



**Roediger**

# SANITATION TECHNOLOGY

New methods and opportunities with vacuum sanitation technology:

**Enabling flexible planning, resource  
conservation, and future sustainability**

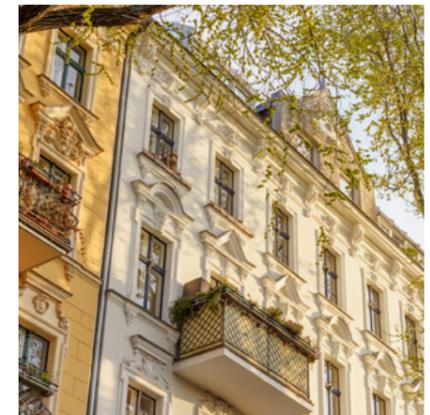
A brand of  
Aqseptence Group

# We create new options where they are needed - with vacuum technology

EXHIBITION



Remaining adaptable is a crucial criterion for sustainable building in architecture. Today's company headquarters could transform into a student residence tomorrow, provided the supply and disposal infrastructure allows for such flexibility. This is precisely where Roediger's vacuum sanitation technology excels: it revolutionizes the collection and transportation of wastewater compared to conventional systems by utilizing vacuum instead of relying solely on gravity. This innovation opens up numerous possibilities for new construction projects or the renovation of existing buildings. With vacuum sanitation technology, wastewater no longer needs to follow a downward trajectory; it can be efficiently lifted upwards and transported horizontally as needed. Moreover, the design of Roediger's pipes offers exceptional flexibility. Their narrow diameters allow for easy installation within buildings, whether behind walls, in ceilings, beneath floors, or around ventilation ducts. Additionally, their reversible nature provides architects and builders with unparalleled freedom in designing and repurposing spaces.

