



GF2 Fuel Enhancer™ Distributed by HHG™.

Overview

The following presentation is intended to introduce GF2™ to additional industrial and commercial users in mining, construction, power generation, shipping, trucking, rail and general transportation businesses worldwide and consumer's personal vehicles.

The GF2™ formulation has been used in heavy industry since the early 1990's and is distributed by HHG™. It is a comprehensive fuel treatment additive extensively tested in various types of industries and proven to give positive results with economic, operational, environmental and maintenance benefits. The use of this product has been deployed on a worldwide basis in multiple sectors of the transportation, mining, rail, power generation and shipping industries and has produced significant results in all categories.

Due to the ability of GF2™ to significantly reduce emissions and improve fuel economy, HHG™ is committed to expanding its product into all sectors of industry, while creating an aggressive marketing platform to allow the general public to benefit from its remarkable properties on a worldwide scale for the first time.

Customer Highlight

Because of the data available and results monitored over a period of 15 years including the awards granted, one specific company will be used to show the success of GF2 fuel treatment in that company's equipment.

We will outline four primary areas of benefit.

- **Operational:** Fuel economy and engine efficiency.
- **Maintenance:** Reduced costs and extended engine and component lifespan.
- **Economic:** Overall net savings directly impacting bottom line profits.
- **Environmental:** Significantly Reduced Emissions.

These categories have been evaluated using one of the largest and most successful mining contractors in the world **PT Pamapersada (PAMA)** based in Jakarta, Indonesia.

PAMA's founder and former President **Mr. Sudiarmo Prasetio**, became lifelong friends with **HHG's supplier** whose products have contributed to **PAMA's** success



and profitability with annual double digit growth figures since they began first using the GF2 Formulation.

Operational

GF2™ is unique compared to other fuel treatments on the market. Instead of having to use several one off treatments, GF2™ is completely self-contained with everything the fuel needs, to allow the engine to run smoothly and efficiently for a very long time extending the life of expensive components such as injectors, pumps, liners, valve system etc. It is highly concentrated containing the following essential components below but without the fillers other manufacturers use making it the most cost effective fuel treatment on the market today.

Normal Treatment ratio is 1:10,000, 1 gallon treats 10,000 gallons, or 1 liter treats 10,000 liters. This is the original product and not a copy.

In Ship and Power Generation Engines using Bunker Fuels the Treatment ratio is 1:5,000 for 1st 800 hours of use then 1:7,500 for regular usage.

1. **Combustion Catalyst** made up of complex organometallic compounds including ferrocene which helps lower the initial burn rate of the fuel in the cylinder, allowing more time for the fuel closest to the piston to burn more completely. This also helps reduce sulfur by products. The engine has a limited amount of time to burn all of the fuel in the combustion chamber before it is swept out to the exhaust.

Without GF2™, fuel is ignited from only one point in the chamber. Normally the flame burns from the top down to the piston head.

With GF2™ multiple flames occur in your engine's combustion chamber propagating from all of the GF2™ molecules in the fuel. More of the fuel in the chamber is burned on each stroke and less is wasted in the exhaust. This allows more of the BTU's in the fuel to be released and used in the form of energy to deliver more power to the transmission providing better overall fuel economy, using less DEF fluid and saving on regen systems and catalytic convertors. If unburnt fuel is entering the exhaust system that means you lost money.

2. **Cetane** is vastly improved in diesel engines with the use of GF2™ allowing for most of the diesel fuel to be consumed in the cylinder, increasing horsepower and performance and reducing smoke/soot.
3. **Octane:** By adding GF2™ to the lowest grade of gasoline fuel, it will provide the performance of the higher grade fuels but with more BTU's available for the power band. High performance engines can use the lowest grade gasoline fuels with GF2™ and not be subject to pre-ignition knock which previously required them to use the



more expensive gasoline fuels. It all has to do with getting more oxygen molecules around the fuel.

