English

WEHRLE

Innovative solutions for wastewater and waste treatment

WEHRLE Umwelt GmbH

ENVIRONMENTAL TECHNOLOGY

WEHRLE-WERK is born with the foundation of the mechanical workshop and boiler shop of Wilhelm Wehrle — 1860

WEHRLE-WERK is converted into WEHRLE-WERK AG — 1920

WEHRLE-WERK AG extends its portfolio to design, built and commissioning waste-water treatment plants — 1982

WEHRLE-WERK AG commissions the first crossflow MembraneBioreactor worldwide treating hazardous liquid waste — 1991

WEHRLE Umwelt GmbH is created as an independent subsidiary of WEHRLE-WERK AG, focussing on the delivery of environmental technologies — 2002

From a local German craft business in the Black Forest to a global plant and technology provider

Our story started in 1860 with the foundation of Wilhelm Wehrle's mechanical workshop in Emmendingen, Germany. Over time this small business successfully grew into a company specialising in the construction of steam boilers for low pressure, steam generators and high pressure water tube boilers. The company enjoyed a healthy growth over the coming decades, allowing the successful addition for design and construction of boilers for heat and power stations and for waste incineration plants, to its portfolio. This innovative and dynamic culture provided the platform for diversification in 1982, with the development of environmental technologies for treating landfill leachate, wastewater from industrial processes, as well as technologies for water recycling. Over the next two decades WEHRLE pioneered the use of crossflow MBR systems for landfill leachate. With an increased demand for these technologies, WEHRLE Umwelt GmbH was formed in 2002 to focus on environmental technologies. Today this innovative and dynamic culture has WEHRLE successfully operating on all five continents.

WEHRLE's business divisions at a glance

WEHRLE Umwelt GmbH

Energy

Thermal utilisation of waste

- Incineration plants
- Boiler & Boiler components
- Engineering & Design
- Construction & Delivery
- Overhauls, Repairs & Retrofits
- Optimisation & Refurbishment

Environment

Waste and wastewater treatment

- Engineering & Piloting
- Turnkey plant building
- Service & Plant Operation
- Upgrading & Optimisation

Manufacturing

Manufacturing of components

- Design & Manufacturing services for plant construction and engineering projects

Tailored concepts for wastewater and waste treatment from WEHRLE

Over 300 references in more than 40 countries throughout 5 continents testify to our competence in Engineering, Turnkey Plant Building and as Service Providers for waste-water and waste treatment.

WEHRLE can offer an all-in-one solution from one source. We assist you from developing the first concept to the construction and commissioning of your treatment plant. We offer support with day to day operation, also we can assess the complete system or individual stages to optimise the plant to the actual requirement. Our plant portfolio ranges from treating highly polluted effluents to water recycling. Modular multi-stage process concepts ensure discharge limits to sewer and river are met or quality specifications are achieved for process water, drinking water and even boiler feed water.

WEHRLE has also developed processes for energy recovery from municipal and industrial waste.

Our engineers pride themselves on being experienced and innovative from the core. The close cooperation with various Universities ensure new impulses to our business. This work environment creates advanced solutions – including various process technologies for different tasks, wastewater compositions and cleaning objectives.

WASTE

Wastewater treatment

- Landfill leachate
- Bunker water
- Wastewater from Mechanical-Biological waste treatment processes (MBT) / Centrate
- Digestate & Manure

Waste treatment

- Biogas generation from organic waste
- Refuse-Derived Fuel (RDF) from Municipal Solid Waste

