

The airbag: life saver or unexploded ordnance?

by Hans W. Mayer, 31 October 2014, VDI Nachrichten

Translated by Frank Owen, Alpha Omega Engineering, www.aoengr.com

For 30 years since its debut the airbag seems to still have mis-fires. Thus Audi ordered last week a worldwide recall of 850,000 cars of its A4 model—150,000 in Germany—because of a possible software fault in the airbag control module.



Safely packed: In an emergency the airbag in the steering wheel should deploy dependably and explode to its full size.

At the same time a gigantic recall in the USA was announced, also for airbag problems: The traffic safety agency NHTSA warned more than seven million owners of BMWs, General Motors vehicles, Hondas, Nissans, Toyotas, Chryslers, Fords, Mitsubishiis, and Toyotas that there airbags could burst or not even be able to deploy.

In Germany the statistics of the expert safety organization KÜS show that there are problems with the electronic guardian angels: 2.69 million investigations found 15,420 vehicles with airbag deficiencies. The possible results: In a crash the airbag would either not deploy or it would deploy in a harmless, unplanned bump with a curb.

Since the beginning of 2006 the testing of electronic safety systems and driver-assistance systems—ABS, airbags, ESP (electronic stability program), brake assistance or automatic roll-over protection (for convertibles)—has belong to the expanded testing regime of the general inspection according to § 29 StVZO (ed: this is the German traffic code). The fundamentals of this testing are delivered by Vehicle Systems Data GmbH (FSD) in Dresden, an alliance of German vehicle-testing organizations.

At first glance electronic safety systems play a secondary role in the statistical failures noted by KÜS: Of 3,046,988 documented failures only 23,100, that is just 1%, are attributed to safety-relevant systems. Among these the airbag with 15,420 cases (48%) ranks number one by a wide margin. Other rankings are ABS (32%), ESP (4.3%), and steering electronics (2.0%). “The numbers show clearly how important

safety and driver-assistant systems are”, confirms KÜS spokesman Hans-Georg Marmit. “For traffic safety they have the same necessity as, for example, testing the brakes.”

The airbag control indicator turns off usually a few seconds after turning on, cranking, and starting the engine. “If that doesn’t happen, it could be that the airbag was deployed in a previous accident and wasn’t replaced,” says Marmit. “Often faulty electronic connections are responsible for an indicated failure.”

Faulty electrical connections often arise, according to Günter Geiß, the proprietor of an independent auto repair garage in Mannheim. “In my experience the main cause of a airbag light that won’t go off are corroded plugs, kinked cables, or cheap cable material. The airbag itself, the control module, or the gas generator are very seldom defective.” Because new vehicles are equipped not just with driver and passenger airbags but also with an entire armada of side-, window- and knee-airbags, looking for faults is very tedious and time-intensive.

“An airbag light that won’t go off can have many causes,” says Birgit Degler, the press spokesman of the airbag manufacturer Autoliv. “It can be, for example, that the electrical connections between one or more airbags and the control module are faulty or are interrupted. It is also imaginable that the control module or the airbag was not repaired or replaced correctly or that there is maybe no longer any airbag at all in the steering wheel, dashboard, overhead lining, or in the A-column.” It’s also possible that instrumentation to test the system for faults is not even there at all.

Testing organizations like Dekra and TÜV’s Technical Monitoring Association could not, when asked, name any failure statistics for airbags, ABS- and EPS-systems. They referred us to the Dresden FSD. But they also gave us no corresponding information. If one reckons with the airbag complaints handled by KÜS for the entire German vehicle population (43.9 million), there are about 20 million general inspections per year, and that means that there are faults registered in six-figures. Thus there are more than 100,000 drivers under way with non-functional airbags, and the danger exists that in a collision the airbag will prove itself to be unexploded ordnance.