

The rescue sheets of passenger cars – a successful European sub project of the ADAC accident research

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Abstract

Every second counts when human lives are at stake. The increasingly safe design of vehicles presents rescuers with a serious challenge. Faced with high-strength steels and body reinforcements, even the most powerful cutters reach their limits. Therefore, incident commanders require information on the technical features and components installed, directly in the vehicle. Several tests have shown that such information helps to save valuable minutes. Therefore, a standardised A4 “rescue sheet” containing information on the location of cabin reinforcements, the tank, the battery, airbags, gas generators, control units etc. – and indicating adequate cutting points must be used throughout Europe. Hopefully, in a few years, the new eCall emergency call system will be in place everywhere in Europe. The system will transmit the relevant vehicle-specific data directly to the rescuers on-site. Until then, we need a simple and effective solution that saves lives.

Introduction

The “Yellow Angels” of the ADAC air rescue service save many lives every year. The medical care given to people injured in road accidents is an essential part of rescue missions. every year, the ADAC helicopters were called out to some 4,200 accidents, mostly involving severe injuries.

Since June 2005, the road accidents which the ADAC rescue service has been called out to, have been closely examined. Each case is evaluated retrospectively, i.e. some time after the accident occurred. Nine air rescue bases are currently participating in the project. These stations provide data on approx. 1,600 road accidents per year.

Within the framework of the project accidents which required technical rescue equipment are recorded in a very high proportion. In nearly 20% of the accidents an extrication is needed. The analysis of these cases confirmed the tendency that the period of time between the accident and the patients’ transfer to a hospital is growing depending on the crashed vehicle’s year of manufacture. The rescue of passengers trapped in today’s vehicle models increasingly causes technical problems. The use of high-strength materials challenges the technical equipment of fire brigades. Naturally, more time is required for the rescue and the transfer of traumatised patients to the hospital is often delayed. The 60-minute pre-hospital time limit is a recommendation to improve survival of traumatised patients.

Problems in rescue operations

Time is rare when human lives are at stake. Too often, valuable time is lost in the process of rescuing crash victims entrapped in their vehicles, especially after severe road accidents. Studies by the ADAC accident research show that in every fifth technical rescue mission problems can be seen. The increasingly safe design of vehicles presents rescuers with a serious challenge. In particular, removing car roofs is becoming more and more problematic. Faced with high-strength steels and body reinforcements, even the most powerful cutters

reach their limits. Safety components, such as gas generators for curtain airbags, can be a safety risk for emergency response teams. Another problem is how to find and disconnect the battery in modern cars. In extrication missions, unnecessary delays may be caused by uncertainty as to the right cutting and purchase points for rescue tools. Therefore, incident commanders require information on the technical features and components installed, directly in the vehicle. This technical information has to be quickly and reliably available to fire fighters and rescuers in a standard format. As tests have shown, such information helps to save valuable minutes. Stable cabin structures make cars safer, airbag and belt pretensioner technology is increasingly complex. Over the past 20 years, this progress in engineering has helped reduce the number of road fatalities by more than 50% from 9,862 in 1988 to 4,477 in 2008.

The technology that protects the lives of occupants in a crash has become a serious challenge for rescuers. This is particularly true when the rescuers have to use heavy equipment to extricate the injured from a vehicle. Highstrength steels often defeat even the most powerful cutters.

It is essential to get the injured into hospitals as soon as possible after receiving primary care on-site. Every minute counts. But emergency responders do not always know where precisely to apply their hydraulic cutters and spreaders or how to avoid airbag deployment during extrication. Quite often, in what little time they have, they are unable to positively identify the type or year of manufacture of the smashed vehicle. An ADAC survey has shown that rescuers incorrectly identify or fail to identify 64% of all crash vehicles.

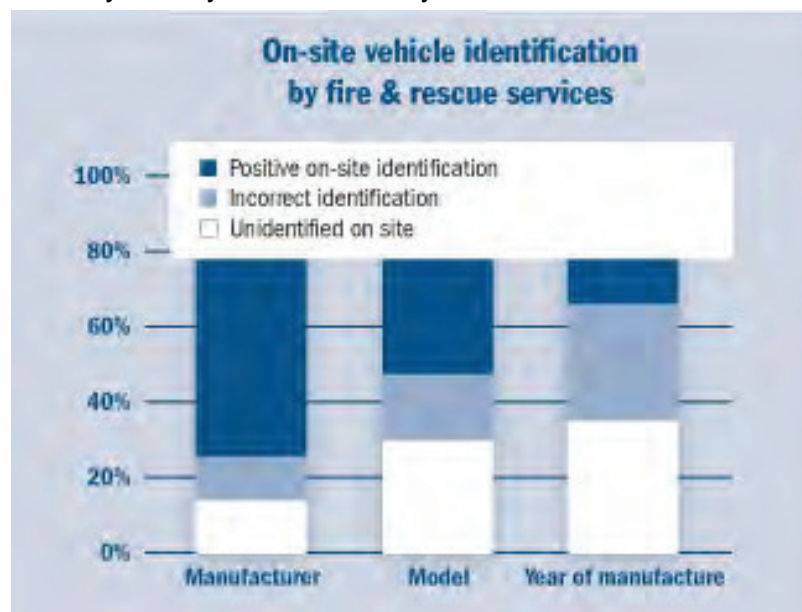


Figure 2: On site vehicle identification by fire services

Rescue gets more and more complicated

Studies conducted by the ADAC air rescue service and ADAC accident researchers have proved that the rescue of injured persons from a vehicle takes longer, the more recent the vehicle is. In crashes involving vehicles made between 1990 and 1992, rescue time was under 50 minutes in 40% of cases. For cars made between 2005 and 2007, only 20% of the rescue missions could be completed in under 50 minutes. This is a serious threat to the

