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Fuel Energizer: The Magnetizer (A Concept of Liquid Engineering)

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Abstract:

The Fuel Energizer has been tested and developed for the Indian Market. The fact that taken into account a vehicle's performance is often affected by the level of adulteration in the fuel used. The Fuel Energizer has been adapted and developed with Indian conditions in mind and it is the first such device in India that can make this claim. "FUEL ENERGIZER" helps to reduce fuel consumption up to 30%. When fuel flows through powerful magnetic field created by Magnetizer inter molecular forces is considerably reduced or depressed hence oil particles are finely divided. This has the effect of ensuring that fuel actively interlocks with oxygen producing a more complete burn in the combustion chamber. Hence by establishing correct fuel burning parameters through proper magnetic means (Fuel Energizer) we can assume that an internal combustion engine is getting maximum energy per litre as well as environment with lowest possible level toxic. This result in higher engine output, better fuel economy and a reduction in the exhaust emission of hydrocarbons, carbon monoxide and oxides of nitrogen through muffler. The magnetic ionization of the fuel also helps to dissolve the carbon build-up in carburetor jets, fuel injectors and combustion chambers and thus keeping the engine in a cleaner condition.

Key words: *BTU, Ortho, Dipole, Para, Diamagnetic, Paramagnetic, light-off temperature etc.*

1.Introduction

Fossil fuels leave a natural deposit of carbon content that choke carburetor, fuel injector, leading to decrease the mileage and wastage of fuel. Most fuels for internal combustion engine are liquid, fuels do not combust until they are vaporized and mixed with air. Most emission motor vehicle consists of unburned hydrocarbons (HC), carbon monoxide (CO) and oxides of nitrogen (NO_x). The same is true of home heating units where improper combustion wasted fuel and cost, money in poor efficiency and repairs due to build-up. Unburned hydrocarbon and oxides of nitrogen react in the atmosphere and create smog. Smog is prime cause of eye and throat irritation, noxious smell, plat damage and decreased visibility. Oxides of nitrogen are also toxic. Generally fuels for internal combustion engine are compound of molecules. Each molecule consists of a number of atoms made up of number of nucleus and electrons. Magnetic movements already exist in their molecules and therefore, in them already have positive and negative electrical charges. However these molecules have not been realigned, the fuel is not actively interlocked with oxygen during combustion, the fuel molecule or hydrocarbon chains must be ionized and realigned. The ionization and realignment is achieved through the application of magnetic field created by 'Magnetizer'. The ionization fuel also helps to dissolve the carbon build-up in carburetor, jets, fuel injector and combustion chamber, thereby keeping the engines clear condition.

1.1.Key Features Of Fuel Energizer

- Increase fuel economy per liter
- Higher initial torque.
- Reduced knocking & detonation.
- Decrease smoke emission.
- Faster A/C cooling.
- No fuel wastage.
- Smooth running & long term maintenance free engine.

2.The Hydrocarbon Fuel

Simplest of hydrocarbons, methane, (CH_4) is the major (90%) constituent of natural gas (fuel) and an important source of hydrogen. From the energy point of view, the greatest amount of releasable energy lies in the hydrogen atom. Why? In octane (C_8H_{18}) the

carbon content of the molecule is 84.2%. On combustion the carbon portion of the molecule will generate 12,244 BTU (per pound of carbon) and on the other hand, the hydrogen, which comprises only 15.8% of the molecular weight, will generate an amazing 9,801 BTU of heat per pound of hydrogen. Hydrogen, the lightest and most basic element known to man, is the major constituent of hydrocarbon fuels besides carbon and smaller amount of sulphur and inert gases & dipole formation is shown in figure 1. It has one positive charge (proton) and one negative charge (electron), i.e. it possesses a dipole moment. It can be either diamagnetic or paramagnetic (weaker or stronger response to the magnetic flux) depending on the relative orientation of its nucleus spins. Even though it is the simplest of all elements, it occurs in two distinct isomeric varieties (forms) - Para and Ortho.

