SEMA BUSINESS

By Mike Imlay

QSA WITH JOHN WARANIAK ADAS: A Look at Key Product Areas for Aftermarket Growth



hile identifying multiple growth opportunities for the specialty-equipment industry, the recently released "SEMA Advanced Vehicle Technology Opportunities Report" (see p. 172) also introduces readers to a range of emerging technologies. To better understand active versus passive advanced driver-assistance systems (ADAS)—and why the latter holds the most aftermarket promise—SEMA News turned to

SEMA Vice President of Vehicle Technology John Waraniak. *SN: Can you review the difference between* ADAS systems activate the

passive and active ADAS technologies?

JW: Passive ADAS products alert or warn the driver to take action in order to prevent an accident or collision. They provide only warnings or information to the driver; they do not take over control of the vehicle. Early examples of passive safety systems, such as seatbelts and airbags, did not provide warnings. They were designed to protect occupants during a crash.

Active ADAS technologies and systems monitor conditions inside and outside a vehicle for possible hazards and not only warn the driver of potential collisions but also automatically take over vehicle control from the driver to prevent collisions. Active ADAS systems activate the brakes, steering or powertrain controls to mitigate or avoid a potential collision.

Electronic stability control (ESC) is an early example of active ADAS technology. Standard equipment on '12 and later models, ESC is an extension of antilock brake technology that helps drivers maintain control of their vehicles on curves and slippery roads. ESC has been proven to lower the risk of a fatal single-vehicle crash by about half and the risk of a fatal rollover by as much as 80%.

It's important for SEMA members to understand how ADAS works. ADAS technologies rely on input from various sensors, including radar, lidar and cameras. After the data from these sensors is collected, it must be processed or fused in real time by software algorithms running on a microcontroller unit or an electronic control unit. Based on the resulting output, passive ADAS products alert the driver to take action, and active ADAS systems both alert the driver and take control of the vehicle. The goal of both is to prevent crashes before they happen.

SN: Why do passive systems offer the best growth potential for the aftermarket?

JW: Passive ADAS will grow the fastest in the aftermarket due to lower vehicle integration complexity and price points. So passive ADAS as well as connected vehicle technology systems (which we will cover in an upcoming *SEMA News* article) really offer the greatest immediate opportunity to SEMA members today.

Passive crash avoidance features are rapidly making their way into vehicles through factory-installed options and standard equipment as well as aftermarket upgrades and retrofits. The aftermarket advantage is that its passive ADAS products provide a lowercost alternative to the more expensive OE standard equipment or option packages that are often bundled with other technologies and features on new cars. Plus, there are many older models that can benefit from aftermarket passive ADAS products.

It takes a long time for new vehicle features to diffuse into the registered vehicle fleet. Even when features are required by the government, it takes many years for them to be available on all vehicles. Many collisionavoidance features have been recently introduced to the fleet, though passive ADAS features are growing the fastest due to customer acceptance.

168 May 2018 **SEMA** News

SEMA **BUSINESS**

SN: You believe that the aftermarket has an exciting role to play in ADAS deployment. Why is that?

JW: New research from the Insurance Institute for Highway Safety's Highway Loss Data Institute (HLDI) indicates that it takes at least three decades before 95% of vehicles on the road have a given safety feature. HLDI's current growth projections for ADAS technologies are based on availability, meaning that the feature could be standard or optional. Federal mandates, safety ratings that reward certain features, and the aftermarket can speed up the rate at which ADAS technology diffuses into vehicles in operation. So the aftermarket has an excellent opportunity to grow by providing passive ADAS systems and accelerating their deployment through consumer awareness and choice.

Five of the fastest-growing passive ADAS technologies are lane-departure warning, forward-collision warning, blind-spot warning, passive parking assistance, and head-up displays. Those five ADAS technologies are creating new and exciting aftermarket business and product-development opportunities in a new performance category that I call "safety performance."

SN: Can we go through the passive safety performance systems one by one, starting with lane-departure warning (LDW)?

