

Roediger Vacuum GmbH

A Clean Matter – Roediger Wastewater Treatment for Train Wash Plants

For more than 30 years Roediger has been supplying reliable and individual systems for the wash water and rinse water treatment of train exterior washing systems.

As one of the world's leading railway operators, Deutsche Bahn (DB) understands the importance of maintaining clean and efficient trains to ensure safe and comfortable journeys for millions of passengers. With a vast network spanning across Germany and beyond, DB's fleet of trains requires regular cleaning. More than 7,200 kilometres of DB trains and suburban trains are cleaned every year – an area of 2.3 million square metres!

Roediger provides eco-friendly practices, including the implementation of innovative water treatment and reuse methods to allow environmentally conscious operations of the train-washing plants. These water treatment systems for train washing plants focus on sustainability, ensuring that water consumption is optimised without compromising on cleanliness.

Water Recycling System

Roediger provides advanced water recycling systems that are of central importance for eco-friendly train washing plants.

These systems capture, filter and treat the water used during the cleaning process, enabling its safe and efficient reuse. Instead of allowing thousands of litres of water to go to waste after a single wash, the treatment process ensures that the same water can be used for multiple cleaning cycles. The majority of the washing and rinsing water (up to 90%) can be reused.

A high water-recovery rate enables the economical

operation of the train washing plant and is made possible by a cascade-like interconnection of the individual water circuits.

Roediger water technology automatically controls freshwater demand, water recycling and wastewater treatment.

The sophisticated Roediger water treatment and purification technologies guarantee that the recycled water meets the highest standards of cleanliness and safety.

The various process stages adapted to the washing process include the following processes as required:

Filtration and Purification

The recycled water undergoes a series of filtration and purification steps to remove any remaining contaminants and impurities. Advanced filtration systems, precipitation, flocculation, neutralisation and sedimentation effectively cleanse the water, making it suitable for reuse without compromising on quality.

Disinfection

Roediger takes disinfection seriously to ensure that the treated water is free from any harmful microorganisms. Advanced disinfection methods are employed to eliminate any potential pathogens, making the water safe for reuse.

Storage and Distribution

Once the water has undergone the rigorous treatment process, it is stored in dedicated tanks for later use in the train-washing plants. These tanks are carefully monitored to maintain water quality and ensure

a continuous supply of clean water for washing operations.

Sludge Treatment

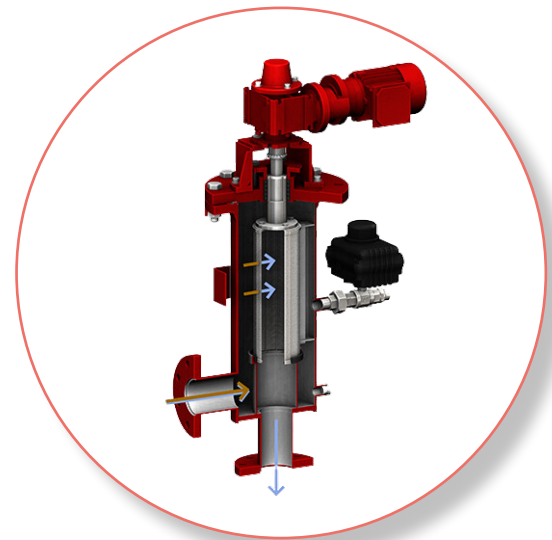
The train-wash process generates significant amounts of sludge, which is a mixture of water, cleaning agents and the removed dirt and pollutants. After separation and filtration, the excess water of the remaining sludge is removed by using automated dewatering technologies, such as chamber filter presses, in an environmentally friendly manner. This results in a reduction in the volume of sludge, making it easier and more cost-effective to handle and transport for final disposal.

Advantages of Roediger plants for wash water and rinse water treatment:

- Roediger wastewater treatment plants use only standard chemicals that can be purchased cheaply on the market
- As a residue a well pressed filter cake is produced, which can be easily disposed of
- Roediger offers a flexible process technology that can be adapted to the respective washing process and can be used for both intensive cleaning chemicals and neutral cleaners, allowing for high variability in optimising the procurement of cleaning chemicals
- Roediger supports the change or conversion of cleaning chemicals
- Compliance with strict discharge limits, e.g. phosphate and heavy metals (copper, nickel, zinc)
- Compact design, e.g. through the use of drum filters



Roediger wastewater treatment for train-wash plants



The use of automatic backwash drum filters enables a compact design of the treatment plant. The drum filters enable fine filtration ($\geq 5\mu\text{m}$) at high cleaning speed (4–10m/s) and low rinsing-water losses

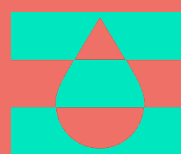
De-icing

In addition to the treatment of wash and rinse water from train washing, Roediger also offers solutions for the implementation of technical equipment for train de-icing during winter operation.

The undercarriages of the trains must be free of snow and ice for maintenance and ultrasonic testing. The Roediger de-icing system can be installed in the hall of the train-wash plant. De-icing is carried out by means of temperature (39 °C) and pressure (1–2 bar) without the addition of environmentally harmful chemicals.

Roediger's innovative water treatment and reuse methods exemplify a commitment to environmental stewardship and sustainability. By optimising water consumption and employing advanced water treatment technologies, Roediger provides technology for many railway operators worldwide. As passenger demands for eco-conscious travel options grow, Roediger systems can be essential in reducing the railway sector's ecological impact.

For more information contact:



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