INDUSTRY

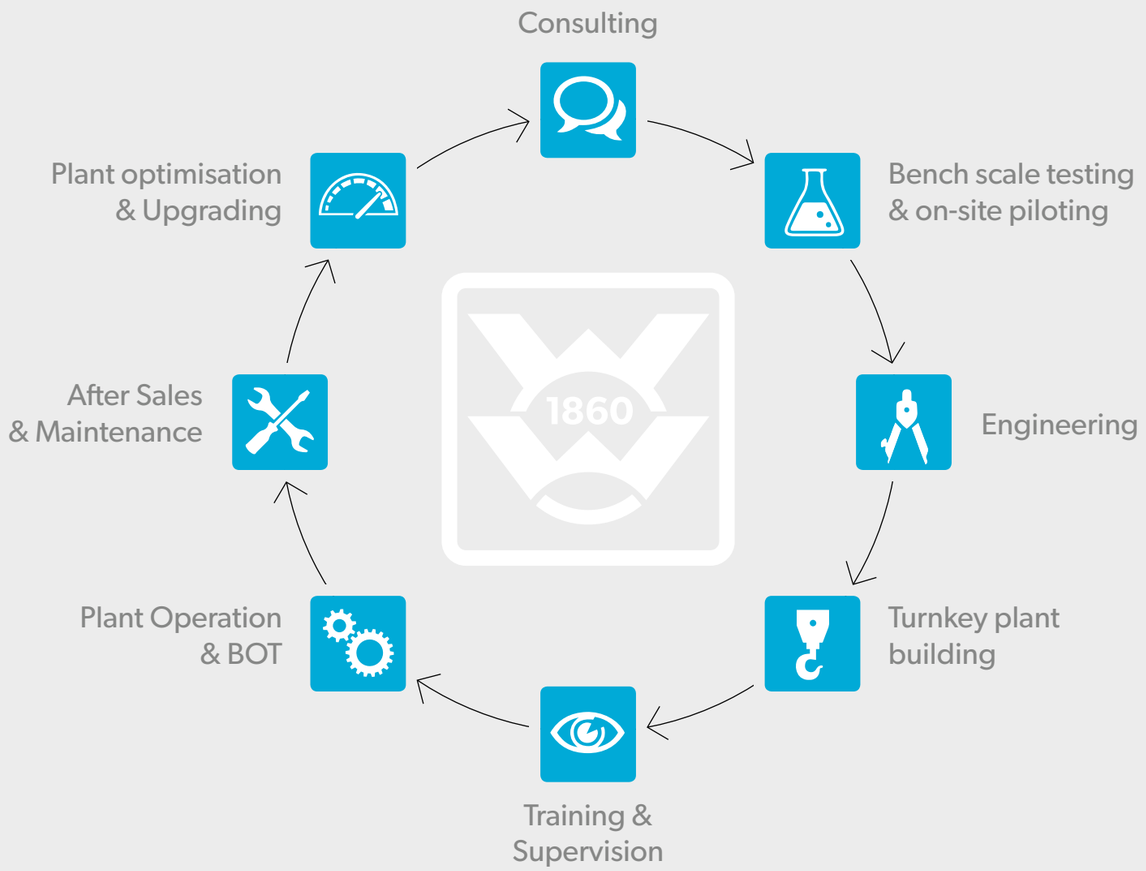
Industries

- Food & Beverages
- Chemical
- Petrochemical
- Pharmaceutical
- Laundries
- Household & Personal Care
- Textile & Leather
- Rendering
- Automotive & Metal
- Pulp & Paper

Applications

- Wastewater treatment
- Water recycling
- Process water
- Boiler feed water
- Drinking water
- Pollutant reduction in wastewater
- Biogas generation
- Heat recovery
- Valuables recovery
- Nutrient recovery

Range of Activities



It is our goal to develop a flexible, efficient and viable solution for you. In order to achieve this we analyse the existing wastewater streams, develop a bespoke concept and build a plant designed to meet your current requirements and future needs. You will benefit during the operational cycle from experience we gained in the last decades that we pass on in training sessions and practical advice on site. We can also assist with the choice of recommended supplies and offer our services in After Sales, Maintenance and Optimisation. This ensures the successful and long term operation of your plant.

Individual plant design for landfill leachate treatment

The treatment of wastewater arising from waste (leachate) is one of WEHRLE Umwelt's core competencies. We design, integrate and modernise tailor-made treatment plants.

The effluent arising from storage and treatment of waste are highly polluted. Discharging leachate is heavily regulated. To comply with existing discharge consents and economic viability is ensured, different processes need to be combined for an optimised treatment concept. In the past, WEHRLE has successfully utilised various options for the treatment of leachate and prides itself to be one of the leading companies in this sector with more than 200 references worldwide.

Waste consists of a large proportion of polluted water. If the waste is stored, this water and rainwater become highly polluted **leachate**. Depending on the landfill operation and age, the composition of the leachate will vary.

