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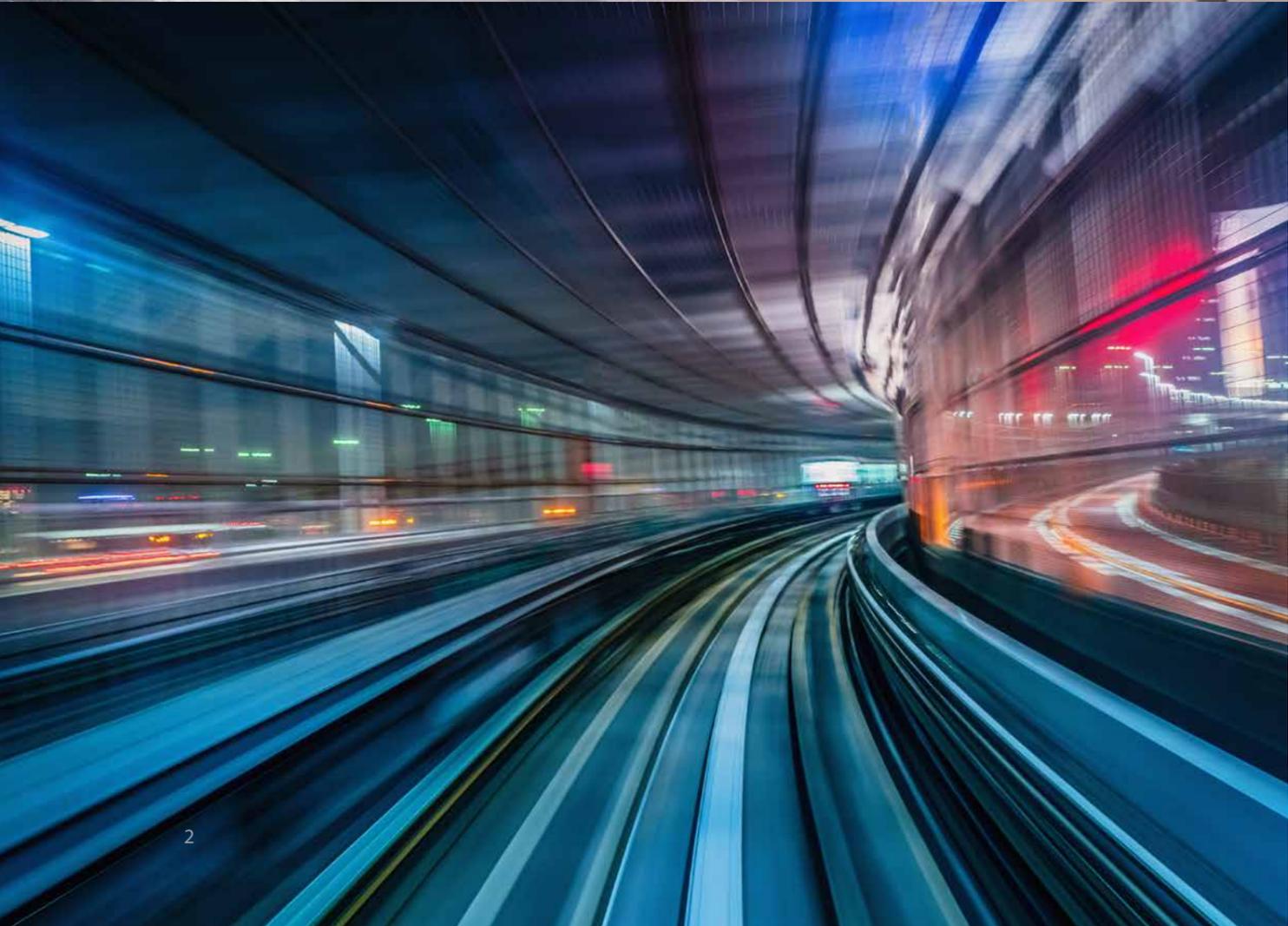
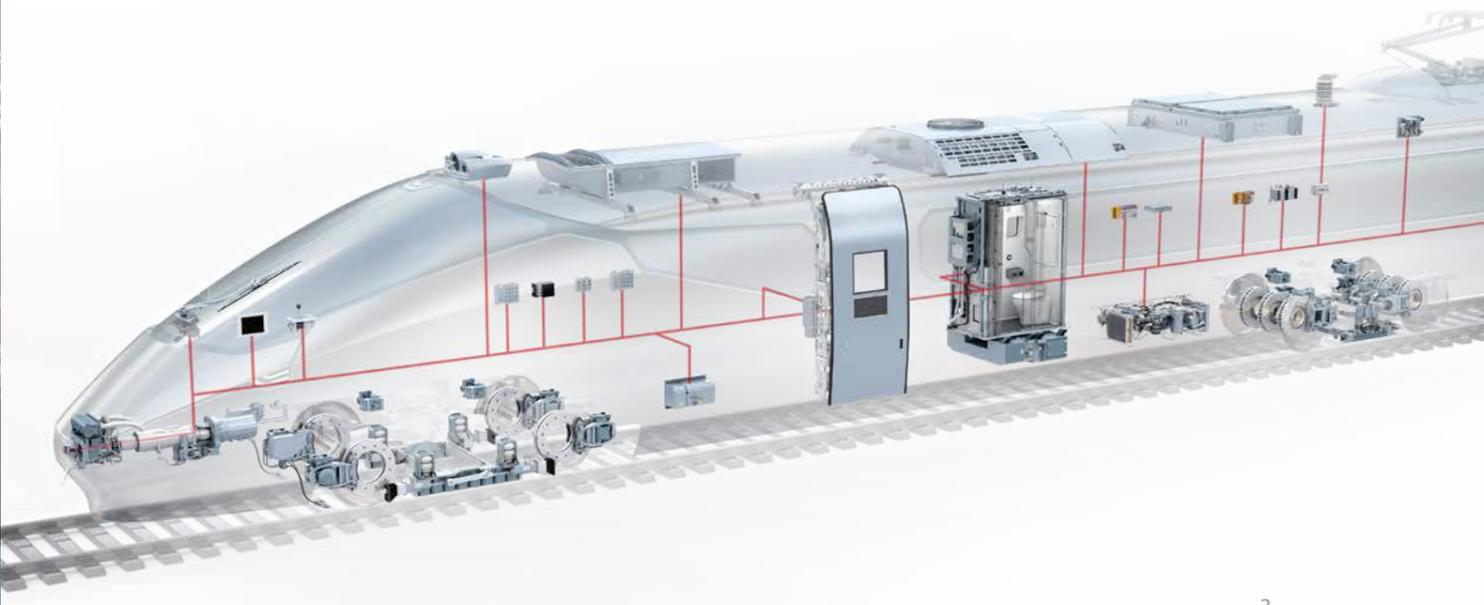
# SANITARY SYSTEMS





