



## **Rail & Road AG Kanalservice** **Your specialist for sewer cleaning** **and sewer TV operations on rails**

Preventive maintenance of rail drainage systems on the route network, in stations and tunnels is incredibly important for the safety of train operations and infrastructure maintenance.

While working on the Gotthard Base Tunnel, Rail & Road developed an innovative two-way vehicle with a combined recycling suction & rinsing device. The performance, workmanship and reliability of the vehicle were demonstrated during the six-year period when it was used under extreme conditions in the NEAT tunnel.

With this complete equipment, the high-tech vehicle is used on the rails for all sewer, tunnel arch, shoulders and special cleaning work. It can also be perfectly combined with road operations.

In parallel to the two-way vehicle with a combined recycling suction & rinsing device, a digital TV system was converted that can be attached to a two-way dumper using a special device. Sewer TV work can thus also be performed on rails and independently from sewer cleaning work.

# The right solution for all challenges on rail and road

## Competence

As well as specialist drainage expertise and rail competence, all our employees have VTE-10 training in operating railway traction vehicles (two-way vehicles). Their many years of experience in performing work on the tracks and ongoing training guarantee a high level of quality and efficiency.

## Vehicle registration and railway companies (EVUs)

Both two-way vehicles (sewer cleaning and sewer TV) have the SBB work permit and BAV operating permit. Rail & Road AG is also the sewer service partner of BauRail AG.



## No need for machines and personnel from the client

The use of two-way vehicles saves both machine and personnel resources (construction train driver, construction train, low-floor wagon and tank wagon, no crossings of low-floor wagons and tank wagons). The key "construction train driver" resource can be used for other construction sites. The ability to use two-way vehicles at short notice and reduction in administrative effort are further benefits.



## Length of two-way recycling suction & rinsing device

The total length of 12 m (standard length of normal train compositions is 40 - 55 m) increases the options for track closures, particularly near the points and in complex local conditions (multi-track sections with lots of points). In clusterings where several construction teams are working at the same time, the construction site coordination can be simplified as the vehicles are significantly shorter and the switching moves can be performed more easily (agility). This leads to fewer blockages to other construction services (forwards and reverse), reduced waiting times, are no/shorter work interruptions and thus greater efficiency.

## Polyvalence – solution for rail and road

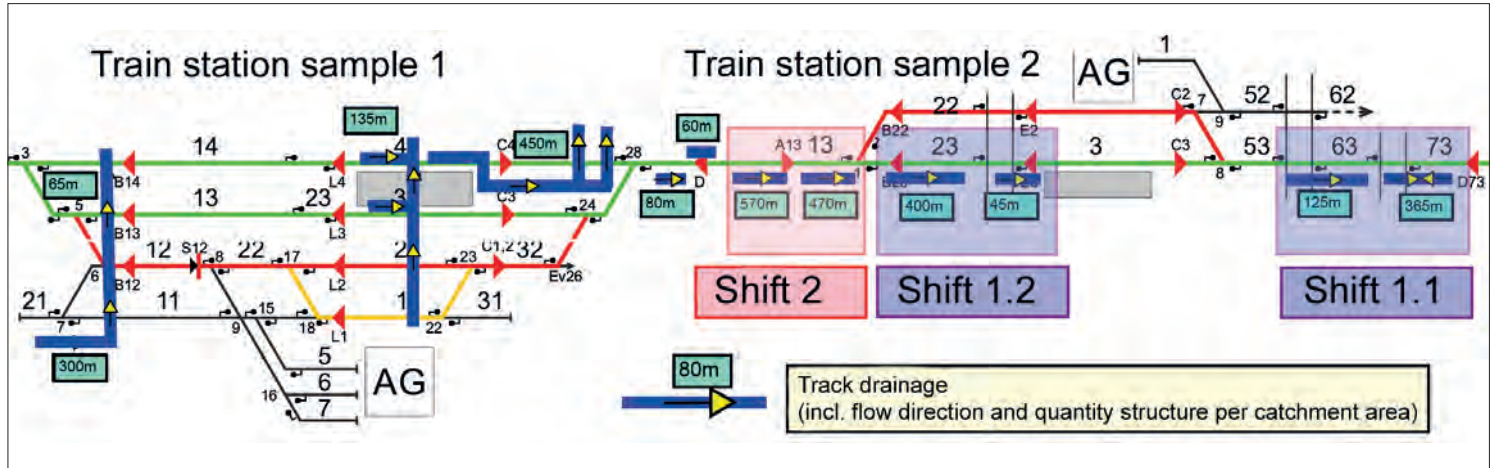
Thanks to the rail travelling mechanism, the vehicle can be operated on both rail and road. It can therefore be used on heterogeneous construction sites or systems (train stations, bridge drainage etc.). The individual electrically driven wheel axles make it possible to efficiently perform work on route sections with larger gradients (up to 40%) and longer distances (Vmax 55 km/h).

## Safety

The vehicle fulfills all safety-related requirements for operation on closed rail sections as per the specifications from the Swiss Office for Transport (BAV). It has an automatic fire extinguishing device and safety features that prevent a spray arch or incorrect manipulation of the rinsing hose booms to the overhead lines. Furthermore, our employees have all been trained in the current guidelines from the railway companies (EVUs) and possess the prescribed personal protective equipment (PPE).

