BETTER TIME FOR BI-FUEL?

Emergence of bi-fuel conversions coincides with growing natural gas fueling network

Venchurs Vehicle Systems has developed bi-fuel and dedicated compressed natural gas (CNG) versions of Ford F-250 and F-350 pickup trucks.

BY BILL PAIGE

Operating a vehicle on compressed natural gas (CNG) is not a new concept, but there has been an emergence of new and updated technology, highlighted by a number of bi-fuel pickup trucks that have hit the market this year. These include the Ford F-250 and F-350 conversions by Venchurs Vehicle Systems and Westport LD, the Chevrolet Silverado/GMC Sierra 2500 HD, and the Ram 2500 HD from Chrysler.

CNG has gained much attention lately as large gas formations (shales) have been discovered in North America while at the same time, unrest in the oil-producing regions has driven gasoline prices to around the $4 per gal. level. CNG is currently averaging just over $2 for a gallon equivalent.

Estimates are that there is a 100-year supply of natural gas, which does not include advances in exploration and the opportunity to unlock additional sources. Natural gas consumed in the U.S. is 97% domestically produced.

"When you pull natural gas out of the ground you might touch it a little, but you don't have to send it to a refinery," said Terry Karges, vice president of sales and marketing with Venchurs Vehicle Systems, Adrian, Mich. "You bring it in, clean it a bit, and then put it in the tank. The benefits are there, the profit potential exists considering how inexpensive it is."

Bi-fuel systems operate using two separate fuel systems — CNG or gasoline — depending on which is desired at the time. What has spurred the recent interest in bi-fuel systems are recent strides in control systems and engine technology, Karges said.

"These control systems and assorted engine technology have radically evolved over the past 10 or 15 years, completely revolutionizing the way we view bi-fuel systems and control the two different fuels," Karges said. "Suddenly we have the ability to have a seamless switch from gas to CNG or CNG back to gas. You can decide when to switch or the engine decides automatically when one of the fuels runs out.

"The old systems had their issues, but the new engines are controlled so much better and more efficiently. There is only about a 3% difference in power between the CNG and

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General Motors' CNG capable Chevrolet Silverado and GMC Sierra 2500 HD Extended Cab is equipped with the Vortec 6.0 L V8 engine. The trucks are built in Fort Wayne, Ind., then sent to IMPCO Automotive, Union City, Ind., for installation of the bi-fuel system.

gasoline and there are no problems with cold starts, warm starts, or high altitude starts."

Venchurs is a Ford Qualified Vehicle Modifier (QVM) with bi-fuel and CNG dedicated fuel systems for the Ford F-250 and F-350 conversion of the 6.2 L gasoline engines. The combined range of the 21.2 gal. equivalent CNG and gasoline fuel tanks is close to 650 miles, the company said.

Ford OEM warranties are not voided by the conversions and the Venchurs warranty mirrors Ford's. Orders placed through the Ford website are drop shipped to Venchurs and then delivered to the end user through the Ford dealership network. Conversions are performed at the Venchurs facility in Adrian, and vehicles are also supplied through Knapheide Manufacturing, Clinton, Ill., and Midway Truck, Kansas City, Mo.

Venchurs is currently taking orders and has multiple units in pilot programs.

Westport LD (Light Duty) is supplying its Wing Power Systems for Ford F-250 and F-350 trucks. A wholly owned subsidiary of Westport Innovations, Westport LD is a natural gas and liquefied petroleum gas (LPG) engine and fuel system provider for the original equipment manufacturer (OEM) light-duty automotive and industrial market. The company is a Ford Qualified Modifier (QVM) with a bi-fuel power system for the Ford F-250 and F-350 conversions of the 6.2 L gasoline engines, four x two or four x four options.

The standard 18.4 and optional 24 gasoline gallon equivalent (GGE) Type 4 composite CNG fuel tank provide a range of 200 to 350 miles, Westport LD said, and more than 600 miles combined with the gasoline tanks.

The Ford warranty remains intact and the Westport LD warranty will match the Ford warranty. Production is scheduled to begin this month and will ramp up later in the summer. The Wing Power Systems will be installed at the Wing manufacturing facility located adjacent to the Ford Kentucky Truck Plant in Louisville.

General Motors' CNG capable Chevrolet Silverado and GMC Sierra 2500 HD Extended Cab is equipped with the Vortec 6.0 L V8 engine engineered to transition between CNG and gasoline fuel systems. They are available in standard and long box, with either two- or four-wheel drive.

The trucks are being built in Fort Wayne, Ind., then sent to IMPCO Automotive, Union City, Ind., for installation of the bi-fuel system. IMPCO Automotive, a division of IMPCO Technologies, Inc., is a subsidiary of Fuel Systems Solutions, Inc. that serves as the system manufacturer and installer for GM. As such, the entire bi-fuel engine system is covered under warranty.

The combined 17 GGE CNG tank and 36 gal. gasoline tank give the Silverado and Sierra more than a 650 mile range, GM said. Ordering of the bi-fuel Silverado and Sierra began in April.

Chrysler's Ram 2500 pickup is powered by a 5.7 L Hemi V8 engine and incorporates two 4.6 cu. ft. CNG tanks that are the gasoline equivalent of 18.2 gal., along with an 8.0 gal. gasoline fuel tank. The range of the CNG is around 255 miles and the backup supply of gas extends the range to 367 miles, the company said.

While a small amount of gasoline is used during the starting of the engines, the truck runs exclusively on CNG. Once the CNG tanks are emptied the truck will switch automatically to gasoline.

The Ram 2500 CNG system was fully engineered and test by Chrysler Group and will be assembled at its plant in Saltillo, Mexico. The company is accepting fleet orders and estimates delivery of the first vehicles in July.

The bi-fuel vehicles are becoming available at the same time the natural gas fueling infrastructure is becoming more apparent. Close to 2000 public filling stations for CNG exist around the U.S. and are rated based on their delivery pressure. The industry standard for the new systems is to operate at 3600 psi.

"Companies are developing CNG infrastructure around the country," Karges said. "Virtually every major energy company is out there working with people to expand the technology. They see that there is a big opportunity in using the fuel as a transportation fuel rather than just a heating fuel.

"It won't take a terrible amount of infrastructure before it begins to become popular, especially with fleets that have set schedules and can adhere to a select fueling schedule." dp