

PRESS RELEASE

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Bundesrat approves simplifications for future technology New regulation clears the way for autonomous series vehicles

With Space Drive, Schaeffler Paravan has a proven drive-by-wire solution that is essential for upgrading or retrofitting autonomous vehicles.



Thanks to drive-by-wire, future autonomous vehicle concepts can do without a steering wheel and pedals Photo: Schaeffler Paravan

On May 20, 2022, the Bundesrat (upper house of the German parliament) passed the autonomous driving ordinance (AFGBV) presented by Federal Transport Minister Volker Wissing (FDP). Among other things, this regulates how operating permits for vehicles with autonomous driving functions are issued and for which operating areas they are approved. In addition, there are technical requirements for the construction, condition, equipment and monitoring of correspondingly equipped vehicles. The ordinance is expected to enter into force as soon as possible following the decision now taken by the Bundesrat.

This means that, for the first time, autonomous vehicle fleets will be able to operate nationwide without physically present safety drivers in defined operating areas of public road traffic. The law on autonomous driving, which was already passed in May 2021, will thus become more practical and economical to implement.

In the future, it will be possible to apply to the Federal Motor Transport Authority for a general operating permit for autonomous cars of the same type. The next step is to apply to the relevant authority in the respective federal state for an operating permit for a geographically defined operating area. This is followed by the actual road registration with official license plate and vehicle documents as well as compulsory insurance. According to the ordinance, an operating area is suitable if an

autonomous car can independently perform its driving tasks there. In doing so, "the safety and ease of road traffic must not be impaired, nor must the life and limb of persons be endangered."

The background to this is that the use of autonomous vehicles in Germany was previously only permitted within narrowly defined local limits. Until now, these vehicles were only allowed to travel at speeds of around ten kilometers per hour and in the company of a physically present safety driver.

The new regulation now allows them to be used at practical speeds and in moving traffic. Although human supervision at all times remains mandatory, the vehicle may now be supervised - for example, by remote monitoring from a control center. Vehicle safety checks before driving are also simplified, reducing overall operating costs.

As a result, lawmakers estimate that 400 geographic areas of operation for autonomous vehicles will be requested under the new regulation over the next five years. The estimate is also based on the assumption that at least four vehicles will be needed to reasonably operate an autonomous service. Mathematically, this would mean that about 320 autonomous vehicles ($400 \text{ operating areas} / 5 \text{ years} = 80 \text{ applications or holders per year; } \times 4 \text{ vehicles}$) would be on the roads nationwide in the future.

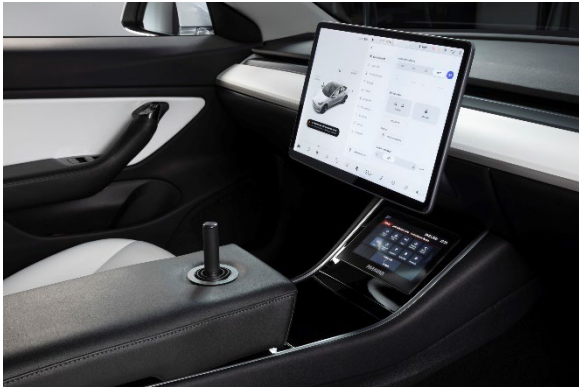
"For the operators of such vehicles, the new regulation now creates legal certainty and clear requirements. Last but not least, it is a clear commitment to technology leadership in Germany. We are convinced that autonomous driving functions will decisively advance the transformation of the automobile in many areas such as safety, comfort, and the design of new interior concepts," says Roland Arnold, CEO of Schaeffler Paravan Technologie GmbH & Co. KG and managing director of PARAVAN GmbH. "In this context, drive-by-wire is the basic technology for all autonomous vehicles that is indispensable for safe approval. With Space Drive, Schaeffler Paravan offers a solution for retrofitting or upgrading these vehicles that has already been used thousands of times. The system, which was developed from the field of mobility for the disabled, has proven its worth for years in public transport on more than one billion kilometers - until now by individual approval. Given the potentially very high cost of obtaining an operating license for their vehicle fleets, it makes a lot of sense for operators to use drive-by-wire components that have already been tried and tested. There is no better proven system in the world than Space Drive."

The joint venture Schaeffler Paravan Technologie GmbH & Co KG is also continuously developing the innovative driving and steering system: Space Drive 3 AddOn is specially designed for small series - such as the autonomous vehicle fleets that are now feasible - and represents the basis for the future integrated large series solution. The multi-redundant system relies on an end-to-end safety concept for vehicles with functional safety relevance; developed according to the ASPICE process, it will meet the requirements of the ISO 26262 safety standard.

The AUTOSAR-based system enables a direct connection to the vehicle electronics as well as communication and network architecture. Automobile manufacturers will also benefit from maximum scalability combined with the greatest possible scope for model- and vehicle-specific customization. This is an important milestone on the road to drive-by-wire in large-scale production - both for road vehicles and for people movers or vehicle solutions for off-highway operation on private industrial sites, such as ports, logistics centers or airports.

Because 90 percent of accidents are caused by human error, the government coalition hopes that the new regulations will improve road safety, increase social participation for previously disadvantaged people, and strengthen public transportation in areas that could not be served economically because of high personnel costs and low capacity utilization.

In addition to the transport of people, the transport of goods is also an important aspect, and autonomous driving could possibly be a solution to the problem of the shortage of truck drivers in the medium term. Last but not least, the regulation will also put an end to speeding, because autonomous vehicles that can be registered must adhere to the applicable traffic regulations at all times.



Thanks to drive-by-wire, future autonomous vehicle concepts can do without a steering wheel and pedals. Photo: Schaeffler Paravan



This is what the vehicle of the future could look like. In auto-nomous vehicles, conventional steering is no longer necessary; driving automation, sensors, radar and lidar take over the control. Photo: AdobeStock



Autonomous mobility concepts can now be tested in the real test field thanks to the autonomous driving regulation (AF-GBV) that has now been passed, Photo: Schaeffler-Paravan



New vehicle concepts such as the autonomous mover or shuttle will be an important mobility building block in the future. Photo: Schaeffler-Paravan

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Seite 4 von 4

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About Schaeffler Paravan Technologie GmbH & Co. KG

Schaeffler Paravan Technologie GmbH & Co. KG is a company specializing in the development of fail-operational drive-by-wire systems - "Space Drive" - and chassis system solutions. It is headquartered in Herzogenaurach with an operating facility in Pfronstetten-Aichelau. Schaeffler Paravan Technologie is a joint venture (90 percent Schaeffler and ten percent Roland Arnold) and was founded in October 2018. The Space Drive system developed by Paravan founder, Roland Arnold was completely transferred to the joint venture and will be industrialized there. For future autonomous vehicles, Schaeffler Paravan is also developing a "rolling chassis" with intelligent corner modules - with integrated Schaeffler wheel hub motors, brakes, space drive steering (90 degrees) and suspension in one system. www.schaeffler-paravan.de