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Sensor Cleaning for Highly Automated Driverless Vehicles

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AUTONOMOUS DRIVING: A MARKET TREND FOR SAFER ROADS

To address the pervasive issue of road crashes and the risk of death or serious injuries to both drivers and passengers, regulatory authorities, independent safety bodies, and governmental organizations have been drafting regulations and guidelines. These guidelines are aimed toward improving the crash worthiness and crash avoidance capabilities of vehicles and reduce fatalities from road crashes. Automotive OEMs have been focusing on improving the safety of their vehicles to address the pervasive issue of traffic crashes, with greater focus on crash avoidance to build upon long-standing benefits in crash worthiness. This effort is further supported by government regulations, independent safety evaluations such as New Car Assessment Program (NCAP), and voluntary commitments by the automotive industry worldwide. To offer active safety and driver assistance features while maintaining a solid business case, automakers are adopting diverse strategies. As part of the broader plans of deploying semi and highly automated vehicles, automotive OEMs are pursuing innovative strategies that enable them to sustainably develop and deploy autonomous vehicle technologies while minimizing risks. Increasing level of automation with increasing number of sensors.

THE NEED FOR CLEANING

Dirt from muddy roads, dust, frost, snow and air pollution can affect not only the view through the vehicle windshield, but also the performance of headlights and all optical sensors such as cameras and LiDARs. With the growing trend of high automated and driverless vehicles with multiple sensors on board, sensor cleaning becomes vital to its function. If a camera/LiDAR gets dirty by approximately 15-30%, the view of sensors is reduced and needs cleaning and this may vary on specific sensor properties, vehicle position and priority. Cleaning is not as trivial as it looks at first glance. Sensor locations and aerodynamics, vehicle speed, weather conditions, dirt types, sensor redundancies and priorities have an influence on the cleaning performance. The innovative Kautex dynamic test bench enables to test the massive impact of the environmental conditions like vehicle speed up to 140km/h, aerodynamics and temperature from -20° C up to +50° C. With the Kautex intelligent cleaning solution, parameters are adjusted to the specific needs and most efficient clean can be realised. Weather conditions varies a lot in the different regions of the globe.

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