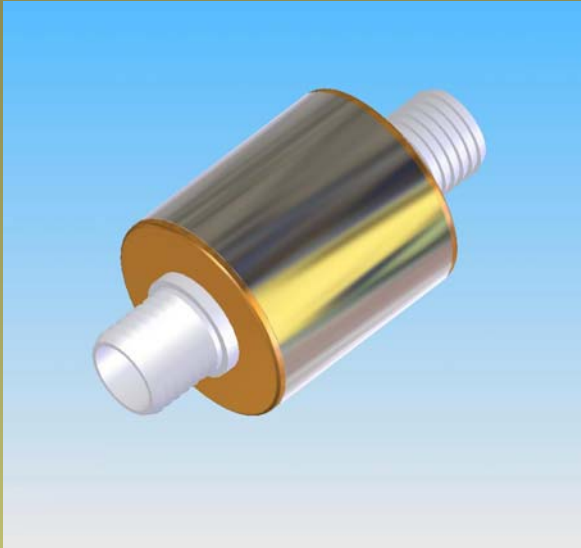


INTERCHARGER
Improving Engine Performance

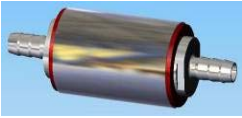


Information Package

www.intercharger.com

Patented Technology

The technology we are about to describe has the potential to realistically change the world's opinion on emissions control strategies. In our continued perseverance in research and development we have acquired a patent in one country and patent pending status worldwide.



What may be one of the most exciting aspects about this technology is that there is no prior evidence of this technology found. What we have learned over the 8-years of laboratory and field testing is now being confirmed through patent searching that we truly are dealing with never seen before technology. Additionally, we have qualitative data confirmed through extensive in field demonstrations that our system is and will continue to be in great demand.

These pictures are just a sample of the profound outcomes as a result of before and after InterCharger installations.



Before the Installation



Two hours after the installation



Introduction

"Worldwide emissions reduction is the most pressing responsibility faced by modern society."

What are our options?

Global emissions problems are not easily addressed because most solutions are not only expensive, but difficult to implement. People want to contribute but the options often become an ever increasing burden. Engines are especially prone to excessive maintenance issues and power loss when configured to meet modern emissions standards, as well, CO₂ emissions often increases as a result.

Improvements in performance and maintenance do not often accompany an engine's modifications to meet the strict compliance of new emissions standards. It is necessary in many cases to continuously maintain or replace components to stay in compliance.

Exhaust filtering takes a toll on an engine's performance and longevity as they are not intended to improve combustion, merely contend with combustion contaminants.

Our research involves the modification of combustion through an electro-chemical reaction to crankcase gases for the purpose of cleaner emissions, improved performance and reduced maintenance.

How many products are available that can effectively reduce emissions while simultaneously improving the efficiency of most combustion systems used today?

The InterCharger will improve your home's natural gas heating efficiency or a propane barbecue's ignition safety and cooking characteristics. As well, it is easily adaptable to be used on your lawn mower, weed eater, snow blower to reduce toxic emissions while at the same time improving their overall function and durability.

This InterCharger will work effectively on all types of community vehicles such as garbage trucks, fire trucks and school and transit buses. As well, it can be applied to construction, trains, farming and the shipping industry. Even industrial plants and power generators, mining and petroleum processing industries will benefit with improved efficiency and reduced emissions.



Dragline before the Device was installed



Dragline after the Device was installed

This product is service proven, tested and now available for the marketplace.

Test Data and Demonstration

"Worldwide emissions reduction is the most pressing responsibility faced by modern society."

Evidence and Case Study – Long Term Test

Date of Test: July 2003
Engine Mileage: 70,000 km
Owner: Brent Ronan
Contact Information: (604)869-1104

Vehicle: 1998 1-Ton Delivery Truck
Engine Type: 6.5 liter turbo
Fuel Type: Diesel

Testing Center Comments:

This vehicle was equipped with a CDR valve (enclosed crankcase). CDR valves require routine replacement every 30,000km because of sludge build-up.

The CDR valve was removed and replaced with our catalyst, eliminating CDR valve maintenance requirements.

The vehicle is used 12 hours per day, 5 days a week continuous operation. Approx. 300km per day.

Outcomes and Results

Documented improvements were noted as follows:

- increased power
- improved drivability (faster acceleration, less vibration)
- reduction in exhaust emissions
- quieter operation with driver reports of less driver fatigue

A new unit was installed and the vehicle test driven with no changes in sound or performance, indicating that the original device was still performing as new in comparison to the old unit in this long term test case.

The owner/operator was pleased with the operation of his vehicle and endorses this InterCharger completely.



Crankcase Emissions before installation.



After installation – intake very clean.



Evidence and Case Study – Long Term Test

Date of Test: May 2005
Owner: Raymond Zervnini, President, Canyon Cable
Contact Information: (604)869-9036

Vehicle: DT466 International Garbage Truck
Engine Type: L10 Cummins
Fuel Type: Diesel

Testing Center Comments:

This test was to look at the InterCharger use characteristics. Determination of whether the InterCharger would work on worn-out equipment that had excessive smoke, blow-by and loss of power.

The test vehicle was put in service with a new InterCharger. After the 3rd day exhaust smoke was diminished. On the 4th day, the operator noticed an increase in power and more responsiveness. Upon servicing the vehicle, we noticed the oil was much cleaner for a longer period.

Outcomes and Results

- No visible exhaust smoke.
- Idled smoother
- Easier starting – especially in -20 degree C. temperatures
- Cleaner oil
- More power on mountain roads
- In compliance with Provincial emission regulations.

Evidence and Case Study – Long Term Test

Date of Test: February 2005
Engine Mileage: 100,000 km
Owner: Jeff Stephenson
Contact Information: (604)869-3495

Vehicle: 1985 S-15 Jimmy
Engine Type: 4.6L
Fuel Type: Gas

Testing Center Comments:

This test identified the effect of InterCharger on high performance engines.

The test vehicle had 100,000km when the engine was disassembled. There was no evidence tar, sludge or build up. There was no maintenance performed on the vehicle or the InterCharger with no signs of any contaminated and/or sludge.

Outcomes and Results

This high-performance engine has over 100,000kms. The engine was disassembled and found to be very clean.

