The automated brake test is on the right track: PJM has completed the product development

September 2021: PJM, the Austrian specialist for railway system solutions, has completed the technical development of the automated brake test. *"The serial operation is imminent. The system is now available and brings immediate, concrete effects for railway companies and a general impact for rail freight transport by gaining attractiveness",* says CEO Günter Petschnig.

The automated brake test system was put on track years ago: Since spring 2018, the first pilot train has been in operational testing. Since March 2019, 105 wagons equipped with the digital system have been running in Switzerland. SBB Cargo leads the operational integration. Further nearly wagons haven been equipped with the automated system since April 2019. The brake testing system was designed and developed by PJM. The validation is expected to be finalised and the system is supposed to go into serial operation by the end of this year.

The need for an automated brake inspection is given for several reasons. First and foremost is the enormous amount of time required. Brake testing is a hugely time-consuming part of train preparation. Even today, this process remains entirely manual, making it personnel-intensive, protracted and physically demanding. However, brake testing is an unavoidable and essential part of the braking rules. Brakes must be checked following a 24-hour standstill and each time a change is made to the wagon configuration. With respect to daily routines, this means: It takes around 40 minutes for two employees to carry out a full brake test for a 500 m-long train. Adverse weather conditions such as rain, snow, cold, and intense heat in summer, as well as night-time operations, are additional impediments to what is already hard physical work. Given a 500 m-long train, the time-saving is massive and sums up to 45 minutes. In addition, the automated brake test can be performed by just one person. Yet there are many more benefits (see next page). The time savings result from the empirical values of SBB Cargo, where almost 200 wagons have been equipped with the automatic brake testing system and successfully in operation. *„Automatic brake testing is efficient and a huge gain for rail freight. And it is no longer a vision of the future, but a functioning system for rail transport here and now",* says Günter Petschnig.

PJ Monitoring GmbH /// Waagner-Biro-Straße 125, 8020 Graz, Austria
T: +43 316 22 84 54 /// E: office@pjm.co.at /// **www.pjm.co.at**

The automated brake test speeds up enhancements of rail freight transport

The completed automated brake test is a milestone for digital rail freight transport. For years, rail experts have claimed and underlined the need to automate rail freight processes. On the one hand, to make rail transport more efficient and faster. On the other hand, it is crucial to increase its attractiveness and subsequently its competitiveness. This has become even more significant in recent months, as concrete targets for achieving climate neutrality and green deal measures have been formulated by various European countries. Know-how and technologies to achieve this are available - which PJM had already demonstrated several times with its digital solutions. *„We are doubly proud: Of our team, which has mastered this major project with impressive commitment and has always kept the development goal in mind. And that such a groundbreaking technology is ‚Made in Europe'."* emphasizes Günter Petschnig. *„The cooperation with the project partner SBB Cargo is excellent. Everyone is pulling together - and only in this way practical innovations succeed to be realized and to move forward the rail transport industry."*

A digital overall system is the basis for the automated brake test and further applications

"The basic idea for the technical design went far beyond the application of an automatic brake test. We wanted an overall system that fulfills monitoring functions and automates processes," explains Günter Petschnig. Hence, the digital overall system WaggonTracker is the basis platform. WaggonTracker is a monitoring system with autonomous power supply that acts as the base platform and is subsequently used for automating operational processes. In addition, WaggonTracker is freely scalable for further applications, e.g. automatic load weight monitoring or a future Digital Automatic Coupling (DAC).

At a glance: Benefits of automated brake testing

Automated brake testing (ABT) is the key to modern, efficient logistics processes in rail freight cargo. There are many advantages to a digital brake testing process:

- **Enormous time savings:** The most immediately visible impact of ABT is the time savings, which increase with train length. Around 45 minutes are saved in checking a 500 m-long freight train. At the same time, this significantly reduces the standing times for both train driver and locomotive.
- **Faster round trips:** Faster handling increases terminal capacities.
- **History:** As sensors monitor the braking system during every brake test, both the brake function and state are recorded and documented.
- **Enabling one-man operation:** ABT allows railway companies to introduce one-man operation, for example by the train driver.
- **Immediate benefit:** The railway company benefits from the advantages as soon as the system has been installed and commissioned. Time savings, faster round trips, fewer personnel, etc. have an immediate impact.
- **New and attractive job profiles:** ABT makes the jobs of shunting personnel and brake testers more attractive. Instead of laborious and strenuous physical activity, the focus now lies on operating interactive assets.
- **Digitalization** in rail freight cargo raises desperately needed **competitiveness**. ABT is a crucial investment and innovation which offers huge advantages to every user. It is essential in economic terms as it not only renders rail freight cargo more cost efficient, but also makes an important contribution to achieving climate goals.

