HOW FEROX WORKS

First, **combustion is a chemical oxidation reaction**, in which a **large amount of energy is generally released**, in all combustion there is a burning element (fuel) and an element that produces combustion (oxidizing), usually gaseous oxygen.

The most common types of fuels are hydrocarbons, in a **complete reaction** all the elements that make up the fuel are completely oxidized, forming products such as carbon dioxide and water (**CO_2 and H_20**) that are the desirable compounds, sulfur oxides may occasionally appear SO_x (if the fuel contains sulfur) and nitrogen oxides (NOx) depending on the temperature, amount of oxygen and pressure. (For example, **the complete and ideal gasoline reaction** would be: **$C_8H_{18} + 25O_2$ --------> $16CO_2 + 18H_2O$ + Energy)**

In **incomplete combustion**, the oxidizer and the fuel are not in the proper proportion, other compounds exist or the ideal conditions do not result, resulting in undesirable compounds such as **carbon monoxide (CO) and coal** forming deposits (carbon and aromatic compounds in a state highly resistant to combustion).

These deposits are the source of many engine problems, such as excessive fuel consumption, excessive harmful exhaust emissions and high maintenance costs. Problems in fuel and incomplete combustion eventually cause complete engine failure

The formation of deposits begins with spherical molecules called primary particles and branched aromatic chains, these are produced in the early stages of combustion. The various branched compounds are attracted to the primary particles, which rotate at extremely high velocity levels. When a branch is attached to a primary particle, the entire structure of the chain is rapidly wrapped around the primary particle and forms a secondary particle. These secondary particles agglomerate and form tertiary particles. This can occur when several primary particles join the same chain in different branches, and then simultaneously become a secondary and tertiary particle, since they wrap the chain. The tertiary particles that agglomerate on the surface and will re-coat to form quaternary particles. The coated quaternary particles form deposits. The surface structures of the chain of the deposits leave exposed branches. **It is in these exposed branches is where the FEROX technology begins to break and destroy the deposits, modifying its surface.**

The deposits are acidic and attract the oxide of the FEROX catalyst which is basic. When the two combines, an exothermic reaction occurs that releases a lot of energy, generating carbon dioxide and water (CO_2 y H_2O). The remaining compounds of this reaction have a low activation energy, easily decompose at high temperatures releasing a CO2 molecule and the catalyst oxide. This process will be repeated and with time, the deposits are eliminated converting them into CO_2 and water

FEROX inhibits the formation of new deposits in the same way that destroys existing deposits. Interacts with the ends of the aromatic chains and the binding sites in the primary particles. This interaction prevents the primary particles from being wrapped in complete chains, blocking or destroying the binding sites and breaking the chains.

This interference stops the process of agglomeration of deposits in the agglomeration stage of primary and secondary particles. This results in much lighter and smaller particles that do not adhere to each other and oxidize more easily. The result of this interference is a decrease in particulate emissions, an increase in energy production and a higher production of CO_2 and water, which are the desirable end products of the combustion cycle.

EFFECTS OF RENNSLI ON THE COMBUSTION PROCESS

RENNSLI technology interacts with the longer and heavier chains, the temperature and speed that determines the combustion resistance of elements in the fuel and existing carbon deposits.

