

Bosch makes cities safer

Electronic codriver for city rail transportation

November 03, 2021
PI11402 BEG MBC/Cd

- ▶ 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 – 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, ensuring more safety in urban traffic. From 2022, the system will also be used in North America and Australia.

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

Contact person for press inquiries:

Cornelia Dürr

phone: +49 7062 -911-1986

Bosch Engineering GmbH is a wholly owned subsidiary of Robert Bosch GmbH and is headquartered in Abstatt, Germany. As a systems development partner to the automotive industry since 1999, the company with its more than 3,000 associates offers development services for powertrains, safety and convenience systems, and electrical and electronic systems – from the original concept to series production. Specialized in electronics and software, it draws on Bosch's proven large-scale series production technology to develop tailored solutions for a wide variety of applications in passenger cars, commercial vehicles, off-highway and recreational vehicles, and in rail applications, ships, and industry. Bosch Engineering GmbH also coordinates all the Bosch Group's motorsports activities. Additional information can be accessed at www.bosch-engineering.com.

Mobility Solutions is the largest Bosch Group business sector. It generated sales of 42.1 billion euros in 2020, and thus contributed 59 percent of total sales from operations. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector pursues a vision of mobility that is safe, sustainable, and exciting, and combines the group's expertise in the domains of personalization, automation, electrification, and connectivity. For its customers, the outcome is integrated mobility solutions. The business sector's main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket. Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 395,000 associates worldwide (as of December 31, 2020). The company generated sales of 71.5 billion euros in 2020. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT provider, Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility. Bosch is pursuing a vision of mobility that is sustainable, safe, and exciting. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to facilitate connected living with products and solutions that either contain artificial intelligence (AI) or have been developed or manufactured with its help. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiary and regional companies in some 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. With its more than 400 locations worldwide, the Bosch Group has been carbon neutral since the first quarter of 2020. The basis for the company's future growth is its innovative strength. At 129 locations across the globe, Bosch employs some 73,000 associates in research and development, of which nearly 34,000 are software engineers.

Additional information is available online at www.bosch.com, www.iot.bosch.com, www.bosch-press.com, <https://twitter.com/BoschPress>