

Pffronstetten-Aichelau, 26 November 2024

Steering by foot: steer-by-wire opens up individualised paths for handicap mobility

Petra uses it, Lothar uses it, the PARAVAN foot-operated steering. If you can no longer steer with your arms and your feet are still intact, they can take over. That's no problem with Space Drive. It doesn't really matter where the input device is positioned or how it is operated. For many people, electronic foot control is a significant improvement over previous mechanical systems.



Petra and Lothar are making the switch: they used to drive with mechanical foot steering. Now they drive much more easily and gently with PARAVAN foot steering, a steer-by-wire solution in which the steering signal is transmitted to a corresponding steering actuator via a cable. Photos: Paravan

Petra's whole face is beaming as she takes delivery of her new Porsche Cayenne. This time, the 62-year-old has electronic foot steering with the Space Drive steer-by-wire system on board - a huge relief. Previously, she drove with a mechanical system that put much more strain on her joints. 'Sometimes it pinches my hips,' she says. 'It's more skilful if I can turn my foot to the right or left.' The old system demanded much more strength and greater movements from her. Over time and with increased use, this could affect her joints. 'Five years ago, I used to ride with a hand control and a fork,' says Petra, 'but that was nothing. Her arms are simply too short to make the turn.

That was also the case for Lothar, the 52-year-old was born without arms. He also used to ride with the mechanical counterpart and he too feared health problems at some point. At first, however, it was a little unusual for him to be travelling with the very sensitive steering system. 'The steering angle is speed-dependent. When stationary or travelling slowly, the steering reacts more sensitively than at higher speeds. The faster you drive, the more sluggish the steering becomes. I first had to develop a feel for this relationship and the necessary dexterity,' he reports. He has now been driving with Paravan foot steering for almost five years and has covered almost 100,000 kilometres with it. In the meantime, it has become second nature to him. 'I wouldn't want to be without this steering system today. I can't imagine anything better, especially when parking or manoeuvring with a trailer'.

However, it is not only steering that is a challenge for users of a foot-steering system, but also operating the vehicle's secondary functions such as indicators, horn, windscreen wipers and sun visor. 'I wanted a modern, future-proof vehicle and not be restricted by levers or buttons,' says Petra. With the PARAVAN voice control and touch system, she now has access to all of her vehicle's secondary functions. Up to 99 vehicle functions can be controlled. In her case, the PARAVAN touch system is individually mounted on the driver's door so that Petra can easily reach the control panel despite her short arms - an ideal complement to the integrated voice control.

PRESSEMITTEILUNG

Lothar is not a fan of voice control: his aim was to operate the vehicle's secondary functions exclusively with his feet, which are also his hands. He achieves this with the PARAVAN Touch, which is integrated into the footwell of his VW Touran, as well as with additional switches and buttons located above the accelerator and brake pedals. 'It was important to me to be able to operate the indicators, windscreen wipers and horn directly - without having to use voice commands. To ensure that I have quick access in any traffic situation, these and other functions are assigned twice - above both the accelerator and brake pedals,' he explains.

For Petra, it's now all about the finer details: for example, is the PARAVAN Touch or the bleeper, which is used to operate the secondary functions, in the right place? She did her first test lap on the practice area, then went straight onto the road. The changeover was easy for her, and after a good month of driving experience she is now confident in her new vehicle.

Foot control as a mobility solution

The foot control offers people with limited or no arm function an efficient way to remain mobile. It is suitable for various conditions such as dysmelia, thalidomide damage or amputations. The system is also a suitable solution for diseases such as polio, which restrict arm function. Electric foot controls with steer-by-wire technology offer even greater relief. Slight horizontal foot movements send the signal to the steering motor, which is easy on the joints and increases driving comfort.

Vehicle selection and conversion:

Almost any vehicle can be converted, as long as there is space for the Space Drive actuator on the steering column and it is easy to get in and out. The belt system must also be adaptable.

