

How Does Hydrogen/ Oxygen Work?

I get asked this question a lot. And yet, this is the most important point to understand if you want to make your car more fuel efficient using this technology. The underlying physics and chemistry/ chemical thermodynamics of this subject can be very complicated. But fortunately the basic concepts are very few and extremely simple.

Misconception

Many people think that we are generating Hydrogen so we can burn it, and that burning this HYDROGEN adds so much power, that we get better fuel mileage. In actual fact, this is not the case. To prove this point, lets this a step further. There are 3 energy conversions at work here:

- Mechanical to electrical (the alternator generates electrical energy)
- Electrical to chemical (the cell makes hydrogen from electro-chemical energy)
- Chemical to mechanical (the Hydrogen burns in the engine to make mechanical energy)

The problem is that there are 3 energy conversions occurring here, and each one loses some energy – in agreement with the third law of chemical thermodynamics. It is a basic fundamental of physics that in any conversion of energy from one form to another, there is going to be some loss.

There is no such thing as 100% efficiency. In some of these conversions there is quite a bit of loss. So if this is all there was to the picture, then the system would actually lose mileage.

I've seen this mistaken idea expressed in magazines and on television news coverage to prove that Hydrogen on demand doesn't work.

What Really Is Going On?

Well, if we aren't trying to burn the HYDROGEN to get our fuel economy, then how does it work?

In actual fact, HYDROGEN, when added to the air/fuel mixture going into the engine, causes that petroleum fuel to burn more completely and thereby releasing more of the energy of the fuel that would otherwise be wasted. The way this is done is by speeding up the burning process in the cylinder. Scientists say that it considerably increases the flame speed of the petroleum mixture. And it is this fact that sums up the primary way that HYDROGEN improves fuel mileage.

When the flame speed of the fuel mixture is increased, the fuel is burned completely during the power stroke and closer to top dead centre. Less fuel is being burned after the power stroke, which is the exhaust stroke, and which actually works against the turning of the engine.

Further, less unburned fuel is being expelled from the engine as waste and pollutants. A relatively small amount of HYDROGEN will have a dramatic impact on the amount of power

a given amount of gasoline will produce. This will then increase fuel mileage dramatically, and cut out a large fraction of the amount of harmful emissions the engine produces.

Summary

There is a remarkable simplicity to this technology. If you add HYDROGEN to your engine, you will get an increase in combustion efficiency. That is just science, and it works as certainly as turning on a light switch. In some cases with modern cars and pickup trucks, we need to make some adjustments to the computer so it will allow these savings to take place. But with most commercial large engine systems, such as truck engines, gensets, marine engines, etc, no other handling is needed to get these remarkable fuel savings. To purchase one of these systems, please email glknox11@live.com or gavan@hydrogenfuelsystems.com.au