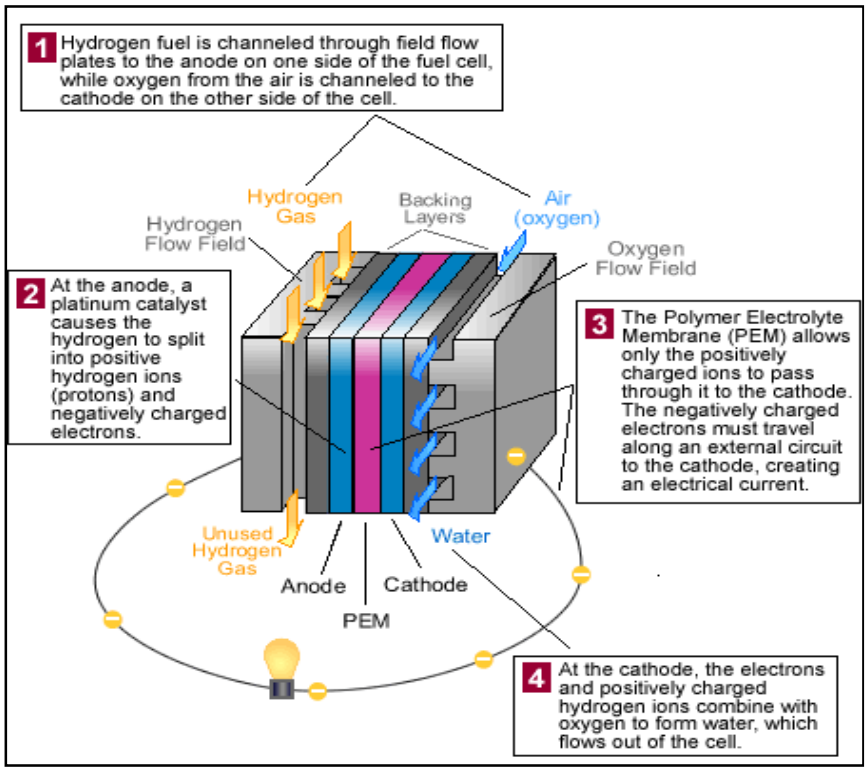

Figure 1: Relative Orientation of Dipole & its Nucleus

It is characterized by the different opposite nucleus spins The liquid hydrogen fuel that is used to power the space shuttle or rockets is stored, for safety reasons, in the less energetic, less volatile, less reactive para-hydrogen form. During the start of the shuttle the ortho-hydrogen form is beneficial since it allows intensifying the combustion

processes. To secure conversion of para to ortho state, it is necessary to change the energy of interaction between the spin states of the H_2 molecule.

3.Para & Ortho State Of Hydrogen

The principle has been utilized, and the effect has been achieved by the action of the Magnetizer where a strong enough flux fields is developed to substantially change the hydrocarbon molecule from its para state to the higher energized ortho state.

- In the para H_2 molecule, which occupies the even rotation levels (quantum number), the spin state of one atom relative to another is in the opposite direction ("counterclockwise", "anti-parallel", "one up & one down"), rendering it diamagnetic.
- In the ortho molecule, which occupies the odd rotational levels, the spins are parallel ("clockwise", "coincident", "both up"), with the same orientation for the two atoms; therefore, is paramagnetic and a catalyst for many reactions. It has one positive charge (proton) and one negative charge (electron), i.e. it possesses a dipole moment. It can be either diamagnetic or paramagnetic (weaker or stronger response to the magnetic flux) depending on the relative orientation of its nucleus spins. The interesting fact is that the ortho-hydrogen is more reactive than its para-hydrogen counterpart. The spin effect of the fuel molecules can be ascertained optically, based on refraction of light rays passing through liquid fuel as had been demonstrated by scientists while using infrared cameras installed, e.g. in metallurgical ovens where the Magnetizer's had been effectively working. Furthermore, the conversion of hydrogen into ortho H_2 has been found highly advantageous in many technologies, especially those where hydrogen is used. Hydrocarbons have basically a "cage-like" structure as shown in figure 2.