“golden hour” that is essential for a successful rescue of injured persons: 20 minutes to alarm rescuers and get them on-site, 20 minutes for on-site rescue/ extrication and 20 minutes for administering primary medical care and getting the patients to a hospital. If all this can be achieved within an hour, the chances of saving the life of a severely injured person are very good.

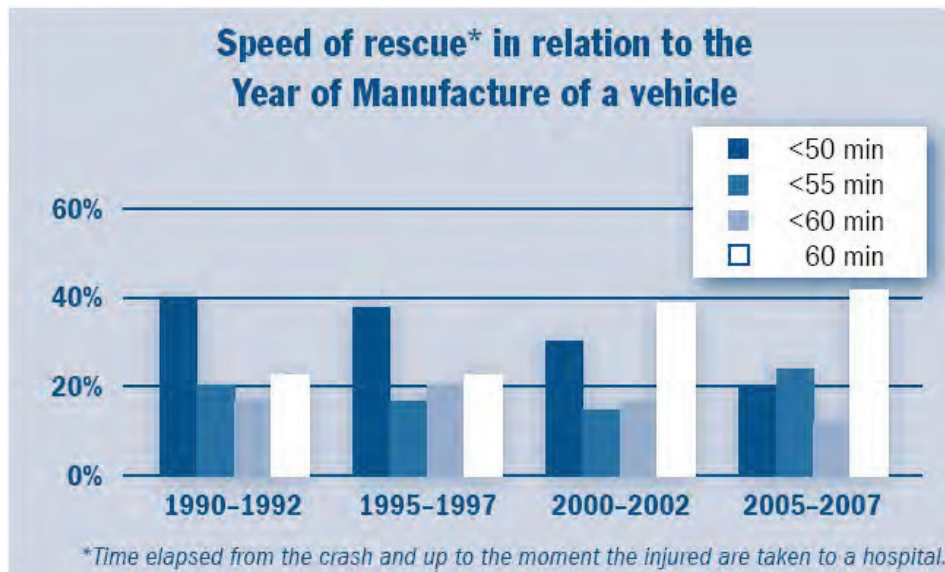


Figure 3: Speed of rescue vs. age of involved cars

The solution

First step - the model-specific rescue sheet

As of now, the rescue sheet developed by ADAC, vfdb (German Association of fire Prevention), Moditech and VDA (German Association of the Automotive Industry) is available to keep rescue time to a minimum. ADAC estimates that by using the rescue sheet on a large scale, up to 2,500 lives could be saved in road accidents across Europe each year. The document contains all the vehicle-specific information relevant for extrication and should be placed behind the driver's sun visor where it is handy for rescuers to find.

The rescue sheet is available now

Nearly all manufacturers have started providing rescue sheets in some countries, e.g. Austria and Germany. Whereas some manufacturers publish their rescue sheets with an explanatory key in English and other European languages, most of the rescue sheets are now available only in German. The other countries and the EU Commission must undertake their own efforts to get the rescue sheets published at least in English to ensure that rescuers can respond quickly and effectively. The FIA Clubs count on the manufacturers to make the rescue sheets available quickly and free of charge. Car owners and/or response teams should be able to download them from a central Internet portal or receive them through the network of authorised dealers. At a web portal FIA Foundation has provided links to the participating manufacturers. The information is being updated on a regular basis. Here, motorists can get “their” rescue sheet quickly. To make the various components easier to identify, the rescue sheets should be printed in colour.

Next Step – -The electronic rescue sheet

Across Europe, the national rescue system structures vary. The use of helicopter emergency medical services in some countries has put rescue systems in Europe on a very high level in terms of effectiveness and quality. But when it comes to saving lives in Europe, there is always room for improvement. The future belongs to electronic data transmission. The automated “eCall” emergency call system will enable the direct identification of a crash vehicle. Technical instructions for rescuers ensuring quick and focused extrication could be integrated into eCall. The roll-out of eCall in new vehicles is scheduled in the next years, but full market penetration will take until 2018 to 2020. However, we must now start implementing the IT framework to ensure that rescue control centres and fire brigades are equipped with the adequate information technology. After all, reducing on-site rescue time in order to save lives is an important public task. Here, a central, non-commercial database such as it is available could be the solution for rescue control centres. In an emergency, such a central database would allow rescue control centres from all over Europe to download the specific rescue sheets for any type of vehicle and to send them to the rescuers on-site.