HOW DOES FTC DECARBONIZER WORK?

FTC Decarbonizer is an organo-metallic material that oxidizes (burns) engine carbon deposits. When added to gasoline or diesel fuel, FTC Decarbonizer modifies the chemistry of the fuel combustion process, to accelerate the fuel burn (explosion) and oxidize existing combustion chamber and exhaust system carbon. This action is harmless to engine components and is a progressive action working first on the easier softer deposits and eventually on stubborn hard carbon that would normally have to be chiselled off at overhaul.

WHY DO ENGINE CARBON DEPOSITS FORM ?

Diesel and gasoline (petrol) fuels including bio-diesel are a mixture of hydrocarbons. Most hydrocarbon fuels typically contain some fractions that are more difficult to burn. The slower burning fractions of diesel are associated with black smoke and carbon deposit formation. In other words, the majority of engine carbon deposits are derived from the fuel source and are caused by incomplete combustion.
Normally a diesel engine becomes glazed when combustion efficiency is poor due to excessive idling, or prolonged light load operation.

FTC Decarbonizer increases combustion efficiency even at light load and idle. It will burn away the cylinder glaze, which is essentially carbon packed into the cylinder cross hatch, preventing proper oil control. To initially deglaze engines we recommend where possible, to operate the engine at heavy loads while using FTC Decarbonizer, as this will promote a faster deglazing action.

Proper oil control will not be restored to an engine where the cylinder cross-hatch has been removed due to wear!

FTC Decarbonizer may improve cetane ratings, but the principal mechanism of the catalyst is to force carbon monoxide gases formed during combustion to convert to carbon dioxide more rapidly than otherwise. This catalytic action releases the available energy of the fuel in a shorter time and improves the power delivered by each combustion cycle, often by 6% and more.

FTC Decarbonizer also reduces the tendency of the combustion process to saturate with carbon monoxide. Carbon monoxide saturation reduces fuel burn, which leads to the formation of abrasive soot and smoke particles.

WEAR: Abrasive soot particle size can vary considerably. The most dramatic reduction in soot size comes from improving fuel combustion efficiency. Independent studies show that FTC Decarbonizer reduces the soot diameter from 1.0 micron down to 0.2 microns... that's 1/5 the original size! 1.0 micron particles can act like grinding paste, whereas 0.2 micron particles seldom bridge the oil film between moving parts, thus reducing wear.

A reduction in the diameter of abrasive soot particles is the most important factor in reducing engine wear. Reductions in engine wear of 20-25% are not unusual with FTC Decarbonizer used in the diesel fuel.

FTC Decarbonizer use is supported by laboratory analysis of used engine oil.

For operations experiencing wear problems, it is necessary to first determine what is the likely cause. However, in the majority of cases, optimizing the combustion efficiency by use of FTC Decarbonizer will produce a measurable reduction in wear.

EXPLANATION OF FUEL COMBUSTION CHEMISTRY:

High performance diesel fuel produced by a straight-run, narrow-cut distillation process, is a thing of the past. Today's diesel is not a true "distillate" because it contains large amounts of catalytically cracked components (cycle oil) and higher boiling point components. The performance value of diesel fuel can be increased chemically by 6-10% in high speed diesel engines by introducing FTC Decarbonizer.

1. Hydrocarbon fuels release energy in an explosive series of oxidation steps by which the original hydrocarbon molecules are broken down giving up energy in each step.

2. This oxidation process desires to eventually convert all the hydrogen atoms in a hydrocarbon molecule into water (H_2O) and all the carbon atoms to carbon dioxide (CO_2).

3. In a combustion chamber the oxidation reactions firstly proceed at explosive rates until all the hydrocarbons are converted to hydroxyl ions (OH^-), water (H_2O) and carbon monoxide (CO).

4. The oxidation of carbon monoxide to carbon dioxide (CO to CO_2) is a much slower less explosive reaction than the earlier stages of combustion. It requires hydroxyl ions (OH^-) in the process to form intermediate compounds prior to the formation of the CO_2 end product. CO will not even burn in oxygen (O_2) without the presence of OH^- ions.

5. In the presence of FTC Decarbonizer and oxygen (O_2), CO at elevated temperatures converts rapidly to CO_2. The affinity CO has for FTC Decarbonizer is about 1000 times stronger than it has for O_2. Thus in the combustion chamber, the FTC Decarbonizer reacts violently with CO to form an unstable intermediate compound, probably a pentacarbonyl, which at the high temperatures reacts rapidly with O_2 to form CO_2 releasing the FTC Decarbonizer to repeat its catalytic role.

6. The violent FTC Decarbonizer catalytic reaction produces more power and reduces the soot forming process, which otherwise occurs when CO saturates the combustion chamber before the completion of fuel burning.

7. It is worth noting that as diesel fuels are produced with increased un-hydrogenated "cracked" bottoms, the ratio of C to H increases. This means that engines must deal with increased proportions of CO and reduced available OH^- causing more smoke and soot.

Under these circumstances FTC Decarbonizer is of greater benefit, as is the case at high altitudes where oxygen levels are lower.

224 S Main Street, #442, Springville, Utah, 84663, USA