

Platooning in the logistics industry: Researchers see great potential in real operations after tests

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Successful completion of pilot project run by DB Schenker, MAN Truck & Bus and Fresenius University of Applied Sciences

Operating electronically linked trucks on German motorways is safe, technically reliable and easily applicable in the routine of a logistics company. These are the key results of the world's first field test with truck platoons in real logistics operations, which the project partners presented in Berlin today.

As part of a research project sponsored by the Federal Ministry of Transport and Digital Infrastructure (BMVI), professional drivers drove two electronically linked vehicles on the Autobahn 9 between the Nuremberg and Munich branches of the logistics company DB Schenker over the course of seven months. Having covered some 35,000 test kilometers, the truck drivers, who drove at a distance of only 15 to 21 meters, praised the driving comfort and the general sense of safety. The field test also demonstrated savings in fuel consumption.

The Federal Ministry of Transport and Digital Infrastructure (BMVI) contributed funding of approx. 1.86 million euros to the research project. The project partners DB Schenker, MAN Truck & Bus and the Fresenius University of Applied Sciences presented the results at the Ministry. According to the project partners, the use of truck platoons could ensure more efficient use of space on motorways, less congestion and increased road safety.

Andreas Scheuer, Federal Minister for Transport and Digital Infrastructure said, "The mobility of the future will be automated and networked. Of course, this is also true for logistics. I therefore fully support the industry in bringing technologies such as platooning to market maturity. We want to make the processes even safer, more efficient and more environmentally friendly, all along the value chain. The drivers have a key role to play here.

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MAN Truck & Bus is one of Europe's leading commercial vehicle manufacturers and transport solution providers, with an annual revenue of some 11 billion euros (2018). The company's product portfolio includes vans, trucks, buses/coaches and diesel and gas engines along with services related to passenger and cargo transport. MAN Truck & Bus is a company of TRATON SE and employs more than 36,000 people worldwide.



In a digital truck they will be modern logistics specialists. This will open up new prospects for the profession."

Doll believes platooning possible on 40% of kilometers operated by land transport

According to DB Schenker's research, platooning can be used extensively in the logistics network. Alexander Doll, Member of the Management Board for Finance, Freight Transport and Logistics at Deutsche Bahn AG said, "We have analyzed our European transport network and it is safe to say that around 40% of the kilometers traveled could be carried out in platoons." For this, however, further tests and ensuring the regulatory framework would be necessary. Customers would also benefit. "With platooning we can offer even more reliable transports."

The platooning system installed in the MAN trucks operated smoothly 98% of the time. Active interventions by the driver were necessary only once every 2,000 kilometers, which is much less than expected. In addition, the pilot project demonstrated a 3 to 4 percent reduction in fuel consumption. "We were able to show that platooning has the potential to contribute to the reduction of fuel consumption and CO2 emissions. First and foremost, we are pleased that the system works reliably and can increase safety on the motorway. Accordingly, platooning is an important step for us on the way to automation," said Joachim Drees, Chairman of the Management Board of MAN Truck & Bus SE.

Scientists confirm that drivers feel safe

Scientists from the Fresenius University of Applied Sciences investigated the psychosocial and neurophysiological effects on the drivers. Having experienced the actual field test brought about a significant change in the previously sceptical attitude of the drivers. "A general sense of safety and trust in the technology is echoed in the drivers' assessment of specific driving situations. None of these were described as uncontrollable," said Professor Sabine Hammer from the Institute for the Science of Complex Systems (Institut für komplexe Systemforschung, IKS) at the Fresenius University of Applied Sciences. The drivers experienced vehicles of other road users cutting in from adjacent lanes or cutting across multiple lanes as



"disagreeable", but not critical. "Due to the fast response times of the system, drivers would now prefer a distance of 10-15 meters," said Hammer.

"The EEG measurements show no systematic differences between platoon runs and normal runs when it comes to the neurophysiological stress placed on drivers, i.e. in terms of concentration or fatigue," said Professor Christian Haas, Director of the IKS. For international use, the scientists recommend further research with longer periods in platooning mode. The project partners are convinced that the potential of truck platooning can be further increased by future developments. In addition, new digital business models in logistics are conceivable.

How platooning works

The term "platooning" refers to a system that vehicles use on the road in which at least two trucks drive in a tight convoy on a motorway, supported by technical driving assistance and control systems. All vehicles driving in the platoon are electronically linked to each other. The truck in front sets the speed and direction, and the others follow.

Caption:

The participants of the platooning-project presented the research results at the final event at the Federal Ministry of Transport and Digital Infrastructure (BMVI) in Berlin (l.t.r.): Joachim Drees, MAN Truck & Bus, Alexander Doll, Deutsche Bahn, Dr. Tobias Miethaner, Federal Ministry of Transport and Digital Infrastructure, Andy Kipping, Truck Driver DB Schenker, Prof. Dr. Sabine Hammer and Prof. Dr. Christian Haas, both Hochschule Fresenius.