

Rearview cameras for CVs edge closer to regulatory approval

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Caption: With MirrorEye there are no more monstrous side mirrors blocking the driver's field of view.

To borrow from a well-known automotive phrase, “Objects in mirror” aren’t really closer than they appear—because the mirror itself appears poised to become another relic of the analog age. Long-debated since the technology quickly became more sophisticated and less costly, camera systems to replace external rearview mirrors for trucks and other on- and off-road commercial vehicles are likely just around the corner.

With surprisingly little fanfare last December, the Federal Motor Carrier Safety Admin. (FMCSA) granted a 5-year exemption for on-road commercial vehicles to install Stoneridge Inc.’s MirrorEye Camera Monitor System (CMS) in place of conventional mirrors. It’s been off

to the races since, as Stoneridge and other rearview-camera developers sense that unconditional change to FMCSA's current commercial-vehicle mirror regulation is next.

"This decision will help bring an innovative driver-vision technology to market that will greatly improve the safety of everyone who shares the road," said Jon DeGaynor, Stoneridge president and CEO, in a release. "The MirrorEye Camera Monitor System empowers truck drivers to avoid potential collisions by the elimination of certain blind spots, expansion of their field of view and increased awareness of the truck's surroundings. This exemption allows our customers to fully recognize both the safety and fuel economy benefits of MirrorEye."

The CMS technology has for several years been touted on concept trucks and in the light-vehicle sector and for passenger vehicles has made the move to production-intent in markets with regulatory approval. In the commercial-vehicle sector, CMS have been shown on concept trucks not only because of their projected safety improvement but also for their distinct aerodynamic advantage.

MirrorEye on the road

Stephen Fox, vice president of business development for Stoneridge, told a packed meeting room at April's SAE Government/Industry Meeting in Washington, DC that Stoneridge's MirrorEye is the only CMS system so far granted an FMCSA exemption to the requirement that all CVs have at least 50 sq. in. of outside mirror surface on each side of the vehicle—but current practice is something on the order of 410-450 sq. in., Fox said.

"All this extra mirror surface creates approximately 36 feet of blind spots," that obscure the driver's field of view when making turns and checking crosswalks, Fox explained. With drastically slimmer surface area and housings, CMS markedly reduce the driver's blind-spot obstruction—or eliminate it altogether, as Stoneridge's display truck at the 2018 IAA show in Germany demonstrated by situating the camera housings high above the windshield on each side of the cab. The driver views the images from the cameras on high-resolution screens unobtrusively installed on the cabin's A-pillars.

Stoneridge's fleet trials in the U.S. have included Maverick Transportation, J.B. Hunt and Schneider National, among others. The fleets provided vehicles, test drivers and feedback during what Stoneridge called a "significant fleet evaluation period in order to ensure the MirrorEye CMS product meets driver and fleet requirements."

Fox said at the Government/Industry conference that the installations had been done as retrofit, but "we're working with OEMs as well," to install MirrorEye instead of conventional mirrors. "The fleets have been very supportive," Fox said, adding that significant activity also is under way in Europe, where the company has worked with OEMs to test the systems.

Daimler Trucks this year made camera mirrors standard equipment for the fully redesigned 2019 Daimler Actros cab-over truck in certain non-U.S. markets; Daimler calls the system (not supplied by Stoneridge) MirrorCam.

Early this year, Stoneridge formed a strategic partnership for MirrorEye installation and support with Velociti Inc., a provider of technology deployment and support services. The two companies said they will work together with commercial vehicle fleets to install and support MirrorEye systems.

“With this agreement we will be able to provide our commercial vehicle fleet customers with installation and post-sale support services from an industry leader in the space,” Fox said in a release. “Velociti’s technology-deployment experience and network will support this need.”

Advances all around

The MirrorEye system, said Stoneridge, provides several distinct advantages over conventional mirrors:

The extended field of view can display wide-angle, narrow-angle and passenger-side “look-down” views on the in-cabin monitors. Fox also told *TOHE* that there are significant advantages in low-light, night and other bright-sunlight conditions, as well as the cameras’ considerably improved protection from weather and water-and-dirt fouling.

Fox added that property-damage accidents for commercial vehicles increased by more than 107% between 2009 and 2016; injury accidents increased by 62% during that period and fatality accidents by 3%. The average cost of a property-damage insurance claim is more than \$170,000, he said, stating that the enhanced view from the company’s MirrorEye technology is expected to help mitigate the accident trend.

The company also claims the greatly-reduced aerodynamic profile of the camera housings can deliver as much as a 2.5% increase in fuel efficiency, which should make CMS an instantaneous choice for large fleets and those with a significant portion of long-haul business.

“It had to be better than mirrors in every aspect,” Fox said at the SAE Government/Industry conference. “Until we get [to high-level automated driving], this is a technology that can help.”

Technology proliferating

Others are quickly joining Fox’s camp. The high-profile [April unveiling of the Nikola Two hydrogen-electric heavy-duty truck](#) saw trucking disruptor Nikola also using a CMS developed by Mekra Lang, along with “critical involvement from Bosch.” The system’s name, Mirror Cam (as two words) is virtually identical to Daimler’s trade name for the technology, MirrorCam.

Unlike the Stoneridge tech-demonstrator truck and the Daimler Actros, the Nikola Two fixes the cameras below the truck’s greenhouse, demonstrating their slimline profile’s placement flexibility.

And in the passenger-vehicle sector, Audi confirmed its 2019 e-tron electric vehicle (EV) will offer what is claimed to be the [world’s first series-production application of CMS for passenger vehicles](#) when it launches later this year. The CMS technology also is not yet approved for

passenger vehicles in the U.S. but is available for production vehicles in Japan. In 2015, the United Nations World Forum for Harmonization of Vehicle Regulations approved side-view cameras that can comply with specific performance and placement standards.

<https://www.sae.org/news/2019/05/camera-mirrors-for-cvs-advancing>