

Fuel-injection System That Delivers 64 Miles Per Gallon

March 10 2010, by John Messina



The new fuel-injection system is placed into this sports car which weighs approximately the same as the Toyota Prius hybrid and has similar aerodynamics. The new fuel injection system gets better gas mileage than the Prius hybrid. Credit: Transonic Combustion

(PhysOrg.com) -- The best hybrid cars of today can only deliver about 48 miles per gallon. By using this newly developed fuel injection system a test vehicle was measured at achieving 64 miles per gallon in highway driving. This is approximately a 50% increase in fuel efficiency in a gasoline engine.

The fuel injection system was developed by a [startup company](#) Transonic Combustion and their goal is to increase [fuel efficiency](#) of existing gasoline engines. The cost for this ultra-efficient system would be as much as high-end fuel injection systems currently on the market today.

By heating and pressurizing gasoline before injecting it into the [combustion chamber](#) places it into a supercritical state that allows for very fast and clean combustion. This in turn decreases the amount of fuel needed to run the vehicle. The gasoline is also treated with a catalyst to further enhance combustion.

What makes Transonic's fuel injection system different from a direct injection is that it uses supercritical fluids and requires no spark to ignite the fuel. The supercritical fluid mixes quickly with air when it's injected into the cylinder. The heat and pressure, in the cylinder, alone is enough to cause the fuel to combust without a spark.

Ignition timing happens just when the piston reaches the optimal point, so that the maximum amount of energy is converted into mechanical movement of the engine.

Proprietary software has also been developed by Transonic Combustion that allows the system to adjust the fuel injection precisely depending on engine load.

Transonic Combustion is currently testing their new [fuel injection](#) system with three automakers. One key concern is the life of the engine when it's subject to high pressures and temperatures. The company plans to manufacture the system themselves and not license the technology. Transonic Combustion plans to build its first factory in 2013, and place the technology into production cars by 2014.

More information: Transonic Combustion: www.tscombustion.com/

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Citation: Fuel-injection System That Delivers 64 Miles Per Gallon (2010, March 10) retrieved 17

April 2024 from <https://phys.org/news/2010-03-fuel-injection-miles-gallon.html>

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