Ford, Mercedes-Benz, and Nissan target 2017 for fuel cell vehicles

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It must be a new season of sharing as major automakers sign agreements to co-develop fuel cell technology. Last week Toyota and BMW said they would work together on a fuel cell system, while today Ford, Daimler, and Renault-Nissan announced they would pool research into fuel cell technology. In their joint press release, Ford, Daimler, and Renault-Nissan said they would produce fuel cell vehicles in 2017.

All of these companies have been working on the technology, and some have demonstrated prototype vehicles. Mercedes-Benz, part of Daimler, has been testing multiple generations of its F-Cell fuel cell vehicle, and currently runs a leasing program for the vehicles in Los Angeles, helping it gather real-world usage data.

The Toyota-BMW agreement covers the joint development of a fuel cell stack, hydrogen tank, and electric motor for a car. The companies will also work on new lithium-air battery technology, with the goal of greatly increasing the energy density of electric vehicle batteries.

From its past demonstration of a Highlander model powered by fuel cell technology, it seems as if Toyota has conducted more research than BMW. As such, this agreement may amount to trading and licensing different technologies between the two companies.

Ford, Renault-Nissan, and Mercedes-Benz have all demonstrated working fuel cell vehicles. Most recently, Nissan said it could produce cars today using the fuel cell system in the Terra SUV concept it showed at the 2012 Paris Motor Show.

Given the advanced state of fuel cell development between these three companies, it is difficult to see the advantages of joint development. The underlying goal most likely concerns making the fuel cell hardware affordable and able to endure everyday usage.

Fuel cell cars are essentially electric vehicles, with motors driving the wheels. The fuel cell stack generates electricity from the reaction when hydrogen and oxygen molecules combine. The electricity from the fuel cell powers the car's electric drive motors. The hydrogen is stored under high pressure, up to 10,000 psi, in tanks.

The advantage of a hydrogen fuel cell stack over a battery pack is that the hydrogen tanks can be filled more quickly than a battery pack can be charged, and that hydrogen allows for more energy storage in cars, giving them greater range than current electric vehicles.

However, very little hydrogen fueling infrastructure exists today, and hydrogen production would need to be scaled up to meet the needs of motorists.

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