 years/80,000 miles for the catalytic converter, electronic emissions control unit and on-board diagnostic device). The performance warranty is conditioned on the vehicle being properly maintained and operated. Like the Magnuson-Moss Act, vehicle manufacturers may not refuse warranty repairs under the Clean Air Acts performance and defect warranties merely because aftermarket parts have been installed on the vehicle. The only circumstance under which the vehicle manufacturer can void the emissions warranties is if an aftermarket part is responsible for (causes) the warranty claim.