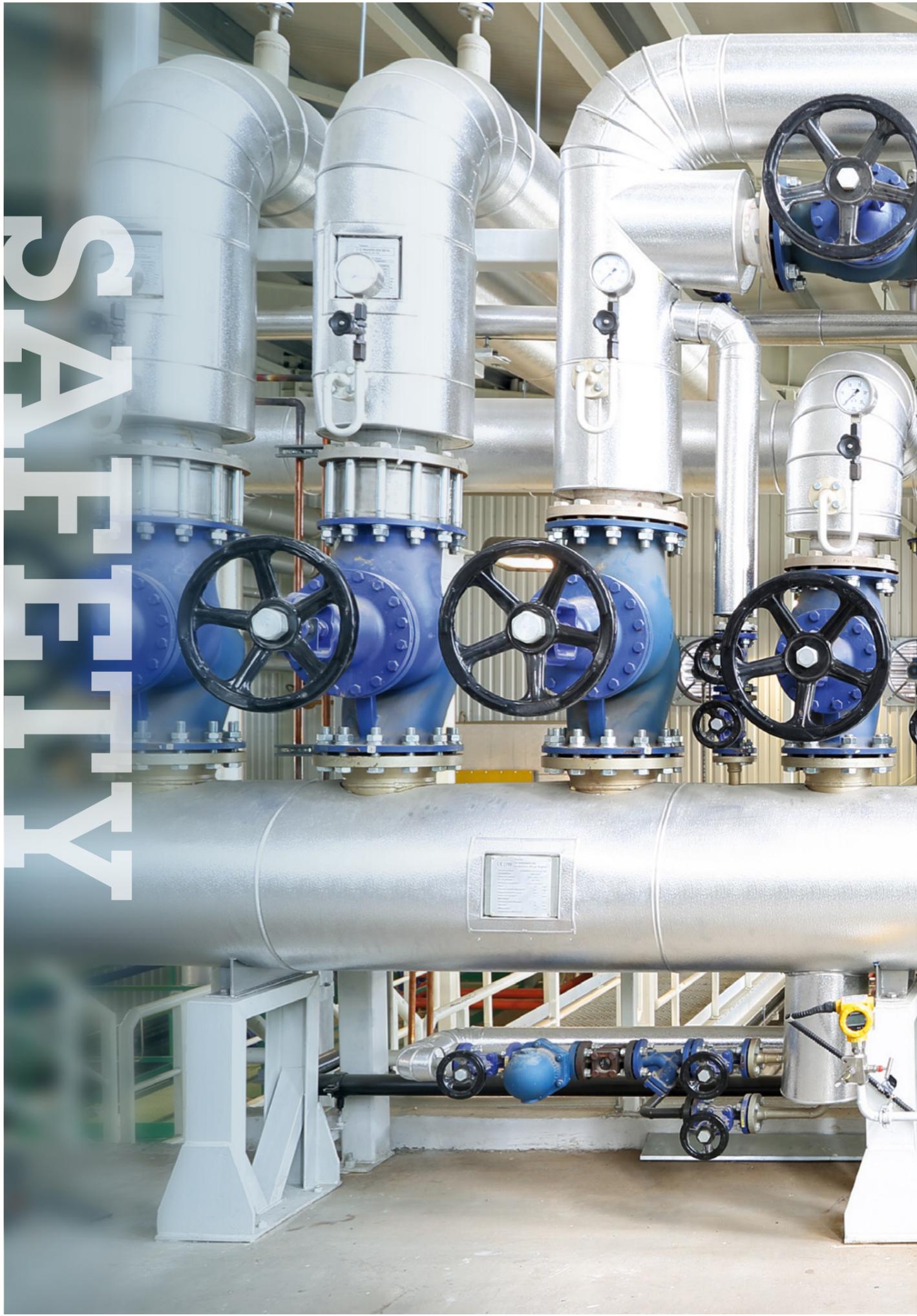


## Experience a technology that unlocks new possibilities for you.

- Customize each floor according to your specific needs
- Flexibly adapt retail spaces in mixed-use buildings
- Suitable for installation in both supply and disposal pipes
- Easy integration into existing buildings
- Scalable for future building extensions



SAFETY



# Leak-proof by design: Our closed system ensures absolute protection for people and the environment

In industrial settings, the composition of wastewater can vary widely, often containing various contaminants. Safely collecting and treating this wastewater is crucial. Roediger® vacuum technology offers a customizable system tailored to your production process. It ensures absolute tightness and containment, preventing any wastewater leakage even in the event of a system breach. This level of reliability has been demonstrated daily since the 1970s, particularly in demanding environments like nuclear medicine.



**You can rely on absolute safety.**

- Certified for decay systems
- Closed system
- Drip-free and leak-proof
- Separation of different types of wastewater possible
- No sedimentation due to high flow velocity



# HYGIENE

## Not just meeting standards, but enhancing and shaping them: That is what we stand for with our vacuum sanitation technology



In environments like hospitals or care homes, maintaining hygiene is paramount. Vacuum sanitation technology offers significant advantages over conventional systems, particularly in terms of hygiene. By extracting wastewater using vacuum pressure, there's no generation of aerosol clouds containing pathogens during flushing. Additionally, showers and washbasins can be seamlessly integrated into the system, preventing the discharge of germs and contaminants and eliminating the risk of cross-contamination. This reduces the spread of hospital-acquired infections and contributes to overall health and well-being. Roediger® sets a standard for health and safety by providing a closed system that removes wastewater efficiently and without residue, effectively minimizing the presence of bacteria and pests.



- Absolutely leak-proof
- Separation of sensitive areas, such as isolation wards, is possible
- No overspray, no aerosol cloud
- No transfer of germs from room to room via wastewater pipes
- Vacuum toilets are rimless and therefore easy to clean



# How rethinking technology leads to innovative solutions for wastewater management!

## The principle of vacuum sanitation technology

For decades, we've been pioneering vacuum sanitation technology, ensuring the safe transport of various types of wastewater across a diverse range of settings, including industry, conference centers, stadiums, ships, hospitals, and residential units.