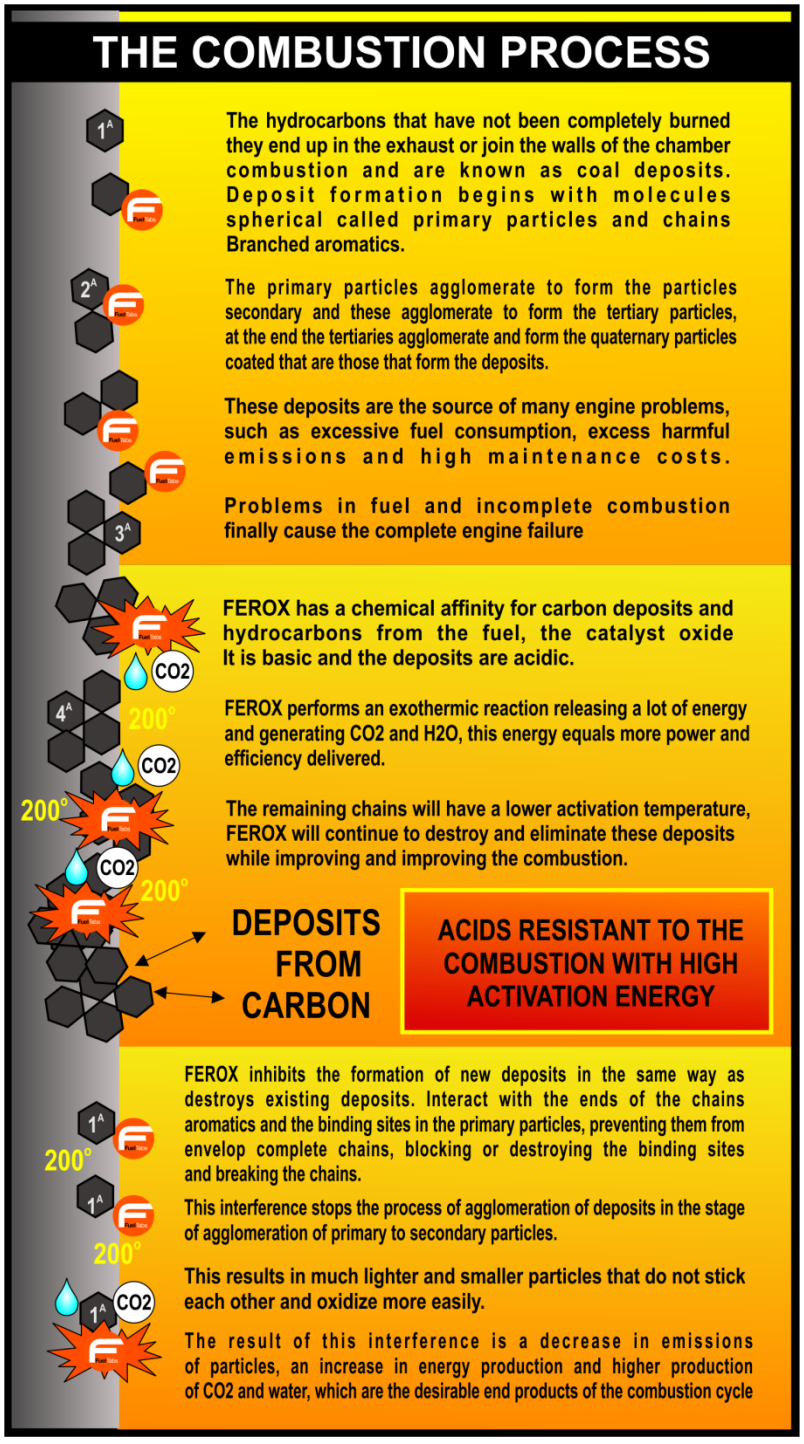
This interaction allows these deposits to break and burn. The "molecular atomization" of the fuel, the destruction and burning of the surface of the deposits produce the following positive effects in the combustion process:

- **Fuller and standardized combustion**
- **Optimal use of available oxygen**
- **Reduce the requirements of excess air**
- **Elimination of existing deposits**
- **Better heat transfer**
- **Lower fuel consumption**
- **Greater efficiency in general**

EFFECTS ON THE COMBUSTION BYPRODUCTS

RENNSLI improves the combustion process, which leads to the following positive effects in combustion byproducts:

Inhibition	- of the new formation of deposits
Elimination	- of old coal deposits
Prevention	- of the new formation of deposits
Decrease	- of fuel consumption
	- of particles, smoke and soot
	- of NO_X, SO_X, CO y VOC emissions
	- of carbon content in the ash
	- dirt and corrosion due to decrease the activity of V_2O_5
	- cold corrosion due to the decreased SO_3 formation



These effects lead to a significant increase in energy production by burning a larger portion of the available carbon in the fuel, and a significant reduction in corrosion due to the much lower formation of SO_3, which increases the amount of SO_2 than harmlessly It is captured in ashes.