The selected process for the treatment of leachate needs to be flexible enough to ensure discharge consent is met consistently. Processes which do not require high pH variations should be selected as the buffering system in leachate generally requires high amounts of chemicals.

Within the incineration process leachate is extracted from the waste in the reception bunker. Because of its origin, this leachate is called **bunker water**. If this water enters the incineration process a lot of the energy produced would be lost as it is required for the evaporation of the bunker water.

Raw leachate — MBR effluent — NF permeate = plant effluent

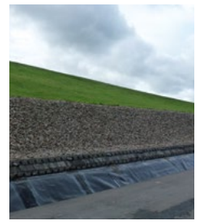
Various effluents from storage and handling of waste

Waste transfer station

Bunker water

Waste Treatment, i. e. MBT wastewater

Open landfill



Caped landfill

← fresh — **Leachate** — old →

Very wet, organic waste might even require the addition of fossil fuel to start the incineration process. Therefore, it is beneficial to separate the bunker water in the reception hall and treat it separately instead of evaporating it with the waste. The separation and treatment of the bunker water reflects the efficiency and profitability of modern waste treatment concepts.

The mechanical-biological waste treatment (MBT) generates biogas from organic substances in the waste, which is then used to produce energy. By-products of the process are in the liquid fraction. During dewatering the solid fraction is separated from the polluted effluent. The so called **MBT wastewater** can be discharged to sewer at a high cost or sent to a local watercourse after efficient onsite treatment.

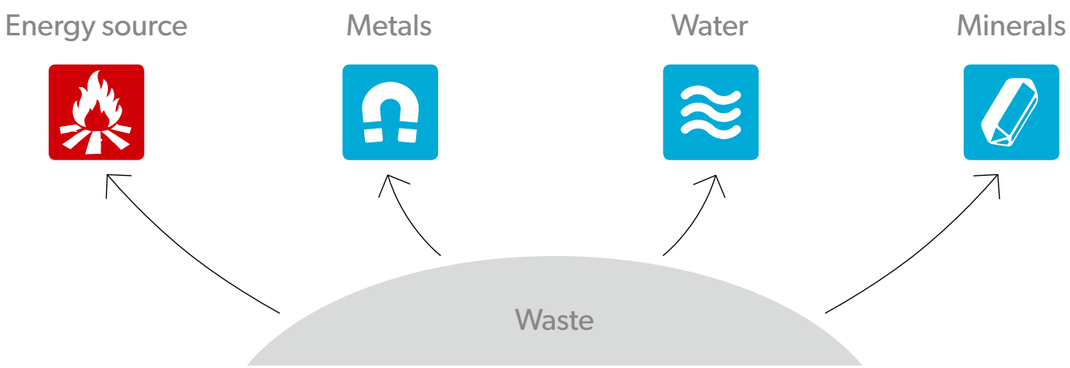
Two problems, one solution: Energy recovery from municipal waste

In recent decades the focus in waste management was to dispose of waste as innocuous as possible. Today's focus lies on the possibility to generate an additional economical value. WEHRLE Umwelt can assist you in maximising your (energy) profit from waste.

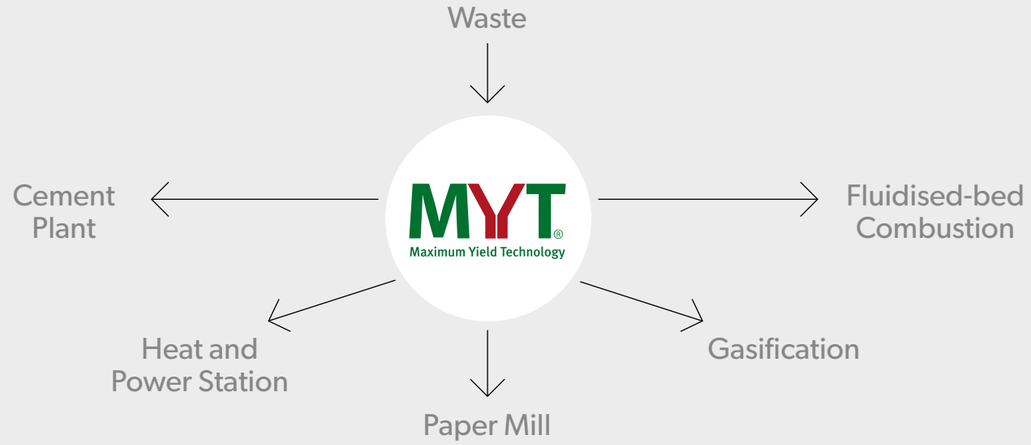
Two of the main environmental challenges are (1.) to supply an increasing demand of energy and (2.) the disposal of waste. In developed countries the disposal of waste is financed by landfill charges / taxes. In emerging markets no fees exist for waste disposal and currently there is no plan to change these regulations. This means alternative concepts for the treatment and disposal of waste have to be selected, such as the utilisation of the energy in the waste.

