Fracking for Natural Gas Being Powered by It, Too

MARC LEVY, Associated Press

HARRISBURG, Pa. (AP) — Advances in hydraulic fracturing technology have powered the American natural gas boom. And now hydraulic fracturing could be increasingly powered by the very fuel it has been so successful in coaxing up from the depths.

Oil- and gas-field companies from Pennsylvania to Texas are experimenting with converting the huge diesel pump engines that propel millions of gallons of water, sand and chemicals thousands of feet down well bores to break apart rock or tight sands and release the natural gas trapped inside.

It's the latest way for drillers to become consumers of the product that they are making broadly available in large amounts — and extremely cheap. Production has increased so much that natural gas has flooded the market, dragging down prices and forcing companies to pull back on their plans to expand drilling while looking for new ways to use gas.

After the conversion, the engines will run on cheaper natural gas, or a blend of diesel and natural gas. That brings down costs and, theoretically, cuts down the sooty exhaust that comes from burning diesel.

"You're going to see this spreading quite rapidly across the industry," said Douglas E. Kuntz, president and CEO of Pennsylvania General Energy Co., based in tiny Warren, Pa. "As the technology evolves, you'll see more companies across the country doing more natural gas fueling of this equipment."

A number of increasingly cost-conscious oil- and gas-field companies are already using natural gas to run trucks and drilling rigs. But what makes the conversion of the hydraulic fracturing pump engines to natural gas particularly challenging is the sheer number of engines running at once, and the amount of horsepower necessary to power the pumps.

PGE and contractor Universal Well Services, of Meadville, Pa., are converting a 16-engine pumping unit called a "frack spread" so that the engines will accept a blend of 70 percent natural gas and 30 percent diesel. It should be complete by May and is estimated to cost less than a quarter of what it would if it was powered by diesel alone.

Houston-based Apache Corp., one of the nation's largest independent oil and gas exploration companies, has worked with Halliburton Co., Schlumberger Ltd. and Caterpillar Inc. to develop similar technology.

A 12-engine unit — the first full frack spread that is operating in the field, according

to Apache — just completed two Granite Wash wells near Elk City, Okla. Another unit is in the process of being completed.

"Today we've said, 'we've seen enough testing.' We've decided this is how we want to frack with all of our fleets and we're going to start with two permanent conversions," said Mike Bahorich, Apache's executive vice president and chief technology officer.

PGE will be able to use field gas, drawn from pipelines that connect to its nearby Marcellus Shale wells in north-central Pennsylvania, and save trips by fuel-hauling trucks. For now at least, Apache will have to truck in compressed natural gas or liquefied natural gas to run its new frack spreads, but it hopes to start using the cheaper field gas in the future, Bahorich said.

It also may provide a way for drilling companies to improve their image on environmental issues after sustaining criticism for air quality problems around gas wells and the practice of lacing hydraulic fracturing fluids with chemicals.

The U.S. Environmental Protection Agency calls reducing pollution from diesel engines one of the county's most important air quality challenges. Diesel engines can produce large quantities of smog-forming nitrogen oxides and soot, which can cause lung and heart problems. Soot also plays a significant role in climate change, researchers say.

Saving the truck trips will improve air quality, but the size of the benefit from replacing diesel engines with natural gas is less clear, according to environmental advocates.

That's because new diesel engines are subject to strict environmental standards and natural gas-powered engines give off only slightly less pollution, said Joe Osborne, legal director of the Pittsburgh-based Group Against Smog and Pollution.

Regardless, the economic benefit appears enormous for an industry that used more than 700 million gallons of diesel domestically in hydraulic fracturing last year, according to Apache estimates.

The cost to convert the engines is far less than the roughly $3.5 million per frack spread that Apache can save if it completes 140 planned wells in a year with the two units, Bahorich said.

For PGE and Universal, the cost of conversion and engineering will be several million dollars, said Roger Willis, Universal's president. After that, the fuel price savings are eye-popping: A gallon of diesel fuel costs about $3.60, while equivalent amount of the natural gas blend replacement currently costs about 47 cents, Kuntz said.

PGE, which plans to drill 35 to 40 new Marcellus Shale wells in 2013 all with the natural gas-powered frack spread, expects to save 750,000 gallons of diesel a year, or 55 percent of the diesel in its fracking operations.

"Keeping this frack spread busy over the course of a year, you'll be on the positive side in less than a year," Kuntz said.

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