saflex™
from Eastman

Saflex™ Horizon Vision PVB

Designed for enhanced visibility in advanced autonomous driving systems and unique head-up display applications

Providing a clear view ahead to innovation

As autonomous vehicles continue to advance, the automotive industry faces growing challenges to deliver best-in-class vision system performance while adhering to the highest safety standards. As head-up display (HUD) systems proliferate, technologies that support autonomous driving become more sophisticated, it is vital to ensure clear visibility for a safe experience for drivers and passengers.

Enabling superior clarity for advanced driver assistance systems (ADAS)

The next generation of ADAS plays a crucial role in the evolution of driver safety and supports the transition of conventional cars to advanced autonomous vehicles. An essential component of the system is the front-sensing camera, which is often positioned behind the windshield. To support efficient sensor fusion, advanced camera systems are demanding more stringent optical requirements to avoid transmitted double image (TDI). TDI is a phenomenon that can have significant impact at the camera zone on the upper part of the windshield:

- **When it can happen:** The light from street or car taillights passes through the windshield, which is mounted at an angle to the incident ray.
- **How it works:** Most of the light passes into the vehicle (primary image), but some of the light will be reflected from the inner glass/air interface back to the outer air/glass interface. The light is then reflected back into the vehicle, forming a secondary transmitted image that can be more pronounced at higher wedge angles.
- **Why it matters:** Due to TDI, the camera won't capture a clear picture. Instead, it will capture a distorted, blurry double image. This can affect the accuracy and reliability of the ADAS features, including forward collision warning, automatic emergency brakes, pedestrian detection and more.

With Saflex™ Horizon Vision PVB interlayer, the variable angle wedge can be tailored to minimize TDI and enable clarity and accuracy of visual information to ADAS.

Enhancing visual comfort for more sophisticated HUD applications

HUD technology has advanced to a new level by incorporating sophisticated augmented reality (AR) features. One HUD evolution is known as dual plane, having two sets of images being projected at different virtual image distances (VIDs) — near field and far field — to enable AR. This integration of HUD technology with AR dual-plane applications offers a rich driving experience with improved visibility and access to relevant information directly on the windshield.

To continue advancements in this field, challenges related to image distortion, known as ghosting, may occur:

- **When it can happen:** A projected image at different HUD zones, near and far field, reflects across multiple layers of glass at an angle, causing a faint blur or double image.
- **Why it matters:** The ghosting effect can occur when there are separated planes of projection in the near- and far-field zones with different focal points, ultimately requiring different wedge angles.

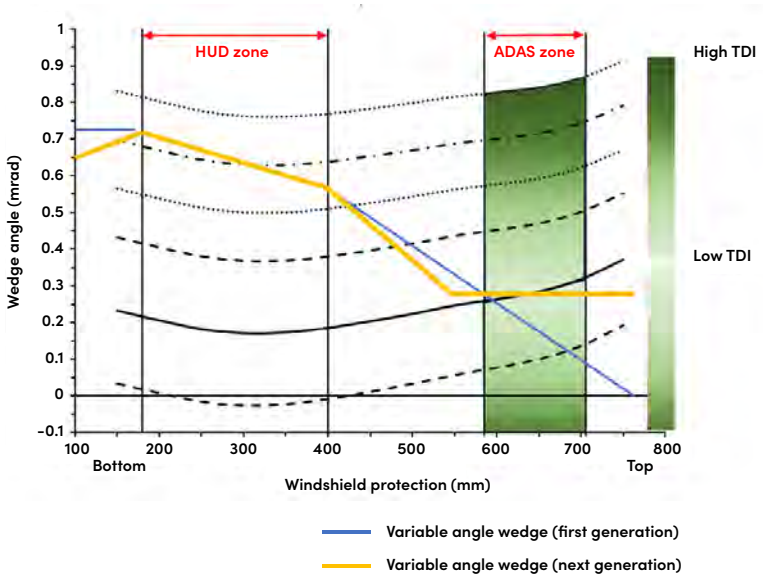
With multiple planes of projection, depending on the windshield design and HUD zone separation, distinct wedge angles would be required for the near- and far-field zones to meet specific ghosting requirements.

With Saflex™ Horizon Vision PVB interlayer, the variable angle wedge can reduce ghosting and enable improved visual clarity and comfort for HUD dual-plane applications.

Innovating with a clear view ahead

Saflex Horizon Vision is the next generation of Eastman's variable angle wedge PVB technology. Its unique feature lies in its highly customizable capability to generate an extended set of profiles and angles, which enables the product to meet multiple image-separation requirements from the bottom to the top of the windshield. This ensures exceptional image clarity in both the HUD zone for drivers and the ADAS zone for cameras.

Saflex Horizon Vision PVB interlayers support the automotive industry's goals of advancing safety, comfort and sustainability, enhancing the overall experience for drivers and passengers.



Saflex Horizon interlayers are available in acoustic and solar formulations for:

A quieter, more comfortable cabin experience, improving interaction with voice-activated devices and conversations with passengers

UV protection that blocks more than 99% of harmful UV radiation and solar control, lowering interior vehicle temperatures for more cabin comfort

Greater fuel efficiency and CO_2 reduction as lower cabin temperatures reduce AC use

Trusted by experts

Around the world, automotive engineers trust Eastman when performance and safety are critical concerns. The reason is simple: Saflex interlayer technology delivers advanced glazing performance for demanding applications, meeting exacting specifications and targets. The industry counts on Eastman for technical and development expertise, making us a global leader in PVB interlayers for automotive applications.

For more information, visit **saflex.com**.

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