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Q&A with Wild Ingenieure AG: Technology to Overcome Rail Monitoring Challenges

Trimble S7 total station with the construction site for the renovation of the railroad station in Wil (Canton of St. Gallen, Switzerland) in the background

Wild Ingenieure is a survey firm that specialises in railway construction projects in Switzerland. The firm is well known for its progressive mindset that has helped its customers, both public and private, resolve some of rail's most complex challenges.

We asked Florian von Matt, the Küssnacht am Rigi-based firm's rail monitoring expert, about industry challenges and the role of new monitoring tools, such as **Trimble's purpose-built Trimble® 4D Control™ (T4D) Rail software module**, in meeting growing demands.

Q: Have your company's monitoring services/ requirements changed over time?

A: We have always specialised in rail surveying, so that has not really changed. What has changed is the growing need for ever more accurate and timely monitoring services. With ever-evolving regulations, emerging technologies and great need for infrastructure improvements, our surveying

and monitoring services are greatly in demand. Construction is everywhere and not just railroads, but also roads, bridges and buildings. In each of these conditions, there are concerns about movement.

Q: How and why have you invested in T4D Rail?

A: We have relied on monitoring solutions such as Trimble total stations and T4D Control software for several years. One of the challenges has always been the time-consuming process of getting from collected as-built data to the final results. On a big project, this could take several days. T4D Rail greatly improves that process.

We collect the as-built data with the **Trimble Access™ Track Gauge Survey app** and from there everything is streamlined through T4D Rail. For instance, we used to do offset and parameter calculations manually; those are now automated through T4D Rail. The module produces deliverables such as calculated parameter values as well as rail-specific visualisation graphs that are easily digestible. Everything is now faster and more streamlined – what used to take days, now takes hours. It's also helpful that T4D Rail adheres to the strict Swiss Federal Railways standards.

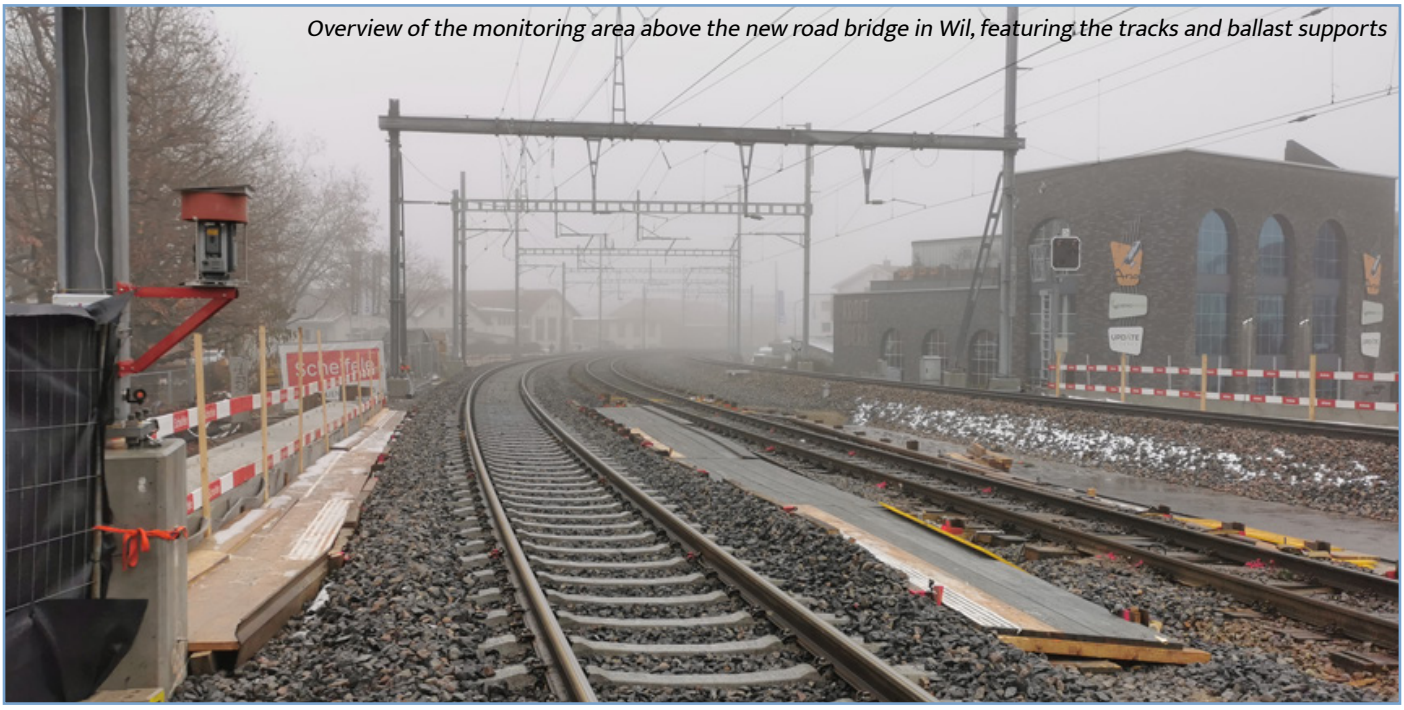
Q: How does the Track Gauge Survey app help with monitoring projects?