Emission Test Date – (Source: BC AirCare®)

- **-29%** Reduction in Hydrocarbons emissions
- **-75%** Reduction in CO emissions
- **-35%** Reduction in NOx emissions



		Driving Test	Idle Test
Hydrocarbons (HC) ppm	A good reading for your vehicle:	36	43
	Vehicle reading:	54	178
	Pass / Fail:	PASS	PASS
	Maximum allowable:	151	357
Carbon Monoxide (CO) %	A good reading for your vehicle:	0.02	0.01
	Vehicle reading:	0.08	4.96
	Pass / Fail:	PASS	FAIL
	Maximum allowable:	1.53	4.10
Oxides of Nitrogen (NOx) ppm	A good reading for your vehicle:	319	
	Vehicle reading:	470	
	Pass / Fail:	PASS	
	Maximum allowable:	1938	
All Diesel Vehicles (Opacity)	A good reading for your vehicle:		
	Vehicle reading:		
	Pass / Fail:		
	Maximum allowable:		

		Driving Test	Idle Test
Hydrocarbons (HC) ppm	A good reading for your vehicle:	40	70
	Vehicle reading:	43	127
	Pass / Fail:	PASS	PASS
	Maximum allowable:	151	357
Carbon Monoxide (CO) %	A good reading for your vehicle:	0.08	0.17
	Vehicle reading:	0.10	1.26
	Pass / Fail:	PASS	PASS
	Maximum allowable:	1.53	4.10
Oxides of Nitrogen (NOx) ppm	A good reading for your vehicle:	307	
	Vehicle reading:	307	
	Pass / Fail:	PASS	
	Maximum allowable:	1938	
All Diesel Vehicles (Opacity)	A good reading for your vehicle:		
	Vehicle reading:		
	Pass / Fail:		
	Maximum allowable:		

Evidence and Test Data – Long Term - Diesel Engine

AirCare Inspection History

Vehicle Information		Current AirCare Standards for this Vehicle			
Registration: 4974380		Current Opacity Std: 30 percent			
Model Year: 1998		Note: the standards shown above are obtained from the most recent inspection record (shown below).			
Make: CHEV					
Model: G30					
Vehicle Type: T					
Curb Weight: 3200 kg.					
Displacement: 6.5 L					
Fuel: Diesel					
AirCare Inspection Data					
Date/Time	Odometer (000's)	Opacity	OBD-II	Overall Result	Det: De
2007-04-09 09:30:17.00	779	0.76	n/a	P	15
2005-03-26 08:36:17.00	604	2.16	n/a	P	15
2003-03-24 08:35:50.00	38	10.67	n/a	P	15

Outcomes and Results

After four years and 400,000kms of using this technology the engine's emissions were reduced **-93%**. There has been no modification or parts replacement on the engine in that time period.

Example of InterCharger Installations



2006 Duramax Diesel

1985 Detroit Diesel

2004 Duramax Diesel



1985 International Gravel Truck

2003 CAT Engine



Other Testimonial and Evidence

To Whom It May Concern,

I was introduced to Jeff Stephenson and his emission reduction device in October 2006, and have been impressed with its results ever since. I am directly involved with the installation and monitoring of eleven InterCharger Devices in the field to date with everyone showing positive results.

I am currently employed as the mechanic for School District #78 Fraser Cascade, in charge of the repairs and maintenance of fourteen buses, eleven support vehicles, and numerous pieces of equipment relating to the operations of schools. I also hold the position of Deputy Fire Chief for the Agassiz Fire Department. The department operates six pieces of fire apparatus, a mobile generator, and numerous small engines. In both environments toxic emissions are a great concern. The "DEVICE" has been a welcome addition to our emission reduction programs.



I currently have three units installed and in regular use on buses, with positive mechanical results, as well as feed back from the operators of the units. On the mechanical side, the problem of crankcase oil discharge from the vent tube is no longer an issue as well as toxic emissions are no longer able to enter the passenger compartment of the bus. When installed the unit creates a small vacuum in the crankcase which in turn draws out the vent gases, as well with a vacuum as opposed to crankcase pressure minor oil leaks are virtually eliminated. Other findings include, virtually no exhaust smell, engine vibrations are greatly reduced, engine oil appears cleaner for a longer period of time, engine operating temperatures are lower, and power is increased. With the power increase it appears to have in return decreased fuel consumption, directly affecting operating costs. The drivers of all three units continue to give positive reports in regards to the above noted findings.

The Agassiz Fire Department currently uses this system on one of its engines, again with positive results. It is a gasoline powered big block V-8 engine with a unit on both the PCV system and fuel supply line. Comments from driver / operators are very similar to those findings put forward by the bus drivers. The department plans on having these devices installed on all of its equipment in the future.

Personally, I have devices installed on both of my private vehicles as well as my lawnmower. I do not put a lot of miles on my 2003 Ford Expedition, but still have noticed considerable positive affects, such as, near nil exhaust smell, smoother engine



running, clean engine oil, and increased power. My lawnmower is a fairly recent install, but the results are amazing. The mower would not start this year as it is getting old and tired. After installing the device and changing the spark plug, the mower started and after a few uses runs better than ever. I replaced the new spark plug with the old one with no change in performance. The spark plug actually cleaned up, and its appearance looked new. Again exhaust smells are near gone, vibration greatly reduced, and stall power increased. My 1999 Volkswagen Jetta has the greatest results, understandably as it puts on the bulk of miles. It is the turbo diesel model with 240,000 plus kilometers. The diesel engines are plagued with problems of carbon build-up in the intake manifolds where the EGR valve is mounted. This model already re-circulates the exhaust gases without any filtering of the oil vapor, causing an oily mixture to be introduced into the intake manifold where the EGR is. This combination of hot exhaust gasses and oily charged air make for a hard carbon formation on the walls of the intake manifold. I was aware of this problem when I purchased the car and was going to repair it at its next service interval. When I went to remove the manifold to clean it I noticed that the formation had softened to a soft tar type coating that was substantially reduced from the original inspection. I did not carry on with the repair, instead I am monitoring it to see if it cleans itself completely. As well, the usual findings of reduced vibration and exhaust smell were observed, along with increased power and fuel economy. The car used to emit smoke from the tail pipe after prolonged idle or hard acceleration, and that is no longer evident.

All in all, it is safe to say that I am very impressed with the overall results of the unit. The device has demonstrated very impressive positive results with no negative drawbacks. In my experiences, the unit has been easy and quick to install with no maintenance issues to worry about. In my previous position as an automotive mechanic, I was a certified "Air Care" repair technician and so have worked with emission related issues for fifteen plus years. All the emission reduction components were post combustion, dealing with the problem after the fact. The Device is a pre-combustion device, treating combustion gases before combustion, and so emitting fewer emissions that need to be treated. I myself feel that this is a revolutionary device that I would not hesitate to recommend to anyone who is looking for overall improvements to the operation of their vehicle.

Sincerely,

//Signature on file//

Gerald Basten

Trades Qualification #1428-AM-90

Commercial Vehicle Inspection License #M04415-2

Tel: 604-819-5570



Testimonial and Evidence

My name is Wayne Lakerveld. I maintain a fleet of 13 tow trucks. I have tried Stephenson's system on two of our trucks. The first is a 1995 Ford Powerstroke that had approximately 350000km when we installed it. The truck is notoriously smoky, especially when cold if it is not plugged in. It consumed about 4-5 liters of oil between its 5000 km oil changes. Since installing the unit, the oil consumption has dropped to 1 liter between oil changes and the engine oil is much cleaner when we change it. The idle quality has improved dramatically. One of the biggest things I have noticed is when we forget to plug the truck in, when it starts; there is almost no smoke at all which is a huge improvement. The truck used to leave a thick fog of blue smoke before putting the unit on. The trucks exhaust used to be really bad when the operators worked the controls for the wrecker (used to make your eyes water etc), but since the unit, it is much better. The second truck we installed the unit on is a 2004 6.0liter Ford. In the first 100 000, we had several drivability issues with the truck related to carbon in the intake system (caused by the EGR system etc). We installed the unit at about 110 000km and noticed right away the same improvements in the idle and part throttle performance and the exhaust smell. The best part for me was that when the head gaskets (slight external leak) were replaced, the technician noted that he has never seen a turbo charger that clean on the inside. The technician noted that the variable turbo charger is known for sticking due to carbon build up, especially on the standard transmissions. The new diesel emission standards have made it necessary to have EGR systems and closed crankcase ventilation, with this we have heard and seen a lot of carbon build up issues. I look forward to trying this system on more of my trucks.

