

Truckers Choose Hydrogen Power

By [Stephen Leahy](#) 

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Hundreds of semitrailer trucks zipping along North American highways are now powered in part by hydrogen. These 18-wheelers make hydrogen as they go, eliminating the need for high-pressure, cryogenic storage tanks or hydrogen filling stations, which, by the way, don't yet exist.

These truckers aren't just do-gooders. They like Canadian Hydrogen Energy's [Hydrogen Fuel Injection](#), or HFI, system because it lets them save fuel, get more horsepower and, as a bonus, cause less pollution.

"We're saving \$700 a month per truck on fuel," said Sherwin Fast, president of [Great Plains Trucking](#) in Salina, Kansas. The company tried the HFI system on four trucks and has ordered 25 more.

"Drivers like the increased power and noticed there is a lot less black smoke coming out of the stacks," said Fast.

HFI is a bolt-on, aftermarket part that injects small amounts of hydrogen into the engine air intake, said Canadian Hydrogen Energy's Steve Gilchrist. Fuel efficiency and horsepower are improved because hydrogen burns faster and hotter than diesel, dramatically boosting combustion efficiency.

"You get more work from the same amount of fuel," said Gilchrist.

This is not a new idea. The [Jet Propulsion Laboratory](#) at the California Institute of Technology published research on the uses of hydrogen as a combustion-enhancing agent in the early 1970s. But the ability to make hydrogen on the go is novel.

The sticking point for hydrogen has always been getting it. Unlike crude oil, natural gas, wind or solar energy, hydrogen doesn't exist freely in nature. It costs \$5 a gallon to make hydrogen from natural gas.

But the HFI system uses electricity from an engine's alternator to power the [electrolysis](#) of water to produce hydrogen as needed from small amounts of distilled water.

"That's a big advantage and a bit of a novelty," said Venki Raman, an expert on hydrogen-energy applications who started [Protium Energy Technologies](#).

HFI's manufacturer guarantees 10 percent fuel savings, which likely won't interest car companies or consumers, Raman said. But a reduction of pollution emissions could spur broader use.

Trucks with the HFI system produce half the amount of particulates -- microscopic, unburned bits of diesel. The system also reduces nitrogen-oxide emissions, which are major contributors to harmful air pollution, by up to 14 percent, according to Canada's [Environmental Technology Verification Program](#).

The HFI units are relatively small and cost between \$4,000 and \$14,000, depending on the size of the vehicle.

"It looks like a good transition technology to hydrogen fuel cells, which are still at least 15 years away from commercialization," said Raman.

It will take at least until 2040 before fuel cells begin to reduce greenhouse gas emissions, according to the [National Hydrogen Association](#), Gilchrist pointed out.

"We vehemently disagree with governments picking the fuel cell as the single path to a cleaner environment," he said.

Gilchrist recently argued just this point in meetings with California officials, who are considering buying prototype fuel-cell vehicles that will cost more than \$1 million each. That money could buy many HFI systems, which would provide "300 times" the air-pollution reductions of one fuel-cell vehicle, he said.

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