4. **Lubrication additive**, recent legislative changes to reduce sulfur content in fuels and eliminate all lead, have meant a decrease in the inherent lubricity of diesel fuel as well as gasoline (petrol). Experts estimate that as much as 50 percent of today's ULSD (ultra-low sulfur diesel) pool will need a lubricity improver to meet engine manufacturer's specifications and that up to 75 percent of the diesel pool could require treatment as refiners convert to ULSD production in 2006 and beyond.

GF2™ includes a synthetic lubricity agent that addresses the Engine Manufacturers Association (EMA) preferred diesel fuel lubricity specification, the FQP-1.

The ASTM D-6079 diesel lubricity specification test balances input from engine makers, standards officials, and fuels producers. It says that a "wear scar" no larger than 520 µm (microns) in diameter should result from a standardized wear test. The lubricity agent in GF2™, when analyzed under the ASTM D-6079 test specifications produced a wear scar of less than 440 µm, far exceeding the requirements for lubricity specifications required by engine manufacturers.

5. **Water Demulsifier** which separates water from fuel making it more efficient in the combustion process, eliminating harmful acids which are by products of the combustion process in water contaminated fuels and which cause pitting and component failure.
6. **Polymerization Retardants** which stop the fuel from breaking down and returning to its natural state as crude oil which is what fuels begin to do typically 30 days after being "cracked" at the refinery.

This polymerization process starts to form submicron-sized particles. As the process continues, particles become larger and eventually agglomerate, forming macroscopic sludge. These particles can score injectors and eventually plug filters and the very small openings in the injector's nozzles and over long periods of time render the fuel un-pumpable. Equipment left for long periods of time without being used such as seasonal equipment like boats, lawn movers, tractors, off road vehicles, trucks etc. become very hard to start because of this polymerization process.

GF2™ disperses existing macroscopic sludge and retards further polymerization, permitting the fuel to flow and burn more efficiently making it ideal for use in heavy fuels such as No 6 diesel or bunker fuel, which is used in ships and power generators.

GF2™ is perfect for long term fuel storage especially emergency generators which are vital and need to start when utility power goes down. Companies can purchase large quantities of fuel when the price has dropped and can store that fuel for very long periods of time keeping it fresh and alive with the use of GF2™.



7. **Oxidation stabilizer.** All fuels are subject to oxidation. Oxidation creates in-soluble by products which cause injector deposits like a varnish. These deposits can slow response or cause sticking of moving internal parts and lead to injector failure. GF2™ contains a dispersant that stabilizes fuels, preventing oxidation.
8. **Corrosion inhibitors.** Many parts of an engine are made up of ferrous metal components, aluminum and plastics. Many fuels today contain Ethanol which is alcohol and highly corrosive to fuel lines and engine components. GF2™ contains a corrosion inhibitor in order to mitigate corrosion in tanks, engines and fuel lines and a detergent to help keep engines, fuel lines, filters, pumps and injectors clean. This will result in increased efficiency, less breakdowns and less maintenance for your equipment.
9. **Detergents** which keep the fuel system components clean and within original design tolerances for precise fuel delivery to the combustion chamber.

All of the above provide better running equipment, less breakdowns, more profits and a cleaner environment, all in one simple, effective, treatment.

Maintenance

When **PAMA** first began using the GF2™ formulation their engines were being overhauled at 12,000 hour intervals on average. Using the GF2™ formula the engine life was extended to over 18,000 hours of operation as there was much less wear in cylinders, valves, and fuel delivery systems especially injectors and fuel pumps and this required fewer personnel for repairs.

(Typical costs of overhauling these engines are \$250,000 - \$500,000) They have reduced their maintenance budget by 40%.

This is unheard of in an industry which is the harshest environment for equipment on the planet.

Economic

Q. How effective is GF2™ in providing a Return on Investment for heavy industry?

A. The GF2™ formulation treats over 300 million gallons of diesel fuel (over 1 billion liters) for **PAMA** each year with the GF2™ formula. This saves **PAMA** in excess of \$50 million dollars per year in fuel consumption alone.



The GF2™ formula provides **PAMA** with up to 8% fuel savings in addition to what they save not having to purchase equipment replacement parts.

