



Lynred and Saint-Gobain Sekurit develop windshield with integrated thermal camera to improve safety at nighttime

First windshield to integrate visible and thermal cameras will help car makers meet new day and night safety requirements for Pedestrian Autonomous Emergency Braking (PAEB) systems

Demonstration of windshield for PAEB systems will take place during [AutoSens, September 19 – 21, 2023](#) at booth #40

Grenoble and Thourotte (near Paris) France, September 13, 2023 – Lynred and Saint-Gobain Sekurit today announce the world's first windshield that incorporates both visible and thermal cameras side-by-side. The windshield, with an enhanced sensing-system, aims to help car makers improve the reliability of collision mitigation systems by detecting pedestrians in adverse visibility conditions, particularly at night, when more than 75% of pedestrian fatalities occur¹. It will also reduce incidences of false positive alarms - cars automatically braking when there is no danger, creating a risk of rear-end collisions.

Saint-Gobain Sekurit and Lynred will demonstrate their visible and thermal sensing suite integrated into a windshield during AutoSens in Brussels, September 19 – 21, at booth 40. This sensing-system is the first to enable thermal imaging through standard windshield glass; detecting and classifying pedestrians at up to 140m in all weather and lighting conditions.

This co-development is in response to new automotive vehicle safety standards requiring Autonomous Emergency Braking (AEB) and Pedestrian Autonomous Emergency Braking (PAEB) systems to work reliably both day and night, at speeds up to 100km/h for lead car crashes avoidance and up to 65km/h for pedestrians. Within four years of public approval of the regulation, the US National Highway Traffic Safety Administration's (NHTSA) [notice for proposed rulemaking](#) will require light vehicles to be equipped with these systems.

[Europe's Road Safety Policy Framework 2021 – 2030](#), and its 'Vision Zero' approach, is also requiring better vehicle construction to improve road and pedestrian safety.

Road traffic accidents, a global issue

Globally, approximately [1.3 million](#) people die each year as a result of road traffic accidents. According to the American Automobile Association (AAA), in the US alone it is estimated that AEB systems with pedestrian detection functionality could reduce annual vehicle/pedestrian accidents by up to [5,000](#) a year.

"One of our main objectives is to provide Tier 1 suppliers with the critical building blocks to produce a thermal camera system under €100 that can connect to the AEB system. By halving the cost of thermal image sensors used by car makers today, they will have an affordable thermal sensor solution to enable them to comply to NHTSA rulemaking more readily across all car ranges," said Sebastien Tinnes, global market leader at Lynred.

¹ US Department of Transportation: Traffic Safety Facts 2019, Pedestrians Data, p.6 (DOT HS 813 079, published May 2021)

In a summary of [test results](#) (p.46), the AAA concluded that most pedestrian AEB systems have been 'ineffective' at night. One challenge for car manufacturers is that glass appears non-transparent (mirror-like) on the infrared spectrum. Thermal imaging does not work through glass, which until now has precluded its integration into windshields, the optimal area for obstacle detection in AEB systems.

"Our long-standing expertise in safety systems for windshields and our best-in-class glass material shaping knowledge are essential to ensuring the best optical performance for reliable camera detection both night and day. Alongside Lynred, we are pleased to contribute to the development of this innovation for the safety of all occupants, while improving the mobility experience," said Adil Jaafar, global innovation manager at Saint-Gobain Sekurit.

AEB system windshield solution

Saint-Gobain Sekurit developed a crystal-based technology to create a transparent area within the windshield, aligning both the visible and thermal cameras. The crystal is Federal Motor Carrier Safety Administration (FMCSA) compliant and is integrated while retaining the original performance of the wiper system and the thermal comfort of the passenger compartment.

Lynred provided a VGA (640x480 resolution) thermal sensor equipped with Umicore lenses and configured the camera data input with the pedestrian detection algorithm.

Conventionally, thermal sensors have been placed behind the grille, exposing them to mud, dirt shocks and other elements. Positioning visible and thermal sensing-system behind the windshield increases the reliability of AEB by improving visibility in all scenarios.

Advantages include:

- Distinguishing pedestrians from other animate or inanimate objects, thus reducing false positive alarms
- Functioning in all weather and lighting conditions
- Close proximity of both sensors, resulting in easier visible and thermal image fusion thus providing enhanced detection performance
- Better road vision due to higher placement of the sensing-system
- Protecting sensors from obstructive elements to optimize operating time

Having successfully demonstrated the technical and economic viability of this windshield for PAEB systems, each company plans to gear up their respective technologies for industrial-scale production with a view to commercializing the final product to be integrated into the windshield in 2027.

About Saint-Gobain Sekurit

With more than 350 years in business, Saint-Gobain is one of the 100 most innovative groups in the world. Worldwide, Saint-Gobain Sekurit designs and manufactures sustainable and innovative high-performance glazing systems specifically for Original Equipment Manufacturers (OEMs). As a trusted automotive partner, Saint-Gobain Sekurit aims to be a game-changer; improving individual and collective mobility by making every drive a great experience while providing safety for all and preserving our future.

www.saint-gobain-sekurit.com/

About Lynred

Lynred and its subsidiaries, Lynred USA and Lynred Asia-Pacific, are global leaders in designing and manufacturing high quality infrared technologies for aerospace, defense and commercial markets. It has a vast portfolio of infrared detectors that covers the entire electromagnetic spectrum from near to very far infrared. The Group's products are at the center of multiple military programs and applications. Its IR detectors are the key component of many top brands in commercial thermal imaging equipment sold across

Europe, Asia and North America. Lynred is the leading European manufacturer for IR detectors deployed in space.

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