ONR and GM partner to test advanced fuel cell vehicles of the future (w/Video)

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The Office of Naval Research sponsored Fuel Cell Vehicles operating at the Marine Corps base Camp Pendleton, Calif., represent a radical departure from vehicles with conventional internal combustion engines, potentially generating more than twice the amount of energy without the noise or emissions. ONR and its partners across the DOD and private industry are looking at fuel cell power to expand warfighter capabilities, whether to reduce the size and weight of man-portable devices or to meet the megawattage requirements for shipboard power. Credit: Scott Brierley, GM, March 12, 2009

As the global automobile industry considers alternative energy sources to replace the traditional internal combustion engine, Jessie Pacheco, a mail clerk at Camp Pendleton, has been making his rounds to Marines in General Motors (GM) Chevrolet Equinox fuel cell vehicles (FCVs). The Office of Naval Research (ONR) has sponsored the GM FCVs at Camp Pendleton since 2006 with two more scheduled to arrive later this year.

"These vehicles are the future," says Pacheco. "It's great to see people drive by me, giving me the thumbs up, and asking 'Where can I get one?'"

"Fuel cell vehicle research is clearly a case where the Navy and Marine Corps need are propelling advanced technology that also has potential benefit to the public," says Rear Admiral Nevin Carr, Chief of Naval Research. Within the Navy-Marine Corps Team, ONR has been researching power and energy technology for decades. Often the improvements to power generation and fuel efficiency for ships, aircraft, vehicles and installations have direct civil application for public benefit.

"There is not a drop of oil in it," explains Shad Balch, a GM representative at Camp Pendleton. "The electric motor provides maximum instant torque right from the get go." The efficiency of a hydrogen-powered fuel cell may prove to be twice that of an internal combustion engine, if not greater, adds Balch.

From an operational perspective, the fuel cell vehicle is quiet yet powerful, emits only water vapor, uses fewer moving parts compared to a combustion engine, and offers an alternative to the logistics chain associated with current military vehicles.

Closer to home, the addition of fuel cell vehicles to Camp Pendleton provides a glimpse into the future of advanced transportation technology that reduces reliance on petroleum and affords environmental stewardship benefits such as reduced air pollution and a smaller carbon footprint for Navy and Marine Corps bases.

Balch also notes that, "Partnering with the military gives us critical feedback from a truly unique application. This will help us as we engineer our next generation of fuel cell vehicles."

Technology underwrites the solutions to both national and naval energy needs. As an ONR program officer in the 1990s, Richard Carlin, Ph.D., recognized the potential of alternative fuel research to help meet the energy challenges of the future. Today, as ONR's director of power and

energy research, Carlin is pleased to see the positive reaction to the fuel cell vehicle research program.

"This is an example of where the value of investment in science and technology can really pay off," says Carlin. "Besides the potential energy savings and increased power potential of fuel cell technology, the research and testing we are doing will address challenges like hydrogen production and delivery, durability and reliability, onboard hydrogen storage and overall cost."

For example, through its testing ONR has made advances in the storage necessary for achieving greater range in fuel cell automobiles.

Dave Shifler, the program officer managing the alternative fuels initiatives at ONR, emphasizes that partnerships are essential when bringing a new technology forward.

"With the right partnerships, you can accomplish almost anything," stressed Shifler. "We have teamed with the Army from the beginning on this research, sharing technical support, contracting support and usage of the GM fuel cell vehicle."

ONR fuel cell research has not been limited to vehicles and spans the operational spectrum: from ground vehicles to unmanned aerial vehicles (UAVs), to man-portable power for Marines and afloat. Hydrogen powered fuel cell technology is one of many programs at ONR in the power and energy research field that is helping the Navy meet the energy needs of both the warfighter and the public.

Source: Office of Naval Research