



## The Micro-Hybrids Are Coming

By Jim Motavalli | Mar 15, 2010



Do you find hybrid cars intriguing, but the price too high? Get ready for the micro-hybrid - conventional cars that increase gas mileage three to eight percent by adding a few hybrid features.

The low-hanging fruit is in the automatic start-stop technology found on most hybrids. Start-stop, which costs only \$300 to \$400 for automakers to add, shuts down the engine at stoplights and then starts it up again when the driver lifts his left foot. If there's a hurdle to putting start-stop on conventional cars, it's in the ability of their relatively small 12-volt batteries to

run accessories (especially air-conditioning) when the engine is shut off.

**Valeo**, which supplies start-stop systems to European automakers, estimates that urban cars spend as much as a third of their time on the road not moving. Asian markets, with huge congestion, are likely to gain the most from the technology. U.S.-style highway driving doesn't benefit all that much, one of the reasons for its slow adoption in the U.S.

"By 2015, auto analysts are predicting that start-stop will be, if not ubiquitous, at least very common," said **Richard Brody**, vice president of business development at **PowerGenix**. The San Diego-based battery company [is developing compact, high-output nickel-zinc \(NiZn\) batteries](#) that could help enable start-stop on conventional cars. The NiZn packs are a third smaller and lighter than the nickel-metal-hydride batteries in most hybrids, Brody said.

NiZn batteries also have applications in full hybrid cars, and Brody said PowerGenix had tested such a pack over 10,000 miles in a Toyota Prius with good results. The Prius has had start-stop technology from the beginning.

A [Strategy Analytics Automotive Electronics Service](#) report says that micro-hybrid start-stop systems will be on nearly 20 million cars annually by 2015.

The prospects for micro-hybrids are particularly bright in China, Brody said, citing a study that says the world's most populous country could be producing 15 million cars annually by 2020, with half of them using some form of electric drive (and three-quarters of those EV-enabled cars could be micro-hybrids). "When it comes to electric and hybrid cars, China [is challenging the automotive industries in the Western industrial countries](#)," said Wolfgang Bernhart, partner in the **Automotive Competence Center** at **Roland Berger Strategy Consultants**.

"The Chinese government is mandating both fuel efficiency and electric vehicles," said Brody. **Jonathan Read**, president and **CEO of ECotality** (which is supplying charging for 4,700 **Nissan Leaf** battery cars) adds that his company has a partnership in China, which has "the largest and most immediate market for electric vehicles," including micro-hybrids.

Among the automakers using start-stop already in Europe and other world markets (but not yet the U.S.) are **BMW**, **Mazda** (its **i-stop** on the 2010 **Mazda3**), **Mercedes-Benz**, **Mini** and **PSA/Peugeot-Citroën**. PSA said in 2008 that it intends to make all of its small and mid-sized cars micro-hybrids. "By 2011, we want to produce and sell one million **Peugeots** and **Citroëns** in the European Union with that system," said PSA **CEO Christian Streiff**, "and 1.6 million by 2012." One Chinese car that already offers micro-hybrid technology is the **Chery Motors A5 BSG** sedan. BSG stands for "belt-starter-generator," which restarts the engine after it shuts off at stops.

The **Smart FourTwo** will also be offered with start-stop on its one-liter engine. Indian truck maker **Mahindra** plans to put the technology on its **Scorpio** and **Bolero** SUVs, and **CEO Pawan Goenka** says if those launches go well, start-stop could also be extended to other models.

[As I reported in BNET back in January](#), Mazda would like to introduce i-stop in the U.S., but the company is frustrated by EPA testing procedures that gives the automaker no fuel economy credit for adding it. "We're going to begin detailed discussions with the regulatory agencies and the Alliance of Automobile Manufacturers aimed at getting a new test procedure for the urban environment," said Robert Davis, a Mazda vice president for research and development.

It's interesting that Europe is becoming an early adopter of micro-hybrids, because Brody points out that the technology is more challenging to incorporate into diesel engines, which are much more common in Europe. "It's harder to start and stop diesels," he said. Brody also said that carmakers can create a sort of super-micro-hybrid by adding one other power-saving technology, regenerative braking. Commonplace in today's hybrids, regenerative brakes convert the energy used to slow a car into usable energy.