## Content

Evac company	04
Vacuum Toilet Systems	06
Integrated Toilet Cabin Modules/ Cabin Interior	08
Control & Communication Systems	10
Fresh- and Waste-water Tanks	12
Doors and Door Gears	14
Treatment Systems	15
Service, Spare Parts	16



## Integrating Excellence

### System Integration at its best



Reliable, integrated sanitary systems are an operationally critical component for train operators, necessary for train availability. It is also an important element for passenger comfort.

Evac is a world leading supplier of sanitary systems: With more than 120,000 installed units worldwide, in all climate conditions and train types imaginable. With half a century in field-experience and an enormous wealth of insights into the real-life use of its products. And with a global customer base in more than 40 countries.

Available for OEM customers as well as for modernization projects, the highly engineered sanitary systems use vacuum technology to provide hygienic, water-saving and clean wastewater disposal.

## Highest Standard of Sanitary and Hygiene Comfort for Passengers

Knorr-Bremse Evac – a strong and reliable partner for all Sanitary Solutions

Backed up by Knorr-Bremse's global service and replacement parts network, the brand is genuinely close to its customers, with a local presence almost everywhere rail vehicles operate. The brand offers:

- » The most integrated and compact modules currently on the market
- » A maximum level of performance and stability into any system while using minimum resources and space
- » Some 200 highly skilled professionals and a global network ensure fast reaction on any continent and at any time
- » Thanks to the globe-spanning production network, Evac can satisfy even the most demanding localization requirements.
- » Bundling the sanitary systems with other subsystems makes for an attractive everything-from-one-source approach.

# Evac Vacuum Toilet Systems

Saving space as well as resources, this microprocessor-controlled, all-in-one unit features a local vacuum system, removing the need for a vacuum-proof wastewater tank. It is available with both sliding gate valve and pinch valve. Use depends on customer preferences and specifications. The customer has a choice between sit-down, squatting pan and urinal styles. Super-efficient at just 0,5 l water per flush and engineered to ensure optimum performance using small tank volumes, the Evac Compact is an excellent and economical standalone solution. Its integrated fault detection and trouble shooting as well as super-easy installation and maintenance make it a worry-free system: The entire unit can be replaced within 10-15 minutes.



## Configuration variety

Urinal



Squatting Design



Pinch Valve



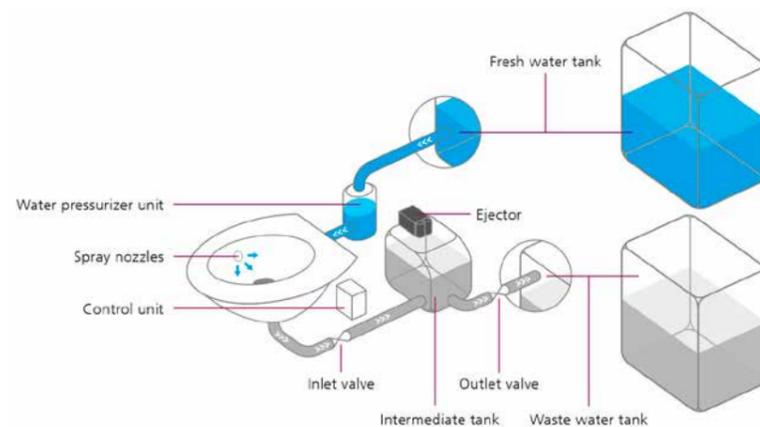
Sliding Gate Valve



With one centralized waste water tank, the Evac 2000 effortlessly services multiple toilet units – with all the reliability and efficiency that have become Evac’s trademark. Even with long pipes, risk of blockages is extremely low. Available as both a permanent vacuum and vacuum on demand solution, the Evac 2000 is easily adaptable to almost any layout and setting. Toilet units can be configured in sit-down, squatting pan and urinal styles. In addition to increased space efficiency, the centralized vacuum and waste water tank also serves to ease maintenance. An advanced electronic control panel with a wide range of alarm, control and monitoring functions as well as robust software with built-in fault detection and troubleshooting contribute towards worry-free operation.

