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Impulse

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DEUTSCHE BAHN AG

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 State-of-the-art fire protection
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WAGNER is equipping up to 300 multiple units of the next generation ICE trains with state-of-the-art fire protection systems. ■

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A major order for WAGNER: State-of-the-art fire protection technology for ICx

TITANUS® very early fire detection for the ICx

WAGNER has received a framework order from Siemens AG to equip up to 300 multiple unit trains with its state-of-the-art fire protection systems.

Starting in 2016, Deutsche Bahn AG will replace its Intercity and Eurocity fleets, built between 1971 and 1991, with the ICx. In the first phase, 130 ICx trains will be ordered from Siemens AG. There are later plans to replace the ICE 1 and ICE 2 models. The ICx will then cover around 70% of Deutsche Bahn's long-distance routes, representing the backbone of their business. From the start, all trains will be fitted with the latest fire protection technology from WAGNER. The TITANUS® air sampling smoke detection systems will monitor the entire passenger area, actively drawing in air and capable of detecting even the tiniest amounts of smoke. The LOGIC-SENS intelligent evaluation logic guarantees an extremely high level of false alarm immunity. Given the space restrictions and the compact design of the vehicles, and taking design specifications into account, a flexible air sampling system will be installed.

The sampling orifices are small and invisible, making them extremely secure against sabotage and vandalism. Together with a reliable fire detection system, this is essential in the rail trans-

portation industry. Alarms are transmitted directly to the higher level train bus system, making it possible for action to be taken at an early stage via rapid signal processing. ■



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WAGNER continues to develop its low pressure water mist systems

New types of nozzle – New fire extinguishing concepts

New system solutions, which generate a fine water mist with exceptional fire extinguishing results are specifically tested in technical areas and machinery rooms, where space is highly limited.

In modern rail vehicles, space is usually extremely limited in machinery spaces and technical areas. This complicates not only the installation of the pipes and positioning of the fire protection nozzles, but also the ability to produce a fine water mist. Water mist systems need



free space at the nozzle outlet to allow a mist to form fully and prevent it hitting a nearby obstacle before it can actually have an effect. With this in mind, WAGNER has tested and developed new types of nozzles with an extremely narrow spray angle which can be directed with precision within the remaining free areas. A space less than 5 cm wide is actually enough to form a full mist.

Fire tests at the WAGNER test site have shown it is also possible to fight a fire successfully in a 50 m³ volume, even when the water is nebulised in an extremely narrow gap which is shielded by room structures from the main volume containing the fire load. Spraying into the narrow gap is sufficient to successfully extinguish a fire.

Fire extinguishing using a combination of water mist and gas extinguishing using nitrogen has been tested for closed technical areas and machinery spaces. The objective is to safely put out a fire using as little water as possible. During

the discharge, which lasts a few minutes, the oxygen concentration is reduced to 10-12 % residual oxygen by volume in the protected area by discharging nitrogen. A mist is produced which simultaneously cools the protected area and prevents reignition. The tests aim to optimise hazard-dependent gas and water volumes and flooding times, to extinguish the fire safely and minimise the weight. This solution is especially useful for enclosed technical areas and machinery spaces where there is a risk of deep-seated or liquid fires, where fires must be extinguished quickly and reliably.

To deploy the water mist system in rail vehicles and save even more space, it is possible to operate the system using the on-board compressed air supply, or even with the fresh water from the toilets. This eliminates the need for gas bottles and water tanks, saving on both space and weight. ■

The Munich Underground A follow-on order for WAGNER

Over the next few years, WAGNER will fit the entire fleet of vehicles for the Munich underground with a comprehensive fire protection system.

This means all passenger and technical areas will be monitored by the WAGNER Rail 138 fire detection and alarm system. Technical areas will be protected with a nitrogen gas extinguishing system, while passenger areas will be equipped with a low pressure mist system. All existing B and C cars will be retrofitted with the WAGNER system; in addition, all newly ordered C2 cars will be equipped by Siemens AG. The water mist fire extinguishing system was designed so that in the event of a fire in an underground station, operation is possible even with the vehicle doors open, without compromising the extingu-

ishing performance. TITANUS® air sampling detection systems from WAGNER are installed in the passenger areas and are practically invisible to passengers, thus offering the best protection from vanda-

lism. It was also possible to greatly reduce the problem of dirt or dust settling on the detectors, as the sensitive smoke sensors in the air sampling systems are protected by special filters. ■



Fire detection for the new generation of SBB double-decker Intercity trains



WAGNER has won a major contract from Bombardier Transportation to fit all new Intercity double-decker trains for Swiss National Railways (SBB) with a comprehensive fire alarm system.

