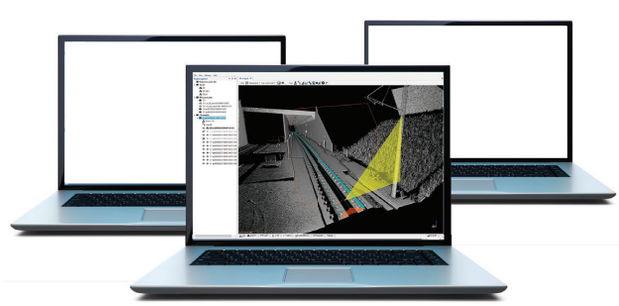
3-D Scan System gets the new rail fleet back on track

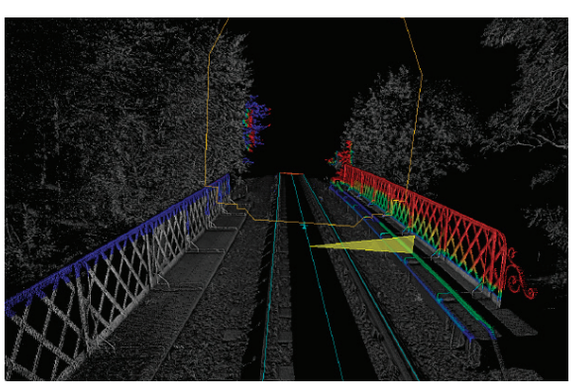
The Trimble GEDO Scan system collects data for track clearance assessment in tunnels

CHALLENGE

With new fleets of trains arriving onto Scotland's rail way, including the LNER Azuma, class 365s and class 385s, and the growing demands of freight operators, the task of making sure they actually fit on existing lines has never been more crucial or time critical.

Surveys were also due to assess the network for future freight capacity expansion, e.g. in the Mossgiel Tunnel near Kilmarnock (pictured), the tunnels at Drumlanrig, Blochairn and Duke St. The railway is preparing for larger and longer goods trains on the network, which could have a positive impact on reducing emissions and relieving congested roads.





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SOLUTION

Network Rail Scotland has for the first time utilised a track based three-dimensional scanner to precisely model the railway infrastructure ahead of the arrival of new trains onto the net-work.

The new system was introduced in April and is already delivering higher quality scanning and modelling quicker and more precisely than before with a relative accuracy of less than 5mm. It also increases safety for rail engineers who now need to spend less time on the track to gather much more detailed data.

The Trimble GEDO Scan system – operated by Network Rail's team of absolute track geometry (ATG) engineers – has been deployed to collect detailed information about the track and sur-rounding features such as bridges, parapets, and platforms – quickly gathering precise, high-resolution data for use in track clearance assessments on structures and tunnels.

The scanning system has been used across the network to carry out general surveys for maintenance and monitoring but also to assess the capability and suitability of specific routes to carry certain types of rolling stock – such as to review the possibility of introducing class 158 rolling stock on the West Highland Line and ahead of the introduction of High Speed Trains (HSTs) on the network between Scotland's seven cities.

Benefits

- Modular setup allows the usage for other track survey tasks
- Easy to handle system and high prodictive data collection to reduce the time on the track
- High resolution and detailed data
- Specialized software for track based analysis and reporting

RESULTS

This system is ideally suited to tunnel surveys where irregular construction can make it diffi-cult to locate the main pinch points. The three-dimensional scan measures the full extent of a tunnel precisely in about a fifth of the time than it took previously.

It can also be used for proactive monitoring to inform maintenance requirements and to bet-ter predict and prevent faults and to reduce disruption for passengers.

"Three dimensional scanning provides more, and more detailed information in a shorter time which reduces the need to be on the track; making it safer as well as more efficient.

GRAHAM HUTCHISON
absolute track geometry engineer with Network Rail in Scotland

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