VanAssist Pilot Project

Intelligent Delivery: Ibeo Automotive Systems Allow Delivery Vans to Drive Autonomously

Hamburg, 27 April 2020 – Parcel and freight logistics is thriving due to a boom in online shopping. As a result, CEP service providers (courier, express, and parcel services) such as DPD are facing major challenges when it comes to the “last mile”. The aim of the VanAssist research project is to use sustainable, intelligent, and automated delivery vehicles to reduce the strain on couriers in the future. Hamburg-based LiDAR specialist Ibeo utilizes a safety system to monitor all the components involved here so that the vehicle can be driven without a driver. Ibeo also ensures highly precise detection of objects and vehicle localization with the new solid-state LiDAR sensor ibeoNEXT. The pilot project is funded by the Federal Ministry of Transport and Digital Infrastructure. Apart from Ibeo, DPD, IAV, and bridgingIT as well as the Institute of Automotive Engineering at TU Braunschweig, TU Clausthal, the University of Mannheim, and the University of Applied Sciences Offenburg are all part of the consortium.

The focus of the VanAssist project is autonomous electric vans designed for emission-free delivery in urban centers. A rendezvous mode, for example, guides the courier back to their vehicle after successfully making deliveries so that they can pick up further packages. Increased efficiency in delivery and vehicle utilization should also minimize and automate repetitive work steps.
Ibeo Is the Eyes and Brain
The safety system plays a key role in the self-driving delivery vehicle. Ibeo coordinates and monitors the safety-relevant data of the components involved here, such as lane-keeping sensors. If the vehicle starts to deviate, the path is then corrected. “An autonomous vehicle needs eyes to find its way. Sensors scan the outside world in order to do this,” explains Alexander von Bergner, Ibeo Project Manager for VanAssist. “But it also needs a brain to evaluate situations and take action. Our safety system takes care of that. For us, this is a major contribution so that vehicles can drive on their own in the near future without requiring a safety driver.”

Ibeo’s newly developed solid-state LiDAR sensor ibeoNEXT collects live environmental data, which is processed into highly accurate digital maps for the vehicle to use for navigation. The delivery vehicles detect when something changes in the surroundings and update the map. If a vehicle still cannot keep going on its own, the control center switches on. “A purely GPS-based tracking system would be far too inaccurate. Our sensors let us determine the vehicle’s position to within exactly ten centimeters,” adds von Bergner.

VanAssist in Practical Use
The courier removes packages from the vehicle and delivers them on foot to the surrounding area. The vehicle moves on its own to the next stop and waits there for the courier. The vehicle and courier are in permanent contact with each other via a communication unit. For example, the courier can order the vehicle, which is currently driving on its own to one stop, to drive to another stop than the one originally requested. In complex and dynamic environments, however, situations can arise that can only be solved with human assistance. With VanAssist, defined driving maneuvers can be remotely enabled or started in the sense of a control center, for example, to avoid an obstacle that the vehicle sensors cannot clearly identify. In future, the system will then optimize delivery routes and take
the best and shortest route. The courier’s personal experience is then taken into account, coupled with the ideal delivery time at an address, special delivery conditions, traffic situations at certain times, best stopping points, etc. The automated vehicles can already handle many situations on their own.

The VanAssist test track is located on the TU Braunschweig campus. The project is funded by the Federal Ministry of Transport and Digital Infrastructure within the framework of the “Automated and Networked Driving” funding program with a total of 2.7 million euros in funding.*

Further information: www.vanassist.de.

*This work was developed as part of the joint project "VanAssist - Interaktives, intelligentes System für autonome fernüberwachte Kleintransporter in der Paketlogistik" and was funded by the Federal Ministry of Transport and Digital Infrastructure based on a resolution of the German Bundestag.

About Ibeo
Ibeo Automotive Systems GmbH has established itself as a global technology leader for LiDAR sensors (English acronym for Light Detection And Ranging) and the associated products and software tools. This technology is used as an assistance system in cars and in the field of autonomous driving. It is Ibeo’s goal to reinvent mobility by enabling cars to become cooperative partners in the driving process, thus making transportation safer. Ibeo employs a total of over 400 people at its Hamburg, Eindhoven (Netherlands), and Detroit (USA) sites. Since 2016, the automotive supplier ZF Friedrichshafen AG has held a 40 percent share in Ibeo: initially via Zukunft Ventures GmbH, and since 2019 via ZF Automotive Germany GmbH, a wholly owned subsidiary of ZF. Ibeo celebrated its 20th anniversary in 2018.

For further information, visit: www.ibeo-as.com.
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