

Ingevity advances natural gas technology for vehicles

By Liz Segrist
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A North Charleston chemical manufacturer wants to power more vehicles with natural gas, and company officials said its technology could make that shift more likely.

"The benefits of natural gas as a transportation fuel are well-known," said Ed Woodcock, Ingevity's performance materials president. "It's a more efficient, cleaner-burning fuel."

Ingevity developed a technology that enables low-pressure natural gas storage tanks on vehicles.

The technology depends on activated carbon, which Ingevity has produced and sold for more than 100 years, including using it to capture vehicles' gasoline vapor emissions over the past 40 years.

Ingevity is now using activated carbon for another application — putting the activated carbon monoliths with natural gas into fuel storage cylinders, which are placed on vehicles.

The use of activated carbon significantly reduces the storage pressure of natural gas within the fuel tank without giving up the volume of gas stored, the company said.

"If you took one of those empty cylinders and you filled it with natural gas ... then if you took a second identical cylinder and completely packed it with carbon and filled it with natural gas to the same pressure, it holds twice as much gas," Ingevity CEO Michael Wilson said.

Wilson said this process, known as adsorption, is a novel way to use activated carbon.

It enables bi-fuel vehicles — which run on both gasoline and natural gas — to travel up to 100 miles using only natural gas. The vehicles can then use gasoline to travel further.

"Compressed natural gas vehicles have been around for some time, but they require you to compress the gas to very high pressures in order to get enough fuel on the vehicle," Wilson said. "By putting our carbon inside the cylinders, you can get the same amount of fuel in the cylinder at a much lower pressure. That improves safety and it lowers the cost of energy."



Ed Woodcock, Ingevity's performance materials president, said the company's technology makes it easier for drivers to refuel with natural gas. A vehicle fueling station opened at the company's headquarters in North Charleston. (Photos/Ingevity)

Fueling station

Ingevity opened a low-pressure adsorbed natural gas fueling station last month at its headquarters and technical center, located along Virginia Avenue in North Charleston.

The new fueling station can supply bi-fuel vehicles that are outfitted with natural gas storage cylinders.

The station has two appliances: one designed to refuel fleets of trucks or vans, for example, and another that simulates an at-home residential fueling solution for vehicles. Both appliances slow-fill natural gas into the cylinders within four to six hours, the company said.

"The vehicles fueled at this ANG (adsorbed natural gas) station will help to demonstrate a novel, low-pressure natural gas vehicle technology that will reduce costs, improve efficiency and ultimately help preserve the environment," Wilson said. "When we considered where to build this station, it was obvious that it belonged here at our Ingevity Technical Center where the people leading this innovation are also located."

Officials said the carbons allow for



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CEO, Ingevity

adsorbed natural gas storage at significantly lower pressures than compressed natural gas, enabling daily refueling at home or the station. Drivers could refuel vehicles using their existing natural gas lines at their homes by putting a small compressor in the garage, for example.

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our more than 100 years of history in the state. The governor requested Duke Energy, along with other companies, evaluate options for a potential acquisition of Santee Cooper. After a thorough evaluation, Duke Energy has submitted a proposal through the state's process for consideration. We look forward to understanding the next steps in the process and the state's response to our proposal."

Santee Cooper said it had no comment on the proposals.

agement agreement in which it would oversee certain administrative functions for Santee Cooper but has repeatedly said it is not interested in buying the utility.

Dominion spokesperson Ryan Frazier told the Columbia Regional Business Report last month that transferring control to a private company would result in higher rates for customers, in part because Santee Cooper would forfeit its tax-exempt status and lose the high bond rating driven by its state ownership. CPB

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"Low-pressure storage removes the need for large, costly commercial CNG (compressed natural gas) stations and enables safe, economic refueling at work and at home via existing natural gas infrastructure," Woodcock said.

Testing the technology

Ingevity also bought two Ford F-150 pickup trucks equipped with cylinder adsorbed natural gas storage tanks in the truck beds.

Ingevity employees will use the trucks and the fueling station throughout the year as part of a testing phase. Company officials said the data collected will help commercialize the technology for light-duty vehicle trucks and vehicle fleets, such as municipal vehicles or delivery trucks.

Woodcock said the opening of the station is "another exciting step in the com-



Ingevity employees will use the fueling station over the next year and collect data. (Photo/Ingevity)


mercialization of low-pressure natural gas technology."

Company officials said they believe the cost of ownership eventually will be lower than gas/electric-hybrid options.

"While the technology is being developed here in North Charleston, it is our hope, our vision, that the benefits will one day be realized globally," Wilson said. CPB

Reach staff writer Liz Segrist at 843-849-3119 or @lizsegrist on Twitter.

A photograph of a wooden pier extending into the water. The pier has a railing and is surrounded by water. In the background, there are some structures and a cloudy sky.

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