



Roediger

Innovative Vacuum Technology
for the Collection and Conveyance of Wastewater



Vacuum Sewer Systems

A brand of
Aqseptence Group



**Save yourself
Ø 800 mm!**





Roediger® Vacuum Sewer Systems

– simply more efficient

Sewerage has always played a significant role in municipal and local council meetings, due to the high level of investment involved. Aqseptence Group provides sustainable, cost-effective and technically mature vacuum sewer system solutions with a wide range of advantages over conventional gravity sewer systems.

Significant advantages of Roediger® vacuum sewer systems:

- Short construction phase
- Small pipe diameters
- Shallow installation depths
- Minimal ground excavation and less excavation waste
- Flexible pipe laying
- Completely closed, odour-free system
- Simple operation and maintenance



Aqseptence Group is the world market leader with its Roediger® Vacuum Sewer Systems. Our systems represent modern solutions which have proven to be both, economic and efficient in challenging sewerage projects throughout the world.

Ideal application fields are projects with a low population density, areas with unfavourable soil conditions and high ground-water levels or regions with a flat terrain – i.e. prevailing site conditions which make conventional gravity sewer systems difficult from a technical and, increasingly, from an economic point of view.

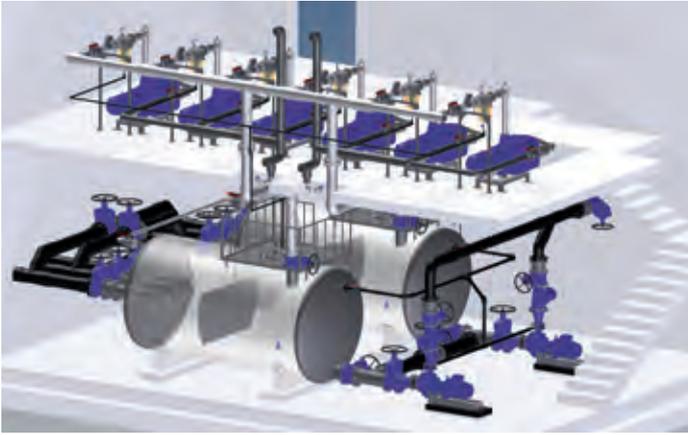
Conventional methods for conveying wastewater can be traced back to ancient Babylon and are essentially based on utilizing gravity force and a gradient in the pipes. In addition to the effort and expense involved in construction works, the dimensions of such installations present vast problems today, as a result of the demographic changes which are occurring in many parts of the world.

Modern vacuum sewer systems have proven to be very attractive for decision-makers due to numerous advantages when compared with conventional gravity sewer systems.

Photo Title Page: Reference for vacuum technology „Lake Eich“ 1997:
Installation with 670 collection chambers in a flooding area

Your partner for sustainable wastewater solutions

Development and construction of vacuum technology systems



Planning and consultation during the design phase



The Vacuum Technology business unit of Aqseptence Group represents tradition, progress and innovation. We proudly look back to 175 years of corporate tradition. As an internationally operating company group we are your competent partner for your environmental engineering tasks.

We have been internationally successful in the field of vacuum sewer technology for more than 40 years and are one of the leading global suppliers of vacuum sewer systems.

Our company is certified as per DIN EN ISO 9001, to ensure consistently high quality levels and a continuous improvement of our processes in all areas. Furthermore, all Roediger® system components are certified as per EN 1091 and comply with DWA A 116-1 regulations (German Association for

Water, Wastewater and Waste). The system components for Roediger® Vacuum Sewer Systems are produced in Germany by Aqseptence Group according to the highest quality standards.



A competent partner in all phases of construction



Professional maintenance and optimisation during operation



As a systems supplier with an experienced and highly motivated team of engineers and technicians, we provide competent and comprehensive support to engineering offices, construction companies and local authorities in every phase of a project:

- Cost comparison study
- Concept design
- Detailed planning
- Construction supervision
- Operation
- Maintenance
- Modification

We organize technical trainings for operators and planners at our facilities in Hanau and Tostedt in regular intervals to inform about system and product related aspects of the vacuum sewer system technology.

We also offer comprehensive service packages for operation, maintenance and optimisation of our systems, subsequent to handing over the completed project.

Your project is our passion!

High performance under pressure

– Our vacuum sewerage technology

Roediger® vacuum sewer systems are more and more used in communities with a low to medium-dense population structure. The wastewater flows by gravity from individual housing units into the collection chamber – the interface between the conventional sewer and the vacuum sewer system technology.



Functional principle and system

The wastewater passes from the collection chamber into the vacuum pipe network and is then conveyed by means of differential air pressure to a central vacuum pumping station at a high flow velocity. The innovative Roediger® pipe-laying technology ensures a suction process with high operational reliability at minimal energy costs. Depending on the topography, wastewater can be collected within a radius of several kilometres around the central vacuum station.

