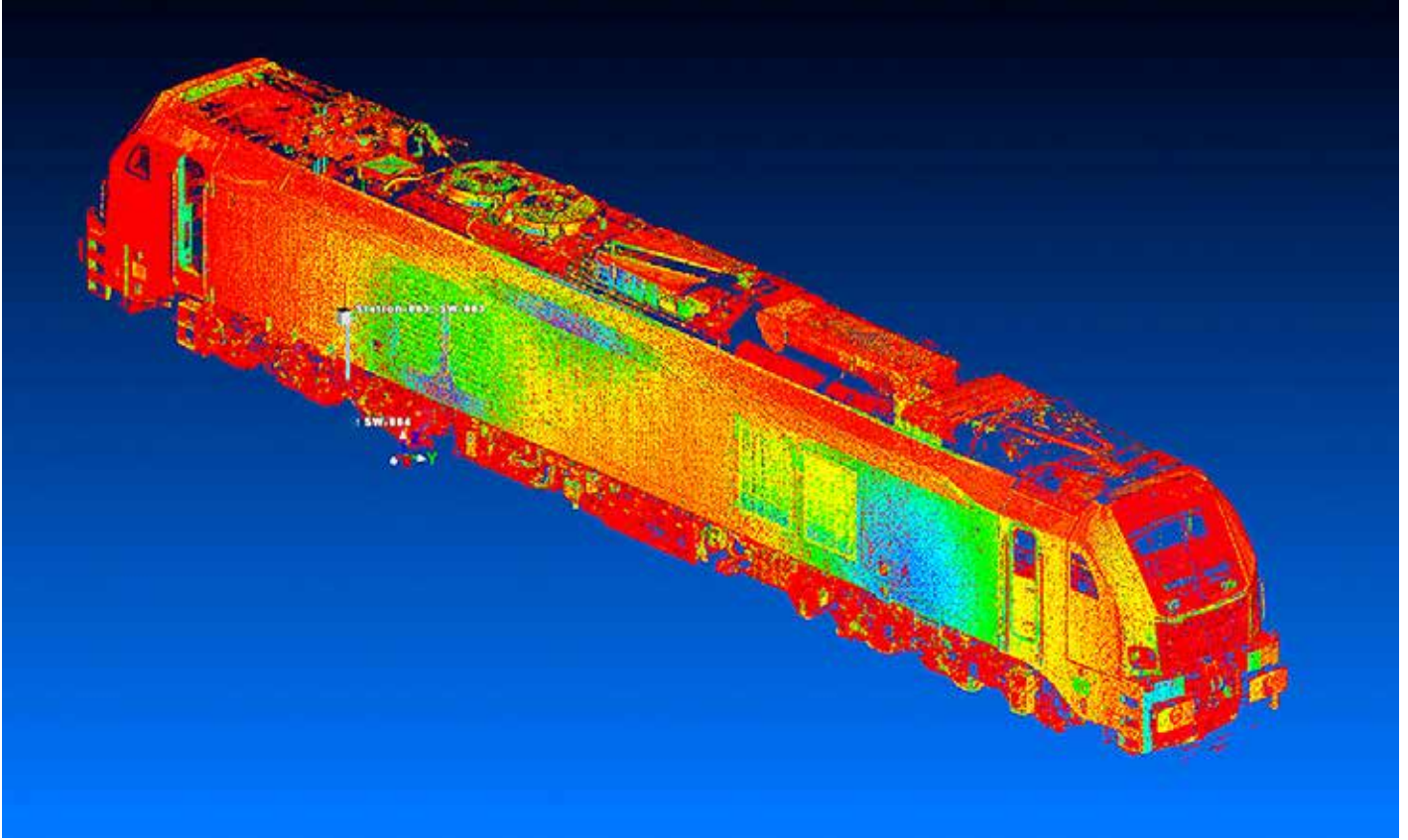


MIRRORING REALITY FOR RAIL



Train users take for granted the comfort they enjoy in their daily commuting. Reliable and safe trains, however, must follow precise specifications so they can glide perfectly through the rails and commuters can enjoy – among many other things – their daily coffee without any spills.