Our technology allows us not only to lift wastewater up to the ceiling, separate it based on contamination levels, or transport it over long distances without relying on a gradient, but also to minimize freshwater consumption during transportation. The key to these advantages lies in the functional principle of our systems: while conventional gravity pipes rely on inclination to facilitate flow, vacuum technology utilizes the pressure difference between ambient pressure and vacuum to propel liquid transportation. This means that wastewater is pushed into the pipe at a speed of 6 m/s without the need for flushing.

This independence from the gradient enables us to explore new possibilities in wastewater movement, whether horizontally, vertically, or around obstacles. As a result, our technology offers greater flexibility in building design and construction, opening up new avenues for efficient wastewater management.

### Saves water, time and money: Further advantages of Roediger® vacuum sanitation technology

- Significantly reduced construction times thanks to small pipe diameters
- Lower planning and construction costs
- Basis for new energy and wastewater concepts
- Individual and scalable: step-by-step expansion possible
- Reduces water consumption to 1 liter/flush

### Technology that inspires: vacuum station, extraction unit and vacuum toilet

A clean interplay of different components ensures the reliable discharge of wastewater. As we are not satisfied with the status quo, we are constantly developing our products further - and demonstrate our inventive spirit and engineering expertise with numerous patents.

#### Our vacuum stations

are available in various sizes and ensure efficient drainage - whether in a single-family home or a stadium. Of course, we also develop systems specifically for your requirements.

#### Our extraction units

extract waste water in a clean, drip-free and odorless manner and can be easily connected to the system.

#### Our vacuum toilets

stand for the highest standard of hygiene, are economical in water consumption and are easy to clean.

#### We can

- Lift wastewater up to a height of 4.5 m
- Transport wastewater horizontally over long distances
- Flexibly bypass obstacles or supply lines
- Collect and discharge wastewater flows separately



# Intelligent. Innovative. Sustainable.

State-of-the-art vacuum sanitation technology in the "Darmstadtium" science and congress center

Schlossgraben 1 in Darmstadt. The sleek, glazed façade of a cutting-edge building stretches skyward like a crystalline pinnacle, shimmering in the sunlight. Named after a chemical element first discovered in Darmstadt in 1994, the Darmstadtium boasts a total area of 18,000 square meters, offering barrier-free spaces with 21 seminar and conference rooms that can be flexibly combined, equipped with state-of-the-art lecture and IT technology. Its multifunctional design allows for a wide range of events, from scientific congresses to entertainment venues, making it a versatile hub for gatherings of all kinds. Yet, what many visitors may not realize is that the Darmstadtium is not only a marvel of architecture - it is also Germany's first DGNB\*-certified sustainable congress center. And at the heart of its sustainability efforts lies the intelligent sanitary technology from Roediger®.

## Collaboration with the planning team from the outset

When the planning for the Darmstadtium commenced in 2003, a dedicated team from Roediger® was involved from the outset. Given the ambitious sustainability objectives and innovative architectural design, which featured irregularly distributed toilets and wet rooms throughout the building, it was clear that vacuum sanitation technology would be essential. Additionally, the building owners and planners had several other key requirements: they wanted to ensure that future extensions, conversions, and changes of use could be easily implemented. They also aimed to incorporate water-saving technology and separate wastewater flows. Lastly, they needed a solution for disposing of greasy wastewater from the catering area and restaurant.

“Without vacuum technology, the architectural highlight of Darmstadtium would not have been possible.”

## Low-maintenance operation since 2009

Thanks to these specific requirements, Roediger® was able to deploy its comprehensive range of sanitation technology at the Darmstadtium. Today, multiple vacuum sanitation systems operate seamlessly within the futuristic architecture, having demonstrated reliable performance since 2009. Additionally, the incorporation of consistent material flow separation, utilization of rainwater, and the installation of toilets requiring only 1 liter of water per flush ensure highly efficient and water-saving operation.

