

BATTERY POWER

PRODUCTS & TECHNOLOGY

Solutions for OEM Design Engineers, Integrators & Specifiers of Power Management Products

GM's Concept Electric Vehicle Could Nearly Eliminate Trips to the Gas Station

The Chevrolet Volt concept sedan, powered by the E-flex System, GM's next-generation electric propulsion system, could nearly eliminate trips to the gas station.

The Chevrolet Volt is a battery-powered, four-passenger electric vehicle that uses a gas engine to create additional electricity to extend its range. The Volt draws from GM's previous experience in starting the modern electric vehicle market when it launched the EV1 in 1996, according to GM Vice Chairman Robert A. Lutz.

"The EV1 was the benchmark in battery technology and was a tremendous achievement," Lutz said. "Even so, electric vehicles, in general, had limitations. They had limited range, limited room for passengers or luggage, couldn't climb a hill or run the air conditioning without depleting the battery and had no device to get you home when the battery's charge ran low.

The Volt can be fully charged by plugging it into a 110-volt outlet for approximately six hours a day. When the lithium-ion battery is fully charged, the Volt can deliver 40 city miles of pure electric vehicle range. When the battery is depleted, a 1L, three-cylinder turbocharged engine spins at a constant



speed, or revolutions per minute (rpm), to create electricity and replenish the battery. According to Lutz, this increases the fuel economy and range.

"If you lived within 30 miles from work (60 miles round trip) and charged your vehicle every night when you came home or during the day at work, you would get 150 miles per gallon," Lutz said. "More than half of all Americans live within 20 miles of where they work (40 miles round trip). In that case, you might never burn a drop of gas during the life of the car."

In addition, the Chevrolet Volt is designed to run on E85, a fuel blend of 85 percent ethanol and 15 percent gasoline. Using E85, fuel economy of 150 mpg would translate into more than 525 miles per petroleum gallon.

A technological breakthrough required to make this concept a reality is a large lithium-ion battery. This type of electric car, which the technical community calls an "EV range-extender," would require a battery pack that weighs nearly 400 pounds. Some experts predict that such a battery, or a similar battery, could be production-ready by 2010 to 2012.