

Kit Uses Natural Gas With Diesel To Boost Fuel Economy

"I'm getting 52 mpg driving a 2002 F-250 with a Power Stroke diesel engine," says Brian Carpenter, whose engine is equipped with a kit that replaces 50 to 75 percent of the diesel fuel in each piston stroke with CNG (Compressed Natural Gas).

Carpenter says, "The engine runs incredibly smooth, it puts out more power, and fuel economy is about 300 percent better than with straight diesel fuel. If I step on the accelerator while driving 60 miles an hour it will set me right back in the seat."

The kit on Carpenter's truck is marketed by C&E Clean Energy of Sturgis, S. Dak. Carpenter is the "C" in the company name. The kit includes a 10-gal. high pressure CNG storage tank, two regulators and hoses that connect the system to the engine.

C&E's kit introduces CNG into the engine through a fumigation nozzle mounted into the air box ahead of the turbocharger. Installing it requires drilling a small hole in the air pipe between the air filter box and the turbocharger. Two wires that control the gas flow solenoid are connected into the vehicle's electrical system.

Carpenter says the engine has to start and

run on straight diesel because compression heat alone isn't hot enough to ignite natural gas. Once the engine is at operating temperature the CNG supply can be activated and the solenoid automatically controls gas flow. Carpenter says, "It's an incredibly simple system that also lessens the amount of soot going out the exhaust pipe and reduces the contaminants going into the engine oil."

C&E sells two different kits, one for turbocharged engines and one for stationary engines where the supply is pipeline gas. That one works for naturally aspirated or turbo diesels.

CNG supply canisters for pickup trucks are available in different sizes and configurations. Carpenter has a 10-gal. CNG canister that allows him to go about 220 to 250 miles between fills. The diesel gas equivalent of a 10 gal. CNG canister is about 8.5 gal. because CNG has lower BTU/gal. For larger engines, like those on over-the-road diesel tractors, C&E recommends a 44-gal. side-mounted CNG tank. Kits are also available for diesel tractors and combines.

Another application where the kits are proving successful is on stationary engines

used to run irrigation equipment. The kit draws CNG directly from a pipeline and feeds it into the air system through regulators. No storage tanks are required. C&E is teaming up with a natural gas company to promote the kits to irrigation system owners in the spring of 2012.

"Stationary engines run at low rpm's and a constant load, so our kits are a way to improve fuel economy and power efficiency," Carpenter says. Kits cost from \$900 to \$3,040, depending on engine size. The CNG kit for pickups and medium duty trucks is \$1,500 and kits for semi-tractors and farm tractors are \$1,999. CNG storage tanks cost from \$900 to \$10,000 depending on size and composition. Kits are also available for propane, but Carpenter says propane should cost one third less than diesel fuel for the LP kits to be economical.

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Kits for pickups replace 50 to 75 percent of the diesel fuel in each piston stroke with compressed natural gas (CNG).

He Burns Natural Gas In Diesel Tractors

"We have natural gas fumigation systems on a pickup and on our Deere 2-WD and 4-WD diesel tractors, and they work great," says Warsaw, Ohio, farmer Ed Jones. "Burning natural gas with diesel boosts horsepower by about 30 percent, helps the engines run cleaner and saves us money on fuel." They have natural gas wells on their farm so the product is readily available. They capture gas from the line with a compressor that fills tanks on the equipment.

Jones says his 4-WD tractor has two storage tanks that are equivalent to about 25 gal. of diesel fuel. The 2-WD tractor has four tanks mounted on the front of the tractor frame. His truck uses a CNG tank that he hauls in the box. In the fall, he uses that same system on his Deere 7720 Combine.

All of his systems feed natural gas from the canisters through a valve and regulator into the air intake between the air cleaner and the turbocharger. The tractors and truck start on diesel fuel and switch to CNG after

the engine warms up to about 140 degrees. Vacuum created in the air pipe as the engine load increases pulls in the CNG. Jones says it's an economical and trouble-free system.

"In the tractors we usually can run a full day on one fill, depending on the work we're doing. I can really notice the difference in power output on the 4-WD and in the combine when we're using CNG," Jones says.

He's also saving fuel with a CNG system on a 4640. "When that tractor runs at wide open throttle it uses a lot of fuel," Jones says, "even though it's not pulling a full load. We switch it over to CNG for baling and spraying and save a lot on fuel costs."

Jones figures his cost for CNG is only about 50 to 60 cents a gallon because they're compressing gas from their own wells. If we had to buy it from a station it would be considerably more, but still economical," Jones says.

His 2005 Dodge pickup with a Cummins

diesel engine also runs on CNG and Jones is pleased with the results. "I took it on a road trip to Indianapolis and got 54 miles per gallon. I think it's safe to say we're doubling our fuel economy and getting 30 percent more horsepower," Jones says.

A neighbor who hauls grain and lime for Jones is using a CNG system on his diesel semi-tractor and getting 10 to 14 mpg compared to 6.5 to 7 mpg with straight diesel. "We were concerned about engine heat when we first installed these systems," Jones said, "so we put exhaust temperature gauges on to make sure everything was okay. We compared the temperature with plain diesel and with CNG pulling the same implement. The engine temperature was actually cooler running on CNG."

Jones cautions anyone running a CNG system not to overload the engine. "With the extra power it puts out it might be possible to overload the cooling system, so a person shouldn't get greedy with that power," he



Ed Jones mounted CNG canisters on front of his Deere 4640 tractor. He says burning CNG boosts horsepower by 30 percent.

says.

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Grain Vac Attachment Empties Grain Stored In Bags

Why buy a grain bag unloader when you can get a grain vac equipped with a FlexStor Vac Attach for the same price or less? Scott Luden, Koyker Manufacturing, points out that a grain vac can be used year-round for moving grain and seed and cleaning out bins.

"If you spend \$30,000 to \$40,000 for a grain bag unloader, that's all you can use it for," says Luden. "Our single fan grain vac sells for around \$19,900, with the double fan unit around \$23,000. Our FlexStor Vac Attach lists for around \$12,900."

While grain vacs can and have been used for unloading grain bags, they can be very dangerous. If the bag has not been fully opened, the vacuum can wrap loose plastic suffocatingly tight around the operator.

The FlexStor Vac Attach keeps the operator out of the bag area while grain is being removed. It also cuts and stores the plastic bag for disposal as grain is removed.

"The Vac Attach can be mounted on most major grain vac systems," says Luden. "Our price will vary slightly depending on connections needed."

The Vac Attach also can be mounted on a separate tractor alongside the grain vac.

The 3-pt. hitch mount raises or lowers the Vac Attach for transport or positioning in the mouth of the bag. Hydraulics power the twin augers that pull the grain to the flexible suction tube mouth. Hydraulics also power the bag winders that pull the tractor and Vac Attach farther into the bag as it empties.

The Vac Attach requires a tractor with at least 100 hp, Category II 3-pt. hitch and a 540 rpm pto.

As the Vac Attach moves back into the grain bag, twin knives top and bottom split the bag into two pieces. The plastic is then wound onto steel tubular cores that can be easily removed by one person.

Visit www.farmshow.com for a video of the FlexStor Vac Attach in action.

Contact: FARM SHOW Followup, Koyker Manufacturing, 200 N. Cleveland, P.O. Box 409, Lennox, S. Dak. 57039 (ph 605 647-2811; toll free 800 456-1107; www.koykermfg.com).

Koyker's FlexStor Vac Attach can be mounted on most major grain vac systems. It keeps the operator out of the bag area while grain is being removed.