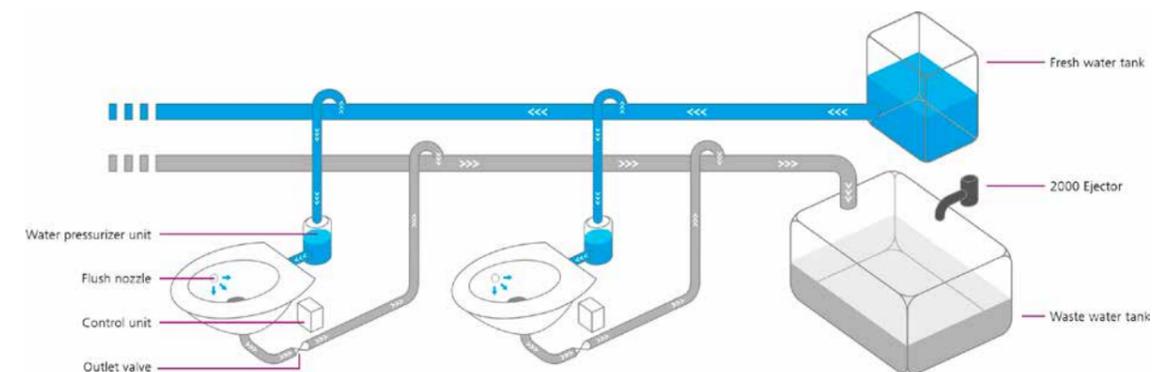
### Evac Compact System

- ✓ Compact excellent economical standalone solution
- ✓ No need of vacuum proof WWT
- ✓ Easy maintenance
- ✓ Integrated fault detection and trouble- shooting



### Evac 2000

- ✓ One centralized waste water tank for multiple units
- ✓ Easily adaptable to almost any piping layout and setting
- ✓ Even with long pipes, risk of blockages is extremely low
- ✓ Increased space efficiency



# Evac Cabin Modules

All systems. One source. No problems



Evac is offering entire, fully integrated toilet cabin modules including all components from a single, one-stop source. No need to coordinate a multitude of suppliers. No interfacing problems between individual components. One consistent level of excellence down to the tiniest detail, instead – and significantly increased time-to-market.

## Features & benefits

- » Extensive in-house expertise and high-end facilities for all materials, manufacturing, and testing steps (incl. GRP production and complex welding)
- » Depending on requirements and specifications: Glass reinforced plastic (GRP), Aluminium sandwich, or Plywood/high density fiberboard (HDF)
- » Genuine added value by rigid testing and advanced quality management system
- » Touchless operations to increase hygiene and comfort level of passengers
- » Available: Water and surface sanitizing systems by UV-C

## Toilet cabin of the future

A clean deal: Evac aims on a completely new user experience with warm colours, a bright lighting concept, and pleasant materials. The focus is, of course, on the hygiene aspect: Door opening and locking, flushing and waste bins can be operated without touching them. The same applies to the soap dispenser, water, dryer, or the disinfectant dispenser.

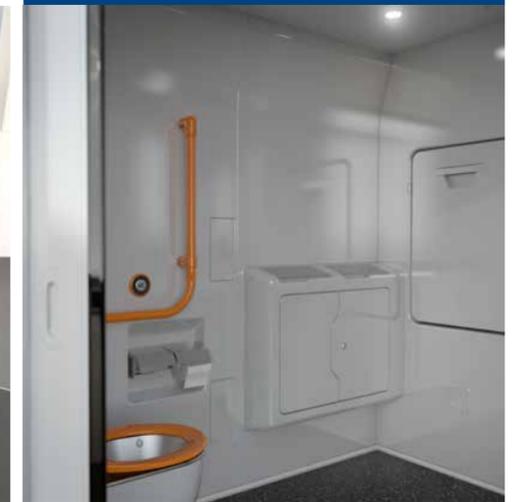


Wash basin, fully functional for daily use, outside the cabin for optimized spacing.

Innovative solutions tailored to the needs of travellers:

- ✓ Availability
- ✓ Functionality
- ✓ Comfort and hygiene
- ✓ Touchless
- ✓ Sitting and squatting position use

