Shock and vibration testing at Stäubli's Railway Competence Centre simulating different strains on three axes and testing during continuous operation and with shocks © Stäubli

Stäubli

An Experienced Partner for Reliable Railway Connections

While the Covid-19 pandemic slowed mobility and even shut down many public services, the railroad did have had some difficult times with declining ridership. But this deceleration in the transport sector also allowed operators to tackle innovative project developments and infrastructure improvements.

It was not only railroad operators who were faced with this new slowed-down situation. Passengers also used the time to reflect on their travel and transportation behaviour. As reported by a survey last year, more than 50 percent of the interviewed Generation Z passengers said they were prepared to consider a more sustainable habit of transportation, with regular rail riders making up the majority. In parallel, the net-zero emission plans of many governments are pushing decarbonisation.

Sustainability Speaks for Railroad

Although railways are the most sustainable form of transportation, there are still means to improve decarbonisation in the rail industry by replacing diesel trains with electric trains using battery technology, hydrogen fuel cells, or overhead lines.

Traffic and transport behaviour on the large continents is quite diverse, and so the requirements for further development also differ. Many of the large European rolling stock manufacturers focus on implementing new energy concepts for their vehicles, improving control systems, increasing passenger safety and comfort and raising economic efficiency for operators.

Whenever safe and reliable power, data, signal or fluid connections are required to support the systems in these innovative railway projects, Stäubli Electrical Connectors is a welcome technology partner. It's not only the vast portfolio of powerful, high-performing and most dependable connection components, it's also the broad experience in the industry and the many Stäubli experts worldwide that partner with railway engineers to develop the most suitable and most efficient connection solution.

Resistant, Dependable and Adaptable Connections

Train companies are supposed to run around the clock in any climate conditions and on any terrain. The rolling stock is challenged on steep gradients, in tight curves, in icy temperatures, strong winds or in great heat. The Stäubli multi-pole rail connector for harsh environment

has proven its reliability and longevity without performance loss on the tracks of the **Swiss Rhaetian Railway in its alpine environment**.

Another alpine train operator will now rely on this solution for its passenger trains and particularly for its construction trains; however, the operator asked Stäubli to upgrade the connector with more performance contacts to adapt to the requirements of this specific application. This highly durable connector couples the power, data and signal transfer between the wagons and resists temperature variations of up to 60°C in one single ride. For this application a special housing with cover lid was designed, providing easy and safe handling for operation, but at the same time ensuring complete protection against snow and dust. To significantly reduce mechanical stress on the cable, a 15° departure angle has been designed. Prior to implementation, this multi-pole connector for harsh environments has been thoroughly validated in the Stäubli-owned test lab at the Railway Competence Centre in France.

Tested and Proven Quality

Resistance to vibrations, mechanical shocks according IEC 61373 and even hammer strokes in case of icing are being tested for this application. The connector also needs to withstand mud, brake dust as well as wet conditions with dew and salt spray according IEC 60512-11, IEC 61984-11, EN 60068-2-11, ASTM B117.

The Stäubli Railway Competence Centre with its specific test laboratory hast just successfully passed re-certification according to the latest IRIS (ISO/TS 22163) standard, defining the highest level of quality throughout the supply chain of products for the railway industry. This certificate proves the suitability of Stäubli's quality management system and know-how for the requirements of the railway sector having aligned all activities in the company with a process-oriented approach.

Customer-Specific Design

In other more remote regions, the available power grid via the overhead contact line is not strong enough or non-existent, so that additional power with battery systems is required. This entails adapted connection solutions in the electrical chain of traction.
This situation is, among other challenges, part of the actual expansion and modernisation project of the regional transport line between Oslo and the Norwegian west coast. Stäubli has co-operated with the rolling stock manufacturer for this project, having grown the relationship over the years. Consequently, it has been able to implement the necessary adaptation to **the Modular Power Connector MPC**. This customer-specific design allows for a safe electrical connection between the individual functions of the inter-car connection in the new trains run by the Norwegian rail operator.

The Stäubli MPC owns a universal multi-application design composed of standardised units to fit various installation requirements. In functionality, it provides durability and low-loss energy transmission for high currents, maximum shock, impact and vibration resistance and highest robustness – even in extreme climatic conditions. Quick separation during technical service helps to minimise downtime, paired with the very compact, space-saving design the MPC contributes to increasing process efficiency during installation and maintenance

Reliable Experience

As a train operator safety, reliability, durability and economic efficiency are key criteria for customised solutions. That's where proven quality, based on extensive and reported test procedures and experience comes in. Stäubli has always placed a high value on the combination of exploring field data, test procedures by customer specifications and long-term in-house testing to guarantee quality and durability. This passion for quality and the track record of successful rail projects are the basis of Stäubli's industry experience, which distinguishes the technology specialist as an experienced project partner for innovative railway projects.

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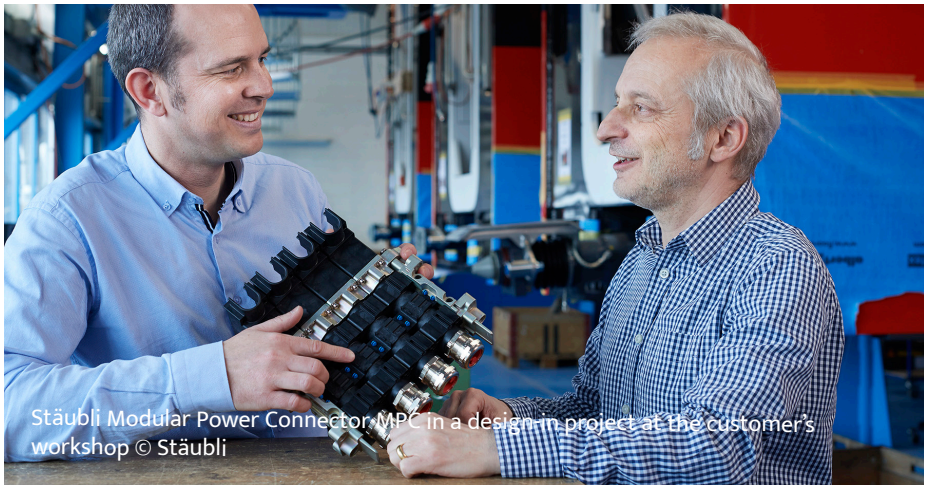

Stäubli Modular Power Connector MPC in a design-in project at the customer's workshop © Stäubli

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