Roediger® Collection Chambers



The watertight Roediger® collection chambers are made of extremely durable polyethylene and are available in various designs:

- pedestrian load
- pedestrian load and flood proof
- Heavy traffic load up to 40 tons and flood proof

A feature of all Roediger® collection chambers is the strict physical separation of the valve chamber and the wastewater sump ensuring that the Roediger® vacuum valve unit remains clean and dry and is easily accessible at any time.

Roediger® Vacuum Valve Units



The vacuum valve unit consists of the vacuum valve itself and the corresponding control unit. Roediger® membrane valves are characterised by their durability, universal application possibilities and their simple operation and maintenance. Various valve sizes with internal diameters of 50 mm, 65 mm or 75 mm are available to suit the respective application.

The Roediger® control unit activates the valve unit; when a pre-determined filling level in the wastewater sump is reached, the valve opens as a result of pneumatic air pressure caused by the water column in the sump and the evacuation cycle starts.

Due to this pneumatic operation, Roediger® vacuum valve units do not require any electric power or mechanical activation.

Roediger® Vacuum Station – mini, compact or individual



In the Roediger® vacuum station, the wastewater is collected in a wastewater tank and then conveyed with wastewater discharge pumps into a conventional gravity sewer main or directly into a wastewater treatment plant. Vacuum pumps in the vacuum station generate the negative pressure required in the pipe network.

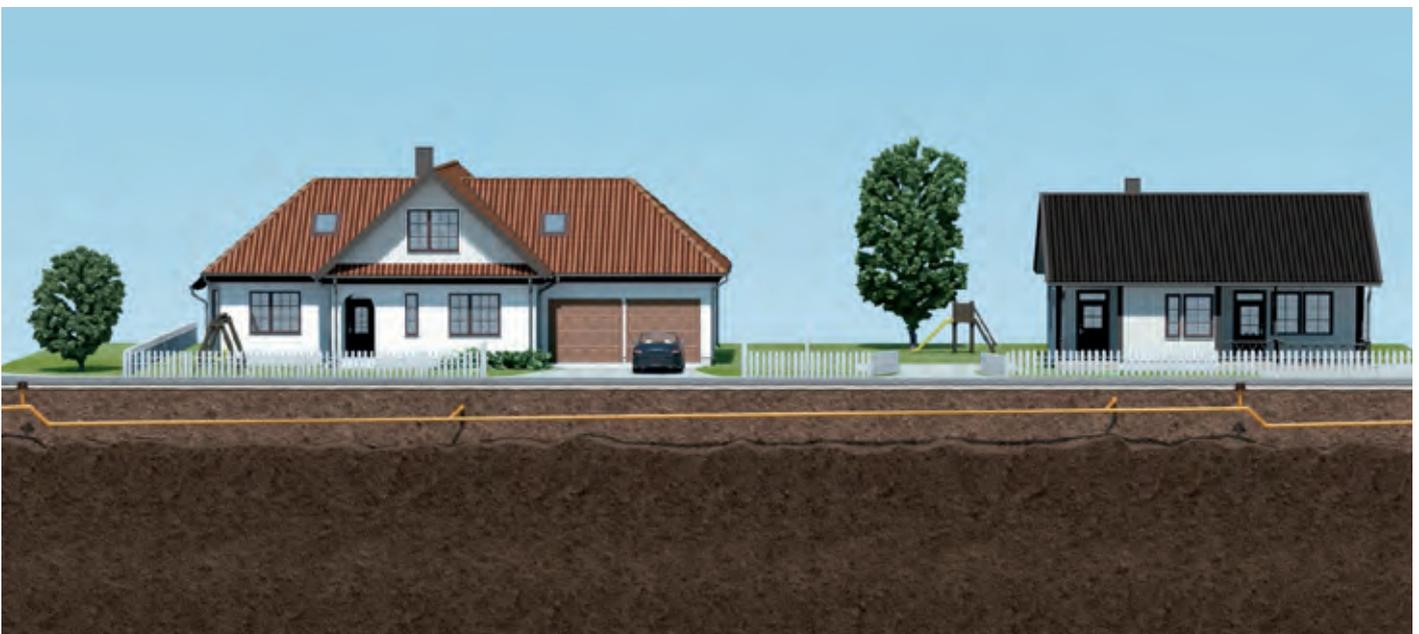
The size and capacity of Roediger® vacuum stations depend on the requirements of the individual sewer system. The Roediger® portfolio provides a wide range of innovative, cost-effective and customer-oriented solutions – from economic mini or compact stations for only a few households to large customized plants serving several thousand households.



Typical gravity sewer

Which system is best suited to these requirements?

- Flat terrain and high groundwater levels
- Weekend and holiday home estates (seasonal flows)
- Connections to new buildings
- Sewer reconstruction
- Material flow separation
- Modern monitoring systems for collection chambers
- Unfavourable terrain e.g. moorland, rocks, danger of subsidence, poor load-bearing capacity
- Sewer systems in areas with lakes, rivers, coasts and flood plains
- Sewage construction in drinking water protection areas



Roediger® Vacuum Sewer Systems

Small pipelines – great possibilities

Roediger® Vacuum Sewer Systems have proven to be highly successful as a modern and reliable method for the collection and conveyance of wastewater for decades. The distinct advantages over conventional methods form the „technical key“ to a successful solution for the most demanding application cases.

