

Press release

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Digitalization: Knorr-Bremse and Rail Vision to test obstacle detection systems on Swiss operator SBB Cargo's locomotives

- **Knorr-Bremse Switzerland is to integrate Israeli startup Rail Vision's electro-optic obstacle detection systems into shunting locomotives of SBB Cargo for extended prototype testing**
- **Fitted with sensors, artificial intelligence (A.I.) and deep learning capabilities, the systems can detect and classify obstacles during shunting processes**
- **Combined with an add-on remote control from Schweizer Electronic, Rail Vision's systems are expected to enable single-person control of shunting processes, potentially optimizing operational flow and staffing for operators**

Munich, Germany/Ra'anana, Israel, September 23, 2020 – Knorr-Bremse, the global market leader for braking and other systems for rail and commercial vehicles, and Israeli startup Rail Vision will equip multiple SBB Cargo shunting locomotives with Rail Vision's Assisted Remote Shunting system for obstacle detection. After prototype testing is successfully completed at the end of the first quarter of 2021, the partners will be looking into addressing additional business activities to adopt obstacle detection systems for cargo vehicles.

Based on electro-optic sensors, artificial intelligence and deep learning capabilities, Rail Vision's systems are expected to make shunting processes of cargo vehicles more efficient. Detecting obstacles and interfacing with the Remote Control from Schweizer Electronic, the prototype system can enable a single person to control shunting from a remote location. Today, by contrast, shunting generally takes two people: a locomotive driver and a signaler, who notifies of any possible obstacles and the remaining distance to other vehicles to the driver via radio from outside. The innovation comes at a crucial time, as several operators are expecting staffing crunches in the medium term.

"We are very happy to jointly enter the crucial testing phase of Rail Vision's obstacle detection systems on SBB Cargo's locomotives", says Dr. Nicolas Lange, Chairman of the Management Board of Knorr-Bremse Rail Vehicle Systems. "These systems offer a promising avenue to further support operators in managing their fleets, and they are a building block in realizing the future scenario of automatic train operation."

"As several cargo operators are anticipating personnel shortages in the coming years, Rail Vision's products can contribute to increasing operational efficiency after a more widespread rollout", adds Andreas Hefti, Managing Director at Knorr-Bremse Switzerland.

"Rail Vision is proud to jointly execute this project with our partner Knorr-Bremse Switzerland and in cooperation with Schweizer Electronic. SBB Cargo is widely regarded as a pioneer when it comes to innovation in the railway industry", says Elen Katz, CEO of Rail Vision. "We are excited to introduce our unique application with our partners to the train industry. Rail Vision's Assisted Remote Shunting system will improve safety and contribute to unobstructed one-man control in everyday operations".

Rail Vision's Shunting Yard System uses advanced electro-optic sensors combined with artificial intelligence and deep learning technologies to detect and classify obstacles on and along rail tracks, providing both drivers and remote operators with critical real-time alerts. The system monitors switches and recognizes signals and paths up to 200 meters ahead. Once

an obstacle is detected, the system analyzes and classifies it. When warning is needed, it sends both visual and acoustic alerts to the driver, and optionally also to the Command & Control Center.

Knorr-Bremse and Rail Vision have been partners in the realm of obstacle detection technology for rail vehicles since March 2019, when [Knorr-Bremse acquired a 21.3% share](#) in the Israeli startup. With its \$10 million strategic investment, Knorr-Bremse took another step on its way to support innovative systems for automated driving in the railway sector.

Caption:

Figure 1: Rail Vision system mounted on cargo locomotive. | © Rail Vision

Figure 2: Rail Vision obstacle detection and classification. | © Rail Vision

Knorr-Bremse (ISIN: DE000KBX1006, Ticker symbol: KBX) is the global market leader for braking systems and a leading supplier of other rail and commercial vehicle systems. Knorr-Bremse's products make a decisive contribution to greater safety and energy efficiency on rail tracks and roads around the world. About 29,000 employees at over 100 sites in more than 30 countries use their competence and motivation to satisfy customers worldwide with products and services. In 2019, Knorr-Bremse's two divisions together generated revenues of EUR 6.9 billion (IFRS). For more than 115 years the company has been the industry innovator, driving innovation in mobility and transportation technologies with an edge in connected system solutions. Knorr-Bremse is one of Germany's most successful industrial companies and profits from the key global megatrends: urbanization, sustainability, digitization and mobility.

Rail Vision is an Israeli startup founded in 2016 designing, developing and manufacturing state-of-the-art cognitive vision sensor systems to improve safety, maintenance and big data services for the train industry, using advanced electro-optic sensors, artificial intelligence and deep learning technology. Its unique systems enable every train to detect and classify objects on and along the tracks from up to 2 kilometers in real time in all weather and light conditions. The tailor-made systems are available for Main Lines, Shunting Yards, and Light Rail Vehicles (LRVs) operating in urban environments. In addition, Rail Vision offers a range of optional complementary features based on collected and analyzed data: Image-based Navigation, GIS Mapping and Predictive Maintenance. For more information please visit <https://railvision.io/>

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