“Everything that is achievable with vacuum sanitary technology today is demonstrated here in action.”



Even the drainage of the commercial kitchen has been connected to the vacuum system - a first in Germany

## Special highlights:

- Complex integrated system for **5-fold source separation with 5 vacuum stations, 2 deaeration units, 14 vacuum floor drains and 8 evacuation units**
- Connection of drainage channels of a **commercial kitchen to a vacuum system**
- Hygienic drainage of wastewater from two large canteen areas
- Reliable operation since commissioning in 2009
- Enormous water savings during operation



# Saving lives with vacuum sanitation technology?

## Expanding treatment options in nuclear medicine through the safe disposal of contaminated wastewater

The Charité, a world-renowned university hospital and important research institution, also serves as THE German nuclear medicine center. The demand for diagnostic and therapeutic treatments at this clinic is exceptionally high. To meet these demands, the clinic's capacities were carefully planned. Approximately 60,000 nuclear medicine services are provided here annually. However, what many people take for granted today - smooth operations and advanced medical services - was made possible by innovative wastewater technology from Roediger®.

### **The limiting factor: radioactive wastewater**

How can nuclear medicine treat as many inpatients as possible? The key question here is not how many beds are available, but how effectively the decay plant can be used to treat radioactive wastewater. This is because the wastewater from the ward must be stored and treated there until it falls below the limits for safe discharge into the public sewage system. This is a more than important measure - which, with conventional systems, enormously limits the number of people who can be treated.

### **The safe solution: vacuum sanitation systems and decay systems**

When we focused on the business field of vacuum technology, it was clear to us that this technology could move worlds. The fact that our innovative wastewater technology continues to contribute to saving lives in the truest sense of the word fills us with delight and pride.

The reason for this lies in the "vacuum principle": On the one hand, a vacuum toilet requires only a fraction of the amount of water of a conventional flush; on the other hand, the system is completely leak-proof. Both aspects mean a quantum leap for the use of radioactive substances, e.g. in cancer therapy: significantly less radioactive wastewater, which is also stored much more safely, means that the number of inpatients treated can be multiplied. And that waiting times for life-saving diagnoses and therapies can be shortened.

The Virchow Hospital of the Charité in Berlin was the first hospital to use Roediger® vacuum sanitary technology for the safe transportation of radioactive wastewater. Today, we count more than 80 nuclear medicine departments in Germany among our customers - with hundreds of treatment options for cancer patients.



**“With our technology, we can significantly reduce waiting times for life-saving treatment slots.”**



# One hundred percent operational:

Roediger® vacuum toilets for the corvettes of the Braunschweig class (K130)

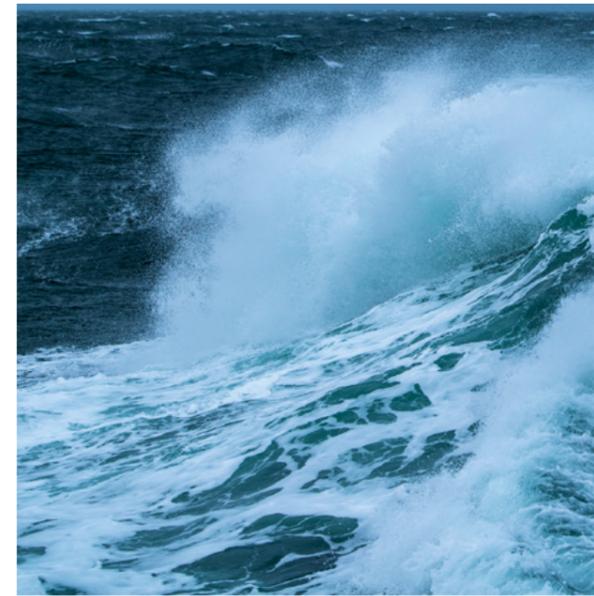
## Operational capability also relies on seemingly small details: hygiene on board the German Navy

