

Combined street/rail machines rely on, modern, safe pneumatics

RESULTS

- Enabled time and cost-savings to produce a standard solution
- Increased flexibility for the production of higher-performance vehicles
- Provided cylinders resistant to heavy contamination
- Ensured reliable components for increased safety and availability



APPLICATION

Cleaning rails and tracks

CUSTOMER

SRT Schörling Rail Tech, Sehnde, Germany

CHALLENGE

SRT Schörling Rail Tech builds customer-specific vehicles for cleaning roads and rails using chassis from renowned manufacturers. With standard street tires, the vehicle maneuvers into position over the streetcar rails. The track boxes with the streetcar wheels are then lowered, elevating the chassis and allowing the specialized SRT Schörling Rail Tech vehicle to begin cleaning the rails, switches, and track beds.

Nozzles target the grooves to be cleaned, spraying them with water at a pressure of up to 1,600 bars, rinsing the railheads and switches at the same time. In the latest vehicle generation, SRT completely reworked its pneumatic system, relying on a new control concept with AV valve systems to actuate the auxiliary consumers pneumatically. Previously, the valves were used for a range of positions, tricky to access, and had to be protected against contamination.

“We changed this completely to optimize the new concept,” reports Thomas Schneider, responsible for designing pneumatics and control technology at SRT.

“Reliable components are crucial to increase the safety and dependability of our vehicles. With the new pneumatic control concept in the control cabinet, we have managed to create a standard solution that saves time and money.”

Heinrich Scheiter
Managing Director of SRT Schörling Rail Tech

SOLUTION

At the heart of the solution are AVANTICS™ AV03 series valve systems connected to the parent control with AES components via CANopen. The compact, lightweight valves only require a compressed air purity of 40 micrometers, reducing compressed air consumption and increasing energy efficiency.

The pneumatics control all the vehicle's auxiliary functions: the sliders that open and close the suction lines, swiveling flaps and safety supports, and the hoist on the trolley with the rail wheels. SRT also uses electrical supply plates with separate voltage segments.

"In the event of an emergency off, for example, this allows us to power down specific valves, independently of the control," explains Schneider. "Now, the overall valve technology features a compact, clean, clear arrangement in the control cabinet, and is easy to access for assembly and maintenance."

Certified safety

"Our collaboration with AVENTICS began when we started looking for new cylinders resistant to heavy contamination," recalls Heinrich Scheiter, managing director of SRT Schörling Rail Tech.

The primary concern was the pneumatic lifting and lowering of the trolley.

"If we were unable to control the lowering of the device, it would drag across the track, causing major damage. Plus, the vehicles permit a lateral displacement for taking corners, where the rail wheels on the trolley run in the rail. Here, we have to avoid the risk of the wheels twisting, or even tearing off," explains Scheiter.

Besides featuring a modular sealing concept, the cylinders also have to reliably ensure brief stops. Certified LU6 series locking units come into play here. Spring-actuated, they hold the piston rods in the event of a pressure drop or failure. The locking unit can be used in safety-relevant applications up to performance Level C/Category 1. With a few extra measures the units can also be used in systems with higher categories and performance levels.

"For us, constructing two identical vehicles is considered to be large-scale production, and reliable components are crucial to increase the safety and dependability of our vehicles. With the new pneumatic control concept in the control cabinet, we have managed to create a standard solution that saves time and money," summarizes Scheiter.

"Now, the overall valve technology features a compact, clean, clear arrangement in the control cabinet, and is easy to access for assembly and maintenance."

Thomas Schneider

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