Assist mode for reduced mobility cabins



Baby holder and Baby changing table

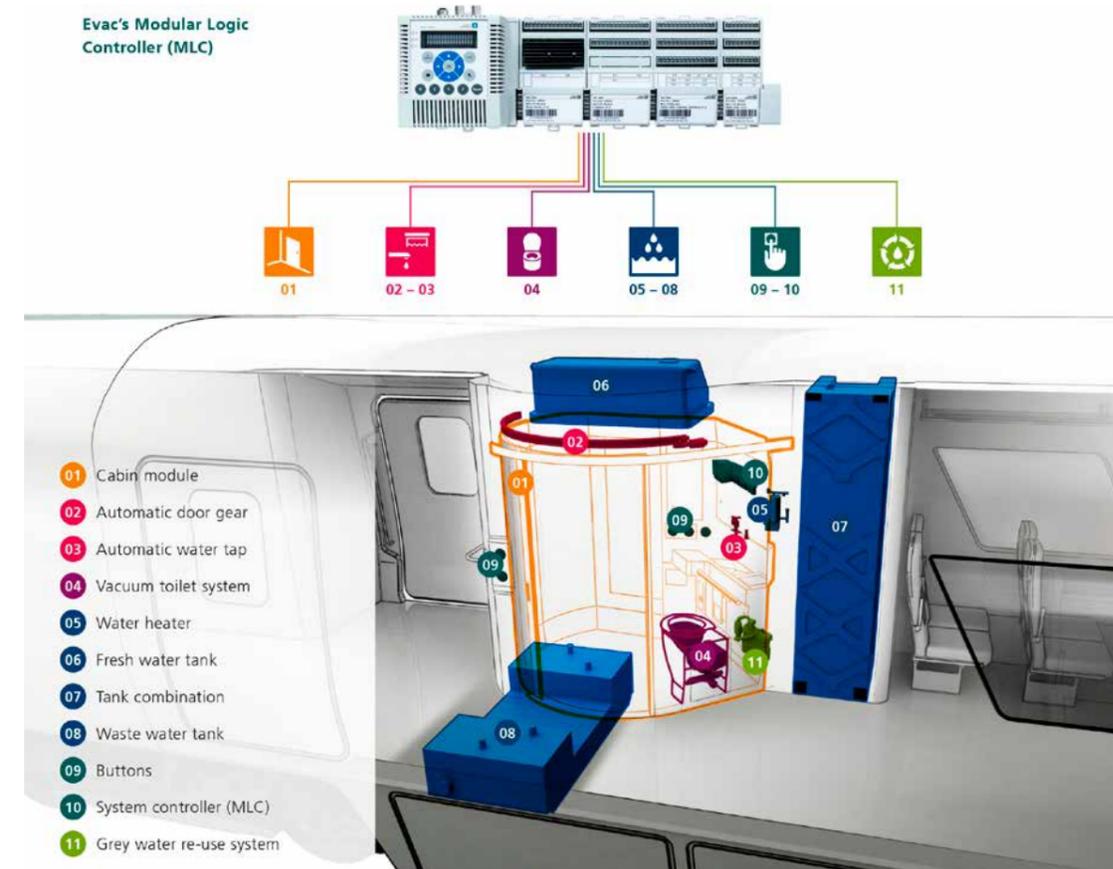
## Control and Communication Systems

### Frictionless. Seamless. Made to measure

Evac develops and integrates high-class components into seamless systems that are much more than just the sum of their parts. The systems come individually tailored for the demands and conditions of vastly different markets in many countries.

Living up to Evac's reputation as a system integrator, the company's made-to-measure approach proceeds when it comes to control and communication: Evac integrates individual toilet controls, level sensors, all kinds of displays and human-machine interfaces (HMI) as well as complex cabin solutions with a centralized automation and control system.

And, of course, it does not stop at the system itself, but also covers data transmission across different train-wide system buses.

