

CustomerStory



Safe welding processes for rail vehicle construction

How Stadler in Winterthur is optimising bogie production with EWM technology

Groundbreaking efficiency in the manufacture of rail vehicles – Stadler Rail places high demands on the welding process in production. When manufacturing bogies, it is not only cost-effectiveness and process reliability that are important, but above all precision and high weld seam quality. EWM masters these challenges with welding machines that

impress with their intuitive operation, digital interfaces and reliable performance in daily shift operation.

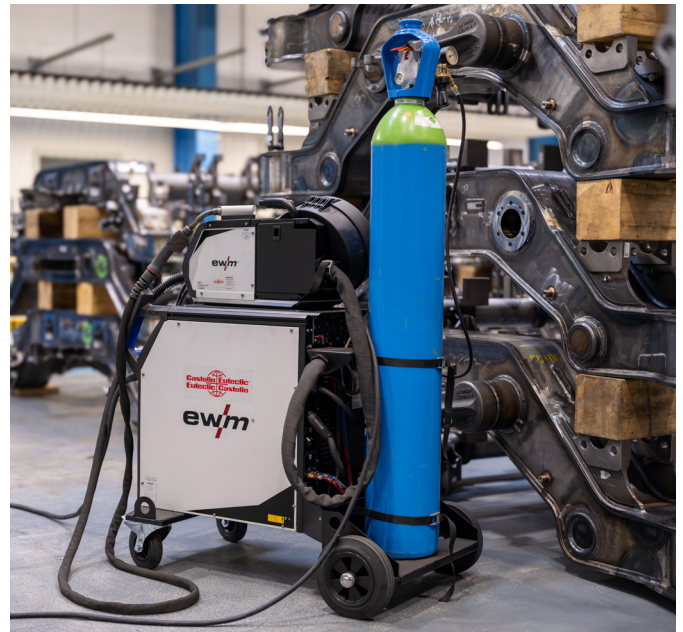
As an international company, Stadler Rail is represented in 25 countries with 16 production and component plants, five engineering sites and more than 80 service locations. In addition, its solutions are in use in 48 countries worldwide. The workforce consists of employees from over 75 different nations. Stadler Winterthur AG is the centre of excellence for bogies. At its site in Oberwinterthur, bogies for standard and broad gauge trains – including SMILE, FLIRT and KISS – as well as for trams are manufactured on over 20,000 m² of production and storage space. As the successor to Schweizerische Lokomotiv- und Maschinenfabrik (SLM), Stadler Winterthur AG has over 150 years of rail vehicle expertise. Since 2010, the main site has been located on Sulzer-Allee. With the opening of a new logistics and assembly building in spring 2022, Stadler Winterthur AG has further established itself as a centre of excellence and now employs around 400 people.



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Demanding production of bogies

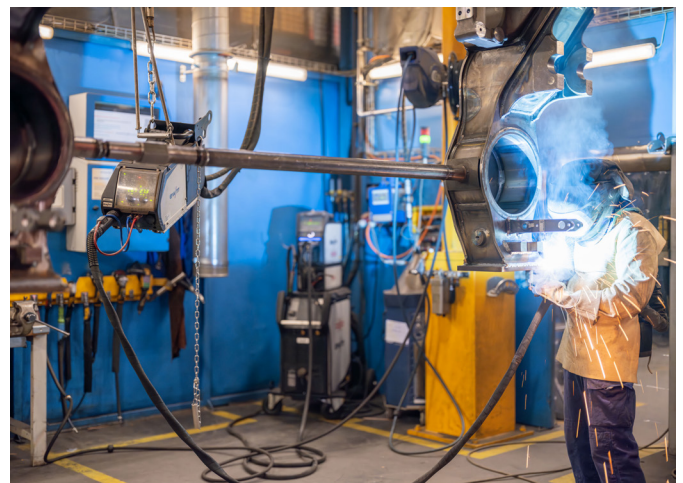
Bogies are special assemblies on a rail vehicle that are responsible for guiding and running the wheels. When welding these bogies, it is not only the complexity of the components that poses a major challenge, but also the need to adhere to tight tolerances. In addition, the weld seams must be able to withstand heavy loads. The high quality of the weld seam must be guaranteed at all times. The components, which are demanding in terms of welding technology, are manufactured at Stadler Winterthur AG in a high-speed production environment. The main material used for the bogies is steel. The MAG welding process is predominantly used to manufacture welded assemblies for bogies and crossbars. TIG welding is used as a supplement for post-processing, for example to smooth seams or for particularly fine components.