Waste can be part of the energy mix and provide a big part of the global power demand because of the energy rich components. In many occasions, waste also comprises of a big amount of water, which negatively influences the energetic utilisation. Modern technologies separate the energy-rich components very economically from the water, thus allowing the use of the full energy potential. One of these technologies is the patented Maximum Yield Technology (MYT®), which has been developed in cooperation with waste managing company Zweckverband Abfallbehandlung Kahlenberg (ZAK).

Useable waste components



Possible application fields for high quality refuse-derived fuel (RDF) from the MYT®-Process



The MYT®-Process produces a unique fuel from the incoming waste, complying with the strict limits on efficient and clean thermal utilisation. Due to integrated process solutions compliance with strict emission limits can be ensured. Therefore, the MYT®-Process is one of the most modern and cleanest technologies for the mechanical-biological treatment (MBT) of waste without the requirement of extensive waste separation in advance.

Produced Refuse-Derived Fuel (RDF) from the MYT®-Process:

Ø Particle size	Calorific value approx.
0–8 mm	11.000 kJ/kg
0–30 mm	13.000 kJ/kg
30–80 mm	14.000 kJ/kg

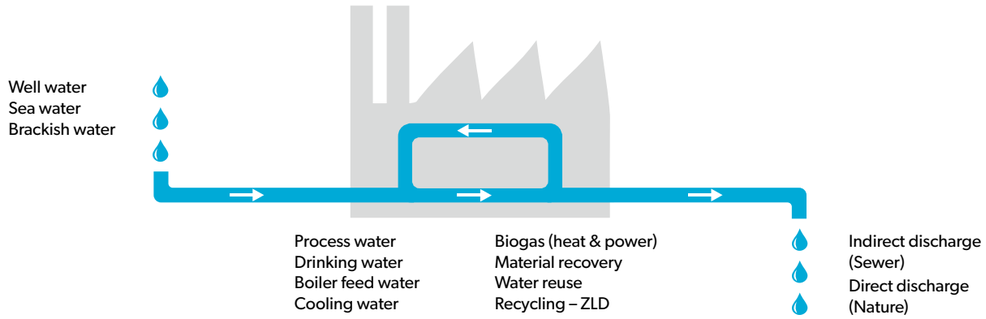
Economic water supply and industrial wastewater treatment

Drinking water, process water and wastewater / water reuse – integrated solutions in this area require modern technologies and process combinations. Local plants supplied by WEHRLE provide sustainable energy and cost efficiency.