By using the GF2™ formula, **PAMA's** return on investment (ROI) with this fuel treatment is over 600% providing a huge profit margin for the company.

GF2™ is the most cost effective Fuel treatment for all commercial equipment including the general public's personal vehicles. Remember **PAMA**, is one of the largest mining contractors in the entire world and the largest purchaser and user of Komatsu mining equipment as well as the largest purchaser and user of Volvo articulating trucks worldwide.

PAMA annual revenue is \$4 Billion dollars and annual profit is \$900 million. **PAMA** attributes over \$300 million of those profits to GF2™ formulation.

Environment

Q. Is GF2™ proven to reduce pollution?

A. Yes! Once again let's use PT Pamapersada (**PAMA**) as the example.

PAMA received **ISO 14064-2** award which is an International Standard related to the reduction of Greenhouse Gas Emissions, on March 10 2014. They received this award as a direct result of using GF2™. By using this product they eliminated **516,912.2 tons of CO2 emissions** in 2012 compared to 2011. That is the equivalent of removing 116,000 full size automobiles off the road in one year.

PAMA is the 1st and only mining operation worldwide and the only company in Indonesia, to have won such a prestigious award all thanks to the GF2™ formula.

Carbon Credits. **PAMA** continues to sell their carbon credits for considerable profit each year.

The result of **PAMA's** use of the GF2™ formula is the people of Indonesia have a cleaner environment in which to live and the huge economic gains that a large company such as **PAMA** provides the country.



World's First, PAMA Getting ISO 14064-2- March 10, 2014



Pamapersada PT Nusantara (PAMA) obtain ISO 14064-2 is an international standard related to the reduction of greenhouse gas emissions (GHG)

Pamapersada Nusantara (PAMA) obtain ISO 14064-2 is an international standard related to the reduction of greenhouse gas emissions (GHG) . Submission of ISO 14064-2 submitted by Mr. Clement Teo as Vice President of TUV SUD Management Service Pte Ltd to the President Director of PT Sudiarmo Prasetyo Pamapersada on March 13, 2013 held at the Head Office Pamapersada archipelago. ISO 14064-2 ceremony was attended by Drs. Hendra Setiawan, Expert Staff of Economy and Sustainable Development Ministry of Environment of the Republic of Indonesia; Ir. Syawaluddin Lubis,

Director of Engineering & Environmental Mineral and Coal, Ministry of Energy and Mineral Resources of the Republic of Indonesia, Dr. H. Adjat Darajat, Chairman of the National Professional Certification (BNSP); Djoko Pranoto, Director of PT Astra International, Tbk .; Edhie Sarwono, Director of PT United Tractors Tbk .; and Johannes Loman, Executive Vice President Director of PT Astra Honda Motor and Astra Group Executive ranks. Certificate of ISO 14064-2 is the first time in the world for mining contractors and the first time in Indonesia for all business units. This application is the next step of carbon foot print that has been done throughout the PAMA since 2009 From the carbon foot print PAMA recorded a total reduction in emissions in 2012 compared to the year 2011 amounted to 516,912.2 tons CO₂e. While in the project implementation ISO 14064-2 in 2012, has reduced emissions of 1,413 tons of CO₂e. Some of the activities carried out by the PAMA in the framework of the application of ISO 14064-2, among others, the use of diesel fuel additives and installation of Economic Auto Mode (AEM) in units of Dump Truck HD HD 465-7 and 785-7. - (Source

Warranty Issues

HHG, maintains 1 million dollars per incident liability insurance. (Copy of insurance may be requested)

When considering changes to the combustion process, there is concern regarding the impact on the mechanical operation of the engine, and the OEM warranty.

GF2™ does not affect the mechanical operation of the engine; it deals with the specification and capability that the fuel delivers by burning the fuel more efficiently it is able to release more of the available BTU's per pound of fuel.