Important steps::

- - Medical roadworthiness certificate
- - Technical acceptance by the TÜV
- - Entry in the driving licence after inspection

The training takes place either in the PARAVAN driving school vehicle or directly in the converted customer vehicle.



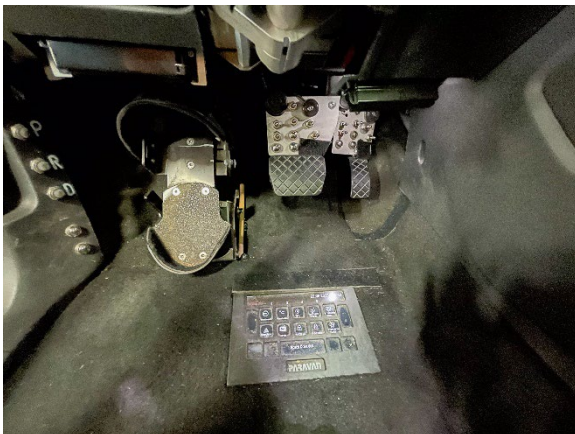
Final adjustment drives for Petra, is everything optimally positioned, does buckling up and operating the secondary functions work? In the end, the car has to fit like a tailor-made suit so that customers can enjoy their mobility independently and without outside help, Photo: Paravan



Petra steers her car with her foot, she can also operate the secondary functions with her left hand if necessary, but mostly she uses the voice control. Photo: Paravan



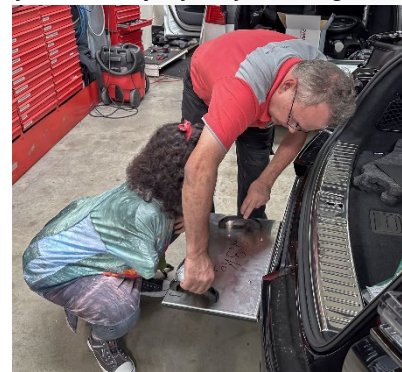
For Lothar Nickels, the steering and secondary functions are firmly integrated in the footwell. Direct operation with the foot was important to him, which is why he has additional switches for operation with the toes. Photo Paravan



For Lothar, the footwell becomes the cockpit. He controls all of the vehicle's secondary functions blindly and precisely with his feet. Using the buttons on the pedals, he can operate the most important functions such as the indicators, windscreen wipers and horn directly and without any detours. Photo: Paravan.



All the other details that Lothar and Petra need are also customised. For Lothar, it's the door opening that he can operate with his foot. For Petra, it is the belt so that she can hold him securely, or a small platform for the dog so that he can jump into the car easily. Photo: Paravan



Before, Petra Baader rode the Franz system, which required different movement sequences and significantly more effort. Photo: Paravan.

PRESSEMITTEILUNG

Contact:

Anke Leuschke, Press spokesperson, Paravan GmbH,
Tel.: +49 7388/ 99 95 81, E-Mail: anke.leuschke@paravan.de

About Paravan GmbH:

PARAVAN GmbH is the global market leader in customized vehicle solutions for the disabled people. About 160 employees at the Pfronstetten Aichelau and Heidelberg sites develop and produce customized vehicle conversions, electric wheelchairs and even specialized driver training. PARAVAN pursues a holistic approach with its "one-stop shop" concept. The technological highlight is Space Drive, an intelligent digital control system based on the drive-by-wire principle. Thanks to the active redundancy of the servo motors, it is completely fail-safe and the first to be approved for road use. This innovation enables severely disabled people, some of whom have no arms or legs, to drive independently and safely. It is not possible for these drivers to simply take control of the steering wheel. Over the past 20 years, Space Drive has been proven on more than one billion kilometers of roads worldwide and is used by numerous industrial customers for test vehicles in the field of autonomous driving. The system is available as a retrofit kit with an open interface for all known vehicle types. www.paravan.com