To do a quality control analysis in a fast and accurate way, Stadler Rail office in Valencia, Spain, the competence centre for mainline locomotives, shunting locomotives, metro trains, as well as for the tram and city lines of vehicles, reached out in 2015 to Lindes Measuring Systems. The main goal was to **laser scan several locomotives for quality control** before delivering them to the clients.

Before locomotives are on the move

Experts from Lindes Measuring Systems used laser scanning technology from Leica Geosystems to obtain point clouds that are an identical copy of Stadler's locomotives. The 3D data obtained with the P40 ScanStation was used to extract the dimensions of every scanned locomotive.

The team of experts had limited time to collect all data as production needed to stay on track. For this task, point clouds were obtained by scanning every angle of the locomotives mounted on the existing rails on Stadler Rail facilities. To scan the top, experts positioned the ScanStation on an elevated static platform over the locomotive.

“When Lindes Measuring Systems proposed this kind of technology to achieve the requirements we had requested them, we were all a bit expectant. With the achievement of this project throughout two years, we have expressed our confidence and satisfaction on the results obtained,” said Felipe Torrent, quality services responsible for Stadler Rail

Valencia. ***“We are proving to our clients that Stadler Rail is embracing the use of state-of-the-art technologies to deliver our products with the highest possible quality. If Lindes has trusted Leica Geosystems products, so do we.”***

To perform a gauge and total gauge control of various locomotives manufactured by Stadler Rail for several clients, scans were post processed with Leica Cyclone 9.1.5. to obtain 3D mirrored copies of reality. Experts contrasted the 3D models with the theoretical gauge tunnel of each model or with theoretical comparison plans determined by Stadler.

Quality and control for rail

Intelligent data requires to be delivered in a visual and actionable way. The captured locomotives were not only documented with all their features and outlines, the project deliverables included a series of **reports for dimensional analysis with control points and colour-coded maps** that were the basis to:

- Check relative position of various components that form the locomotive on its final stages of manufacturing and assembly;
- Check and confirm that the units about to be delivered complied with customers' requirements and with internal Stadler requirements;
- Supply Stadler with accurate dimensional reports for the clients upon delivery of the manufactured units.

When contrasting the locomotive models with the rail gauge in a dimensional analysis, millimetric precision is needed. Beyond the high-speed scan rate of 1 million points per second that the Leica ScanStation P40 provides, Lindes Measuring Systems also outlined the following benefits:

- Data collection is made fast and comfortably
- Time is saved and costs are optimised
- The quality and precision of the equipment added value to projects
- With no need of physically touching the locomotive to carry out data collection, the accuracy of the equipment and safety for the engineers was ensured
- No customisation needed for the ScanStations.

“Throughout my career, I have carried out a multitude of different jobs, mainly civil engineering, and I have used several brands. Leica Geosystems solutions, however, have always given me very good solutions and total confidence,” said Cristina Alcantarilla, project manager for Lindes Measuring Systems. ***“I am overwhelmed by how fast you can work, the obtained accuracy, and how user-friendly Leica Geosystems hardware and software are, giving added value to our work. We’ll keep on exploring new ways to apply this technology in our sector.”***



A partner you can trust

Reality capture sensors paired with 3D point cloud processing software help customers to mirror the real world to **deliver actionable information**. Aware of the potential that high definition surveying offers to turn information into smart data, Stadler Rail Valencia began in September 2015 a two-year project scanning Stadler’s locomotives. Being able to **collect data in a fast, safe and efficient way** has enabled Lindes Measuring Systems to continue working with Stadler on other rail projects related with the scanning of railway tunnels for their Design & Development Engineering Department.

“Lindes Measuring Systems has presence in three countries and two continents. Since 20 years ago, we work with Leica Geosystems products wherever we go. When I sit to negotiate a new deal with any given client, I need to know that our technical team is going to deliver. The same goes for the equipment we are going to use – with Leica Geosystems, I am always confident on this matter. So is our client,” concluded Alejandro Moure, business development manager for Lindes Measuring Systems.

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For more information, visit railways.hexagongeosystems.com





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