General technical advantages of vacuum sewer systems:

Shallow installation	Fast and simple excavation of trenches resulting in cost and time savings during construction
Closed pipe network	No leakages, no wastewater spillage into the ground, no odours and no sedimentation
No manholes	Cost savings during construction
Household connections without electrical power supply	Power supply only necessary at the central vacuum station
Self-cleaning system	No flushing or jetting required due to high flow velocities
Flexible pipe-laying	Adjustment of pipe routes and bypassing of obstacles during construction with little efforts
Lifting unit and pump station	These are not required due to the conveying principle by vacuum
Seasonal operation	No danger of sedimentation even with high fluctuations in wastewater volumes
Small pipe diameter	Diameters from 90 mm to 250 mm in HDPE or PVC material
Material flow separation	Recycling of wastewater and reuse of resources thanks to separation of material flows, e.g. grey and black water

Successful applications throughout the world

Aqseptence Group is represented in many countries, either directly or by cooperation partners. More than 1,500 vacuum sewer systems have been successfully installed worldwide, ranging from installations with a capacity for 10 PE* to large single installations for up to 25,000 PE.



Nonweiler Primstal, Germany

Year of commissioning:	2006
Network length:	1,050 m
Number of collection chambers:	13
Collection chamber type:	G65 flood proof
Number PE:	180

Initial situation

The waterworks and further buildings are situated within water conservation Zone 2. In addition to the requirement of drinking water protection, a further distinctive feature was the topography of all the properties to be drained.

Solution

Roediger® Vacuum Sewerage provides the only system which can be laid in a common pipe trench together with drinking water pipes – double-walled pipes or special pipe monitoring systems are not necessary.

Special features

The machine technology is installed in an above-ground sheet steel building with a basement. Hydraulic loss is minimised due to the installation of the vacuum station in the ground.

Durrat al Bahrain, Bahrain

Year of commissioning:	2007
Network length:	12,000 m
Number of collection chambers:	460 (3 vacuum stations)
Collection chamber type:	G75
Number PE:	11,000

Initial situation

This residential and recreation region consists of 11 artificial islands with a total area of approx. 20 km², situated on the south coast of the island Kingdom of Bahrain. It comprises six atolls and five fish-shaped islands which are connected to each other and to the mainland by bridges. The bridge connections, high groundwater levels and flat topography placed high demands on the sewage system.

Solution

Roediger® Vacuum Sewer Systems enabled the construction of a time and cost-efficient design for the approx. 1,600 villas. The collected wastewater is pumped to a wastewater treatment plant on the mainland.

Special features

As 3-4 islands are connected to a vacuum station in each case, the approx. 3 m raised connection bridges between the islands had to be traversed. This could be achieved with PE pipes which were installed in the service canals of the bridges in accordance with Roediger® installation specifications.

* PE = Population Equivalents



Aluminium Plant, Qatar

Year of commissioning:	2009
Network length:	5,500 m
Number of collection chambers:	63
Collection chamber type:	Z75 accessible for vehicles
Peak flow:	20 l/s

Initial situation

The Qatalum aluminium plant is one of the largest of its kind in the world. The task was to collect the entire wastewater from diverse offices and factory buildings on premises covering several square kilometres and to coordinate the pipeline network with countless underground pipes.

Solution

Roediger® Vacuum Sewerage is the only technology which provides the flexibility to lay the pipelines in a mutual corridor together with other supply lines. Moreover, this flexible laying technique enabled pipes to be laid under and over numerous traversing pipes.

Special features

The entire planning was completed within only one month and the machine technology was planned and installed in accordance with the highest industrial standards for the oil and gas sector. A special feature of the system is the design for strongly fluctuating peak flow values, which can vary between 5-20 litres per second.

Wierzchosławice, Komorów, Poland

Year of commissioning:	2005
Network length:	106 km
Number of collection chambers:	150
Collection chamber type:	G65 2,5"
Number PE:	6,000

Initial situation

Komorów is part of the Wierzchosławice local authority, one of the suburb communities which are situated in the flood plain of the Dunajec at the southern end of the Sandomierz basin, in the district of Matopolska.

Solution

The reason for choosing Roediger® vacuum sewer systems was the close vicinity to the river Dunajec (high groundwater level), ecological and environmental considerations regarding the recovery of drinking water and also the flat terrain. The investor decided on cable-connected collection chamber monitoring in order to optimise the operation of the installation.

Special features

With the vacuum sewer system in Komorów, the next phase of a comprehensive vacuum sewage network was implemented in the Wierzchosławice municipality. The last phase was completed in 2005.

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