For many people, it's hard to imagine, but for others, it's their chosen profession: working with 60 people for three weeks in the service of public safety. In confined spaces, sometimes in adverse weather conditions, always in a challenging environment. Everyday life on board German Navy ships already places enormous demands on people and equipment - so seemingly small things can have fatal consequences. A failure of the sanitation systems, for example, may not sound so serious at first - but in a storm or in tropical heat, something like this is anything but trivial. And if this is compounded by a germ load and half of the crew suddenly falls seriously ill, the ability to act is restricted and the mission may be at risk.

That's why we at Roediger® are proud that the German Navy put their trust in us when it came to the tender for the sanitary equipment for the new K130 class corvettes (Braunschweig class). And that we were able to meet the strict budgetary, scheduling, and technical requirements one hundred percent: To date, we have equipped five of these modern units - enabling even extremely long deployment trips without any breakdowns of the sanitary facilities. The current record is held by **the corvette "Erfurt": it has been in continuous operation with changing crews for no less than 17 months.**

## Engineered for the most demanding conditions: Roediger® stainless steel on-board toilet

Roediger® stainless steel vacuum toilets are our particularly reliable and high-performance variant. The material alone makes them virtually indestructible. In addition, they are extremely economical in terms of water consumption and therefore produce less wastewater per flush - another point that benefits their suitability for military use. They are also easy to clean and, thanks to their technology, prevent aerosol clouds and thus the spread of germs and odors.



Heavy seas, extreme heat, icy cold: the normal hardships for military vessels

### Special highlights:

- Total scope: approx. 30 on-board toilets and 6 gray water tanks
- Design of the system for use up to Beaufort 12
- Planning, development and installation within tight budget and time constraints



# For neighborhoods of the future

Hamburg-Jenfeld: From a military base to a showcase project with an innovative drainage concept

Being pioneers, embracing challenges, and crafting solutions is at the heart of what we do at Roediger®. We thrive on reimagining and implementing ideas, whether they lead to innovative patented products or entirely new ways of community living. This ethos is exemplified in our flagship project in Hamburg-Jenfeld.

The concept was ambitious: to transform a former military site into a sustainable urban district for 3,000 residents, with a focus on energy generation and drainage. Central to this vision was the creation of an urban water cycle, where various wastewater streams would be separated for reuse or recycling on-site, in an environmentally conscious manner.

Working closely with planners and developers, Roediger® pioneered the integration of vacuum toilets and sewer systems for an entire residential area, marking a significant milestone in our company's history and in sustainable urban development. The project was fully operational by 2016 and remains a testament to our commitment to innovation and sustainability. Christian Rüster, among others, looks back fondly on this transformative endeavor.



Christian Rüster,  
Head of Technical Project Development

**“For me, Hamburg-Jenfeld stands out as one of the most ingenious projects I’ve had the opportunity to manage. Our objective was to segregate and channel wastewater streams directly at the source, enabling the utilization of black water for energy generation. To achieve this, we installed vacuum toilets in all buildings and transported the black water through a nearly 3.2-kilometer-long vacuum sewer network to the mechanical plant. Here, the black water undergoes fermentation, releasing energy that is then redistributed back into the buildings as heat. The remarkable aspect is that vacuum toilets use only around 1 liter of flushing water, resulting in highly concentrated black water that is exceptionally efficient for energy generation.”**

“A pioneering project that many cities can learn from.”

## Sustainable concept full of innovative spirit:

- Integrated vacuum sanitation and vacuum sewer system
- Largest system for source separation in Europe (network length 3.2 kilometers)
- Use of black water to operate combined heat and power plants; heat is fed back into the buildings
- Treatment of graywater in a constructed wetland and feeding into a lake within the estate

# Roediger®: Global trendsetter for vacuum technology



Roediger® has solidified its position as a leading system supplier for vacuum technology through innovative solutions, sophisticated engineering, deep technical understanding, and a strong commitment to providing expert advice and exceptional service.