Bogies form the running gear foundation of a rail vehicle. Their manufacture places high demands on the welding process.

Manufacturing complex components in shift operation

Around 120 qualified welders work in two shifts at the plant, taking care of the joining work. Each of them must not only be trained in the processes used, but also certified according to standards. At the same time, automated welding takes place – up to 20 hours a day, seven days a week. If necessary, this can be increased to 24-hour operation. As the degree of automation increases, so do the demands on digital welding data management. Digital interfaces, monitorable process parameters and the ability to centrally record and evaluate welding data are in demand. Stadler Winterthur AG therefore decided to switch to EWM devices in order to continue using welding systems from a single manufacturer in the future, thereby simplifying the supply of spare parts.





The MAG welding process is predominantly used for the manufacture of bogies.

EWM welding technology for demanding manufacturing processes

The first EWM welding machines were commissioned in the summer of 2024, and there are now over 80 in use: the Titan XQ 400 for MAG welding and the Tetrax XQ 300 for TIG welding. With its modern inverter technology and integration of all welding processes, the Titan XQ 400 offers optimal conditions for precise and efficient welding. The devices have a modular design and can be flexibly adapted to different requirements. Thanks to the ergonomic functional torches with integrated display, welding parameters and programmes can be set directly on the torch, which is particularly advantageous when working in difficult positions. For example, pipes and beam components are welded using a lifting and rotating device, with the welder standing on a ladder – a situation that requires the utmost concentration and ease of handling. Stadler in Winterthur also uses the Tetrax XQ 300.

It impresses with its precise control and the ability to customise welding parameters. A robust click wheel allows the welding machine to be operated even when wearing welding gloves. This ensures safe and comfortable handling even under demanding conditions. Both device series are connected to the Welding 4.0 welding management system ewm Xnet. This digital system allows welding data to be recorded centrally and evaluated in real time. This ensures complete documentation and quality assurance. Continuous monitoring of all processes provides a comprehensive database for optimising workflows.



With its modern inverter technology and integration of all welding processes, the Titan XQ 400 (right) offers optimal conditions for precise and efficient welding.

The result: high acceptance, fewer errors, quicker to deploy

The introduction of EWM welding technology at Stadler Winterthur AG quickly proved its worth in production – not least thanks to the close cooperation with long-standing sales partner Castolin, which supported the project from the outset. As the local contact, Castolin reliably takes care of all matters relating to the integration and use of the new systems. 'Around 60 employees work regularly with the new devices and are very satisfied,' says Stefan Carminati, field service representative at Castolin. 'They find the simple operation and clear menu navigation particularly advantageous.' The fact that existing hose packages could continue to be used made the changeover even easier and enabled an uncomplicated device change during ongoing operations. Another advantage is that new employees can be trained more quickly. The intuitive user interface and the display in the torch support targeted adjustment directly at the workplace – without lengthy training or complex instructions. The simplified handling and well-designed device architecture have noticeably reduced the susceptibility to errors. 'With EWM welding equipment, work on the bogies is carried out precisely and reproducibly,' says Philipp Scherrer, Production Manager at Stadler Winterthur AG. 'This ensures stability, especially with our tightly scheduled processes, changing shift schedules and complex welding tasks. 'With EWM welding equipment, work on the bogies is carried out precisely and reproducibly,' says Philipp Scherrer, Production Manager at Stadler Winterthur AG. 'This significantly increases stability throughout the entire production process, especially with our tightly scheduled processes, changing shift patterns and complex welding tasks.'



The Tetrix XQ 300 impresses with its sophisticated control system and customizable welding parameters.

Conclusion: Reliable welding for the future

By using EWM equipment, Stadler Winterthur AG has found a sustainable solution for the demanding production of bogies in welding technology. The Titan XQ 400 and Tetrix XQ 300 devices impress in daily use with their reliable performance, ease of use and digital connectivity. In combination with the ewm Xnet welding management system, they not only offer increased quality assurance, but also maximum efficiency in production. EWM technology has proven itself particularly in an environment with a high degree of automation, a growing demand for skilled workers and complex components. The quick commissioning, high acceptance among employees and reduction in error rates make it clear: for Stadler Winterthur AG, the decision to choose EWM was a logical step towards more reliable and economical production.

In collaboration with Stadler

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