Thanks,
Wayne

Tel: 604-796-2611



Testimonial and Evidence

1978 Ford Diesel tow-truck – This vehicle belonged to Hope towing, it was the worst vehicle in the fleet of tow trucks. Since it was the worst vehicle in the fleet, they really didn't care too much about it, and did zero maintenance on it (1 year oil changes). The vehicle was used to travel up the Cochala about 6 times per day, the Cochala is 30km mountain with a 17km 8% grade. After installing the device, the driver noticed a huge change in performance. The driver could actually shift up from 4th to 5th gear when climbing the mountain, increased speed from 60km/h to 80km/h, smoother sounding/running, less vibration and a 40% savings in fuel.

The mechanic would take off the device without telling the driver as a test of performance. The driver would notice power loss on the first uphill climb and would immediately return to the shop. When the driver transferred to another company, he desperately wanted another device for the new truck because he said that diesels are not nice to drive without this device installed. The acceleration is double that of a normal diesel engine. The temperature would always stay low even on long uphill climbs, the vibration was always less and the engine was quieter. The device was installed in September 2000 to present.

2002 Chevy ¾ Ton 4x4 Extended Cab - A 6.6L Turbo charged, inter-cooled, Duramax V8 Diesel w/open crankcase vent. The vehicle has approx 30,000km and gets about +/-17 mpg in the city, and +/-24 mpg on the highway. After installing the device, the owner noticed it was smoother, quieter +/-50%, improved acceleration, better shifting (automatic transmission), more engine braking, absolutely no exhaust odor from unburned fuel in the exhaust, improved torque and pulling power. They say that the Duramax diesel is one of the smoothest and quietest diesel engines in the industry and yet the device still reduced combustion noise and diesel rattle significantly, and we also enclosed the open crank vent eliminating a source of toxic emissions.

1993 Dodge ¾ Ton 4x4 Extended Cab - A 5.8L straight 6, turbo charged, intercooler Diesel w/open crankcase vent– The vehicle has approx, 150,000km and gets about +/- 9.5mpg in the city, and +/- 16mpg on the highway. Before installing the device, the engine oil would become black in approx 1week or 200km of driving, smoky exhaust, noisy engine (diesel rattle). After the device was installed, the engine was approximately 50% quieter, no longer smokes; mileage went to 17mpg in the city and 22mpg on the highway. The engine runs cooler, less vibration, has an increase power and acceleration. The oil is spotless after 6 months of city driving (approx, 5000km). An older device was installed in June 2001 to June 2003 and upgraded to a newer device in June 2003 to present. They have noticed a significant improvement with the newer unit.

1989 Ford ¾ Ton 4x4 Extended Cab - A 7.3L V8 turbo Diesel, 5-speed transmission. The vehicle has approx. 120,000km and 10,000km on a rebuilt engine and gets about 8mpg city and 11mpg highway. Before the device was installed, the engine was very noisy (diesel rattle), smoke in the exhaust, temperature was in the middle of the gauge, power was unimpressive, exhaust temperature climbs rapidly to 1200F (max) on even short up hill climbs at highway speeds. The driver was unable to hear anything in the cab but loud diesel rattle on the highway. The engine was unable to sustain 5th gear up 8% grade at 90km/h. After the device was installed,



the engine (diesel rattle) noise reduced 50-70% on the highway, significant improvements in torque and acceleration, 5th gear easily held at 100km/h up 8% grade, exhaust temperature dropped to ¼ on gauge under all driving conditions regardless of engine load, fuel economy improved to 16mpg city and 22 mpg highway, engine rattle (combustion noise) is reduced to the point of being able to hear the turbo charger whistle when under load. The Unit was installed in Sep 2000 – June 2003, upgraded to a newer device in June 2003 – present.

1984 Ford ¾ ton extended cab - 7.3L V8 non Turbo Diesel, 5-speed Standard. Fuel economy before was 4km/litre pulling a trailer, 6km/litre without trailer. Noticeable smoke during acceleration and somewhat less at idle, engine noise was considerable (diesel rattle) and performance was sluggish.

After the device was installed, performance improved dramatically and owner spent many hours showing engine and device to friends, combustion noise decreased at least 50%, fuel consumption improved to 6.6km/litre pulling the trailer and 8km/litre without the trailer, smoke emissions reduced to being completely unnoticeable and air-care tests on the dyno indicated lower emissions than even brand new emission controlled diesels (.5% opacity). The device was installed in Feb 2001 – present.

1986 Ford ¾ ton extended cab – A 6.9L V8 non Turbo Diesel, automatic. Extremely noise combustion (diesel rattle) to the point where both driver and passenger wore ear plugs on highway drives (camping trips), performance was very sluggish and smoke was considerable, exhaust temperature readings where about 400F on a level highway, quite high, normal is about 300F. Fuel economy was about 12mpg average city and highway, air-care readings were high at 40% opacity. After installation the driver immediately noticed performance increase with snappier acceleration and increased pulling power, shifting improved dramatically, combustion noise decreased at least 75% and the ear plugs where discarded, fuel economy rose to 19mpg and professional air-care tests indicated an opacity of 8%. Exhaust temperature dropped to 300F on highway, level driving (25% less than before). The device was installed in Feb 2001 – Oct 2002 – Owner removed the device for his motor home and sold the truck.

2001 Chevy ¾ ton 4x4 Extended cab – A 6.5 V8 Turbo Diesel, automatic. The vehicle had considerable problems with smoking, a new turbo did not solve the problem. Fuel economy was 18mpg Average city and highway, oil was extremely dark even shortly after oil changes, performance was good, exhaust odor was considerable with having a high degree of unburned fuel in it, temperatures where normal.

After installation, the smoke was unnoticeable and contained no odor, fuel economy improved, temperatures dropped slightly under normal, no load, driving. Oil remained clean and combustion noise decreased dramatically. The device was installed in Aug 2003 – present.

1985 Gravel truck – A tandem axle, 400hp Cat engine, turbo without intercooler. The vehicle has very smoky exhaust, considerable vibration and engine combustion noise. Engine temperature up hill with load is about 200F, extreme amounts of blow-by gases emitted from vent tube, sluggish performance.

After installation, the smoke decreased approx 70%, vibration disappeared almost



completely under load, combustion noise decreased dramatically, performance improved significantly and the engine accelerated quickly and smoothly, more like a gasoline engine. Fuel economy improved approx, 30% under working conditions, engine temperature was reduced to 180F under max load climbing uphill and would decrease to 170F almost immediately after returning to straight level driving. Engine braking improved considerably and the truck could descend long 6% grade downhill without a load with absolutely no braking assistance from the driver.

1991 Ford 1-Ton 4x4 - A 7.3L V8, non turbo Diesel, 5-speed manual transmission. The vehicle had considerable combustion noise, sluggish performance, ran hot on up hill climbs, could not maintain 5th gear up long hills, and significant engine vibration.

After installation, the combustion noise reduced at least 50%, performance improved considerably, long up hill climbs would be made in 5th gear and temperatures remained below normal. Vibration was reduced and fuel economy improved approx 35%. As a service vehicle, road trips were very short, but occasional long highway trips yielded significant improvements in fuel economy, well over 35%. The driver explained emphatically that he would never drive this truck without a device installed.