It is standard practice for OEM's to neither endorse, nor condemn the use of after-market treatments or fuel additives. The use of a fuel additive, in itself, does not void any manufacturer's warranty. Several manufacturers offer their own application specific additives, or diesel fuel conditioners. The Magnuson-Moss Warranty Act or 1975 (US Code – Title 15, Chapter 50, Sections 2301-2312) prevents an engine manufacturer from voiding a warranty on a vehicle due to an aftermarket part or treatment, unless they can prove that the aftermarket part or treatment caused, or contributed, to the failure of the vehicle. (Copies of No Objection letters on file for some engine manufacturers)

The GF2™ formula has a long history of use across all sectors of industry including among the general public. Users have reported no negative long-term effects resulting from treating fuels with GF2™ . This includes users of the product over many consecutive years in bussing, locomotive/railroads, transit, ocean-faring ships, mining, and trucking fleets. None has reported an issue surrounding warranty coverage. All reports have been positive in with cleaner engines, more fuel economy and better horsepower performance.



Tests

Scientific Data & Testing

GF2™ Fuel Enhancer formulation contains an Organometallic Compound –made up of several components. These combine to create an advanced burn-rate modifier and combustion surface modifier catalyst, which, when combined with gasoline or diesel fuel, or any hydrocarbon fuel for that matter increases the rate of the combustion reaction and changes the surface structure of the fuel to achieve a more efficient combustion process.

Catalyst

A catalyst is a substance that lowers the amount of energy required to start a reaction and which increases the rate at which the reaction occurs during the process.

When this occurs, the overall combustion time is altered, which makes the small treatment application of GF2™ possible. Remember GF2™ is highly concentrated and it does not take much to create the desired reaction.

Scientific Test Procedures & Data

The driving component, or primary active ingredient in the GF2™ has been evaluated utilizing some of the most stringent testing procedures by reputable and reliable laboratories and government entities.

SAE Paper 900154 — concluded that the active ingredient included in the GF2™ formulation improved fuel octane quality for gasoline, increased cetane value for diesel and heavy fuels and reduced emissions dramatically, while improving fuel efficiency.

Effects of Ferrocene as an Additive on Exhaust Emissions and Fuel Consumption of Catalyst Equipped Vehicles

SAE International is a global association of more than 128,000 engineers and related technical experts in the aerospace, automotive and commercial-vehicle industries.

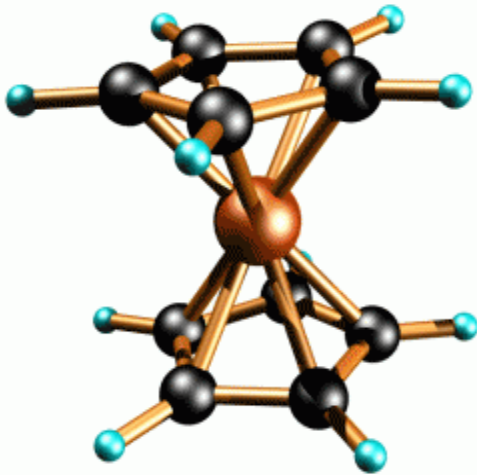
Every day, they demonstrate their commitment to society through local, national, and international public awareness programs that promote vehicle safety and maintenance and energy resource conservation.



Through the SAE Foundation, they are also deeply involved in the engineering-related education of children, teachers, college students, and faculty. Industry and faculty awards provide recognition to outstanding contributors in the profession.

Details of SAE Paper Number: 900154

A test program was performed involving two pairs of vehicles – each pair of the same type and model, technically matched, and equipped with emission control systems including lambda sensors and 3-way-catalysts.



The aim of the program was to investigate the influence of gasoline containing 15 ppm Ferrocene (Dicyclopentadienyliron) on the long-term emission performance.

Vehicles were operated in a highly comparable way under typical traffic conditions encountered in the FRG. From each pair, one car was fueled with clear, the other with gasoline containing Ferrocene.

Effects on the exhaust emission performance were explored at intervals of about 10 000 km operation by means of the CVS method using the FTP 75 driving cycle.

The results demonstrate that Ferrocene operation resulted in lower pollutant emissions. This was confirmed when one vehicle was switched to Ferrocene operation after 40 000 km of clear operation.

Measurements of the fuel economy during test operations showed distinct improvements when vehicles were fueled with Ferrocene-containing gasolines.



