

## Automobilwoche (Germany)

### **Self-steering vehicles are getting closer: everything on autopilot**

*For years the auto-makers have outfitted their cars with driver-assistance systems. Thus the driver has had more and more driving tasks taken away. In the future he could be completely superfluous.*



**Tuesday, 12 November 2013, Stuttgart.** The dark limosine drives at 100 km/h on the highway—and Eberhard Kaus simply takes his hands off the wheel. Curves concern the 40-something-year-old as little as speed limits do. Also, as the Mercedes S-class approaches a town and the traffic around the car gets thicker, the highly concentrated man restrains himself from any intervention. His hands stay in his lap and his feet stay away from the pedals. Kaus is no normal driver. He is a researcher with Mercedes and his seemingly normal business car is a prototype, that is pushing forward perhaps the most important technology trend in the near future: autonomous driving.

If the development people like Eberhard Kaus had their way, cars would very soon be intelligent enough to make the driver a passenger and give all the driving to the electronics. Daimler CEO Dieter Zetsche sees even a historical parallel: “125 years ago we built the first horseless carriage. And now soon the coach without the coachman.”

Indeed the auto-makers do not want to give the driver full control of the car—when all is said and done, the joy of driving is an important buying criterion and an important motor for the entire industry. But in boring, routine situations, for instance in a traffic jam, in regular commercial driving, or on monotonous long stretches, the driver could busy himself with other things. It is so that Audi development head Ulrich Hackenberg imagines the future.

Kaus cannot yet relax. His prototype stops dutifully at every red light, waits at every crosswalk for pedestrians, and rolls alone through the tricky urban traffic. But this technology won't be ready yet for a little while. It functions just now on specially calibrated sections. The test driver is permanently in alarm readiness and ready to intervene.

**Also other auto-makers work on corresponding systems**

Mercedes researcher Ralf Herrtwich views the technology optimistically despite former deficits. The current S-class can already drive itself autonomously through a traffic jam. For a further development the autopilots must simply expand the number of cameras and sensors and be outfitted with new software. Then driverless driving will no longer be science fiction. Within the decade there should be an autobahn driver that has control even at high speeds. The system in Kaus's prototype is thinkable in the vehicle generation after that.

Herrtwich isn't alone in his ambitious prognosis. Carlos Ghosn, CEO of Renault and Nissan, is making even more steam with his engineers and promises autonomous driving by the year 2020. For the media he lets himself be chauffeured over a test track in a correspondingly re-worked Nissan Leaf. Also Tesla-CEO Elon Musk dreams of the car without a driver and has, in numerous interviews, predicted for electric vehicles during the latter half of this decade that they will be able to take over 90% of the driving workload.

There are similar demonstrations being made by almost all the big auto-makers: BMW has been driving test vehicles hands-free for several years already on the autobahn between Munich and Nuremberg. Audi sent its prototypes driverless through parking garages in January in Las Vegas. And the supplier Continental has driven thousands of miles through the U.S. state of Nevada.

"The technical challenges are meanwhile in view and ready to be solved within the next few years," says Herrtwich. But in parallel the legal challenges need to be solved. "It states in the Viennese Convention of 1968 that the driver must be able to take over the control of his car at any instant," explains the research head. But that doesn't fundamentally exclude autonomous driving. "The industry and the agencies are working at an elevated level on this. Since the technology is so far advanced, the laws must be also."

### **Development takes place step-by-step**

The autopilot doesn't come in any case overnight. The electronics will take over the control step-by-step. Cars have been able to automatically park for a long time already. With the Mercedes S-class and the new BMW X5 there are now the first vehicles that can alone hold speed, lane position, and distance at slow speeds in a traffic jam. And there is hardly ever a month when some auto-maker does not announce some new autonomous partial driving function for the near future.

For example, lately Toyota presented active systems for steering, lane-position holding, and speed control that in the next few years should pave the way for autonomous driving.

Among drivers these developments appear surprisingly to have sparked little skepticism. They are apparently ready to let the rudder leave their hands, at least for some moments: According to a survey by the economic testing company Ernst & Young, 42% of Germans are ready to use a driverless car. "If they can jump in in an emergency, this percentage is even higher at 66%," says study author Peter Fuss. Thus many hope for greater safety and fewer traffic jams—and for more free room for reading, relaxation, and communication. "Almost a third of those surveyed would like to use the driving time for other things." Mercedes researcher Eberhard Kaus is under some stress with this development work,

because he must be constantly ready to take over control in an emergency. But when the system in his test vehicle is ready for production vehicles, he would be one of the first users: "I would prefer to turn my driving on my vacation over to the autopilot today."