



AS IT IS

Carmakers Compete to Improve Electric Vehicles

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Carmakers from the United States and other countries are thinking about ways to manufacture and improve a technology called an e-axle or e-drive. This technology is fast becoming an area of competition in the automobile industry.

The e-axle, or e-drive, joins an electric vehicle's **gear**, motor, and power-control electronics. It is the “brain” that controls how a vehicle uses energy stored in its **battery**. This “brain” turns that energy into power. It also helps get back energy lost when stopping the vehicle.

In other words, a well-designed e-axle increases a vehicle's power **efficiency** and ability to change speeds. It also helps extend the vehicle's driving **range** and its smoothness.

The technology has become a competitive area, in part, because automakers are under pressure to cut electric vehicles' manufacturing costs. The goal is to make them cost as much as cars powered by **gasoline**.

Progress in new technologies is also important for efforts to cut pollution, including carbon dioxide, also known as CO₂.

Vehicle-based CO₂ **emissions** are responsible for about 17% of emissions from all **sources**, says Zifei Yang. She is with the International Council on Clean Transportation in Washington.

Yang noted that the reduction in vehicle emissions has slowed as more people drive bigger, more polluting sports utility vehicles. Other industry experts point to changes in countries such as China and India, where more people are buying and using cars.

In recent years, the Japanese business Nidec has turned its attention to automobiles and e-axles. Shigenobu Nagamori is the company's founder.

Nagamori says he wants Nidec to control up to 35% of the world's e-axle market by the year 2030. That market could be worth \$20- to 30-billion a year by then, up from an estimated \$2.8 to \$3 billion today.

Nagamori has said he believes the way to become a market leader in e-axles is to reduce the cost for the technology. The way to do that, he said, is by being able to produce every part that goes into an e-drive system.

Some automotive technology suppliers are working together to manufacture e-axle systems. Japan's Denso and Aisin formed a group called BluE Nexus in 2019. This year, U.S. parts supplier BorgeWarner agreed to purchase Britain-based Delphi, and Japan's Hitachi Automotive joined with three Honda group suppliers. Automakers Volkswagen, Ford, Toyota and smaller Japanese **brands** are each making technology groups in part to drive down e-axle manufacturing costs.

Electric car maker Tesla developed its own e-axle technology. But it is unclear whether the company continues to use it in more recent Tesla models, noted Reuters news agency.

General Motors, or GM, Nissan and some other carmakers believe e-axles offer such a large area for growth that they want to design and manufacture their own systems.

GM believes it can better join the e-axle with the battery and the rest of the vehicle, making for a quieter, smoother and more economical drive, said the company's Adam Kwiatkowski.

I'm John Russell.

Reuters news agency reported this story. John Russell adapted it for VOA Learning English. George Grow was the editor.

Words in This Story

gear – *n.* a set of wheels that work together to affect the relation between the speed of a moving vehicle and the speed driven parts

battery – *n.* a device that is placed inside a machine to supply it with electricity

efficiency – *n.* the ability to do something or produce something without wasting materials, time, or energy

range – *n.* the distance within which something can be reached

gasoline – *n.* a liquid fuel used to power motor vehicles

emission – *n.* the act of producing or sending out something (such as energy or gas); something sent out or given off

source – *n.* a place or thing from which something comes

brand – *n.* a model or kind of product

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