New Car Technology May Take The Wheel out of Human Hands

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Google has been making news in recent months for its work in a ground-breaking area: driverless automobile technology.

A prototype of Google's new self-driving car – a two-passenger electric vehicle with buttons to turn the vehicle on and off, but no steering wheel, accelerator pedal or brake pedal – was unveiled in May. Without a driver at the wheel, the car is instead guided by a light detection and ranging (LIDAR) rotating sensor on the vehicle's roof that scan the vehicle's surroundings to determine its driving route as well as to identify such obstacles as pedestrians, bicyclists and other cars.

While Google is widely considered a front-runner in the development of such advanced automation technology, the major

automakers are also getting into the race. Albeit at a more conservative pace, they're introducing automated features that perform specific tasks – such as adaptive cruise control, lane departure warning and collision-avoidance braking – to their new car models.

According to a recent report by Lux Research, cars with these so-called "Level 2" features are expected to account for 92 percent of a worldwide $87 billion-per-year autonomous car market by 2030. Only 8 percent of the market will go to "Level 3" cars, which would be primarily driven autonomously, but would allow drivers to regain control of the vehicle in an emergency.

In addition, the research firm doesn't expect any fully automated vehicles on the road by 2030. "We consider that ultimate level, Level 4, to be full autonomy, where you just get in and you don't interact with the car at all," explained Cosmin Laslau, lead analyst at Lux Research. "And we don't think that's coming by 2030. The biggest opportunity that we see will be actually from the Level 2 features, which are the more conventional advances that we're already starting to see come onto the market from higher-end developers."

Hermann Winner, director and professor of automotive engineering at Germany's Technische Universit?t Darmstadt, agreed. "We will start with a partially automated car, then a highly automated one," he said, adding that he doesn't expect a completely autonomous car – one with no specific limitations with respect to traffic environment or driving speed – on the market for the next 40 years. "The big challenge to total automation is getting safety approval. Even if you assume the system is ready by 2020, approval is going to be problematic."

Winner is scheduled to address the challenges facing the development of the driverless car during the panel session "IT Meets the Automobile: Interactive Advanced Vehicle Technologies and Self-Driving Cars" at the ASME Advanced

Design and Manufacturing Impact Forum in Buffalo, New York. Visit www.asme.org for more information.