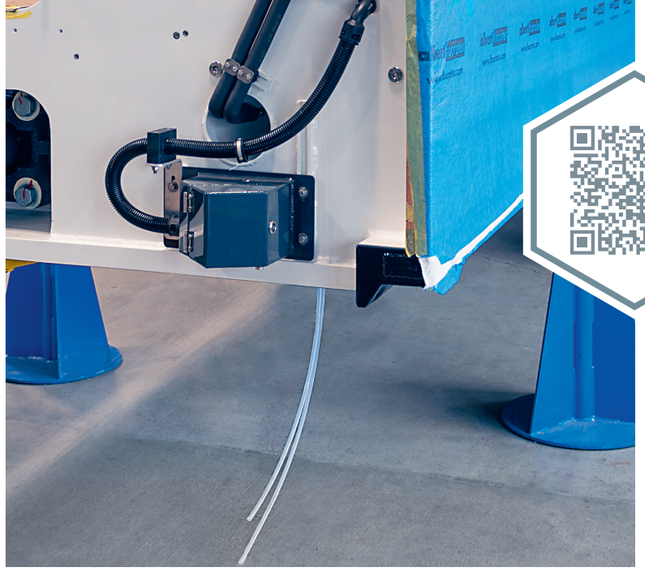
Riding clean with diesel exhaust: Stadler Rail vehicle manufacturer



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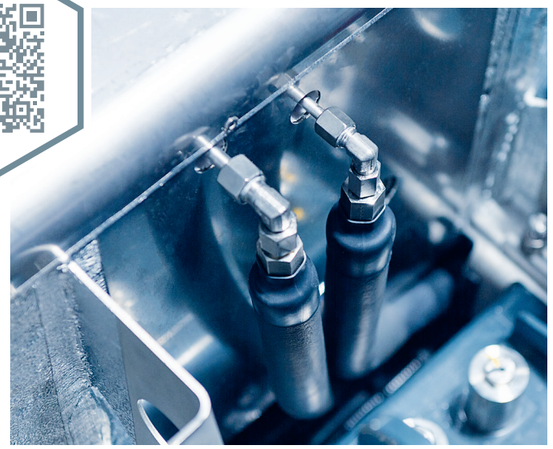

Exhaust emissions from diesel engines are a burden on the environment. AdBlue systems are used to reduce emissions. In tight spaces such as in a diesel locomotive, installing such a system is a challenge. But Stadler's got it under control.

Swiss rail vehicle manufacturer Stadler can look back on an impressive success story. What began in 1942 in an engineering office called Stadler in Zurich and continued 20 years later with the construction of their first factory building in Bussnang, Thurgau, is now a globally active company with an outstanding reputation: Stadler has established itself internationally as a seal of quality among rail operators.

Diesel regional trains for Sardinia

Rail vehicles from Stadler are in service on numerous rail networks throughout Europe, the USA and other countries and regions. Many of them are diesel-powered, as electrification of the rail networks is nowhere near as advanced as it is in Switzerland. On the island of Sardinia, diesel-powered rail vehicles are also in operation on the line between the port and capital city of Cagliari and Isili, which is located inland. The narrow-gauge line is operated by the regional company Azienda Regionale Sarda Trasporti (ARST), which ordered seven diesel regional trains from Stadler in 2019. These will be delivered in 2022.

AdBlue for clean air

Adjustments to environmental legislation required the design and practical fitting of AdBlue systems in the final engineering phase of the trains. AdBlue is a urea solution that reduces the environmentally harmful nitrogen oxides contained in diesel exhaust by up to 90% and, like the diesel fuel itself, must be topped up regularly.

A complex design task

Stadler's engineers were challenged to fit the AdBlue exhaust gas cleaning system into the already tight engine room. This required a system of lines from the filler tank in the lower part of the vehicle to an intermediate tank mounted at the other end of the vehicle above the engine. An injection unit connected to this supplies the chemical to the exhaust tract upstream of the SCR catalytic converter. To prevent overfilling, the line system had to be equipped with a recirculation system, thus doubling the routing of lines.

Stadler Bussnang AG, Bussnang

Development and construction of modularly designed rail vehicles for long-distance, regional and urban transport with the highest standards of performance, reliability and safety. Tailor-made – the original business of the company founded by Ernst Stadler manufactures wagons of all types, from rack railways to locomotives. Comprehensive services ensure high availability of the vehicles and minimum downtimes.

The transparent and insulated fluoropolymer hose PFA from Parker has – despite a very high load – an almost 10-fold longer service life.

Strict evaluation criteria for the line system

«AdBlue is highly corrosive», explains Daniel Schär, the team leader responsible for mechanical engineering at Stadler, «We therefore had to find a completely corrosion-resistant material for the system of lines. In addition, this material had to be flexible in order to save as much space as possible during installation.» The engineering and design team found what they were looking for at Bachofen. As part of a joint evaluation, the decision was made in favour of the PFA fluoropolymer hose from Parker, which has an almost 10-fold longer service life under high chemical and mechanical stress.

«Since we do not operate in the mass market, we very much appreciate the fact that we can sometimes purchase a small series of components from Bachofen for the construction of a single vehicle unit. You can also always rely on Bachofen when things have to move quickly.»

Marco Engler, Design Engineer

Stadler and Bachofen – old acquaintances

The cooperation between Stadler and Bachofen is nothing new: For example, Stadler used solenoid and pressure control valves from Bachofen in the construction of the Butler Eem 923 hybrid locomotive for SBB Cargo. «We know and understand each other», says Stadler designer Marco Engler, «which simplifies cooperation enormously. The exchange of knowledge with Bachofen is also important to us and always leads to strong solutions in our projects.» ■

Engineering office founded by Ernst Stadler
1942

Takeover of Stadler by Peter Spuhler
1989

Location of the Headquarters
Bussnang

Number of employees Stadler Group
over 13 000

Turnover of Stadler Group
CHF 3.6 billion (2021)

CEO of Stadler Bussnang AG
Markus Bernsteiner

Bachofen customer
since 2010

Website
www.stadlerrail.com