1999 Dodge ¾ Ton extended cab – A 4x4, 5.9L 6cyl turbo charged, inter-cooled Diesel, automatic. This is a commercial vehicle with approx. 200,000 highway km. The vehicle has poor engine braking on long downhill's, sluggish performance, when the turbo was not spooled up, performance was lackluster at best, temperatures under load were normal but exhaust temperature rose quickly to 1200F max on uphill climbs, transmission shifted sluggishly and ran hot, engine noise (combustion rattle) and vibration where significant.

After installation, an immediate reduction in vibration and almost eliminated the combustion noise. Power increased and acceleration before turbo spool up improved dramatically. In fact, the driver couldn't believe the improvements in performance and engine responsiveness. Temperatures dropped, including transmission temperature, and shifting improved. On long highway drives the engine was almost silent, temperatures where low and power was immediate when needed. The device was installed in May 2003.

1997 Chevy 1 Ton – A 6.5L turbo Diesel, Automatic transmission, delivery truck. The vehicle has approx. 70,000km on a brand new engine, very noisy combustion rattle, sluggish acceleration and unimpressive performance on long up hills, difficult to maintain speeds over 100km/h on level highway. Engine oil becomes black quickly after fresh oil changes. Driver puts on over 3000km per day. After installation, immediate and significant drop in combustion noise, engine runs very smooth and quiet. The electric fan on the radiator can even be heard. Performance improved to the point where the driver consistently maintains high highway speeds. Acceleration improved dramatically and now this diesel van accelerates much like a gasoline car. Fuel economy improved a minimum of 20% in spite of significantly higher cruising speeds. Shifting improved and temperatures dropped. Engine oil remains noticeably cleaner and any visible exhaust smoke was eliminated. The device was installed in July 2003 – present.

Isuzu 5 Ton, 6cylinder Turbo charged Diesel – A 5-speed delivery truck. Before the device was installed the truck had very smoky exhaust, poor performance and



acceleration, overheated on hills, emitted more smoke from open crankcase vent than it does from the exhaust. The driver was very aggressive and the engine was constantly abused, as a result, the engine had frequent break downs and maintenance expenses were staggering.

After the installation, the immediate improvements in performance and acceleration superseded the driver's ability to control the vehicle and he was forced to accelerate smoother or he would lunge into the ditch. The increased performance allowed the driver to accelerate hard without abusing the truck and high speeds were achieved with minimal throttle input. The oil maintained its cleanliness and maintenance and repair costs became minimal. Fuel economy improved approx. 50% and smoke opacity was reduced approx. 75%. The engine ran considerably cooler even on long, steep hill climbs. This delivery truck ran 10 hour days, 6 days per week under some of the worst driving conditions imaginable, such as, steep, winding highways and temperatures of 35C to over 40C with an aggressive driver who didn't respect his equipment. In spite of this, the engine is now so smooth and quiet it is almost unbelievable. The device was installed in Dec 2001 – Feb 2003, newer device installed in Feb 2003 – present.

1972 Case tractor – A 60hp, 4cylinder non-turbo Diesel. This engine had problems with the valves sticking and as a result had oil spitting out the exhaust, at night sparks were frequently flying from the exhaust into the air. Also the rings were sticking and combustion pressures caused significant oil contamination. Fresh oil became immediately contaminated with black carbon. Engine performance was very poor and as a result the governor would fluctuate the engine speeds constantly while working in the field. Low power levels made fieldwork difficult and tedious. Also black exhaust smoke constantly poured from the muffler and the open crankcase vent emitted almost as much toxic clouds of oil vapor and contaminants.

After installation, the first immediate improvement was, of course, the elimination of the toxic clouds of crankcase vent gases because it was now enclosed and recycled. The oil remained perfectly clean in spite of continuous hours of fieldwork, over 300hours. The valves and rings became unstuck as the carbon was cleared out. As a result oil and sparks no longer flew out of the exhaust. The muffler no longer glowed orange from the intense heat and actually became only warm to the touch. Most impressive however, aside from the remarkable oil cleanliness, was the performance increase. The tractor could work steadily under heavy load in the field and the tachometer remained motionless at its setting. This means that the engine now had enough power to easily maintain a steady RPM under load without governor hunting. As well, the combustion sound became much quieter and smoother to the point where ear plugs were no longer necessary. Oil cavitations were eliminated because of the rings being unstuck allowing much fewer contaminants and combustion pressures to escape past the rings into the lower crankcase, as well, as having a slight vacuum applied to the crankcase by re-circulating the blow-by gases. This means simply that the engine has a much-improved lubricating system which will significantly extend its service life. The owner was and still is extremely pleased with the improvements to his tractor. The device was installed in June 2001 – present.

1987 Mitsubishi Montero 4x4 - A 4-cylinder non-turbo Diesel, 5-speed. This vehicle was in serious need of maintenance and repair. The negligent owner allowed the engine to become so poor running that it had a measured smoke opacity of 99%, as well, the engine had very little power and very poor acceleration. Vibration and



noise was almost unbelievable. Even during idle, this vehicle would fill the parking lot with thick black smoke. Oddly enough the owner is allegedly a scientist who writes articles on pollution for the news papers. When emission tests were taken the engine would almost not rev to 3000 rpm, at which point it sounded as if it would simply blowup.

After installation, the engine became more responsive, and powerful. Combustion knock and vibration was reduced considerably. Fuel economy improved over 45% and highway speeds seemed too slow for it. The engine would easily accelerate to over 5000 rpm. For a diesel that is amazing. Even at that speed the engine sounded smooth and vibration less. The measured opacity would not go higher than 6%. This was a staggering 94% reduction in smoke opacity. The mechanic performing the test was completely bewildered because he desperately wanted to put a new fuel pump and injectors in at the last emissions test, before the device was installed. This vehicle ran so good after, this alleged scientist tried to steal the patent and run away to Germany.

Buses #1 to 7

- 1) Mercedes 4 Cylinder, Turbo charged non-intercooled Diesel, 5-speed. The first bust tested was piloted by the most aggressive driver in the fleet. The bus was considerably abused because it was under powered and slow. Engine temperatures ran steady at about 200F. The engine smoked considerably and even the open crankcase vent emitted clouds of toxic oil vapor. For a bus, this is very dangerous for the passengers. The driver, being so aggressive, had a very difficult time driving this bus. It simply would not accelerate up hills without over heating. It was also very noise and vibrated considerably. Smoke opacity was also a problem, this bus was over 60%. In spite of such a poor running vehicle under extreme conditions with an aggressive, dangerous operator we agreed to install a device without pay for a month trial. After installing the device an immediate reduction in combustion noise and vibration was noted, approximately 40% – 50%. Power and acceleration improvements were also immediately noted by the pleased aggressive driver. He started climbing hills a gear higher and almost lost control around steep corners because of his inexperience with the increase in power. When he settled down and drove normal he was able to accelerate smoother and faster than before without abusing the engine or transmission. Exhaust smoke was almost eliminated. Fuel economy improved by over 25% and oil change intervals were extended 50%. The temperature dropped to 180F and never climbed higher, even on hill climbs. After 1 month the manager happily paid us and ordered 6 more for the other buses. Each bus runs 16 hours per day, 6 days per week. Mileage is about 10,000KM per month. The device was installed in Jan 2001 – Present.

