

## Auto Safety Goes Digital

Tape converters have an excellent opportunity to grow their business with advanced driver assistance systems (ADAS)

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Unless you own an antique car, it may be hard to imagine driving without the many automotive safety features introduced during the second half of the 20th century. Seat belts, padded dashboards, collapsible steering columns, head restraints, child restraints, disc and antilock brakes, airbags, and more all contributed to dramatic improvements in safety. According to the National Safety Council, the U.S. had 7.59 deaths per 100 million vehicle miles driven in 1950. By 2000, the number had dropped to 1.58.

The push to make cars safer bore results in the last century thanks partly to these mechanical and structural innovations. It's bearing results in this century thanks to ADAS.



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## What is ADAS?

If you go new-car shopping, you'll likely encounter a wide range of electronic features designed to help keep you and your passengers safer. Collectively referred to as "advanced driver assistance systems" (ADAS), these include adaptive cruise control, blind spot detection, surround view, collision avoidance, lane departure warning, cross-traffic alert and emergency braking. OEMs introduced most of these features over the last two decades as options in luxury cars. Today, they're standard in many affordable makes and models.

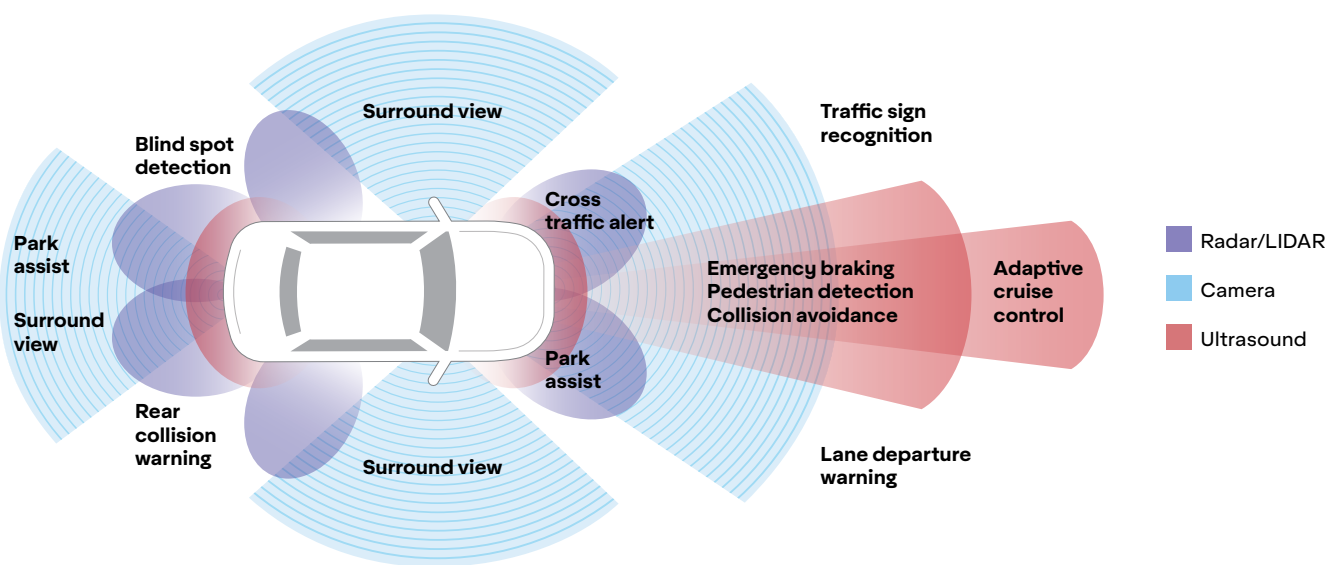
At their core, ADAS features technologies such as radar, lidar, ultrasound and video transmitters, all controlled by microprocessors.

It's really not a stretch to say the modern automobile is a rolling electronic gadget. That gadget is designed to counteract some of the variability (inattention, inexperience, etc.) possibly introduced by the human behind the wheel.

### The era of autonomous driving has begun

At the current cutting edge of ADAS are cars that allow conditional autonomous driving. In 2022, Mercedes-Benz claimed to be the first OEM to offer such capability with its Drive Pilot system. Under certain conditions, the driver can remove their hands from the wheel and feet from the pedals. The vehicle's sensors and computer brain take over.

As an optional feature on a German luxury car, Drive Pilot is out of reach for most car buyers (it's also only available in Germany at the time of this writing). But if history is to be our guide, it's only a matter of time before we see this level of autonomy on more, and less expensive, cars. Fortune Business Insights forecasts the ADAS market to grow from \$27.52 billion in 2021 to \$58.59 billion in 2028. This represents a CAGR of 11.4%.



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## Understanding the levels of automation

While conditional autonomy may represent a small step in technology, the giant leap is yet to come. The Society of Automotive Engineers (SAE) has identified five levels of vehicle automation. Think of this as a standardized framework to help vehicle designers, engineers, regulators and others in the industry understand this evolution.