## Rinsing concepts and shift planning

We create rinsing concepts for our clients that contain line-specific/safety-relevant (line category) and environmental (disruption line) parameters. The catchment areas for the drainage systems and the local conditions (fusions, special structures) are also taken into consideration. For optimal planning of the work (track closures) and qualitative/quantitative execution, the drainage systems including quantity structure are schematically presented in the track overview plans. A detailed shift plan is then created based on the intervals, catchment areas, quantity structures and location of the systems. This achieves a qualitative and quantitative work result.



## Sewer TV with two-way technology

We also use two-way technology for status detection or performing quality controls (building inspections) of the rail drainage systems. A special device for a two-way dumper was constructed onto which a digital TV system can be mounted. This eliminates the need for the client to provide personnel and machine resources, which is also a major benefit. A further benefit is that two heterogeneous types of work can be performed in parallel and independently from one another (different work performance of sewer cleaning and sewer TV). The system is equipped with a camera robot and digital recording technology, which can be used to take professional sewer TV images. The data can be transmitted in common data exchange formats via electronic data transfer or electronic data carriers. Our operators have been trained in category VTE-10 (operating railway traction vehicles) and are ADVK-certified as per VSA.



## Other services

Cleaning of rails, grooves and routes



Tunnel cleaning/wet cleaning of arched tunnels, shoulders and lanes (Euroclass 5 low-emission motor with a soot particle filter)



## Water protection

Railway companies' drainage systems often only drain into a receiving water, which is why the rinse water conditioned after a shift cannot simply be discharged. However, our two-way vehicle combined recycling suction & rinsing device has a mobile wastewater treatment plant with a cantonal operating permit (including acceptance of waste code 20 03 06 [S]). This system prepares the rinse water in such a way that the conditioned water meets the conditions for discharge into a public body of water. This means that the clear water concentrate can be discharged on site. A standard suction vehicle has to extract all the slurry (rinse water may not be discharged) and take it to a suitable licensed stationary disposal facility, which is often far away.

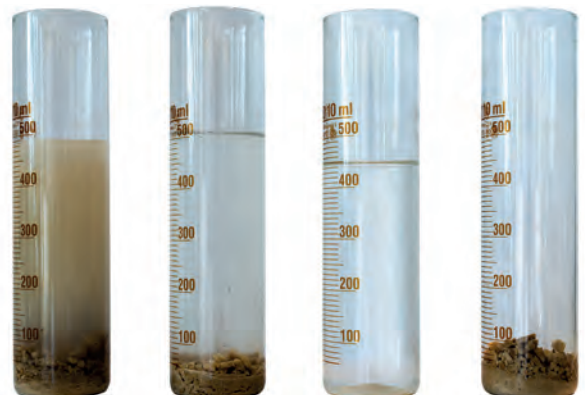
# Suction, cleaning, rinsing, purifying, transporting

## Suction recycling

A chemical/physical preparation system separates the mud from the water. The clean water ends up back in the separator and the mud is condensed. This reduces the volume of waste, which saves on noise emissions and the costs of disposal and transport.

## Ecology

Solid materials are used to generate renewable energy. This vehicle has the corresponding cantonal approvals and fulfills all legal and normative requirements.



Separation into water and solid materials through the addition of flocculants and multiple filtration.



## Two-way vehicle combined recycling suction & rinsing device

- SBB work permit (ABG00820.2020.05.01.205) and BAV operating permit (zr42BB2010-11-0421)
- Rinse recycling system with 2 HD pumps, each 400 l/min at 200 bar
- Chemical/physical rinse recycling and suction recycling system
- EURO 5 with soot particle filter
- Protective device that can be used on rails
- Tank volume 12,000 litres
- Suction performance with 60% vacuum: 2,400 m<sup>3</sup>/h
- Rail travelling mechanism 41 t up to Vmax 55 km/h
- Tunnel cleaning arm



## Two-way vehicle with digital TV system

- SBB work permit (ABG03202.2024.02.28.212) and BAV operating permit (zr425-00926)
- Sewer TV recordings DN 150 - 600 mm
- Pan and tilt camera with endless rotation and driving carriage
- Driving carriage cable 300 m
- Pipe run measurement with 3D Geosense camera
- Shaft measurement with GPS measuring device (xyz-coordinates)
- Pipe and shaft location
- Vmax two-way dumper: 15 km/h
- Protocol/data: WinCan VX, Interlis 2, interface SIA-405/VSA-KEK





## Competence – performance – service

### Your benefit – our promise

- Rail expertise – sewer services only for railway companies
- High degree of expertise when planning the execution
- Experienced teams of 2 that are trained in VTE-10 (operating railway traction vehicles)
- No need for client resources (construction train driver, construction train, low-floor wagon and tank wagon)
- A vehicle length of just 12 m guarantees maximum flexibility (e.g. clusterings)
- Polyvalence – use on rail and road
- High level of water autonomy guarantees long periods of operation on the tracks (rinse water and suction recycling)
- Sewer cleaning and sewer TV work can be performed independently from one another
- The two-way vehicles are field-tested, reliable and ecologically sustainable
- Highly certified process and occupational safety standards
- State-of-the-art infrastructure in the cleaning and sewer TV area leads to high execution quality and efficiency

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### Certificates

ISO 9001:2015 Quality Management  
 ISO 14001:2015 Environmental Management  
 ISO 45001:2018 Occupational Health and Safety