The eight-section and four-section coaches are being built by Bombardier Transportation in Görlitz (Germany) and Villeneuve (Switzerland). WAGNER uses the Rail 138 fire protection system, which use a ring bus system

to monitor all personnel and technical areas supervised by a ring bus system. The *PRO·SENS*® Rail models from the TITANUS® air sampling detection systems are installed in the personnel areas. They are inaudible to passengers thanks to their special silent technology and invisible thanks to the invisible optics. The Rail 138 fire alarm panel is multilingual, which means the system can be operated and serviced in the new Intercity trains in the respective languages of the various regions. Multi-level fire detection processes in the toilets and technical areas also facilitate early intervention by the train driver, so that any fires which may have started can be dealt with as quickly as possible before they spread. ■



Low pressure water mist system for regional trains in Italy

After the initial Semipilota railcars for Trenitalia, WAGNER and its Italian partner GastecVesta srl. are now installing the innovative WAGNER fire extinguishing systems in the new double-decker regional trains.

Thanks to the low pressure technology and the option to configure the water supply specifically for the free space, the water mist system and all associated components can be installed inside the car in the smallest spaces available (0.8 x 0.6 x 1.2 m). The system is designed to allow the water supply to be refilled locally using drinking water and without the need to remove the system. This greatly reduces system downtime after a legitimate system release. The first double-decker regional trains are already running successfully. ■

TITANUS® – SIL 2 air sampling smoke detection systems certified for use in rail transportation

TITANUS® air sampling smoke detection systems from WAGNER have all the necessary approvals required for use in rail transportation and are thus ideal in a large number of applications.

With the TITANUS® air sampling smoke detection systems, *MICRO-SENS®* and *PRO-SENS®*, WAGNER offers very early fire detection customised to the specific requirements of the rail industry, approved by all relevant authorities including VdS, UL and GOST. The systems detect smoke quickly and reliably by actively sampling the air. This is a major advantage in rail vehicles where

strong air currents are generated in air ducts or machine rooms. Conventional point source smoke detectors cannot be relied upon in this field. Temperatures can range from -50 °C to +75 °C. WAGNER air sampling smoke detection systems are extremely quiet and are unobtrusive even in quiet sections. Invisible sampling orifices mean the system is protected from sabotage and vandalism.

Thanks to the additional PIPE-GUARD function, the pipe system is permanently monitored for blockages or breakages and the *LOGIC-SENS* system practically excludes any false alarms. ■





Velaro RUS with state-of-the-art fire protection technology from WAGNER

Since 2009, the Velaro RUS 1 has been running on the Russian broad gauge track between Moscow and Saint Petersburg using WAGNER fire protection technology. This train travels at 250 km/h and has been specially adapted to meet the special demands of the local climate. As has the entire fire protection system. All fire detection and extinguishing components have been tested under extreme operating conditions, including temperature, with positive results. The clear text display of the Rail 138 system, in the Cyrillic alphabet, has greatly simplified operation for personnel.

WAGNER is also equipping 8 train units from the next generation Velaro RUS 2 with state-of-the-art fire alarm and extinguishing systems. ■

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A success story continues

The Velaro RUS high-speed train was developed by Siemens AG and runs the route between Moscow and Saint Petersburg.



The Helsinki Metro

In partnership with Siemens Finland, WAGNER is equipping the vehicles of the Helsinki underground with a fire protection system. Passenger areas are protected using the modern MICRO-SENS® models from the TITANUS® air sampling smoke detection range. The special air sampling smoke detection systems, which can be used for low temperature applications, satisfy the extreme temperature requirements of the Helsinki Metro. ■

WAGNER fire protection systems have comprehensive system approvals

The complete WAGNER fire protection system was the first one to be tested successfully by TÜV Rail in accordance with the new ARGE guidelines.

Approvals testing was carried out on an operative vehicle under real operating conditions.

TÜV Süd Rail certified WAGNER fire protection systems as ideal for use in rail vehicles. All components have also been tested in accordance with the EN 50155 standard by SGS in Munich, also with positive results. For Russia, the entire fire protection system was awarded GOST certification. This is also thanks to the Rail 138 fire alarm panel, fitted with an LED touch screen display, which also allows for the display and operation of the unit in the Cyrillic alphabet, and the suitability of the system technology for operation at temperatures as low as -50 °C.

For Italy, further tests were performed at SGS, which cover the additional specifications of TrenItalia (no. 306158) and exceed the requirements of EN 50155. This affects the requirements in terms of EMC, shock, vibration and temperature in particular. ■



Rail



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