- 2) International 6 Cylinder, Turbo charged non-intercooled Diesel 5-speed. The temperature averaged 190F, it had a newer engine and it was reasonably smooth and quiet. After installation of the device it became almost silent, for a bus, and experienced a 25% improvements in fuel economy. Power and acceleration improvements were also noted which accounted for the increased fuel economy.

- 3) Mercedes Benz 4 Cylinder turbo charged Diesel. This bus had a new engine but



was still under powered. Temperatures ran about 185F and smoke opacity about 40%. The open crankcase vent emitted visible clouds of oil vapor but not extreme. After installation, all operating conditions improved and the mellow driver experienced 30% fuel savings. The engine temperature dropped and maintained 175F.

- 4) Mack 6 Cylinder, Turbo charged inter-cooled Diesel 5-speed. This engine was a fresh rebuild with 0 hours, the mechanic insisted on us installing the device before he even started it. The engine sounded very good, smooth and clatter free. Oddly enough the bus had no muffler and the mechanic believed it was quaint enough to leave it that way. The bus ran for several months without a muffler.
- 5) International 6 Cylinder, Turbo charged Diesel. Same as the other international with similar performance results.
- 6) Mercedes 4 cylinder Turbo Diesel 5-speed. This was a brand new engine with 0 miles. Again the mechanic insisted on us installing the device on the engine before startup. Results were the same, Starting with a new engine allowed the oil to stay cleaner much longer.
- 7) International 6 Cylinder, Turbo charged Diesel 5-speed. This engine was in desperate need of rebuilding. It puffed huge clouds of black smoke continuously, the open crankcase vent also spued copious amounts of thick oil vapor and combustion contaminants. Power was extremely low and acceleration was poor. The engine also ran hot and had very low oil pressure. After installation, power levels improved and acceleration became normal. The thick smoke was reduced approx. 50% and of course the open vent's toxic vapors were recycled and eliminated, or rather converted into useful organic radicals. The bus ran like this for nearly a year before it was finally rebuilt.

1972 Land cruiser 4x4 - 4 cylinder diesel 4-speed manual transmission. This vehicle has many miles of farm labor and smokes excessively as a result of years of abuse and neglect. IT could not pass air-care and could not be licensed. The owner wanted a device to improve its performance on the farm. However, after installation, the engine stopped smoking and ran incredibly well. An air-care test was performed and it passed with very low emissions. A license was issued and the owner used the vehicle for daily transportation. Installed June 2002- present.

ICE Generator: Nordberg 9 Cylinder - 2 Stroke 5000 H.P, 240 RPM Diesel engine. Attached to a 3.2 Megawatt Generator. This engine is 32 feet long, 14 feet high ad 7 feet wide. It burns #6 bunker diesel fuel that must be heated to 180F before it will flow through the injector pump. These engines run for 12 hours at a time usually for several months during the year. Since the engines are over 50 years old (1951) they have been rebuilt and worked on many times over the years. The vibration is considerable and the concrete floor must be replaced after due to stress cracks and deterioration. The noise of the engine under load is extreme, about 107db. Smoke opacity was about 40% and NOX emissions were very high. The engine responded very slowly to power or load changes. Adjusting the engine to maintain a certain power-load rating is quite difficult and the operator must manipulate the controls with coarse, rapid actions. Dozens of U.S and Canadian companies have approached ICE to sell products to improve the function of these



Nordberg engines. No one has succeeded to date.

After installation, the most immediate changes occurred in engine vibration. The vibration levels dropped over 70%. Smoke opacity reduced almost immediately to levels unnoticeable by untrained observers. NOX emissions were reduced 21% which is quite significant considering that Caterpillar is struggling to reduce their new engines NOX emissions by only 10% using computers and special injectors. When asked about the power and torque differences, the operating engineer emphatically explained how much better and then demonstrated the performance increase. Normally to extract more Kilowatts from the generator, a small wheel is turned, which for the most part simply allows more fuel to the engine, and the engine produces more torque. Normally the wheel must be turned 1-2 full turns before the engine responds and produces an increase in Kilowatts. Now, however, even a slight turn of the wheel, ¼ turn, will provide a considerable boost in performance. The engine accelerates harder and faster than ever before but in turn it also runs cooler and is quieter. Exact fuel consumption comparisons are not easy on such large, outdated equipment but it appears that the increase in torque and acceleration is providing a significant improvement in economy. Also, because these engines use such large quantities of lubricating oil, a small oil refining station is used to extract combustion induced water from the oil approximately every 3 hours of engine operation. However, once this device was installed the transparent hoses connected to the device to transfer the hydrocarbon radicals back to the air system contained several liters of water, which was extracted from the allegedly water free oil. This means that even a small water separating oil refining system was not as effective as this device in removing water from used crankcase oil. This device separates water from the oil because of the ionic charged created in the device. Installed Nov 2002-, April 2003- New model in April 2003 to present

1985 Volkswagen Golf - 4 Cylinder automatic, gasoline. The owner is the manager of the ICE generator plant. His car could not pass air care because it burns oil and is in need of a complete engine overhaul. However, I wanted to prove to him how well this device works, even on his worn out motor. After installation, he noticed an immediate improvement in acceleration and overall performance. The engine ran very smooth and quiet after. After 2 weeks of driving, he passed air care with nearly zero emissions and the engine gained about 35% better fuel economy.

1984 Volkswagen Mini van 4 Cylinder Standard – A gasoline engine. This engine was unable to pass air care because of excessive hydrocarbon emissions and carbon monoxide. The owner's mechanic was unable to tune the engine and it got very poor gas mileage because of the over-rich mixture. The air care reading indicated 1200ppm, of HC and the legal limit is 300ppm. The owner is a manager in the ICE company and is responsible for maintaining the 5000 HP Nordberg generator. To prove to him how well this device works, I installed one on his Volkswagen. Again the owner returned to air care for an emissions test. This time he passed with near zero emissions. The HC emission were only 13ppm. He was so amazed that he took off the device and tried another emissions test and failed with extremely high hydrocarbons and carbon monoxide again. He also noted that it was very difficult to drive because of the reduced performance without the device installed. After these experiments, he re-installed the device pass his air care emissions again and enjoyed driving his van. He also noted several months later that the spark plugs were unbelievably clean. Once the respect of these two managers in ICE was earned, working with them on the ICE Nordberg generator was



great because of their support.

1995 Dodge Lebaron Car - A 3 liter V6 5-speed standard, gasoline. This car runs fine and the owner loves its performance. I installed a device and the owner used the car without knowing. After returning from a trip, the owner was extremely excited with the performance and drivability of the car. I explained why the car worked so much better but the owner already realized that I had made some changes to the engine. The engine oil has not been changed for well over a year, approx 15000km and it is still clear. The mileage has improved about 40%. Installed May 2003 – Present

Deutz 4 Cylinder 90hp - Air cooled non turbo Diesel water pump. This engine is very old and gets very little maintenance. It works very hard pumping water to irrigate fields several 100 meters up hill. The engine runs very hot and smokes excessively. The oil becomes black almost immediately after a fresh oil change. Sensitive, professional test equipment was used from the University to measure exhaust contaminants before and after the installation of the device. Before the installation, the smoke opacity was 80%, the NOX emissions were 2,400ppm, CO 1500ppm, and carbon concentration of 7gpm³. exhaust temperature was 425C under load.