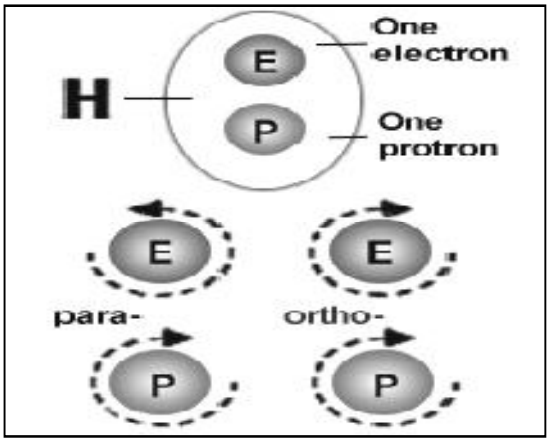

Figure 2: Atomic Orientation

Oxidizing of inner carbon atoms in HC during the combustion process is hindered. Furthermore, they bind into larger groups of pseudo compounds. Such groups form clusters. The access of oxygen in the right quantity to the interior of the groups of molecules is hindered. (It has nothing to do with incoming air from the manifold in the fuel mixture when even though there may be excess of it, this will not provide the required hydrocarbon-oxygen binding.) In order to combust fuel, proper quantity of oxygen from air is necessary for it to oxidize the combustible agents. The peculiar problem in designing engines for air pollution is that in order to fully burn all the hydrocarbons in the combustion chamber, operating temperatures of the cylinders have had to be increased.

4.Working Of Magnetizer

When hydrocarbon fuel (CH_4) is combusted, the firstly the oxidation of hydrogen atoms will have electrons in their outer shell will takes place. Further carbon atoms are subsequently burned ($CH_4 + 2O_2 = CO_2 + 2H_2O$). Since it takes less time to oxidize hydrogen atoms in a high-speed internal combustion process, in normal conditions some of the carbon will be only partially oxidized; this is responsible for the incomplete combustion. Oxygen combines with hydrogen readily; however, the carbon-oxygen reaction is far less energetic. The optimum combustion efficiency (performance) obtained from the Magnetizer application on fuel is first indicated by the amount of increase in carbon dioxide (CO_2) produced, which has been validated by state emissions control devices. The schematic diagram of Fuel Energizer is shown in figure 3.

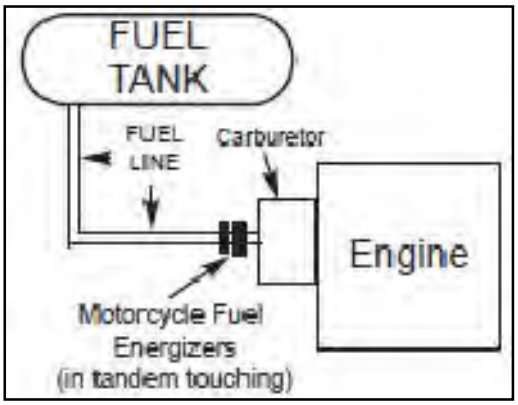

Figure 3: Schematic Diagram of Fuel Energizer

The fuel flows through magnetic flow line & hydrocarbons change their orientation and molecules of hydrocarbon change their configuration. This has the effect of ensuring that the fuel actively interlocks with the oxygen, producing a more complete burn in the combustion chamber. The result is higher engine output, better fuel economy and a reduction in the hydrocarbons, carbon monoxide and oxides of nitrogen that are emitted through the exhaust. The ionization of the fuel also helps to dissolve the carbon build-up in carburetor jets, fuel injectors and combustion chambers, thereby keeping the engine in a cleaner condition. The working of sending unit is located in the fuel tank of the car shown in figure 4. It consists of a float, usually made of foam, connected to a thin**,** metal rod. The end of the rod is mounted to a variable resistor. A resistor is an electrical device that resists the flow of electricity. The more will be the resistance the less will be the current flow. In a fuel tank, the variable resistor consists of a strip of resistive material connected on one side to the ground. A wiper connected to the gauge slides along this strip of material, conducting the current from the gauge to the resistor. If the wiper is close to the grounded side of the strip, there is less resistive material in the path of the current, so the resistance is small. If the wiper is at the other end of the strip, there is more resistive material in the current's path, so the resistance is large.

