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Test track in the city centre: Volkswagen tests fully automated driving in normal traffic

Goal: Improved traffic flow and safety / Trained test drivers at the wheel / Further ITS project gains momentum

Hamburg's inner city test track for automated and connected driving has its first user: For the first time, Volkswagen Group research is testing automated driving up to Level 4 under real-life conditions in complex big-city traffic. Beginning immediately, tests will be conducted with five e-Golfs on a three kilometre long section of the track.

The results will be continuously evaluated, taking all Volkswagen data protection regulations fully into account. They will contribute to the company's research projects on autonomous driving, to trials for client-oriented services, and to the optimisation of private transport. For Hamburg, this will mean important insights into the requirements of the future infrastructure and the effects of automated driving for the city.

Michael Westhagemann, Senator for Economics, Transport and Innovation: "In two and a half years, the World Congress on Intelligent Transport Systems (ITS) will be taking place in Hamburg. Automated driving will play a significant role. I am pleased that, with our strategic partner Volkswagen, we have already found a first user for our test track. I am looking forward to learning how the drives will go and what knowledge this will give the city, too. Other interested users from industry or science are more than welcome to also test applications of automated driving on the test track, which is available to manufacturers and users. We will be establishing Hamburg as a model city for intelligent mobility and will present many innovative mobility projects to the international public in 2021."

Axel Heinrich, Head of Volkswagen Group Research: "The tests are centred around both the technical possibilities and the requirements made on urban infrastructure. After all, to make driving a car even safer and more comfortable in the future, not only the vehicles must be autonomous and more intelligent, but the cities must offer a digital ecosystem in which cars can communicate with traffic lights and traffic guidance systems, as well as with each other."

For reasons of safety, a trained driver is seated at the wheel during the test drives, constantly checks all of the driving functions, and can intervene in case of emergency. For fully automatic driving in public traffic without a safety driver, a change in the legal framework is currently needed, as well as the establishment of the necessary infrastructure. The test drives are part of the strategic mobility partnership that VW and Hamburg have been developing since August 2016.

Hamburg's test track project has been planned so that, by the end of the coming year, 37 traffic lights and a bridge will be equipped to send information to vehicles by WLAN. Six traffic lights are already equipped and are able to communicate with cars. Within the framework of the Intelligent Transport Systems ("ITS Strategy"), Hamburg is constructing the nine kilometre test track so that it is open to any users and manufacturers. It goes from the Dammtor Railroad Station to the Messehallen, Landungsbrücken, Elbphilharmonie, Rödingsmarkt and back. The goal is an improvement in the flow of traffic and safety in road traffic, as well as insights regarding the future use of the so-called "V2X Infrastructure." The project, which is being supported through two fundings totalling 10.8 million euros from the Federal Ministry of Transport and Digital Infrastructure, was presented in a citizen's event at the end of November.

The test track is also to be used by members of industry and science during the ITS World Congress 2021 in Hamburg, so that the latest technological developments can be presented.

The e-Golf has eleven laser scanners, seven radars and 14 cameras. The data exchange amounts to as much as 5 gigabytes per minute for regular test drives, each of which lasts several hours. To master this, a computing capacity of approximately 15 laptops is found in the trunk of the e-Golf. The enormous computing power plus the finest sensor technology ensure that pedestrians, bicycle riders, other cars, intersections, priority rules, parking vehicles and lane changes in moving traffic can be registered at the shortest of distances and in milliseconds. Despite the variety and complexity of the information, the artificial intelligence of the vehicle's software must identify all relevant objects, react to them, but not give false alarms. Accomplishing this involves various approaches for artificial intelligence, including deep learning, neuronal networks and pattern detection processes.

Parallel to the construction of the test track, which will be guided by the Agency of Roads, Bridges and Water and implemented by the Hamburg Verkehrsanlagen GmbH, the track will be marketed by the north German mobility cluster ITS mobility in Braunschweig, to attract further innovative mobility solutions to Hamburg.

Information on the "Test Track for Automated and Connected Driving": www.tavf.hamburg
Information on the ITS strategy and its implementation: www.hamburg.de/its

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