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
No automation	Driver assistance	Partial automation	Conditional automation	High automation	Full automation
Zero autonomy; the driver performs all driving tasks.	The driver controls the vehicle, but some driving assist features may be included in the vehicle design.	The vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.	The driver is a necessity but is not required to monitor the environment. The driver must be ready to take control of the vehicle immediately with notice.	The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.	The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

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Currently, most new vehicles sold are at level 1 or 2 of the SAE's framework. And while predictions for the arrival of fully autonomous cars (level 5) seem to range from "next year" to "next decade," it's clear sophisticated electronics performing a range of tasks are here, and here to stay.



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## ADAS and the opportunity for pressure-sensitive adhesive tapes

So what does this mean for pressure-sensitive adhesive tapes? Plenty.

The engineers working to develop and market ADAS are challenged by the need to make those systems easier to assemble, durable for the life of the vehicle (which now averages more than 12 years, according to the U.S. Department of Transportation), and reliable.

Tapes with high-performance pressure-sensitive adhesives provide an answer for many of their challenges.

- They can replace mechanical fasteners and offer a thinner profile, lighter weight, repositionability and an instant bond
- They can seal and fill gaps for ingress protection, reduce vibrations and noise, and provide clearer vision
- They can reduce glare and manage light

There are multiple applications where pressure-sensitive adhesive tapes can be used to deliver these benefits. These include bonding and gap filling for flexible heater films, sensor mounting and sealing, as a bonding solution for gaskets or microporous venting materials, and glare reduction for cameras (when an adhesive is paired with a light-absorbing film). As ADAS systems proliferate and evolve in the years ahead, engineers will likely devise more uses for adhesive tapes.

### How tape converters can grow with the ADAS evolution

The automotive industry is a complex and global ecosystem. It incorporates the major OEMs, multiple tiers of parts and system suppliers, and suppliers of other functional materials.

As a tape converter, you can play a critical role in this ecosystem by providing lamination of materials; creating multilayer composites; die cutting; and creating part presentations, prototypes and samples. Now more than ever, the industry needs your capabilities and expertise.

And in Avery Dennison, you have a collaborator with a 50-year-plus track record in the industry. We encourage you to lean on our Automotive Electronics portfolio along with our global reach, R&D capabilities, ISO 17025-certified lab and other capabilities.






### **Let's talk about ADAS and pressure-sensitive adhesive tapes**

If you're a converter, automotive supplier or OEM representative looking to better understand the potential for pressure-sensitive adhesive tapes in ADAS, please contact me directly at [max.vanraaphorst@averydennison.com](mailto:max.vanraaphorst@averydennison.com).

Learn more about our Automotive Electronics portfolio at [tapes.averydennison.com/automotiveelectronics](https://tapes.averydennison.com/automotiveelectronics).

### **About the author:**

Max Van Raaphorst is business development manager – E-mobility and Automotive, Avery Dennison Performance Tapes North America. With nearly a decade of technical, sales and marketing experience in the chemical manufacturing field, Max strives to help Avery Dennison tape converters grow their business in the fast-evolving E-mobility and Automotive segments. Based in Michigan, he can be reached through [LinkedIn](#).

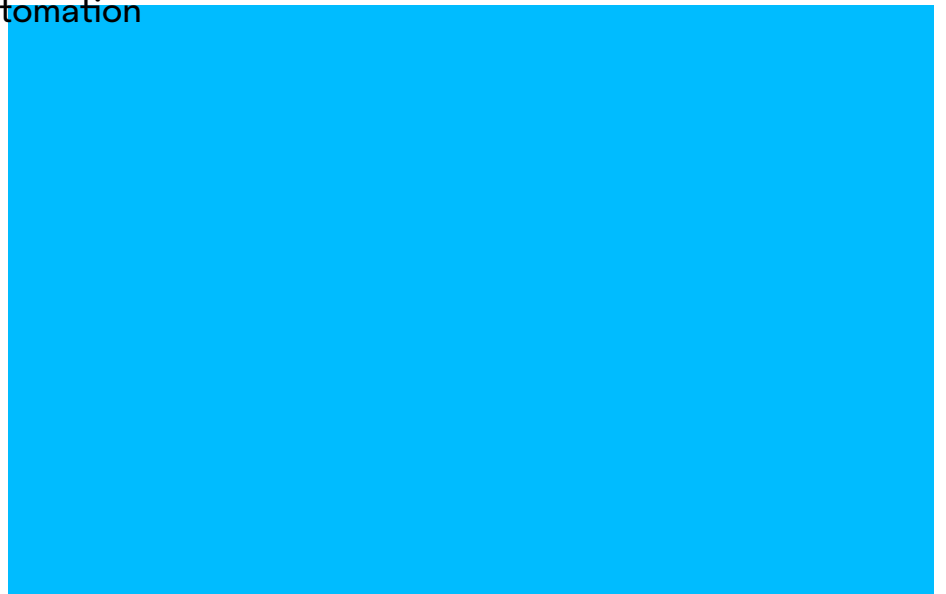
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## Understanding the levels of automation



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