

THE WALL STREET JOURNAL

China Car Makers Pioneer ‘Mild Hybrids’



Fuel-sippers using 48-volt batteries get much of the benefit of full hybrid at a lower cost. Geely Automobile and other top Chinese car makers are lining up behind so-called mild hybrid cars that rely on an auxiliary 48-volt system to power some energy-intensive components and boost fuel efficiency. *PHOTO: WU HONG/EUROPEAN PRESSPHOTO AGENCY*

By **MIKE RAMSEY**

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Some of China’s top auto makers, facing among the toughest national emissions rules in the world, are lining up behind an emerging battery technology that provides a way to boost fuel economy to near hybrid performance.

The Chinese car makers—including [Geely Automobile Holdings](#) Ltd. and FAW Group Corp.—in the next two years will begin selling gasoline-powered cars with 48-volt battery systems that provide additional energy for steering and other high-energy devices. These cars offer a lower-voltage building block to better fuel economy than the about 200-volt systems in the best-selling gasoline-electric hybrids.

Although some U.S. and European auto makers have signaled plans to follow suit, it is unclear when they will join the fray. Analysts say 48-volt lithium-ion batteries are one of the most

effective ways to create “mild hybrids,” vehicles that use smaller batteries and an electric motor to boost fuel economy without adding thousands of dollars to the price of a vehicle.

The 48-volt battery-driven hybrids can deliver an about 15% fuel economy boost, says consultants AlixPartners LLP. Although the mileage gains are less than the between 25% and 30% improvement achieved by hybrids compared with similar-size gasoline-only cars, it can be a much cheaper solution.

“What’s nice about the 48-volt systems is that you are getting a lot of the same benefits of a full hybrid at 30% of the cost,” said Dan Hearsch, a partner with AlixPartners. These mild hybrids are just behind direct fuel injection when it comes to fuel-saving technologies important to achieving future fuel economy targets, Mr. Hearsch estimates.

China’s auto industry, while the biggest in terms of volumes, has long trailed the more advanced markets in Japan, the U.S. and Europe in the technology race. Often, Chinese buyers are offered older technology than consumers in more mature regions get.

Beijing, however, has taken steps to change that. In the electrification of automobiles for instance, federal mandates coupled with generous incentives focused on local manufacturers are substantially increasing demand for electric cars that have minimal appeal elsewhere. This gives local companies a leg up in meeting emissions targets, a potential asset in the patchwork of joint-venture partnerships companies like Geely, FAW and several others have, and complements other electrification investments Chinese companies have made, including funding or owning several U.S. startups.

Geely and FAW confirmed plans to introduce the systems.

Chinese auto makers face a requirement to have average fleet fuel-efficiency achieve about 47 miles-per-gallon by 2020. Auto makers world-wide have been trying to get more battery power in cars—including a push in the 1990s for 42-volt units—but a lack of standardization or insufficient components have stymied implementation.

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—Jason Forcier, A123 Systems