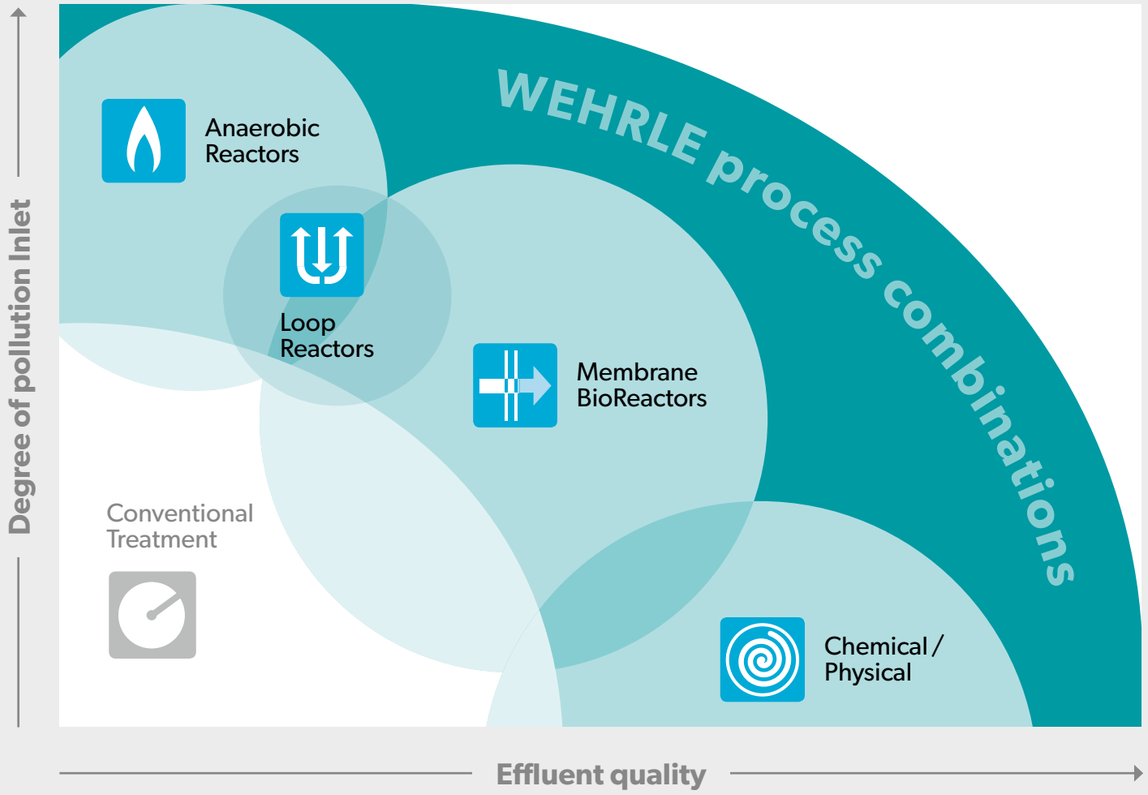
Water supply and wastewater treatment are an increasing cost burden in the industrial sector. Because of this sustainable, economic and resource friendly approaches are required. We are familiar with this approach and offer individual process technologies for sustainable water management inside the factory. Local plants connected to the existing processes reduce the cost of operation. At the same time they stand for a circular approach by recycling the water. Depending on the wastewater composition, energy production from biogas could be feasible.

The main challenge in the treatment of industrial wastewater generally does not lie in the volume but the pollution load. WEHRLE's concept focuses on the treatment of highly loaded side streams arising from production. This ensures efficient plants with a small footprint and cost efficient operation.

Ensuring the factor water is covered in the industry – WEHRLE's range of solutions



Technology portfolio – Wastewater treatment



More efficient: the advantages of the WEHRLE technology

- Compact construction with reduced footprint utilising highly efficient processes
- Easy integration in existing process plants
- Extension of existing wastewater treatment plants using minimal footprint
- Modular system easy to extend and to convert towards changes in production
- Consistent high discharge quality independent of ambient climate
- Optimised for varying inlet concentrations, such as seasonal production or changes in product lines
- Easy upgrades for recycling / reuse of the treated effluent
- Highly automated reducing operator intervention
- Short commissioning period and reduced operating expenditure due to elaborately designed processes and technologies

Efficiently utilised: Energy from industrial organic waste

During production concentrated organic solid wastes can accrue. Alternatively, they are discharged from production with the effluent. These solids can be used for energy production in optimised anaerobic processes.

Using anaerobic technology from WEHRLE, waste generated during production or remaining residue from the food and cosmetics industry can be utilised to produce energy. Even solids, which need to be separated and require treatment or disposal can be used to produce energy. This also applies for difficult production residues from the pharmaceutical industry. The generated biogas can be used on site or converted into electricity and fed back to the grid. WEHRLE provides customised anaerobic processes and technologies for wastewater and waste digestion.