Our work is based on the transportation of wastewater by vacuum - a highly efficient and sustainable technology that we use in its entirety:

With **sewer solutions** that ensure a state-of-the-art, scalable infrastructure even under the most difficult external conditions.

With **sanitation technology** that enables previously unimagined architectural and planning freedom - and at the same time creates completely new opportunities for resource recovery.

With an **all-inclusive offering for railway operators** that takes train maintenance to a whole new level.

And with a **portfolio of additional services** that also guarantee the fault-free and efficient operation of vacuum systems in the long term.

## One team, one task: Services beyond the norm

Plan, build, commission - and then what? For us, it goes without saying that we will continue to be available to you after a project has been completed - day in and day out, around the clock. After all, technology is developing at breakneck speed, constantly creating new possibilities - and we want you to be able to benefit from this. Each of our international service teams stands for its own core competence, ensuring your 360° support:



CONSULTATION



### MAINTENANCE TRAINING

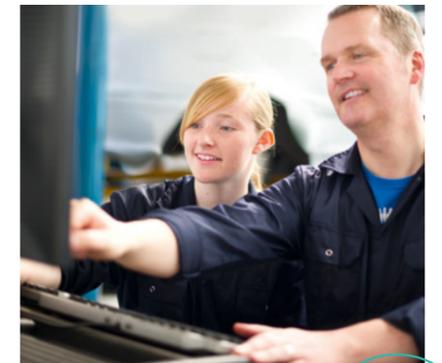


**Wisely invested capital:**  
With a maintenance contract, you ensure that your system undergoes regular inspections to identify any signs of wear before they can lead to significant consequences.

**Helping you to help yourself:**  
Through intensive training sessions, we transfer our knowledge to your employees, empowering them to gain a deep understanding of the system and operate it flawlessly.

### SPARE PARTS

**Replace or repair:**  
You can always rely on our spare parts service. With around 10,000 items in stock, we are able to help you quickly and reliably.



**Troubleshooting in day-to-day operations:**  
If you encounter a problem or feel that your system could be optimized further, you've come to the right place. We're available 24/7 to address any questions you may have and provide long-term solutions. Whether it's piston or membrane valve technology, whether the systems were installed by us or by third parties, we are here to support you and ensure your system operates at its best.



### MODERNIZATION

**Always up to date:**  
Our systems are designed for a long service life. At the same time, their design also allows them to be upgraded or retrofitted at any time with the latest monitoring options - or simply with the latest generation of vacuum technology.



#### More information?

Are you interested in our company or would you like to find out more about our solutions?

**Then simply contact us by telephone on +49 6181 309-275**

**By e-mail at info@roediger-vacuum.com**

**Or visit us online: www.roediger-vacuum.com**



# VACUUM SANITATION TECHNOLOGY

The most important facts at a glance

Roediger® has been developing innovative solutions in the field of vacuum sanitation technology since 1972, not only setting new standards in terms of hygienic conditions, but also solving the challenges facing planners, architects and construction companies, as well as politicians and society today.

Roediger® vacuum sanitation technology stands for:

## **Flexibility:**

For more options in existing and new buildings

## **Safety:**

Thanks to a drip-free, closed system without exfiltration

## **Economy:**

In terms of water, time and money

## **Scalability:**

For subsequent extensions

## **Future:**

As the basis for new energy and wastewater concepts for individual buildings, districts and communities through to entire cities



# Roediger

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Aqseptence Group**

**Roediger Vacuum GmbH**

Kinzigheimer Weg 104  
63450 Hanau  
Phone +49 6181 309-275  
E-mail [info@roediger-vacuum.com](mailto:info@roediger-vacuum.com)

[www.roediger-vacuum.com](http://www.roediger-vacuum.com)

