How Much HHO Do I Need For My Vehicle????

First of all, let me start out by making a Factual Statement: Nearly all users of HHO systems are using Too Much HHO.

I frequently get asked about how much HHO will yield the best mileage gains for a particular car or truck. Years ago, we used the following formula: **1/4 liter per minute for each liter of engine size.** For example, if you have a 2 liter engine, you need .5 LPM of HHO. In practice this is a pretty good formula to use, because most people measure HHO using ball meters or pop bottle test. These tests are not particularly accurate, and tend to read higher flow rates than actual. So with this in mind, the formula will work pretty well.

We have since found that the correct amount of HHO to use is closer to **1/8 of a liter per minute per liter of engine size.** But the measurement of HHO flow must be made with more precise equipment calibrated for HHO. We have a DHI Coriolis Mass Flow meter. It costs $5,500 retail, and has been calibrated for HHO specifically . It compensates the flow reading for 72 degrees Fahrenheit, no matter what the actual gas temperature is, as well as compensation for barometric pressure. When we compare the readings from the DHI, to a ball meter, we find that the ball meter shows almost double the flow rate as the DHI. Pop bottle testing will also show flow rates all over the place depending on it's design characteristics, temperature, barometric pressure, and a host of other factors.

Now while it's true that some cells are much more efficient than others, the efficiency difference can be and will be a major factor on your end results. In some cases, manufacturers will report wildly high flow rates. They probably aren't lying about what they read on their flow meters. However, in these cases you will find that they are over-driving their cells and making very hot output gas that includes a lot of steam. Just the fact of being hot will fool the flow meter, and can double the "flow rate". But this isn't actually more HHO. Its just a hotter gas which, because its expanded, will show an apparently higher volume. That coupled with the steam makes the gas much less effective at improving mileage than another cell producing 1/4 of the volume, but more HHO per amp. If you **can not** comfortably hold you hand on your cell after it has warmed, then it's a steamer.

So, assuming that the cell isn't being over driven (we call these cells "steamers"), you can actually get pretty close to the correct amount of HHO by the amount of amps you draw. If the cell is drawing about 5 amps, that will work on a 1.5 to 2.0 liter engine. 9 amps will work fine on a 5 Liter engine, and 11-12 amps will work on larger 6 and 7 liter engines. For 15 liter semi trucks, we use 1.25 - 1.5 LPM, and we run at about 19.5 to 19.8 amps to get it. We include an amperage chart with each Black Box Controller showing the correct setting for your vehicle.

In actual practice you should try adjusting your amperage to see which gives you the best mileage gains. There will be a very large variance in cell efficiency. But you will find that the correct amount of HHO will give you the best gain in MPG, and that more HHO will start to reduce that mileage. **Add more and more HHO, and you can end up with lower mileage than when you started.** ***So, by trial and error of many years, many researcher's in the HHO industry have adopted the formulas above. I hope I have helped you in your quest to get the best mileage from your vehicle.***