After installation the engine was run at full load for several hours and measurements were taken every 30minutes. Initially the opacity became worse and the carbon emissions increased from 7gpm³ to 52gpm³. However, after 30 minutes it became less and less as the engine was cleaned of years of carbon accumulation. After 2 hours the opacity dropped to 5% and the carbon emissions were reduced to less than .0015 gpm³. As well, the CO emissions dropped to 750ppm. The engines exhaust temperature dropped from 425C to 325c under full load and the engine temperature became normal rather than overheating. Engine vibration and sound was also reduced approx 50%. Interestingly, the oil remained clear for many hours.

Sod Cutter - Briggs & Stratton 1 Cylinder 8 HP Gasoline. The engine was old and had very poor maintenance. It emitted more smoke than a diesel engine. It was forced to work extremely hard and as a result vibrated excessively and ran very hot. The operator would become dizzy and sick after only one hour of work. Professional emission test equipment was used from the University and it was found that this small engine emitted over 40,000ppm of CO emissions, which accounted for the operator's sickness. The device was installed and the engine was worked hard. After several hours of use the emissions were taken and this time the CO levels dropped 80%. Sensitive gas chromatograph experiments were performed as well of the hydrocarbon emissions before and after the installation of the device. Interestingly, the test equipment indicated that before the installation the hydrocarbon emissions were extremely toxic complex molecules with an 80% ratio of carcinogenic compounds. After the installation of this device however, there was not even one percent of carcinogenic compounds detected. This was a result of the devices ability to completely dissociate large hydrocarbon structures into non-toxic elements. The engine's performance also improved considerably and the vibration levels, sound and temperatures dropped substantially as a result. After these tests the workers chose this machine over all of the others, including some brand new Hondas, because of the reduced vibration and performance increase. Of course, it was also a lot safer to breath in its vicinity. Installed May 2002 – present.

1984 Nissan Sentra - 4 Cylinder 4-speed manual, gasoline, high performance.



The owner is the chief aviation mechanic at a local airport. He takes great pride in his work and built his car to exact high performance tolerances, as well, he uses the highest grade aviation fuel available. He is a professional and really knows engines well. Even a slight change in performance is noticeable to him. Even with the highest grade aviation fuel, 130 octane, he still had midlevel emissions readings at air care, and of course, performance enthusiast always are looking for more power. After installation, the mechanic noticed an increased performance immediately. He estimated a 25% increase in acceleration and torque. The engine ran much smoother and quieter. His emission test indicated a 70% reduction and the air care facility was seriously considering dismantling and investigating his engine because they thought he might be cheating. There is also a very interesting effect this device has on leaded fuels used for aviation. It seems that the lead sticks to spark plugs and valves causing maintenance problems as well as reduced performance as lead deposits accumulate. However, it was noted by the aviation mechanic that this device eliminates lead deposits completely from his spark plugs which normally must be frequently cleaned and /or replaced. After installation of the device, frequent inspections revealed no traces of lead what so ever. This indicates that aviation engines which face similar maintenance problems will also benefit with this invention.

1989 GMC S-15 Jimmy - 4.3 Liter V6 automatic gasoline. This vehicle has had virtually no maintenance for several years, but was driven frequently. The oil was similar to tar and the valve seals leaked bad enough to foul the spark plugs and stop the engine from running every 200km. Gas mileage was about 16mpg and the engine was difficult to drive because of poor performance. Also, descending long hills caused brake failures because of almost non-existent engine braking. After installing, the engine responded immediately with considerably improved performance in acceleration and power. Vibration and sound were reduced to the point where it became difficult for passengers to tell if the engine was even running at all. It was as if the vehicle simply coasted everywhere. Fuel economy improved to 22mpg city driving and over 32mpg on the highway. Air care emissions tests indicated very low exhaust contaminants. Compression braking improved dramatically and in many cases brakes were not even necessary on downhill excursions. The vehicle would simply hold and maintain its speed without accelerating on most down hills. This made driving much easier, as well, the degraded valve seals were never replaced and yet the spark plugs never fouled again. In fact, frequent inspections always revealed perfectly clean spark plugs even after two years of considerable use. Engine oil remains clear even after months of driving and several thousand accumulated kilometers. Installed October 2001.

2003 Toyota Camry – 4 Cylinder automatic, gasoline. This car was brand new with less than 500 km on the odometer. The owner enjoyed driving the car and thought the power quite acceptable. However, because it was brand new, he wanted it to last as long as possible and stay as new. When engines re-circulate untreated crankcase emissions however, the engine becomes progressively more contaminated with unburned hydrocarbons and oil sludge which significantly reduces performance and engine longevity. Therefore a device was installed to maintain the engine as new. When the owner drove his new car with the device installed he was in complete amazement at the performance increase. The car pulled harder up hills and never shifted down under load. Acceleration was much snappier and it ran smoother. Installed December 2002.



1997 Honda Quad racer – 350cc 4-stroke 1 cylinder gasoline, air-cooled. This bike ran good but fouled spark plugs quickly and was quite loud and vibrated a lot. The device was installed and the owner test drove it before he allowed his kids to use it. He noticed an immediate improvement in power and reduction in sound and vibration. The kids later, who were not informed of the installation of the device, were amazed at how much faster and quieter their quad was. Installed August 2002-present

2000 3 Cylinder Air conditioner Reefer, Diesel. This motor is mounted on an ice cream delivery truck. This cooling unit was only 7 months old. It runs approx 3-5 hours per day. The oil is changed every 3 months. The oil was very black upon inspection. After installation of an older device with a built in sludge chamber we found approx. 2 cups of water in it after only 3 hours of operation. The water was drained and not even a drop was found during further inspections in more than 100 hours of operation. The absence of further water in the chamber indicates that there was no longer any water remaining in the oil. The electro-chemical reaction in the device is strong and, as a side effect, draws the water in the crankcase into the device. The water normally reacts with the oil to form acids, which damage internal engine components. This device, however conveniently removes the water effectively eliminating internal corrosion. The new device does not need a sludge chamber and any water drawn into it is simply emitted into the combustion chamber. Only used oil contains water in engines without a device installed because the water is a bi-product of combustion, which gradually passes by the rings into the crankcase gradually contaminating the oil. Being slightly electro-negative, the water is drawn into the electro chemical reactions inside the device and effectively eliminated. We also noticed that the engine ran smoother and quieter as well as emitting almost no smoke. Installed Nov 2000 – Dec 2000.

1990 Bobcat tractor – 3-cylinder diesel. This engine gets regular maintenance but it works very hard all day and the oil is always black as tar. The engine smokes a lot as well, approx. 70% opacity. After installation, the tractor immediately sounded quieter. After several hours of fieldwork, the smoke was reduced approx 70%. The operator noted a substantial increase in performance and decrease in vibration. The engine oil stayed clean for several weeks before slowly becoming darker. Because this type of equipment accelerates and changes engine RPM quickly and very frequently, it would be expected never to have spotless clean oil, as in a large tractor. However, it did stay incredibly clean and it never contained water.

