

Bosch makes Italian cities safer

Electronic codriver for city rail transportation

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- ▶ The assistance system warns of obstacles and applies the brakes automatically in an emergency
- ▶ More safety for drivers and passengers of city rail transportation
- ▶ Cost savings for rail operators thanks to less material damage and fewer rail vehicle breakdowns

Abstatt, Milan – Obstacles on the tracks, car, bicycle, or motorcycle riders who merge too closely in front of their vehicle, or pedestrians who cross the road inattentively: In the hustle and bustle of city center traffic, city rail transportation drivers must always anticipate potential accidents. Then there is the possibility of poor visibility due to rain, snow, or fog. To support the drivers in their demanding role, Bosch Engineering has developed an innovative driver assistance system for city rail transportation. In the event of a possible collision, it first warns the tram driver by means of a signal. If the driver does not intervene or does so too late, the system automatically brakes the tram until it comes to a complete stop, in order to prevent an impact or at least to reduce it as much as possible. “The solution is to increase safety in city tram traffic in order to protect human lives as well as prevent material damage, which is occurring with considerably greater frequency. After all, such damage leads to high costs for the rail operators,” explains Heiko Mangold, head of the engineering rail technology business field at Bosch Engineering.

More safety in urban traffic – higher efficiency for rail operators

The assistance system consists of a multipurpose camera, a radar sensor, and an electronic control unit. The multipurpose camera perceives the track course as well as vehicles and persons in front of the tram and transmits the information to the radar sensor in real time. The object information of the video and radar system is merged into an overall picture of the surroundings. On this basis, and

taking into account the vehicle's own driving speed, the electronic control unit calculates the current collision risk.

If the assistance system detects a critical approximation, it warns the driver by means of a visual indicator in the cockpit and an acoustic signal. If the tram driver does not react to this within two seconds, a safety function brakes the tram automatically until it comes to a complete stop. Here, the deceleration takes place so gently that even standing passengers need not fear losing their footing in the tram. After all, rail accidents in particular frequently lead to serious personal damage. Multiple times higher is the number of tram accidents with material damage. But with the use of this system, all this damage can be reduced significantly or even prevented completely. Therefore, rail operators are able to save costs for expensive repairs, increase the availability of their fleets thanks to fewer rail vehicle breakdowns, and ensure their smooth operation. In addition to the increased safety, the system also leads to a tangible reduction in the physical and mental load for the tram drivers.

Assistance system asserts itself internationally

Bosch Engineering developed the collision warning system based on the tried-and-tested large-volume production technology from the automotive sector. The system is being developed continuously and will be optimized further with even more efficient sensor components in the coming years. "Our constantly growing system toolbox will support the tram in further increasing the degree of automation," emphasizes Heiko Mangold. This year, the system is already used in approximately 550 trams in 19 cities in Europe and Australia, ensuring more safety in urban traffic. From 2022, the system will also be used in North America.

Press photo: #4e10ee8e, #e54b0b36, #c32efdb8, #277092e8

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