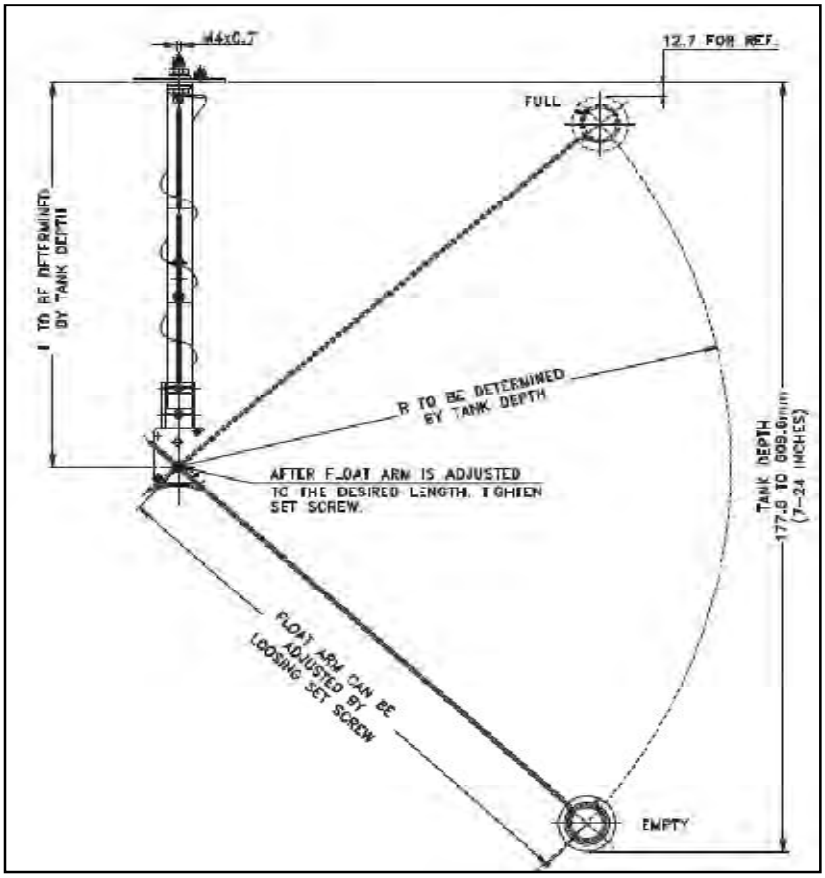

Figure 4: Fuel Level Sender

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The Magnetizer's extremely strong magnetic field, with sufficient flux density to have the required affect on fluid passing through it, substantially changes the isomeric form of the hydrocarbon atom from its Para-hydrogen state to the higher energized, more volatile, ortho state, thus attracting additional oxygen. Fuel structure and properties, such as e.g. electrical conductivity, density, viscosity, or light extinction are changed; its macrostructure beneficially homogenized we attach the Magnetizer unit to the fuel line of an automobile (before carburetor, in tandem series, placed 1/4" apart, or in Fuel Injection Systems - on fuel line to the injectors + before the injection pump; make sure it is not in contact with the engine's metal parts), one can see an immediate (approx. after 5 min., 4-5 miles/6-8 kms upon start-up) drop in unburned hydrocarbons and carbon monoxide due to the magnetic conditioning of the fuel which makes it more reactive. Upon the Magnetizer installation (5-10 minutes thereafter) engine will undergo the so-called "Stabilization Period", i.e. the time of the gradual disappearance of prior carbon varnish sediments and the total magnetic saturation of all ferromagnetic metal parts of the feeding system between the installed energizer and the combustion chamber in order

to fully activate fuel. The initial saturation lasts about a week while the complete engine cleaning from the carbon residue lasts about 30 to 70 days (old engines).

