Media release

Measurements in a picturesque landscape:
PJM carried out dynamic tests for Rhaetian Railway
Instrumented wheelsets and simulations were previously implemented in Graz

Graz, February 2023: The Rhaetian Railway (RhB) makes railway hearts beat faster. The track is one of the most beautiful in the world, and the Bernina and Albula lines are even UNESCO World Heritage sites. In addition to the picturesque landscape, the technical requirements are fascinating. Typical for the metre gauge track are curves up to 45 m radius and gradients up to 70 ‰. The Allegra multiple-unit train made by Stadler AG, which is used on this line in various vehicle configurations, is perfectly tailored to these high line requirements. In order to test the running characteristics of different train compositions under special operating conditions, PJM was commissioned with running tests.

The project was carried out in several parts by the experienced system specialist from Austria:

- In the preliminary stage, the wheel-rail forces as well as occurring buffer forces were determined by simulations. In this way, critical conditions or constellations could be resolved computationally. Another advantage is that this keeps the metrological effort to a minimum.
- Instrumented wheel sets, accelerators, transducers as well as measuring buffers were prepared in the usual way at the company's location in Graz and then installed on the test vehicle at the RhB main workshop in Landquart.
- The measurement campaign was carried out on the track between Poschiavo and Alp Grüm. In real operation, the running behaviour was tested under increased operating forces. The test runs took place in November 2022. The data analysis and report were recently completed.

„A project of this kind requires more than just test run know-how. We also have many years of experience in the implementation of instrumented wheel sets. Due to the simulations in advance, we can carry out the driving tests in an extremely efficient manner. Thanks to our theoretical as well as practical expertise, we can ideally link the results

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from the calculation with the test results from real operation. Our customers benefit from economically efficient project handling, reliable data material and a single point of contact throughout the entire project," explains Martin Joch, CEO of PJM.

For the first time, the mobile calibration test rig for measuring wheelsets developed by PJM was used in this project in addition to the proven calibration procedure. This means that measurement reliability can also be ensured for projects on site.

The Rhaetian Railway at a glance

The 385 km long railway network is mainly located in the canton of Graubünden and a small part is situated in Italy. One third of the track is at an altitude of over 1,500 m above sea level. Typical for the metre gauge line are curves up to 45 m radius and gradients up to 70 ‰. The rolling stock comprises around 1,000 vehicles, including the panorama cars of the Bernina or Glacier Express as well as 20 Allegra multiple units.

PJM at a glance

PJM is an internationally renowned railway system specialist and has successfully implemented projects in 30 countries on 6 continents. As an accredited test facility according to ISO/IEC 17025, PJ Messtechnik GmbH carries out approval tests of rail vehicles worldwide. These include, for example, the Mountaineer in Canada, the regional train TILO, the S-Bahn in Berlin or the subways in Chicago and London. PJ Monitoring GmbH is a technology leader in the automation of rail freight transport with forward-looking comprehensive solutions.
PJM was founded in 2006. 60 employees at the Graz site ensure „100 % Made in Austria": R&D, hardware and software development, production & administration come exclusively from Austria.

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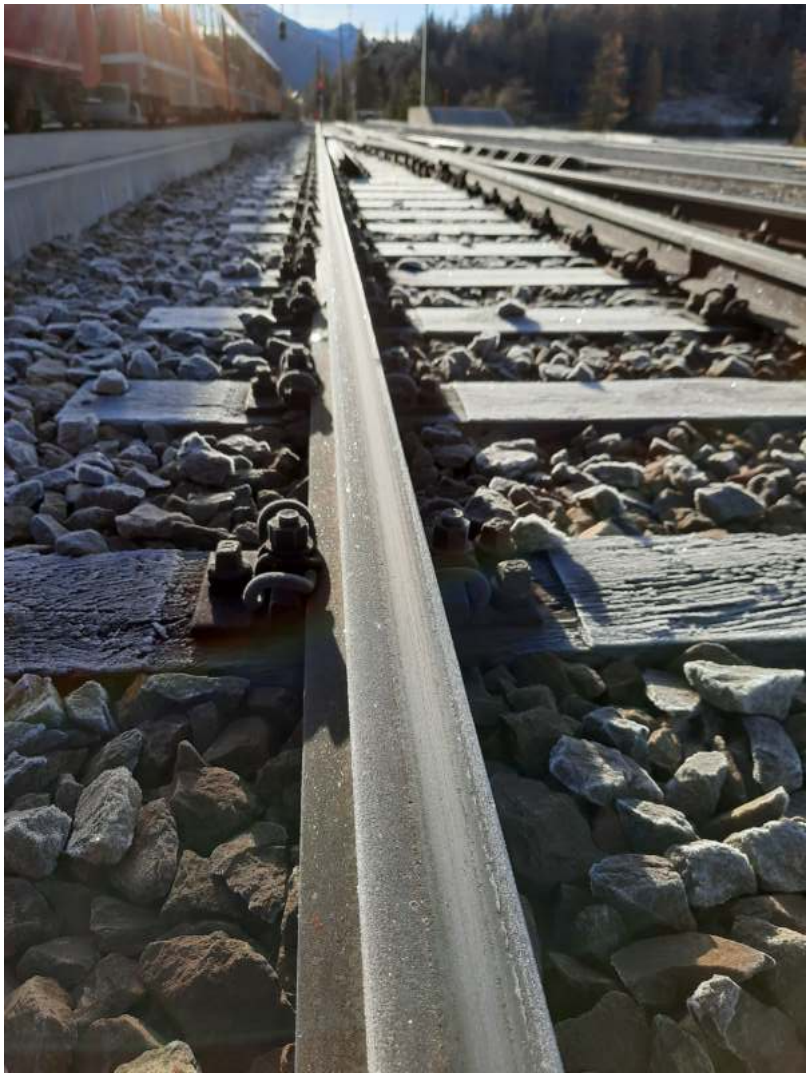
PJM carried out dynamic tests for the Rhaetian Railway to examine existing and future train configurations and operational concepts.

Credit: PJM, free of charge



The vehicle tests took place on the route between Poschiavo and Alp Grüm. The running behaviour and the occuring forces were measured under a wide range of operating conditions.

Credit: PJM, free of charge

The PJM project volume for the Rhaetian Railway included simulations as well as a measurement campaign with instrumented wheel sets, acceleration sensors and force transducers as well as specially developed measuring buffers.

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