1985 Versatile 4x4 Tractor – Front-end loader, 4 Cylinder diesel (approx 100hp). This tractor accelerates and decelerates all day long because of its versatility with the front-end loader. When it works hard it puffs clouds of black smoke. It loses power easily when pushed hard. The oil becomes black reasonably fast, usually after 1-2 hours of use. After installing the device and of course, installing fresh oil, the operator immediately noticed smoother acceleration and quieter engine noise (less combustion knock). Working with the tractor was easier and smoother. The power increase was very much appreciated and made working with the equipment faster and less tiring. A very interesting, but familiar by now, observation, was that the oil was again spotless as it was with other construction equipment with this device installed. Even after 10 hard hours of work, this engine still had absolutely spotless engine oil. Installed September 2003.

Gord Trick - Diesel mechanic for the district of Hope. In charge of service and



maintenance on the towns fire trucks, town maintenance vehicles, tractors and construction equipment.

May 2006 he purchased a catalyst for his personal 2004 Chevrolet 4x4, 3/4 ton Duramax diesel. His truck is in near perfect condition and he uses it for daily transportation and towing horse trailers on the weekends. He has considerable experience with engines and drives expertly. His Duramax diesel is already considered, in the industry, to be one of the smoothest and most powerful engines. His comments are as follows: the engine has greater throttle response making it more responsive to drive in the city where the turbo has no time to spool up. As a result his fuel economy improved approximately 20%. The engine's coolant temperature dropped noticeably indicating improvements to the thermal efficiency of the engine; more power with less heat and lower fuel consumption. As well, the engine's compression braking improved allowing the truck to decelerate on highway off ramps without using the brakes. He also noted that the engine's oil stayed perfectly clean for much longer between oil change intervals. It should be noted that the 2004 Duramax has an open crankcase ventilation system and once we enclosed the system with the catalyst the engine not only performed much better, but the oil became even cleaner. In comparison, the 2006 Duramax has an enclosed crankcase system and all of the owners have noted that the oil becomes black much, much sooner than the older models with an open crankcase vent. We have demonstrated over and over that we can effectively enclose the crankcase ventilation system with our catalytic system and the oil will maintain cleanliness for considerably longer. Gord's comments reinforce the observations of many others.

Gord's experience with this new technology on his personal, prized truck has prompted him to recommend, sell and install our catalytic systems to the following:

2005 - VW Jetta diesel turbo charged. His comments included much smoother operation with less vibration and the increase in performance provided a 6% increase in fuel economy.

2004 - KIA mini van with a 6 cylinder. Gasoline engine
Comments: Runs smoother, better acceleration and approximately 10 % better economy, Also the oil filter cap indicated considerable water in the oil, from lack of frequent oil changes, became spotlessly clean in less than an hour of driving.

2004 - KIA car with a 4-cylinder gas engine.
Comments: Runs smoother and more powerful

2001 - Honda car with a 4 cylinder gas engine.
Comments: Noticeably smoother and faster especially while climbing mountain highways. He liked it so much he bought another unit for his truck.

2000 - Chev ½ ton 6.0 litre V - 8 gas engine
Comments: Smoother and better performance

1995 - Dodge car, V-6 gas engine.
Comments: Much better acceleration and performance especially on the steep mountain highways. The engine runs smoother and starts easier.

1982 - International gravel truck - 6 cylinder diesel w/turbo and intercooler



owned by the district. Gord recommended to his boss that this truck required our catalytic system to reduce the excessive smoke and to help the engine start better as it was well known to require frequent starter replacement because of its poor starting characteristics.

Comments: The smoke was reduced significantly even when cold. Acceleration and general performance improved with reduced vibration. The starting characteristics improved considerably.

1985 - Tractor, 3 cyl diesel - owned by the district. Gord recommended our catalytic system to help reduce the considerable emissions, which tend to infiltrate the tractor's cab causing the operators to become tired easily and very uncomfortable.

1989 - Fire truck w/Cummins 6 cylinder - Diesel w/turbo and intercooler. This truck has only 16,000km and was in near perfect condition, however it is severely under powered. Its absolute maximum top speed on a level highway is approximately 100 km/hour. The acceleration characteristics are also very poor because of the lack of power, automatic transmission and heavy load of water that the truck must continuously carry.

Comments: After the catalytic devices were installed, the operator noticed during an emergency response that the truck started much faster, accelerated out of the building much quicker and was able to achieve 120 km/hour on the highway. The operator was so impressed that he contacted Gord (the mechanic) and asked what he had done to the engine to make it so much better. The operator also bought the catalytic devices for his personal truck 2 days later.

2001 - Dodge 3/4 ton - 4x4, 6 cyl. Cummins diesel w/turbo and intercooler. Owned by the fire truck operator Don Wiens.

Comments: Faster starting, smoother, quieter, improved acceleration and torque. It shifted into a higher gear sooner and it didn't stumble or vibrate. Fuel economy also improved.

1998 - Fire truck w/ Ford 6 cyl diesel - A turbo charged, automatic transmission. This truck was severely under powered and as a result was very slow to accelerate. It ran warm and generally was unpleasant to drive even though it is in excellent factory condition.

Comments: After installing the catalytic devices the vehicle accelerated much faster and operated with a considerable reduction in coolant temperature. The original operator was not informed of the installation but realized very quickly that the engine had been worked on because of the increased acceleration characteristics and lack of vibration that normally causes the steering wheel to vibrate to such a degree as to become uncomfortable. Now, the steering wheel vibration was nearly eliminated. It should also be noted that this engine had an open crankcase vent system and as a result required a tray underneath the vehicle when parked to catch and contain the rather significant amounts of oil sludge dripping from the vent tube. The installation of the crankcase catalyst completely eliminated the open vent system allowing the parking garage to remain clean. The operator of this truck also



purchased a device for his personal vehicle.

1997 - Chevrolet ½ ton – A V-8 gas engine, automatic, well maintained, but had many miles on it. Scott, the owner of this truck and driver of the fire truck, purchased a catalytic system to improve its performance. In the first ten minutes of driving with the catalyst installed he noted the engine to have become considerably smoother, quieter and more responsive to throttle input. In the next two months he experienced better fuel economy and a significant torque increase while driving in the mountains. The interesting thing about Scott's noteworthy comment is that he is the manager of a high performance parts store and has several years of experience with hundreds of performance parts. Even with his extensive experience in this field, he has never known a product to offer so much improvement to a vehicle's overall function regardless of price. He has since recommended devices to number of his friends.

1978 - Fire truck - V-8 gasoline engine with carburetor, automatic transmission. This truck is not slow or under powered but is extremely difficult to start and maintain running condition for the first 30 minutes of operation. Even with a tune up and adjusting the carburetor, it could not be adjusted to run well when cold. Comments: The engine responded very well with the device and although it has not been driven much since the installation, it appeared that its cold starting and running problems were resolved.



Frequently Asked Questions

(Call toll-free for more information 866-945-3800)

Industry Questions:

#1. Is it really possible to inexpensively reduce emissions?

Yes, emissions are a result of incomplete or uncontrolled combustion reactions. With this technology we have consistently demonstrated that combustion can be manipulated to such a high degree that emissions are reduced significantly as a result of the cleaner, more complete burn process. Thousands of hours in research and development have enabled us to produce this technology in such a way as to be extremely efficient, compact and light weight. This ultimately translates to cost effectiveness in manufacturing and installation. As well, the improvements instilled to the combustion process translates quickly into improved performance and reduced maintenance allowing existing emission control equipment to last longer and function at their optimum longer.

