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ADSORBED NATURAL GAS (ANG): EMERGING FUEL STORAGE SOLUTION.

Here's a quiz to test your green car knowledge. Which is considered the greenest, most environmentally friendly, highway capable car sold by a major manufacturer in the US?

If you thought Toyota Prius you'd be wrong. According to the American Council for an Energy Efficient Economy (ACEEE), as well as the US Environmental Protection Agency (EPA), it's actually Honda's Civic GX NGV, or Natural Gas Vehicle. The EPA has given the car that distinction since 1998 when it was first introduced, at that time to fleets only. (The ACEEE has done the same but only since 2000 when it was first offered to consumers.)

Why the Civic and not the Prius? Greenness is not just about CO2 emissions and fuel economy, it's also about smog-producing pollutants. As a fuel, natural gas just burns cleaner than gasoline. (Which is why you can boil your potatoes on your gas-fired kitchen range without dying.)

In cars and trucks, noxious pollutants from natural gas are 60-90 percent less than petrol. And there is a greenhouse gas emission benefit as well, natural gas has 30-40 percent less carbon dioxide in its exhaust stream.

So between low smog-producing pollutants and low greenhouse gas emissions, natural gas used in vehicles, mostly in its compressed form - CNG (compressed natural gas) - is pretty green stuff.

If it's so wonderful, why hasn't natural gas taken off as a green fuel? For a time, along with propane (aka LPG), it was the darling of the green car community. Then hybrids came along giving better fuel economy than natural gas.

Further, at least for consumers, there are other concerns. Not everyone is enthusiastic about filling a vehicle with pressurized gas which requires slightly more expertise to pump safely than gasoline. From an engineering standpoint, too, there are challenges. The robustly-built pressurized cylinders are hard to squeeze into the confines of an automobile body, There's a physical limit as how many can be squeezed into the trunk of car, like the Civic.

And there are cost, weight and safety considerations as well for those tanks which hold the gas under high pressure. The list price of a Civic GX NGV is about two thousand more than the Civic hybrid which, in part, may reflect the cost of the CNG storage tanks.

Now there's an emerging storage technology that should make natural gas aficionados perk up. It's called Adsorbed Natural Gas (ANG), and it's surprising simple.

It goes something like this. If you fill a standard high pressure CNG cylinder with nanoporous material such as activated charcoal (the same stuff used in fish tank filters) the cylinder will hold MORE natural gas at high pressure than a tank would hold without being filled with the material.

Or, in more interesting and game-changing scenarios, the standard high pressure tank can hold the SAME amount of natural gas at LESS pressure, making filling the tank much easier, or ANG tanks can be free-shape containers since the pressures are a lot less and the cylindrical shape is not necessary.

To recap the ANG technology, with nanoporous material (that fish tank activated charcoal) more natural gas can be stored at high pressure, the same amount stored at less pressure, and or tanks can be designed with a free form shape.

It's the last part of story that should perk up ears like a dog listening to a strange noise. Less pressure for adequate storage means high pressure cylinders are no longer needed. A lightly pressurized natural gas tank can look like just about anything and be fitted into the same location as a standard gasoline tank in a car. Tanks can be bigger, have greater volume and hold more gas, thus giving more driving range. Further, the low pressure tanks, being easier to fill make fueling infrastructure less costly. (High pressure pumps are expensive.)

One company working with the technology is Energtek of Valley Stream New York. That company has announced it is working with the Department of Energy of the Republic of the Philippines, along with the Philippines National Oil Company Exploration Corporation, to build an ANG three-wheeler in the hopes of commercializing the technology for two and three wheeled vehicles throughout Asia to help clean the air.

There's more to the simple technology than just better tanks in cars. It can also be used to store natural gas at filling stations reducing the cost of these facilities.

Dreaming a bit, too; fuel cell vehicles could use ANG technology to store natural gas, not hydrogen. Some think that fueling a fuel cell vehicle with natural gas reformed on board into hydrogen would be easier than storing hydrogen itself. If ANG made it simpler, easier, and cheaper to store natural gas then it would also help move fuel cell vehicles forward.

A few other good points about natural gas. There's more of it worldwide than oil. The US produces about 87 percent of its own natural gas. Much of the world's natural gas is flared off and wasted. Further, the main component of natural gas - methane - is being made all the time. Check your local landfill site, sewage treatment plant, or the septic tank in your yard for sources. And while natural gas filling stations are rare, Honda offers its Phill home refueling station.

There's a downside to natural gas, of course. If we suddenly started using it in cars and trucks on a wide scale the demand would increase, along with imports. But it is feasible that the greater efficiency of fuel cells would lessen that demand, at least for a while.

Still, there's lots of natural gas on the planet, we're making more all the time, and now there may be a really simple and cheap way to store it.

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