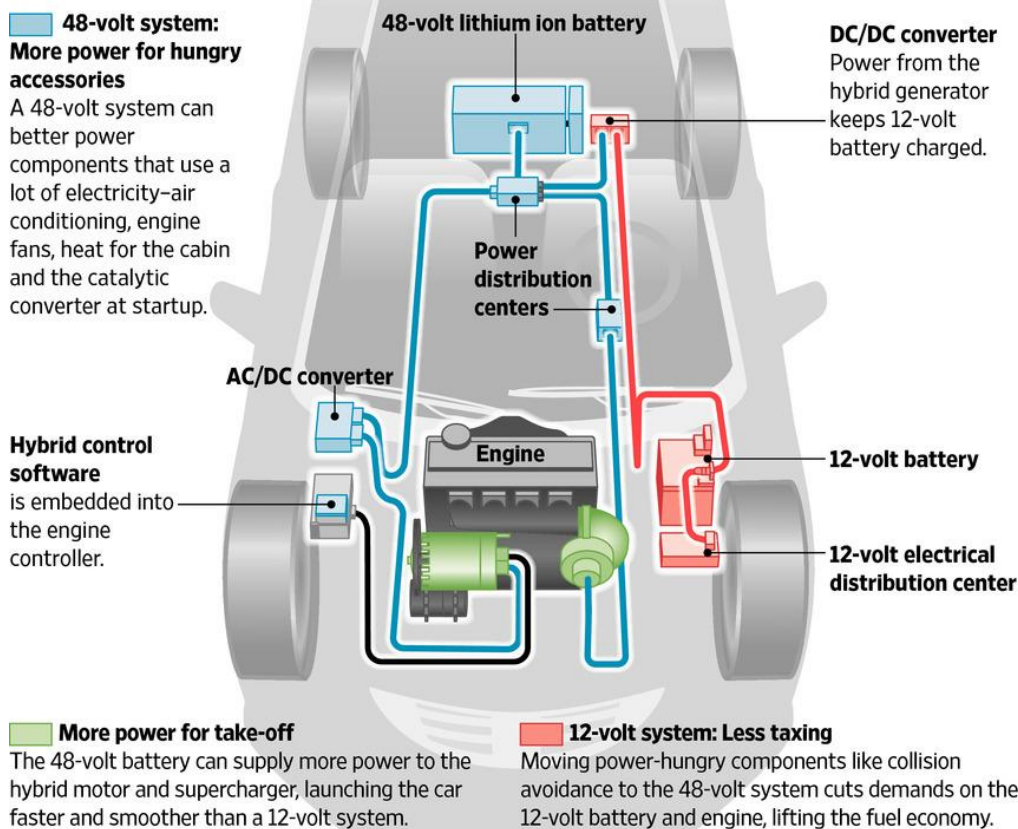
Strict air quality regulations are an effective motivator in China, said Jason Forcier, chief executive of A123 Systems, a Livonia, Mich., based battery maker that was bought by a Chinese

company in 2013. Now owned by Wanxiang Group, A123 has contracts with five Chinese auto makers and expects to begin shipments of 48-volt batteries to Chinese auto makers this year.

“We see all major Chinese auto makers on or sourcing 48-volt batteries [and] they will phase in over the next three years,” Mr. Forcier said. By 2020 “a substantial part of all new vehicles in China will have them.”

Powering Up the Automobile

Car makers are weighing ‘mild hybrids’ that use auxiliary, 48-volt batteries to power devices and boost acceleration, but are less costly than in full hybrids like the Prius. Supporters say these vehicles could provide 70% of the fuel-efficiency of a hybrid at 30% of the cost.



Sources: IHS Automotive and Delphi Automotive

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Lux Research Inc., a Boston emerging technologies research firm, recently reported that adding the 48-volt battery system to cars and small sport-utility vehicles is the most cost-effective way to achieve U.S. fuel economy standards.

Longtime battery suppliers, however, raise caution flags due to fears about complexity. Alex Cattelan, vice president of advanced batteries at [Johnson Controls](#) Inc., said auto makers have

been reluctant to embrace these batteries because they require an electrical system that can handle 48- and 12-volt power.

Johnson Controls is the world's largest supplier of lead-acid 12-volt batteries.

[Delphi Automotive](#) PLC's head of engineering and program management, Mary Gustanski, said the industry has no choice. As cars have added more power-hungry technology like collision avoidance systems or Internet connectivity, demands on batteries will only rise.

"We have run out of power," she said. Delphi has agreements to supply wiring used with 48-volt batteries with numerous companies, including European brands, but doesn't disclose the names of its customers.

[Volkswagen](#) AG has publicly said it plans to use 48-volt hybrids on forthcoming [Audi](#) models and [BMW](#) AG said it would introduced the systems "when the time is right." [General Motors](#) Co. said it is working on 48-volt systems, but has no timetable for introduction.

—*Rose Yu contributed to this article.*