#2. Can such a system be adaptable and function well on new and old engines?

Yes, this technology easily adapts to any and all types of internal combustion engines, even old ones. The concept of combustion hasn't really changed over the years, fire is fire. Even though, new injection systems and computers ultimately influence combustion reactions. By extremely high pressure injection system or variable rate injection, fire can be more easily modified using reactive intermediates. This enables us to be able to effectively influence and improve combustion on virtually any engine, old or new.

#3. What modifications are involved and are they expensive or complicated?

The modifications necessary to adapt this technology to most any given engine, old or new, is relatively easy. In most cases it involved simply fitting the device in the crankcase emission vent tube. The unit is light weight and compact enabling it to easily be connected, usually in line, enabling the crankcase emission to pass through the device and into the engines air ingestion system before the combustion chamber. Being light weight and compact, it does not interfere with any of the engines accessories or operating systems.

#4. How long will the system last?

The device is designed specifically to process toxic, gooey crankcase emissions without itself being consumed in the reaction or becoming contaminated by these emissions. Its external structure is designed to allow these emissions to be processed without restriction and maintenance is not generally required. As well, the reaction involved absorbs heat, therefore the condition involving the modification of these emissions are very mild contaminants are not baked on the surface as often occurs with exhaust-type, heat releasing catalytic converters. The device is believed to have an indefinite life span.

#5. Will it function in various industries such as underground mines, farm



equipment, on-road vehicles?

Yes. All engines produce crankcase emissions regardless if their operating environments or odd conditions. We have successfully demonstrated in many commercial applications that the environment or condition of operation have no effect on the units' function. In fact, we have observed that in extreme cold climates, the engines start easier with the device installed and in extremely hot countries, the engine ran cooler. Therefore, as long as an engine is operating, the crankcase gases can be modified successfully with our technology.

#6. Will customers appreciate the changes imparted by the systems function?

Yes. The entire purpose of modifying crankcase emissions with this technology is to improve the engines function while reducing exhaust emissions simultaneously. This technology is very unique in that it can convert toxic emissions into performance enhancing reactive fragments without additives or any external assistance such as heat or electricity. Maintenance is also not an issue. This is not like any known system because there are no filters to clean or replace and the significant improvements to an engines performance and long term durability are what motivates most customers to want this technology. A reduction in vibration, sound, smoke and engine temperatures accompany an increase in performance and engine durability are realized by most customers and appreciated.

#7. Is there anything similar on the market?

No. We have extensive field experience ranging from lawn mowers to ship engines. Never have we seen technology such as this, anywhere. We have also discovered that the unique method in modifying crankcase emissions to produce reactive intermediates introduces a completely new concept in the field of manipulating combustion reactions. Also, since fire itself is a chemical reaction, it makes perfect logic that the chemistry involving our technology can ultimately improve combustion characteristics as well as reduce exhaust emissions.

#8. Are there any risks involved with product use? Manufacturing materials?

No. This technology involves heat absorbing chemical reactions between the crankcase emission and specifically chosen materials inside the device. The materials are non toxic, nor are they consumed. The temperatures are mild and there is a slight vacuum draw rather than pressure. There are no fluids to leak or freeze and if a hose connection was removed, at any time on a diesel engine, there would be no detrimental effect on the unit or the engine.

#9. How is it possible to work with all different types of engines and fuels?

This technology works with most any internal combustion engine because they virtually all produce crankcase emissions and, since fire is simply a chemical reaction, regardless of fuel used, it can be modified. Conventional belief is that different fuels involve different, unique combustion reactions. We have learned through extensive field testing that all engines respond favorably to the ingestion and combustion of the reactive intermediates produced by our device. The chemical



reaction involving fire, regardless of fuel, become more controlled resulting in improved performance and reduced emissions.

#10- Can the system be successfully manufactured in large quantities?

Yes, after nearly eight years of field testing in research and development we have maximized the efficiency in the design of the device enabling mass production with minimal effort. The current design allows unlimited parameters in flexibility of design such as shape, size or application. This technology is currently in mass production.

#11- How many different model sizes are available and can changes easily be made if necessary to adapt to new applications?

Any size of device desired can be easily manufactured from motorcycles to very large diesel engines in ships. It only requires that sufficient volume be allowed for the internal application; the technology itself is the same, it only requires sealing to enable adaptation to the various applications.

#12. Is the technology safe?

Yes, the technology is safe. It does not produce heat or is under any pressure. The gases exiting the device are not as unhealthy as the crankcase gases entering the unit. The modified gases are reactive to fuels and other hydrocarbons such as oil residues. As well, crankcase gases are not under pressure or high heat condition. This allows flexibility and safety in installation unlike fuel processing, or exhaust catalytic converters.

#13. How will it affect the engine and what are the long term benefits?

Normally an engine produces crankcase gases, which are either recycled back into the combustion chamber or vented into the atmosphere. These toxic gases, when recycled, cause the engine to become contaminated with carbon sludge eventually reducing its life span considerably. The sticky tar-like material sticks in rings, valves and other components reducing their service life. These gases also reduce combustion efficiency producing vibration, excess heat and worse exhaust emissions. As well, performance is reduced. Open crankcase vent systems contribute to cancer. When crankcase gases are recycled but pass through the device, they become considerably different. They effectively clean the engines combustion system allowing rings and valves to work freely. They also improve combustion ultimately reducing vibration, sound and exhaust emissions. As well, performance becomes significantly improved. Engines run cooler, last longer and pollute less. These effects are sustained for very long periods of time when using this technology, even under extended use commercial application. It has also been noted that an engines lubricating oil stays cleaner, longer. All of these effects are logic repercussions of using modified crankcase emissions to manipulate and control combustion reactions.

#14. How long does it take to demonstrate its function?

Many engines respond immediately to the installation of this technology. Usually an engine produces noticeably less toxic emissions, runs smoother and quieter within a few minutes. However, the full effects are not realized until the engine has been run



and worked significantly to allow contaminants to be cleaned from the rings and valves. As the engine becomes clean and the compression pressures restored it performs better and better. In many cases this happens in only a few hours and in some extreme cases it requires over one hundred hours. Most importantly, once installed, the unit will allow the engine to remain in service significantly longer. Cleaner engines perform better, last longer and produce less toxic emissions. Many old engines that we have demonstrated this technology on are performing better than ever have, even better than when they were new.

#15. Are there any modifications necessary on engines with computers or emissions control technology?

Modern engines use computers to help control the combustion system, for example, by manipulating injection pressure. These engines usually recycle crankcase emission which significantly contaminates the entire intake and combustion system. As well, the exhaust system and emissions control equipment become excessively contaminated with un-burnt crankcase emissions over time. When these gases are modified by our system, they no longer contaminate the engines sensors and combustion system allowing them to work as intended. Most importantly, however, the modified gases improve the combustion process regardless of the computers influence. When the chemical reaction of fire is improved with our system, the combustion process becomes more efficient ultimately providing more work with less energy input. The computer sensors never indicate problems and, in fact, by having them cleaned and by producing smoother combustion reactions, allow even greater benefits than otherwise possible.



Before



After