5.Comparative Study

	Magnetizer	**Catalytic Converter**
Warranty	Lifetime	None
Installation	5 minutes	45 minutes to 1.5 hours
Product Life	Never wears out	20 to 50,00 miles depending on the vehicle it is fitted on
Vehicle's Power	Get Improvement	Less Power
Vehicle's Economy	Gets Improvement	Less economy
Customer Opinion	love the benefits	Poor acceptance due to loss
Air Pump Required	No	Yes
Light-off Temperature Required	No	Yes

Table 1: Magnetizer Vs Catalytic Converter

6.Result & Discussion

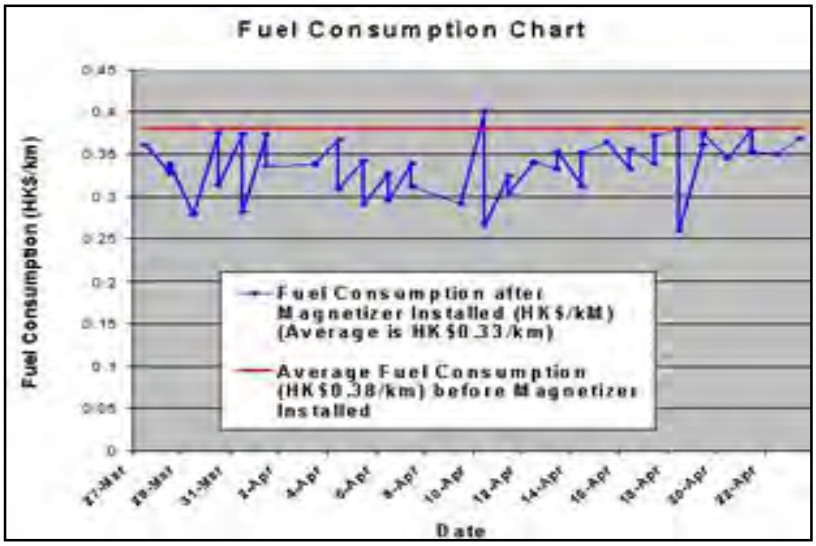
One of the chief reasons for the Magnetizer to have possibility to lower the NO_x level, as reported elsewhere, is due to the low reactivity of nitrogen gas. If we can bind up all the available oxygen with the hydrocarbon fuel, there simply will be no oxygen left over to form the unwanted nitrogen compounds. The emission control of various vehicles after installing magnetizer is as shown in Table 2. The test is carried out over the period of 7 weeks & over the mileage of 9,653 Km.

Make Model	HC Before	HC After	% HC Decreas	CO Before	CO After	% CO Decreas
Maruti, India (vehicle)	100	60	40	2.6	1.6	30
Hyundai 4 Cylinder	18	14	22	5.6	0.02	99
Suzuki 4 Cylinder	170	100	41	1.6	0.15	91
Jeep	38	7	81	0.16	0.05	68

Table 2: Emission tested by using Magnetizer fuel Energizer

(Prescribed Government Emission Norms: CO max. 1% and HC max. 300 ppm)

It appears that magnetic treatment is the simplest means of achieving this feat. There is very little oxygen left to produce any additional toxic compounds with nitrogen. The drop of HC & CO emissions is easily proven by comparative gas flue analysis & Opacimeter Emissions Tests. The stoichiometric tests indicate reduction in hydrocarbon HC (unburned fuel) approx. 75% - up to 92% and carbon monoxide (CO) up to 99.9%, due to the use of Magnetizer.



(The saving is 13% of the Total Fuel)

Figure 5: Comparison: Fuel Consumption after Magnetizer installed with Average fuel Consumption

7.Conclusion

After having stoichiometric fuel burning parameters through proper magnetic lines of forces the internal combustion engine is getting maximum energy per litre as well as environment with lowest possible level toxic emission. HC goes down, mileage goes up. This result in scientifically measurable emission reduction/combustion efficiency ratio

and an average increase in mileage of 15% - 25%. Since the Fuel Energizer saves fuel by increasing combustion efficiency, less CO is being emitted; thereby, less fuel is being used.

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