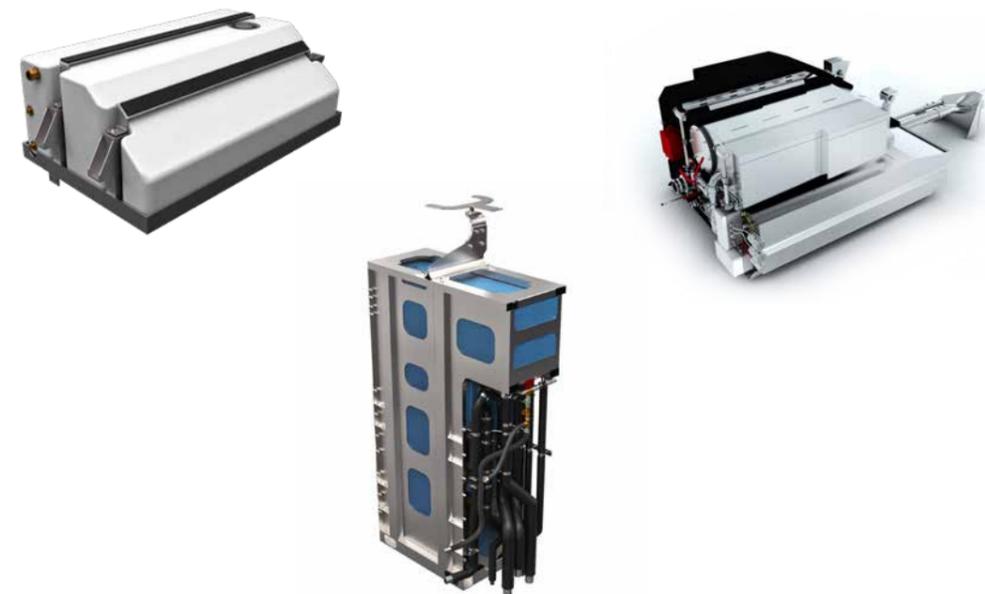


## Fresh-, Grey and Waste-water tanks

### Essential options from a one-stop source

Optimized treatment for fresh-, grey- and waste-water is essential for any vacuum toilet solution. As the world's leading provider of vacuum systems for trains, Evac offers all the Components needed for complete, fully integrated solutions from a single, one-stop source – from tanks to water panels including water heaters and pumps.

The advantages are obvious: Frictionless interplay and seamless interfacing between all parts are guaranteed by individually tailoring all key components for any given project. Choosing the combination that works best, Evac makes sure to meet even the most complex project requirements spot on.



- » Tanks are designed for robustness as well as for easy maintenance. They make optimum use of literally every cubic millimeter of available space.
- » Quick time to market due to modular frames for PE tanks, which can be adapted easily to different configurations.

