CGX-4®
Premium Propane Fuel

A Fuel for LPG Powered Internal Combustion Engines that Drastically Reduces Emissions, Lowers Maintenance Costs and Improves Performance

Compared to gasoline, LPG with its relatively low levels of exhaust emissions is still the fuel of choice for forklifts and other vehicles operating in confined spaces. Yet, LPG is a fuel that can and does produce hazardous levels of carbon monoxide and other emissions.

Furthermore, LPG is a fuel that has several undesirable characteristics when used as a fuel in internal combustion engines. Heavy end build-up in carburetors and vaporizers require constant service, long chain hydrocarbons and other contamination cause combustion problems, inadequate upper end lubrication, and preignition in the combustion chamber are problems that are all inherent in the fuel.

At a quick glance the alternatives to standard LPG powered vehicles, are either conversion to compressed natural gas powered vehicles, a very expensive alternative, or electric powered vehicles requiring purchase of an entire new fleet with limited operating capabilities. But there is a very inexpensive alternative that significantly reduces emissions of CO and other harmful gases. That alternative is using a premium LPG treated with CGX-4. A LPG fuel treatment that has been proven to reduce CO emissions by up to **75%** while literally paying for itself in reduced maintenance costs alone.

Why you should be concerned about CO emissions.

A cleaner, less hazardous work environment for employees and less downtime due to employment related illnesses caused by increased levels of CO and unburned hydrocarbon emissions in the work place are obvious benefits. However in addition, OSHA, realizing the serious health hazard of standard LPG, has set guidelines of carbon monoxide levels at 35 ppm. Corporations that allow employees to work in facilities violating these guidelines face serious fines and possible shutdown if they do not comply. A healthier work environment and economic penalties are, of course, the two primary reasons for concern.

Extensive testing by Energy Additives, Inc., independent testing firms, and industry testing by firms adopting CGX-4 Premium Propane Fuel have shown greatly reduced CO and other emissions.

How much are Carbon Monoxide emissions reduced?

Of course depending on the condition of the fuel systems and engines of the forklift trucks, typical results on units with even more than 450 hrs between their last overhaul or tuneup indicate that:

- **After one week of use, CO emissions are reduced by 50%**
- **After two months of use, CO emissions are reduced by 75%**

These are not blue sky projections but are substantiated by extensive testing done by or for major owners of LPG powered fleets. Companies very concerned about compliance to OSHA guidelines have adopted CGX-4 Premium Propane Fuel exclusively for their lift truck fleets. From major automobile firms to pulp and paper mills, from large shipping facilities to heavy equipment manufacturers, all are finding reduced emissions using CGX-4 Premium Propane Fuel.

What about reduced maintenance costs and improved performance?

LPG as it passes through carburetors and vaporizers deposits heavy end

buildups. The hydrocarbon chains breakdown at this point leaving a buildup of a gummy residue similar to grease.

This inhibits performance and requires disassembly and cleanup of these components. A time consuming process that can disable vehicles in the fleet for prolonged periods. Labor costs to regularly clean these components can add significantly to the cost of maintaining each fork lift truck in the fleet. CGX-4 Premium Propane Fuel can and does greatly reduce these buildups .

Valves and upper end engine components do not get lubrication from the crankcase and LPG does not naturally provide proper lubrication to these components, This leads to greater wear and major engine failure. CGX-4 Premium Propane Fuel improves the lubrication of these components.

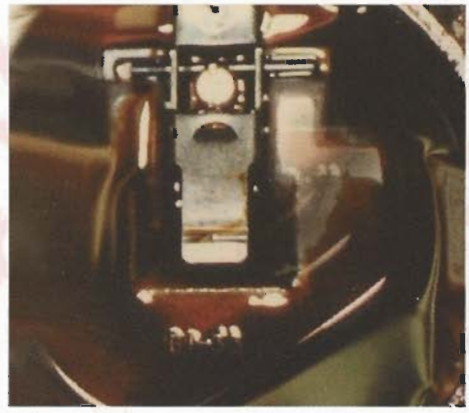
How CGX-4 improves LPG in all these areas?

Without the use of metallic elements that by themselves can add harmful impurities to the environment, CGX-4 improves all of the problems noted above. Here is how.

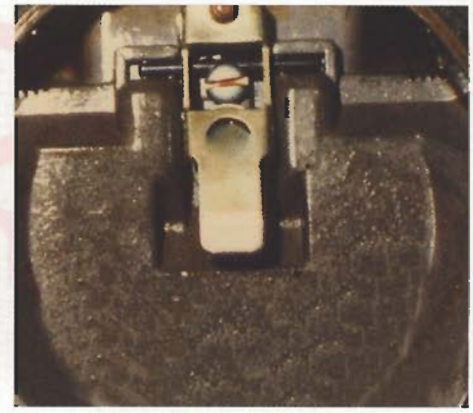
First, CGX has combustion improving compounds. These compounds minimize pre-ignition in the combustion chamber prior to spark plug ignition of the fuel mixture. They also provide a more even burn upon ignition, increasing the efficiency of fuel combustion. Results include: higher pressures in the combustion chamber, increased power, more efficient fuel economy, and a very significant reduction in carbon monoxide, nitrous oxide and unburned hydrocarbons in the exhaust gases.

Secondly, LPG often causes a buildup of long chain hydrocarbons in the engines vaporizer and carburetor systems. As these buildups increase, the fuel does not vaporize effectively. The emulsifiers in CGX-4 slowly soften and remove these buildups to prevent their interference with engine operation. The oil soluble substance holds insoluble foreign matter in suspension so the heavy-ends are carried through the vaporizers and carburetors and are burned during the combustion process.

Thirdly, a surfactant takes care of



Long chain hydrocarbon buildup in a vaporizer chamber, hinders proper fuel and air blending. The normal result of running untreated LPG.



A vaporizer chamber having been run with CGX-4 LPG remains free of long chain hydrocarbon buildup.The result, smoother more efficient fuel and air blending.

free water found in most LPG. The surfactant accomplishes this by dispersing the water and other liquid impurities into colloidal size particles in the LP gas. The small droplets of water remaining are dispersed in the LPG, for the emulsifier is a polar compound with one end of the molecule having an affinity for water and the other having an affinity for the L.P. gas. The emulsifier retains this suspension through to final ignition after which it is expelled with the exhaust gas.

Finally, the upper cylinder lubricant provides lubrication to the moving parts in the top of the combustion chamber that are not lubricated by crankcase oil, This top-oil is not completely vaporized in the combustion chamber because of its 425° F. (218°C) flashpoint. This results in a light film coating to the cylinder walls, rings and valves. The added lubrication increases engine efficiency, reduces operating temperatures and prolongs engine life. Another noted benefit is extended life to all diaphragms, gaskets and rubber parts due to the permeation and conditioning effects of the top-oil. Steel tank deterioration can also be delayed due to top-oil penetration into the wall surfaces.

Many companies are combining a regular program of maintenance and CGX-4 Premium Propane to reduce CO and other emissions.

For case histories about these firms and the results of their use of this premium fuel please contact us, or see accompanying literature for documented results

How you can adopt CGX-4 Premium Propane.

There are many ways to implement a program using CGX-4 Premium Propane Fuel.
The amount of LPG your fleet utilizes and distribution of LPG within your area are variables that must be addressed.

Please call us for more information about designing an economical program to fit your needs.

Manufactured by

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