JW: LDW systems scan painted roadway lane markings and warn you if you're drifting out of your lane and to drive back to the center of your lane to prevent a crash. The alerts can be visual, vibrations or sound warnings. LDW does not work when lane markings are covered or faded, and using your turn signal will override the warning. HLDI estimates that 5% of registered vehicles in the United States had LDW systems in 2016, and more than 23% will have them in 2021. The dollar value of LDW systems is expected to grow at 11% per year.

SN: Forward-collision warning (FCW)?

JW: FCW systems alert you to an impending collision with a slower-moving or stationary car in front of you. They're designed to warn you with audio tones or visual alerts so that you can brake or swerve in time. Passive FCW systems will not automatically brake for you. They use cameras and sensors to scan the road ahead and maintain a safe

170 May 2018 **SEMA** News

following distance to other vehicles on the road. HLDI estimates that 4% of registered vehicles in the United States had FCW systems in 2016, and more than 20% will have them in 2021. SEMA forecasts the dollar value of FCW systems to grow at 14% per year through 2021.

SN: Blind-spot warning (BSW)?

JW: BSW uses a visual symbol, sound or vibration to let you know that there are other vehicles located in your blind spots. They may also provide an additional warning if you use your turn signal when there's a car next to you in another lane. Consumer surveys indicate that BSW is one of the most favored ADAS systems.

As with most passive warning systems, there's high market potential for BSW because there's little or no complex integration with existing vehicle control systems. Aftermarket companies are leveraging new customization opportunities by developing sensors and warning lights to previously unequipped vehicles in ways that are innovative and cool. HLDI estimates that 7% of registered vehicles in the United States had BSW systems in 2016, and more than 28% will have BSW systems in 2021. SEMA estimates that their dollar value will grow at 14% per year through 2021.

SN: Passive parking assistance?

JW: Passive parking assistance systems alert drivers to the position of objects around your car as you park. They employ backup cameras and/or radars, and shifting into reverse activates the front and rear parking sensors. The driver listens to the speed of the warning sounds and monitors the cameras if the vehicle is equipped with visual sensors. The radar systems alert a driver when an object enters within a certain distance and include systems that improve driver awareness of surroundings at low speeds, but they do not influence vehicle control systems.

Interviews conducted during our SEMA Advanced Vehicle Technology research suggested that 360-vision systems are difficult to retrofit due to calibration requirements. However, there are several aftermarket systems available that include calibration procedures. Rear cross-traffic alert is an added function to some of these systems.

There's already a strong aftermarket for passive parking assistance, mostly in the form of rearview cameras. More than 4.5 million units are sold annually, representing about \$700 million in sales. That market is expected to grow to a \$1-billion market by 2021. Passive park assist makes up the primary share of the aftermarket's current value and unit installations and is expected to maintain that aftermarket lead, as dollar growth is forecasted at an average rate of 8% per year through 2021.

SN: And last but not least, head-up display (HUD) systems?

JW: HUDs are transparent displays projected onto the vehicle windshield to provide drivers with information and situational awareness to help enhance driving efficiency and prevent potential accidents. Such information includes speed, tachometer, navigation and other data. There's increasing interest in using HUDs to provide warnings and alerts to drivers so that they can keep their eyes on the road as well as access information from connected devices such as smartphones.

HUDs do not directly fall into the passive or active categories. The National Highway Traffic Safety Administration explicitly recommends against displaying moving images on an HUD screen. More than 600,000 HUD units are sold annually in the aftermarket, representing about \$1.25 million in annual sales. The HUD aftermarket is projected to roughly double by 2021 to annual sales of between \$210 million and \$286 million.

SN: Now that we've outlined the key systems, is there a final takeaway for our readers?

JW: We're in a new era of vehicle safety performance. ADAS technology reduces accidents and fuels a safer ride. The industry focus includes not only reducing deaths and injuries in vehicle collisions but also preventing crashes from happening in the first place. Safety features designed to avoid accidents are becoming increasingly common, driven by consumer demand and government regulation, and safety performance is creating new business and product development opportunities for traditional as well as nextgeneration SEMA companies.



John Waraniak leads SEMA's vehicle technology programs to connect members with costeffective product-development and engineering resources, solutions and benefits.