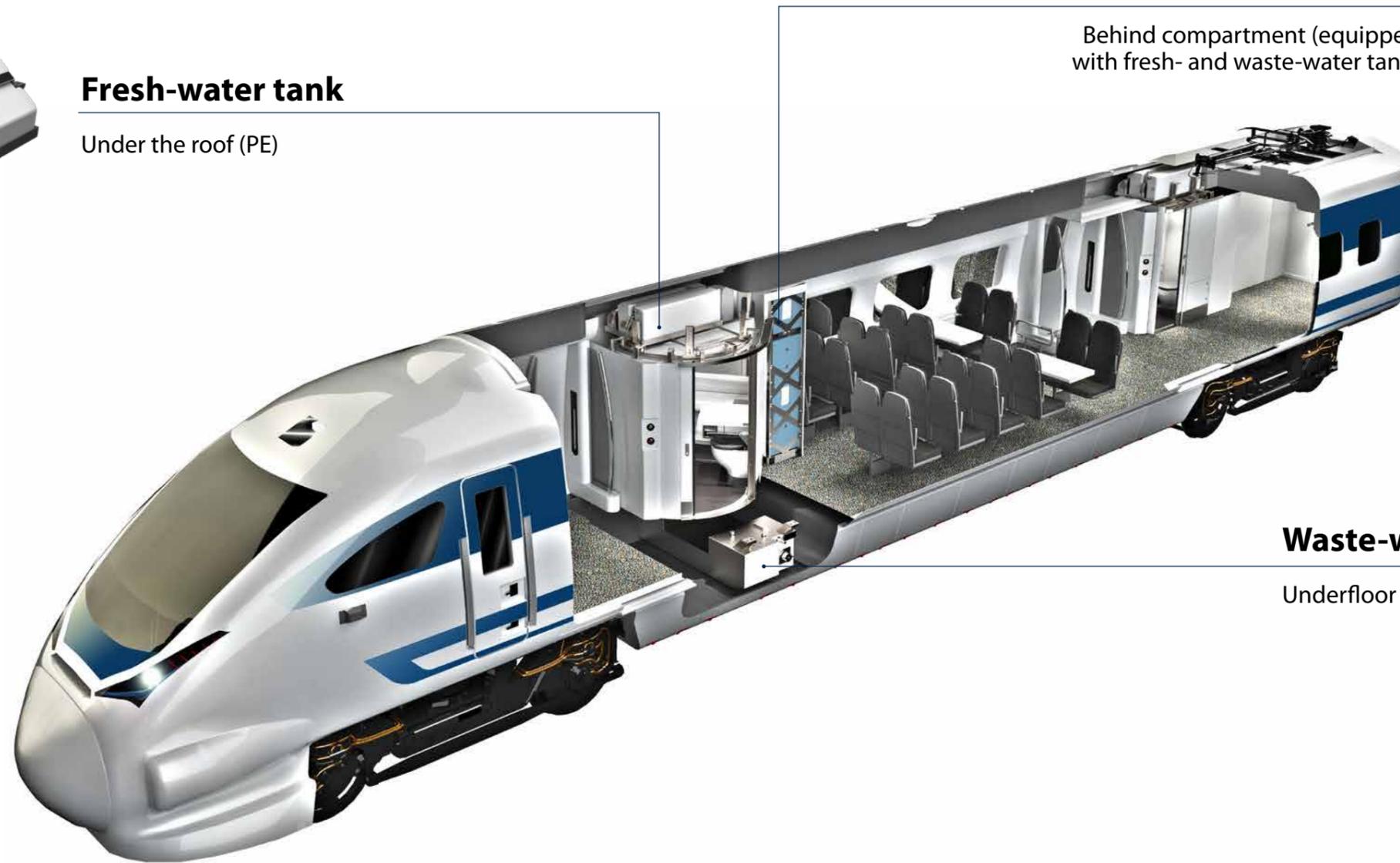
# Fresh- and Waste-water tanks

## Essential options from a one-stop source



### Fresh-water tank

Under the roof (PE)



### Tank frame

Behind compartment (equipped with fresh- and waste-water tank)



### Waste-water tank

Underfloor (stainless steel)



## Integrated Door Gear Systems

### Straight. Curved. Perfect. And built to last

Evac's electric door gear is always a perfect fit. It is available as both a straight and a curved version and easy to customize. In every respect, both versions and all their components have been designed to last. Special attention has been spent on keeping maintenance