A: We have a GEDO system, but largely relied on a track bar previously to collect data, since rail monitoring projects usually span hundreds of metres of track. We decided to get the Track Gauge Survey app since it integrates well with the T4D Rail module. With this app, the as-built data can be exported with a simple click and then imported into T4D Rail to automatically calculate the offsets between measured prisms and rail points, which in our case must be used for parameter calculations.

Q: How many projects have you used the T4D Rail on thus far and what has been the benefit?

A: We've used it on several projects this year. The first was a fairly straightforward monitoring project to monitor about 80 metres of track on top of a railroad bridge. The bridge was built in three different stages, with two tracks in continuous operation. These two tracks had to be monitored during the construction work on the bridge. Because the railroad line is very busy, the work had to be carried out mostly at night

TA Track Gauge App is used in Trimble Access, so the installation can be done in the Installation Manager. The structure of the app is based on Trimble Access (user interface, labels, etc.), so no training or long start-up time is required to work with it. There are not many different settings to make, so few application errors can occur.



Overview of the monitoring area above the new road bridge in Wil, featuring the tracks and ballast supports

and in short intervals. Unfortunately, we were only able to carry out the last monitoring stage with T4D Rail.

After the last tamping works of the tracks, the monitoring had to be installed and measured immediately. The data collection was not executed with the Trimble Access Track Gauge Survey app but with another tool. We had a few errors, but the Trimble support team was able to prepare the correct data for us.

After that, the data was imported into T4D Rail and both tracks were analysed and monitored from that moment on for the whole construction phase.

In the second monitoring project, we were tasked to monitor rail tracks for Swiss Federal Railways near a construction site for several weeks. We set up five total stations near the existing rail to monitor movement and used the Trimble Access Track Gauge Survey app to collect and T4D Rail to manage and analyse the data.

T4D Rail is easy to use because we only have to import one file (track file), with which all needed values are calculated. Nothing has to be calculated independently.

As with all projects, the important part is the data collection process. If this is not done correctly, there will also be problems with the import into T4D Rail. Before T4 Rail, all values had to be defined with calculation sensors. In this project, around 100 profiles were monitored. Without T4D Rail, the setup would have taken us around two to three days.

In this case, we did that entire setup in one morning. Data collection was five night shifts of four hours. Setup was one day for everything, including plans and protocols (pictures in T4D, alerting scheme, alarm definitions, etc.). It's like using a smartphone, it's just really easy and very, very fast.

Q: Any specific features that you particularly like in T4D?

A: I especially like the detailed rail track geometry charts. They are automatically created based on the collected rail track geometry parameters. The automatic visualisation of the configured thresholds

Monitoring of the left track over a length of 450m with five total stations

in the chart views is just great for seeing movement changes. I used to do this step manually. Now, it's just one click, and I see the data for the whole monitoring system.

Q: Are you realizing a measurable ROI from the adoption of T4D Rail?

A: With this technology, I believe we can spend more time focusing on the data analysis thanks to the automated charts and faster setups, and we also spend less time in the field gathering data. That's a big advantage in providing quality services to our customers. It also allows us to take on more monitoring projects that perhaps we wouldn't have had time to do in the past.

If you would like to talk to someone from Trimble about the benefits of using the Trimble 4D Control Rail module, contact us here.

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