

The big obstacle on global auto industry's road to an electric future

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The lithium-ion battery is a complex industrial product, not just another component in the consumer electronics supply chain. This inconvenient truth is a major obstacle on the global auto industry's road to an electric future.

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to McKinsey. Unless costs fall, most consumers will continue to prefer cheaper traditionally powered cars and manufacturers won't hit strict carbon-emissions targets set by the European Union and China—two of the world's big three auto markets. This will trigger crippling fines.

In the U.S.—the third biggest market—President Trump is trying to roll back Obama-era emissions rules, but Detroit can't afford to relax. Vehicles sold nationwide will likely be influenced by stricter Californian rules and U.S. auto makers also have operations in Europe and China to worry about. Ford tried to resolve its European emissions problem by signing a platform-sharing deal with Volkswagen this month, while Fiat Chrysler in May unsuccessfully sought a merger with local electric-vehicle leader Renault.

Last year was a promising one for battery costs. Including control software and the cooling system, they fell by 24%, according to estimates by Asad Farid, an analyst at Berenberg, faster than in 2016 and 2017. Manufacturing capacity expanded massively, cutting unit costs, while the price of key inputs such as cobalt, lithium and nickel fell.

It is usually assumed that the pattern of deflation will continue, following the example of the consumer electronics and solar industries. But batteries are a different kind of product. Betting on ongoing declines seems a risky strategy for car makers.

One problem is that, whereas solar cells are made of abundant silicon, batteries contain volatile commodities. Input prices fell in 2018, but they could easily rise again as investment in extra mining and processing capacity slows.

Another issue is that East Asian battery-cell manufacturers may be getting more wary of an industry that requires huge capital investments but isn't making them money. Tesla-supplier Panasonic has stopped investing in the so-called gigafactory in Nevada to focus on improving returns. And Volkswagen last month invested in battery production itself—taking a stake in Swedish battery startup Northvolt—partly for fear of not being able to source enough cells from the likes of LG Chem of South Korea and CATL of China.

Then there is fire risk. A Tesla burst into flames in an underground parking garage in Shanghai in April and Chinese EV maker NIO was forced to recall nearly 5,000 cars last month following multiple reports of fires. As battery manufacturers try to cram more power into less space, volatile lithium-ion technology may be reaching its safety-prescribed limits. More stable technologies exist, but none with the existing manufacturing scale dedicated to lithium-ion.

If the cost of batteries doesn't continue to fall, long-range affordable EVs will remain a pipe dream. Car makers will need to find other ways to hit emissions targets. Hybrids, which require much smaller batteries, are one option. Short-range EVs are another, but would require heavy investment in charging infrastructure to alleviate consumers' so-called "range anxiety."

As computing power has grown exponentially in recent decades, batteries have improved only gradually—such is the difficulty of the chemistry involved. Car makers would be unwise to pin all their hopes on such a troublesome technology suddenly falling into line.

Source: The Wall Street Journal