PJ Monitoring GmbH /// Waagner-Biro-Straße 125, 8020 Graz, Austria
T: +43 316 22 84 54 /// E: office@pjm.co.at /// **www.pjm.co.at**

Milestones of the automated brake test

The project from the beginning:

- The automated brake testing system is an innovation by the development alliance of SBB Cargo, PJM and Rail Cargo Austria. Currently, the system is integrated in real operation by SBB Cargo and RCG runs a prototype train equipped with the automated system. Within the project AmaBPro, a pilot train of DB Cargo will be equipped with the PJM system and then operationally tested. AmaBPro is part of the program "Future Rail Freight Transport" initiated by the Federal Ministry of Transport and Digital Infrastructure. In addition, Mercitalia Intermodal will have a pilot train for intermodal transport.
- For SBB Cargo, the automatic brake test is an important part in the „one-person operation" automation project. The other two parts are the early collision warning system and the automatic coupling.
- In 08/2017, the pilot project was started with wagons. By the end of the testing, the wagons will have completed 1,000,000 kilometres. The brake test will be performed 500 times and the brakes of all wagons will have been tested 10,000 times.
- Since 04/2018, the pilot train has been in operational testing.

Current project status:

- Since 04/2021 another nearly 100 wagons have seen upgraded, since 03/2019 105 wagons have been in operation at SBB Cargo.
- 09/2021: Product development is completed.
- By the end of 2021, the validation is expected to be finalised and the system is supposed to go into serial operation.
- The automated brake test meets all safety-relevant specifications in terms of operation and vehicle.

PJM at a glance:

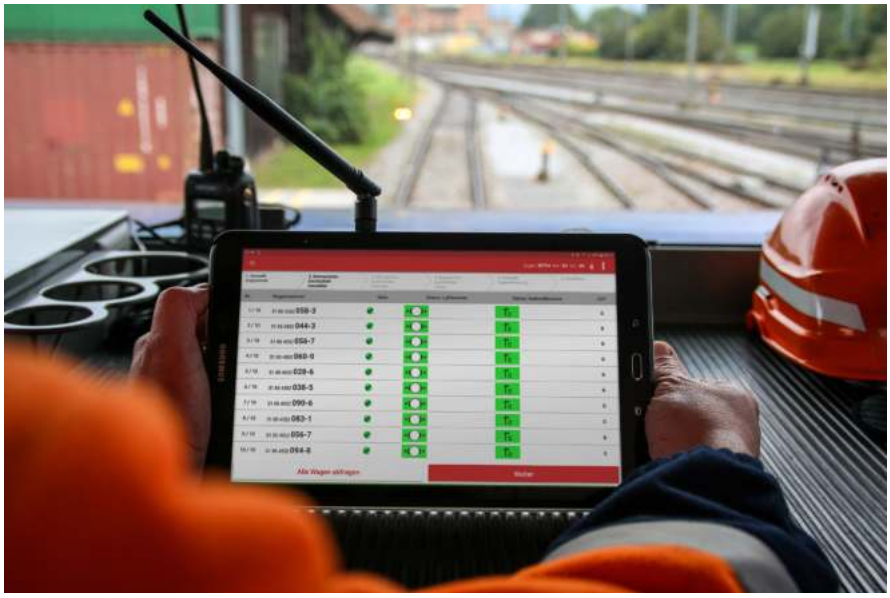
PJM is a worldwide leading specialist in the field of railway systems.
PJ Messtechnik GmbH is an accredited test centre by ISO /IEC 17025 standard focusing on approval tests for railway vehicles.
PJ Monitoring GmbH is a technological leader in automated and digital systems for rail freight transport.
Founded in 2006, meanwhile a team of 60 employees ensure „100% Made in Austria": R&D, hardware and software development, production & administration come exclusively from Austria.

Further information:
https://pjm.co.at/en/waggontracker/

Contact for further information:
Birgit Rami-Jauk
Corporate Communications
Mobile: +43 676 3634665
rami@pjm.co.at

The completed automated brake test is a milestone for digital rail freight transport: Instead of laborious and strenuous physical activity, the focus now lies on operating interactive assets

Credit: SBB Cargo, free of charge.



Digital brake testing fulfils all safety-relevant guidelines, saves valuable time and creates attractive jobs.

Credit: SBB Cargo, free of charge.

Daily rail routine in Switzerland in September 2021: The automated brake test is operationally tested by SBB Cargo.

Credit: SBB Cargo, free of charge.

PJ Monitoring GmbH /// Waagner-Biro-Straße 125, 8020 Graz, Austria
T: +43 316 22 84 54 /// E: office@pjm.co.at /// **www.pjm.co.at**