Further investigations of particulate emissions from the test cars were conducted by an independent research institute. The results show particulate emission levels to be low, with only minor changes in the particulate iron contents. No gaseous iron compounds were measured within the detection limit.

U.S. Department of Interior Bureau of Mines Paper RI 9438 (Now under the **NTIS -The National Technical Information Service**) — determined that the active ingredient utilized in the GF2™ formulation reduces emissions significantly. (The full 34-page document is for sale at their website)

Southwest Research Diesel Engine Emission Control Technologies Paper, Appendix B, subsection B.3.5, describes one of the active ingredients in the GF2™ formula as a catalyst component that increases Cetane and reduces burnout time and temperature requirements in new Diesel Particulate Filters (DPF).

Southwest Research Paper, Hydrocarbon Fuel Chemistry provides documentation that the active ingredient in the GF2™ formulation reduces compression ignition emissions as much as 20% and improves fuel efficiency as much as 10%. This also allows high performance gasoline engines to use the cheaper octane fuels without pre-ignition knock while having greater power because of increased BTU availability.

NIOSH IC 9642, Department of Health and Human Services Paper, subsection 2.2.3 indicates that the active ingredient incorporated in the GF2™ formula reduces smoke particulate by 25% and reduces burnout time and temperatures in new Diesel Particulate Filters (DPF).

Canadian Environment Protection Agency Paper, subsection 5.2.4.1 determined that the active ingredient utilized in GF2™ reduces Diesel Particulate Filter (DPF) filterable matter by 23% and reduces total particulate matter by 22%.

California Air Resource Board (CARB), 3D Air Quality-Emission Report; appendix b states that the active ingredient contained in the GF2™ formula reduces burnout time and temperature of new Diesel Particulate Filters (DPF). Tests show reductions of particulates by 20% without the DPF and two-fold reductions with DPF.

Olsen Laboratories determined that the active ingredient in GF2™ formulation reduced emissions during the EPA Highway Fuel Economy Test (HFET) and Federal Test Procedure (FTP).

GF2™ is a complete comprehensive fuel treatment program containing a full range of additives and organometallic compounds working synergistically together to increase fuel

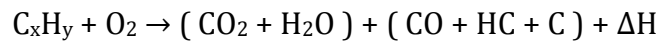


economy, increase engine longevity, reduce emissions and increase bottom line profits for industry and now available to the general public as a means to reduce their motoring costs, increasing their vehicle performance while improving the overall environment worldwide.

The basic principles behind the benefits and catalytic effects of GF2™ are easy to understand. Today's engines leave some amount of fuel unburned on each piston stroke. GF2™ makes it easier for your engine to burn more of the fuel in the cylinder. Since more of the fuel is being burned, more power is being generated. Since less of the fuel is being wasted, you will have fewer emissions.

Chemistry

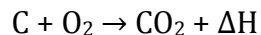
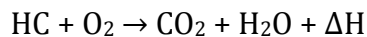
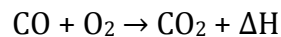
An engine converts fuel into energy by the following chemical processes:



The ΔH is known in chemistry as enthalpy and represents the energy created from the thermodynamic process taking place inside an engine. The C_xH_y represents the fuel, for example gasoline is C_8H_{18} and diesel is $C_{12}H_{26}$. The CO_2 , H_2O , CO , HC , and C on the right side of the arrow represent products that are released in the engine exhaust.

There are no exothermic (i.e. energy producing) reactions that could yield more energy out of the CO_2 or H_2O , so we've grouped those components together in the equation above. However, there are exothermic reactions that can extract additional energy from the second group: the CO , HC , and C .

