

Safe eyes save lives: How Bosch engineers are innovating the 95-year-old sun visor

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Bosch's new Virtual Visor greatly improves driver safety and comfort

- ▶ Sun glare causes thousands of automotive accidents a year, almost two times more than any other weather-related condition.
- ▶ Virtual Visor features a single, transparent LCD panel, a driver-facing camera with AI facial detection and analysis and tracking software.
- ▶ Dr. Steffen Berns: "Some of the simplest innovations make the greatest impact, and Virtual Visor changes the way drivers see the road."
- ▶ Bosch at CES®: Virtual Visor named Best of Innovation in CES 2020 Innovation Awards; see it in action at booth #12041 in Central Hall.

Farmington Hills, Michigan – Bosch is rethinking driver safety and comfort, bringing one of the most overlooked interior components into the spotlight, the sun visor. The sun causes twice as many car accidents as any other weather-related condition due to temporary blindness. The National Highway Traffic Safety Administration reports thousands sun glare-related car accidents each year, and [another study](#) indicates the risk of a car crash is 16 percent higher during bright sunlight than normal weather. The traditional sun visor is not equipped to adequately address this safety concern. At best, it blocks some of the sun from your eyes but along with it, some of your view is blocked as well.

Bosch is offering a solution with the revolutionary Virtual Visor, a transparent LCD and intuitive camera, which replaces the traditional vehicle sun visor completely. As the first reimagined visor in nearly a century, Bosch's technology utilizes intelligent algorithms to intuitively block the sun's glare and not the view of the road ahead.

“For most drivers around the world, the visor component as we know it is not enough to avoid hazardous sun glare – especially at dawn and dusk when the sun can greatly decrease drivers’ vision,” said Dr. Steffen Berns, president of Bosch Car Multimedia. “Some of the simplest innovations make the greatest impact, and Virtual Visor changes the way drivers see the road.”

The Virtual Visor, which was honored as a Best of Innovation in the CES 2020 Innovation Awards, will debut at CES 2020 in Las Vegas. The Virtual Visor was also named as an honoree in the awards competition, which recognizes products across 28 categories. Virtual Visor received the Best of Innovation for the In-Vehicle Entertainment & Safety category, as it received the highest ratings from a panel of judges that includes designers, engineers and members of the tech media.

A sun visor fit for the future

Virtual Visor links an LCD panel with a driver or occupant-monitoring camera to track the sun’s casted shadow on the driver’s face. The system uses artificial intelligence to locate the driver within the image from the driver-facing camera. It also utilizes AI to determine the landmarks on the face – including where the eyes, nose and mouth are located – so that it can identify shadows on the face. The algorithm analyzes the driver’s view, darkening only the section of the display through which light hits the driver’s eyes. The rest of the display remains transparent, no longer obscuring a large section of the driver’s field of vision.

“We discovered early in the development that users adjust their traditional sun visors to always cast a shadow on their own eyes,” said Jason Zink, technical expert for Bosch in North America and one of the co-creators of the Virtual Visor. “This realization was profound in helping simplify the product concept and fuel the design of the technology.”

The creative use of liquid crystal technology to block a specific light source decreases dangerous sun glare, driver discomfort and accident risk; it also increases driver visibility, comfort and safety.

Innovation from the recycling bin

From the original ideation and concept phase to testing and prototyping, Virtual Visor is a bottom-up solution made possible through the innovation culture established at Bosch. Employees are encouraged to apply lean startup methodologies to confirm customer benefits, market potential and feasibility for new ideas, which are then validated by peers and approved for development.

“We’ve built a culture around empowering our associates by putting them in the driver’s seat,” said Mike Mansuetti, president of Bosch in North America. The Virtual Visor was developed by a team in North America as part of Bosch internal innovation activities.

“As a leading global technology provider, we understand that innovation can come from any level of an organization, and we want to see that grow.”

A group of three powertrain engineers, led by Zink, developed the idea for Virtual Visor and created prototypes in their free time in order to secure internal funding for the project concept.

“Like many early-stage ideas, we were working with limited capital and resources,” said Zink. “The original prototype, we used to first pitch the concept, was made from an old LCD monitor we recovered from a recycling bin.”

The Virtual Visor team received mentorship from Bosch executives as they sought funding and developed additional versions of the product. Ultimately the product was transitioned into the Bosch Car Multimedia division.

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Bosch at CES 2020:

- **PRESS CONFERENCE:** From **9:00 to 10:30 a.m.** local time **on Monday, January 6, 2020** in Ballrooms B, C, and D, Mandalay Bay Hotel, Las Vegas **South Convention Center, Level 2**
- **BOOTH:** **Tuesday to Friday, January 7–10, 2020**, in the Central Hall, booth #12401
- **FOLLOW** the Bosch CES 2020 highlights on Twitter: **#BoschCES**
- **PANELS WITH BOSCH EXPERTS:**
Wednesday, January 8, 2020, 10:15 to 11:15 a.m. (local time)
Growth of Apprenticeships for “New Collar” Jobs session with Charlie Ackerman, Senior Vice President of Human Resources, Las Vegas South Convention Center

Mobility Solutions is the largest Bosch Group business sector. In 2018, its sales came to 47.6 billion euros, or 61 percent of total group sales. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector pursues a vision of mobility that is accident-free, emissions-free, and fascinating, and combines the group's expertise in the domains of personalization, automation, electrification, and connectivity. For its customers, the outcome is integrated mobility solutions. The business sector's main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket. Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 410,000 associates worldwide (as of December 31, 2018). The company generated sales of 78.5 billion euros in 2018. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected manufacturing. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to deliver innovations for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 460 subsidiary and regional companies in over 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. At nearly 130 locations across the globe, Bosch employs some 68,700 associates in research and development.

Additional information is available online at www.bosch.com, iot.bosch.com, www.bosch-press.com, twitter.com/BoschPress