

Train transport of the future: Bosch Engineering is working on automated driving in rail traffic

Mobility transformation for the railway

September 08, 2022
PI11543 BEG BEG/Cd

- ▶ Digitalization and automation increase capacity of existing rail network without building new tracks
- ▶ Development focus is on systems and methods for object recognition and classification for partially and fully automated driving
- ▶ Successful collaboration with Deutsche Bahn as part of the Sensors4Rail project of Digitale Schiene Deutschland and the Train Autonome – Service Voyageurs consortium by SNCF
- ▶ Bosch Engineering is a strong development partner and large-scale supplier for the rail sector

Abstatt – The mobility transformation requires new solutions, and this applies to rail traffic too. To continue to improve the carbon footprint of the mobility sector, both freight and passenger transport by rail must be expanded even further. “Digitalization and automation are the key to attractive transportation by train with more frequent trains, improved availability, and greater punctuality. This allows the capacity of the existing rail network to be expanded considerably without having to lay a single meter of additional tracks,” explains Heiko Mangold, head of the engineering rail technology business field at Bosch Engineering. The long-term vision is fully automated, highly connected, and therefore efficient rail traffic with more frequent passenger and freight trains and high network utilization.

Automation of rail traffic based on tried-and-tested automotive technology

Bosch Engineering has been researching and developing systems and functions for automation of rail traffic for more than ten years. For urban areas, the company offers a collision warning system for city rail transportation as a driver assistance system that supports tram drivers and considerably increases safety in city traffic. For mainline trains, Bosch Engineering is working on much more comprehensive solutions to support automation of driving functions, including normal rail traffic, shunting, and delivering and sorting trains in coach yards. For this purpose, the company also uses its extensive expertise in assistance

systems and automation from the automotive sector. The focus of development is on systems for object and signal recognition and methods for object classification that interpret the surroundings of the train and help to prevent accidents during operation. “The next step is then automating train traffic so that the conductor simply monitors operation and only needs to intervene in case of an emergency, all the way to full automation,” says Mangold.

Initial successful concepts implementations with Deutsche Bahn as part of the Sensors4Rail project of Digitale Schiene Deutschland and the Train Autonome – Service Voyageurs consortium by SNCF confirm the potential of Bosch Engineering’s software and hardware for automation. Work is currently being done to transfer the research and development results into products that are ready for use. Simulations and tests on different route profiles with different train and locomotive series are still to be performed in order to validate and optimize the data obtained.

Press photos: #5a2664b7, #513dbd35, #82f75827

Further information:

Sensors4Rail – Digitale Schiene Deutschland

<https://digitale-schiene-deutschland.de/en/Sensors4Rail>

<https://www.sncf.com/en/innovation-development/innovation-research/driverless-trains-to-run-in-2023>

Train Autonome – Service Voyageurs de SNCF

<https://www.sncf.com/en/innovation-development/innovation-research/driverless-trains-to-run-in-2023>

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About Bosch Engineering GmbH

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 45.3 billion euros in 2021, and thus contributed 58 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.

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Additional information is available online at www.bosch.com, www.iot.bosch.com, www.bosch-press.com, [www.twitter.com/BoschPress](https://twitter.com/BoschPress).