When GF2 is introduced into the engine, it acts as a catalyst and lowers the activation energy needed to further break down the unburned products in the above reactions. Specifically, when GF2 is used the following additional chemical processes take place in the engine:

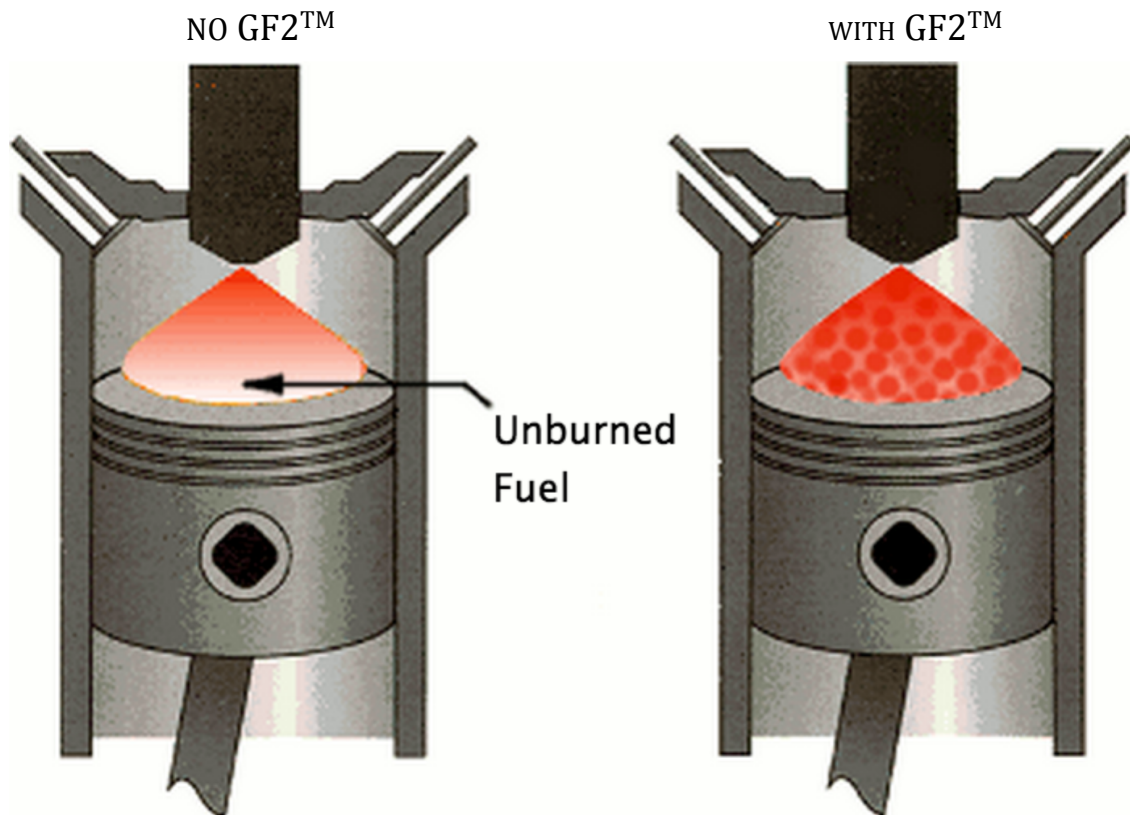


The ΔH 's in the three above equations are how GF2 increases your engine's output. These ΔH 's add to the ΔH produced by the engine's standard process to deliver more output energy from the engine. This extra energy can be used to either increase engine output power (if the amount of fuel input is kept constant) or reduce the engine's fuel intake (if the amount of output power is kept constant).

Flame Propagation



Your engine only has a limited amount of time to burn all of the fuel in the combustion chamber before it is swept out to the exhaust. Without GF2™, fuel is ignited from only one point in chamber. A red flame burns from the top down to the piston head. GF2™ contains compounds that act as flame initiators. Because of this, the flame in your engine's combustion chamber isn't propagating only from top to bottom. It's also propagating from all of the GF2™ molecules in the fuel. More of the fuel in the chamber will be burned on each stroke and less will be wasted in the exhaust.



Flame burns from the top down.

Multiple flame points.



Pressure Measurements

Sensors inside laboratory engines have shown that GF2™ changes the pressure cycle inside the combustion chamber. Since the average pressure is greater inside the chamber, the piston will receive more force driving it down. Since the piston is being driven down faster, more output power will be delivered to the crankshaft resulting in efficiency improvements..