Press Release
MAN Truck & Bus

Next-generation technology: MAN to showcase its Research Department's assistance systems

Camera-based assistants for increased safety

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. MAN has specifically further developed the active safety of trucks and buses, based on years of extensive accident research. This has resulted in assistance systems provided as standard, which assist drivers in situations which have been proven to be the most common causes of accidents: Adaptive Cruise Control (ACC), Emergency Brake Assist (EBA) and Lane Guard System (LGS).

At the IAA, in addition to these systems already provided as standard, the MAN Research Department will also be providing visitors with an insight into systems which are capable of providing drivers with assistance in other hazardous driving situations and are currently the focus of the researchers. The assistance systems, which will be demonstrated inside a fully accessible driver's cab in the Innovation section of the exhibition stand, are based on camera technology and image processing software. They represent the driver's extended "electronic eye" since the driver is unable to directly see certain areas surrounding the vehicle from the cab and since monitoring the surrounding traffic requires a lot of concentration. All of these systems are conceptual prototypes which showcase MAN Research Department's current progress with regard to active safety.

[Annotation: This text explains the functions for right hand traffic countries and LHD vehicles.]

Lane change assistant for multi-lane roads

On multi-lane roads, changing lanes safely is a complicated manoeuvre for the driver. Serious accidents can occur on the left-hand side (the driver's side) primarily caused by vehicles advancing at speed from behind. Before changing lanes, the driver must accurately gauge the speed and distance of faster vehicles.

The MAN Group is one of Europe's leading industrial players in transport-related engineering, with revenue of approximately €15.7 billion in 2013. As a supplier of trucks, buses, diesel engines, turbomachinery, and special gear units, MAN employs approximately 53,500 people worldwide. Its business areas hold leading positions in their respective markets.

On the right-hand side, when overtaking, the driver must assess when there is sufficient distance between their vehicle and the overtaken vehicle to be able to pull right and return to the original lane.

MAN has developed a prototype for a lane change assistant to help drivers with this. The system monitors the lanes to the left and right of the truck, takes approaching vehicles into account and warns the driver with a truck-optimised warning concept.

This requires two cameras to be installed on both sides of the vehicle: a telephoto lens camera with a long-distance rear view and a wide-angle camera which monitors the area immediately next to the cab. The cameras are able to recognise trucks, buses, passenger cars and motorbikes.

The assistant warns the driver that there is a vehicle already in the next lane or fast approaching if the driver starts to change lanes. This gives the driver sufficient time to react (two seconds according to the researchers' findings) and abandon the lane change.

The researchers are focusing heavily on the warning concept which must be tailor-made for commercial vehicles. It makes sense to warn drivers about a hazardous situation acoustically as soon as they begin to change lanes. The system therefore monitors the driver's intention to change lanes by using the lane markings.

Turning right in the city

MAN is working hard on research projects to improve the safety of pedestrians and cyclists. One such example is MAN's turning assistant, which warns drivers about any cyclists or pedestrians in their blind spot when turning right.

MAN will showcase the basic technology behind this at the IAA: a safety system based on two cameras, which provides assistance to truck drivers when turning right in the city, helping to prevent truck-related accidents at crossroads.

In order for this to be developed from a research project into an assistance system ready for series production, it must be 100% reliable and suitable for everyday use. As a result, the system still needs to be extensively tested. When it comes to launching the assistance system on the market, it must be economically attractive and provide optimum safety.

Making turns in the city can be a very complex and tricky affair for truck drivers due to the traffic around them. An electronic assistance system must be able to recognise and interpret the traffic situation, including pedestrians and cyclists. Camera and image processing systems currently form an effective basis for recognising pedestrians and cyclists over the entire duration of a turning manoeuvre. If, throughout the entire duration of the turning manoeuvre, the assistant can tell if people are in a potentially hazardous area in terms of the vehicle's surroundings, it can warn the driver in good time and therefore help to avoid collisions.

Out with mirrors and in with cameras

Truck and bus drivers currently have to use a multitude of exterior mirrors to get an overview of the vehicle's surroundings. This means that they have to collate the information from the images in various mirrors in order to get the overall picture.

This could be done much more efficiently with technical systems whereby several camera images are helpfully collated and displayed on one monitor.

At the IAA 2014, MAN will be showcasing a new type of camera monitor system which does just that. Drivers can see their surroundings at a glance instead of having to look in several mirrors which is currently the case. MAN has carried out studies into how to set up such displays to ensure that they can be ergonomically accessed and understood using professional drivers who have tested the prototype.

Currently, legislation dictates that conventional mirrors are compulsory and cannot be replaced with camera systems. However, MAN plans to highlight the advantages of this technology using its research cab at the IAA and contribute to the debate.

Emergency Brake Assist (EBA)

The emergency brake function has been available in all MAN truck series and in all coaches since the Euro 6 generation was introduced. As such, MAN customers are provided with an emergency brake system well before it becomes a legal obligation in November 2015. This safety system has high potential to prevent serious accidents or to significantly reduce the severity of accidents. MAN is therefore developing an even more effective

upgrade for this system which will be showcased in the Innovation section at the IAA.

The next-generation EBA developed by the MAN Research Department combines the information from the radar sensor and camera in the windscreen in order to be able to recognise potential emergency brake situations earlier. By merging these sensors, the system can recognise stationary and moving objects more quickly and safely, saving the system valuable time and allowing it to brake earlier.

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