

**BOSCH**

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## Early-warning fire alarm for Mercedes-Benz car manufacturing plant

### Customer story

Aspirating smoke detection secures the automotive production facility in Russia.

Located 40 kilometres outside the Russian capital, the new Mercedes-Benz passenger car factory is a showcase for Industry 4.0 automotive manufacturing. To ensure the safety of more than 1,000 employees at the massive facility, Bosch provided a fire alarm and security system, replete with voice evacuation capabilities to meet the specific safety needs of modern-day car factories.

Walking into the main manufacturing hall of the new Mercedes-Benz Cars plant in the Moscow region is to see the future of automotive production. Amid glass walls and high ceilings, robots and humans work side-by-side to assemble the company's most popular limousines for the Russian market. From chassis welding to windshield installation to painting, the plant combines all production steps in the same building as part of a 'one-roof concept'.

But from a fire safety perspective, the 'one-roof concept' with its tall factory ceilings and open floorplan poses challenges.

The reason: Conventional, point-type fire detectors exceed their performance limit when it comes to detecting smoke particles inside such a vast, air-conditioned space. Working closely with the client, experts of Ateksis, the system integrator who led this project, realized that early fire detection would take a solution just as innovative as the futuristic car factory itself. Additionally, Mercedes-Benz required a centrally controlled combination of intrusion alarm and video security to guard the entire perimeter of the 85-hectare facility with its total of seven buildings. And could the solution be ready within a few weeks for the plant's grand opening featuring international dignitaries?

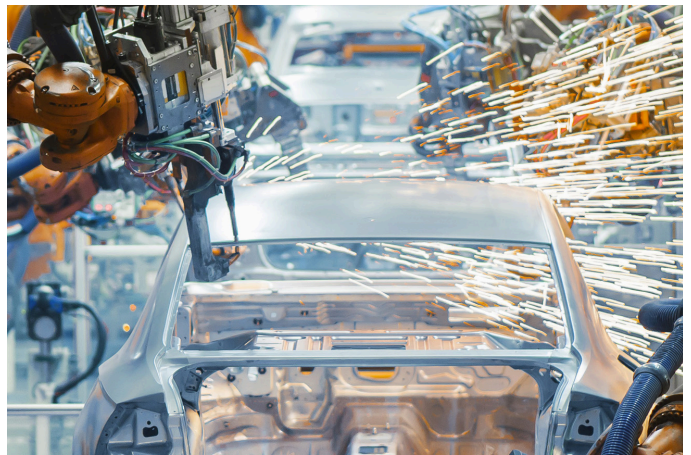


# The future of car manufacturing



“ The Mercedes-Benz project is an important reference for us. It shows the level of integration and customer focus made possible by Bosch solutions. Our system has succeeded in meeting the specific needs of automobile manufacturers in the next generation of car production facilities.”

Ivan Konukhin, Bosch Security and Safety Systems  
Russia



## Safety for automotive factories



Working on a tight timeline, the team of Bosch and Ateksis experts selected a fitting smoke detection technology: aspirating smoke detectors. Perfectly suited for large warehouses, the detection units are located within a pipe system that constantly ‘inhales’ samples of air, which are checked for smoke particles via intelligent signal processing technology. As a result, the light-based detectors achieve smoke sensitivities as precise as 0.05%. They can detect fires in the beginning stages (called the “smoldering” phase) even before visible smoke is released. Aspirating detectors also pinpoint the exact location of fires, thus reliably preventing major damage in most cases. The system also suppresses environmental factors that typically cause false alarms in car factories, including dust, flying sparks and electrical interference for maximum reliability.

Amid the acoustic conditions inside the vast production plant, a total of 650 horn and ceiling loudspeakers from Bosch deliver sufficient volume and intelligibility. The horn speakers offer a wide opening angle to broadcast sound across factory floors while offering protection from water and dust, as well as the corrosive effects of industrial environments. What's more, the ceiling loudspeakers are equipped with a metal fire dome to adapt to the in-air handling spaces of the automotive plant. The cabinet loudspeakers are certified according to the fire evacuation EN54-24 standard for reliable performance under emergency conditions. Overall, this level of audio sound quality directly serves to keep workers secure and informed, especially if evacuation becomes necessary.



In the bigger picture, the total of 248 aspirating detectors inside the main production hall are centrally networked via Modular Fire Panels 5000 series and connected to more than 2,500 automatic fire detectors installed throughout six additional administrative buildings on the premises. For maximum employee safety, clear voice and audio alarm is provided by the PRAESIDEO Digital Public Address and Voice Alarm System.

With Smart Safety Link, the interfaced fire and voice alarm system offers a full control in case of emergency, including the customization of the fire verification time and the automatic process that can ensure a safe phased evacuation.

## Full visibility and perimeter control

To ensure full visibility of the premises and around-the-clock safety, the video security solution consists of 112 high-definition cameras from Bosch. While bullet and moving cameras secure the perimeter, dome cameras monitor inside spaces. Integrated on the Bosch Video Management System (BVMS), all cameras can be controlled centrally by the on-site security team inside the control room. Bringing security full-circle, the video system has a direct interface with intrusion alarm system containing over 200 detectors.



This seamless integration of all solutions on the Building Integration System (BIS) from Bosch enables a host of additional functions: for instance, the system alerts the control room when a fire detector is triggered and sends live images from the nearest camera for full situational awareness. As Ivan Konukhin at the Regional Representative Center North-West and South Russia at Bosch Security Systems explains: "The cooperative functionalities between BIS and BVMS components were programmed according to customer requirements in an uncomplicated manner via macros, which also supported a timely installation."