to an absolute minimum. The use of special, wear-resistant materials not only contributes for extraordinary long timeframes without servicing – but also significantly towards an excellent user experience thanks to smoothly gliding doors.

### Quality and safety

- ✓ Wear-resistant materials contribute significantly towards smoothly gliding doors
- ✓ Excellent user experience for extraordinary long timeframes without servicing
- ✓ Built-in locking block includes latch detection within the installation space of the door gear itself



## Treatment Systems

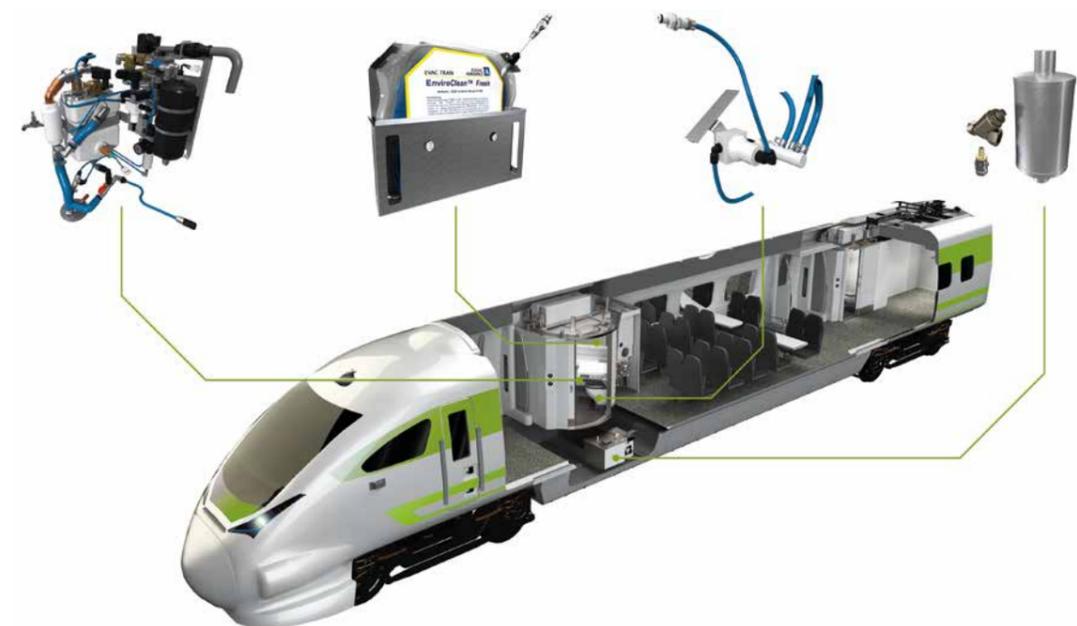
### A boost for availability, reliability and lifespan

