How to Find a Reliable Turn Assist System?

Interview with an Accident Expert and a Technology Expert

Although turn assists are not yet mandatory for conventional trucks, fleet operators and professional drivers would be more than happy to have a reliable system. We talked with accident expert Henrik Liers from the University of Dresden and Ulrich Roskoni, Head of Technical Product Design for Special Vehicles at Continental.

SVE: Mr. Liers, what is the real importance of accidents involving right turns? Is it possible that the topic is being exaggerated by the media?

LIERS: Absolutely not. Turning maneuvers by trucks are a significant cause of road accidents, and collisions with vulnerable road users like pedestrians and cyclists are often particularly serious. Of the some 300,000 traffic accidents resulting in injury recorded each year by the police in Germany, some 14% involve vehicles that are turning off. Although passenger cars account for about 85% of these, there are severe injuries or fatalities in almost 90% of the cases where a truck is involved. Quite often, the victims are cyclists.

SVE: Why do such accidents happen in the first place? Who as a rule was not watching out?

Henrik Liers

LIERS: Most reports by the police on the cause of an accident give the fault to the truck driver and state “Error when turning”. Of course, the accident victims sometimes must share the blame. Moreover, the driver’s view is frequently obstructed by parked vehicles, buildings, vegetation, traffic signs, etc. The biggest factors are related to the vehicle itself, like the blind spot and obstructions by structural elements of the vehicle. In addition, but not as frequently, the cause is windows that are fogged, iced up or dirty.

SVE: What must a turn assist system do in order to prevent turning accidents with pedestrians or cyclists?

ROSKONI: In order to provide greater safety for unprotected road users in such risky situations, a solution must reliably detect people in a truck’s danger zone and warn the driver in critical situations. The system must also function under many different visibility and weather conditions. That is, it must not be subject to narrow limits.

SVE: Aren’t there already such systems on the market?

LIERS: Yes, in principle. But drivers often deactivate them. That’s especially because of the many false alarms they trigger.

Ulrich Roskoni

ROSKONI: Now that’s a very important point! Accuracy in detecting pedestrians and cyclists must be as good as possible in order to decrease the rate of false positives and make the systems more acceptable to drivers. In addition, the detection area should be large enough to give drivers enough time to react after an acoustic, visual or haptical warning. Based on the usual speeds of trucks and bicycles, this area should extend at least 8-10 meters behind the front of the truck and 4-5 meters at the side.

SVE: Last summer, Continental came out with RightViu®, a turn assist that can be retrofitted. How does this system work, and are there differences from the first-generation systems?

ROSKONI: Yes, there are differences between our system and those of the first generation. I can’t go into the details here, but let me briefly describe what makes RightViu® special. The system monitors an area extending four meters to the side of the vehicle and up to 14 meters behind the front. That, for example, is well beyond the requirements in the applicable directive of Germany’s Ministry of Transport and Digital Infrastructure. RightViu® is a radar-based turn assist. In my opinion, radar is better than the other technologies used for this purpose, cameras or ultrasound, when it comes to reliably detecting objects in the zones next to a vehicle or behind it.

SVE: And how do you prevent false alarms?

ROSKONI: We use what we call VRU software. VRU stands for vulnerable road users. The software evaluates the information from the radar sensors and decides what kind of an object was detected. If a person, like a cyclist, is in the danger zone and is at risk of a collision, the driver receives an acoustic or visual warning – or a combination of warning signals. We also have a steering angle sensor so that a warning is not given until the driver actually turns the steering wheel.

SVE: How does retrofitting work? Is it difficult?

ROSKONI: Not at all. RightViu® was designed so that it can be fitted to a vehicle in just a few steps. The radar system is mounted directly beneath the right rear-view mirror at a height of at least two meters, and it uses the existing CAN bus in the vehicle. There is no need to drill holes. Nor is it necessary to lay any cables in the cabin. According to our experience and the reports we have received, all the work can be done in about six hours. It could go even faster, but the steering angle sensor, which protects drivers from annoying false alarms, has to be installed too.

SVE: Can the turn assist be mounted on any vehicle?

ROSKONI: In principle, yes. The only requirement is an outside rear view mirror at a height of more than 2 meters.

ENVIRONMENTAL CONDITIONS	Radar	Camera	Ultrasound
Day/night	✓✓	neutral	✓✓
Shadows cast by sun	✓✓	✗	✓✓
Rain	✓✓	neutral	neutral
Fog	✓✓	✗✗	neutral
Snowfall	✓	✗	✗
Dirt	✓	✗	✗
TECHNICAL CRITERIA			
Range	✓✓	✓✓	✗
Resolution	✓	✓✓	✗
Measurement of velocity	✓✓	✗	✗✗
Measurement of distance	✓	neutral	✗
Detection of objects	✓	✓✓	✓✓
Classification of objects	✓✓	✓✓	✗✗

A comparison of technologies according to different criteria: from very good (✓✓) to very poor (XX).

SVE: That’s no problem for big trucks. And trucks are the vehicles that can be so hard to maneuver in city traffic. I can imagine this will make life a lot easier for drivers.

LIERS: It sure will. Fleet operators can even get a subsidy for their investment. In Germany, RightViu® has a General Operating Permit, which is an important condition for government support.

SVE: Mr. Roskoni and Mr. Liers, thank you for this interview.

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