### Greywater re-use

Designed and engineered as the ideal enhancement for all our vacuum toilet solutions, Evac treatment systems are just as easy to add as they are effective – no matter if they are used to upgrade existing systems or if they are integrated right at initial implementation. All products in our treatment systems range complement each other perfectly and can be used individually as well as in combination. Their overall effect is to increase the value and lifespan of your Evac systems by making them even more robust, maintainable and sustainable. A genuine time and money saver, Evac treatment systems achieve a wide range of beneficial effects with minimal investment.

### Flushwater additives

Flushwater additives (Enviroclean / Enviroclean Fresh / Evac Clean Eco) boost hygiene as well as system longevity. In addition, they keep pipes, valves, and other toilet parts free from lime deposits.



## Integrating Service

### Reliable. Efficient. Safe: All your service needs in one place

Defective sanitary systems can lead to entire trains being taken out of service. That's why we are there, whenever you need us. We are sure to find a solution, whatever the problem is.

With the flexibility of a medium sized-company, With the large-scale industrial capacity of Knorr-Bremse as a globally active group. And thanks to more than 40 years of field service experience, we have encountered – and mastered – just about every challenge imaginable in train sanitary systems.

Evac services are designed to make your professional life easier. Providing essential services, our exceptionally well-trained teams channel the expertise to deliver individual, local service solutions. That's what we call getting closer to the customer.

### Evac In-Field Service

- ✓ Highly qualified and motivated staff ensures professional repairs. At all times and all over the world – by pick-up or on location.
- ✓ Evac's own offices and our vast network of partners and representatives are always near.
- ✓ Transparent and highly efficient repair processes and certified quality management

### Evac Trainings and Workshops

- ✓ Who better than the manufacturer to transfer the necessary know-how about sanitary systems? Evac guarantees a solid level of knowledge about their functionality and day-to-day operation.
- ✓ On location at the clients' facilities or in Evac's headquarters featuring state-of-the-art technology and test equipment.
- ✓ Experienced instructors educate your staff in field-proven best practices.
- ✓ During installation and commissioning, Evac's technical trainings bring your train drivers, conductors and service personnel up to speed in no time.



**What can we help you with?**

**Contact us: Service Tel. +49 4103 9168 -10**

## Evac Refurbishment Concepts

- ✓ Maximize fleet performance and economy. Find the perfect time window to integrate new technology.
- ✓ Educated and skilled to the highest standards, our team's track record in developing, optimizing and maintaining advanced solutions in the field of mobility is unrivalled.

## Evac Maintenance

- ✓ Evac is proud to making sure that your company is always among the first to benefit from improvements in technology and processes.
- ✓ Evac maintenance helps to keep your processes running as smoothly as our systems.
- ✓ As the leading manufacturer of sanitary systems for trains, we have access to the world's biggest repository of spare parts and components, all expertly prepared for seamless integration into your system.
- ✓ Tailored to your needs and scheduled for minimum disruption, our maintenance services save time and money by preventing the need for repairs.