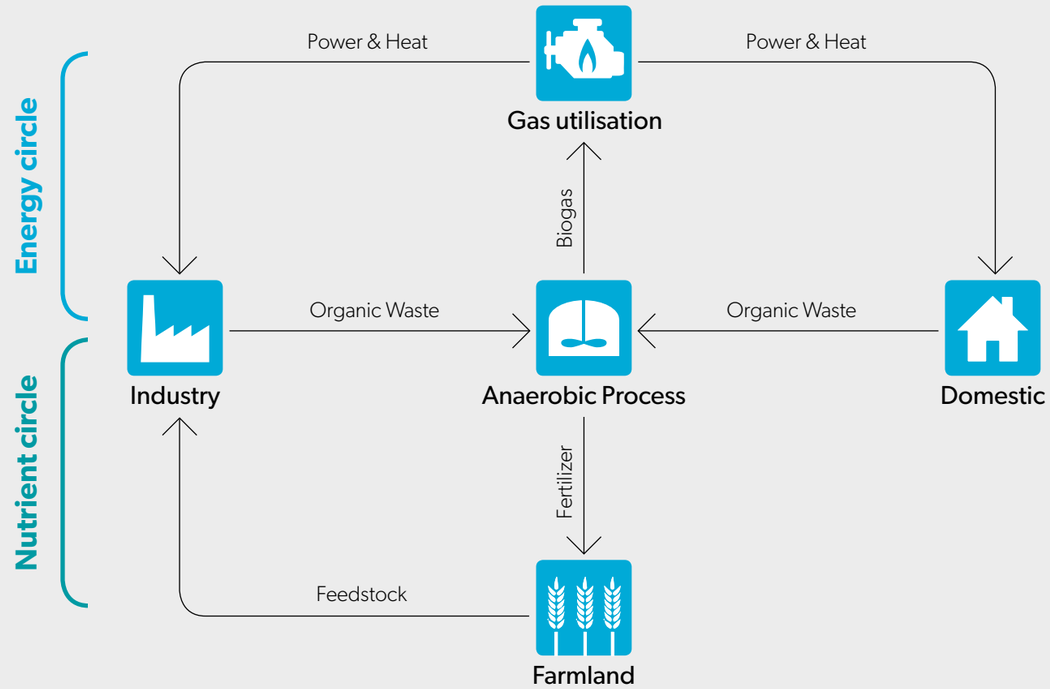
In the first step we will analyse your high solid wastewater and waste streams on specific loads. Following that, we identify an ideal load mapping to ensure the different flows and concentrations can be treated to their optimum. If required, we carry out bench scale tests and full on-site pilot trials to verify the concept. Based on the findings, we develop processes providing stable, reliable and cost efficient treatment even during difficult input conditions.

We built our concepts geared towards production and in partnership assist you even after the plant is commissioned. If you like, we can also assist in the operation of the plant or provide complete operation packages. For us our promise to the customer counts far beyond the Take-Over.

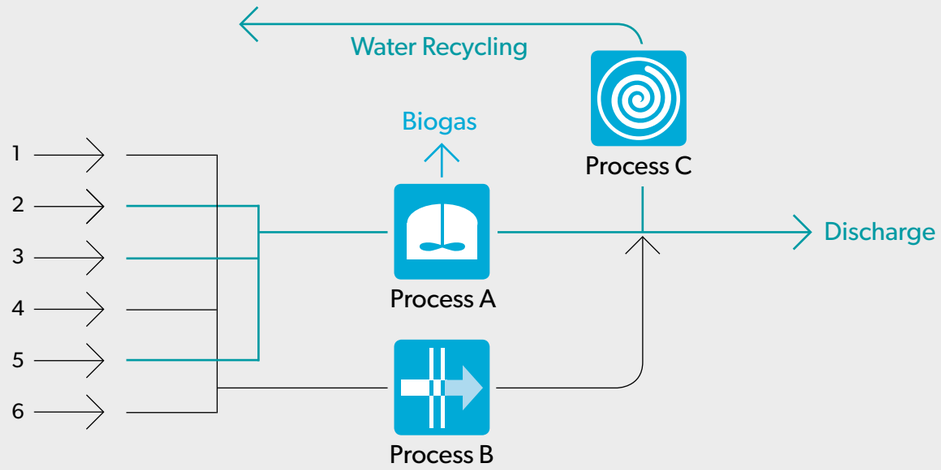
The incorporation of production cycles in the concept development and WEHRLE's partner-like support after commissioning ensures long term cost savings in the following areas:

- Chemical consumption
- Energy requirement
- Disposal costs
- Labour cost

Futureproof Technologies



Material Flow from Production



Customer orientated services for each project phase

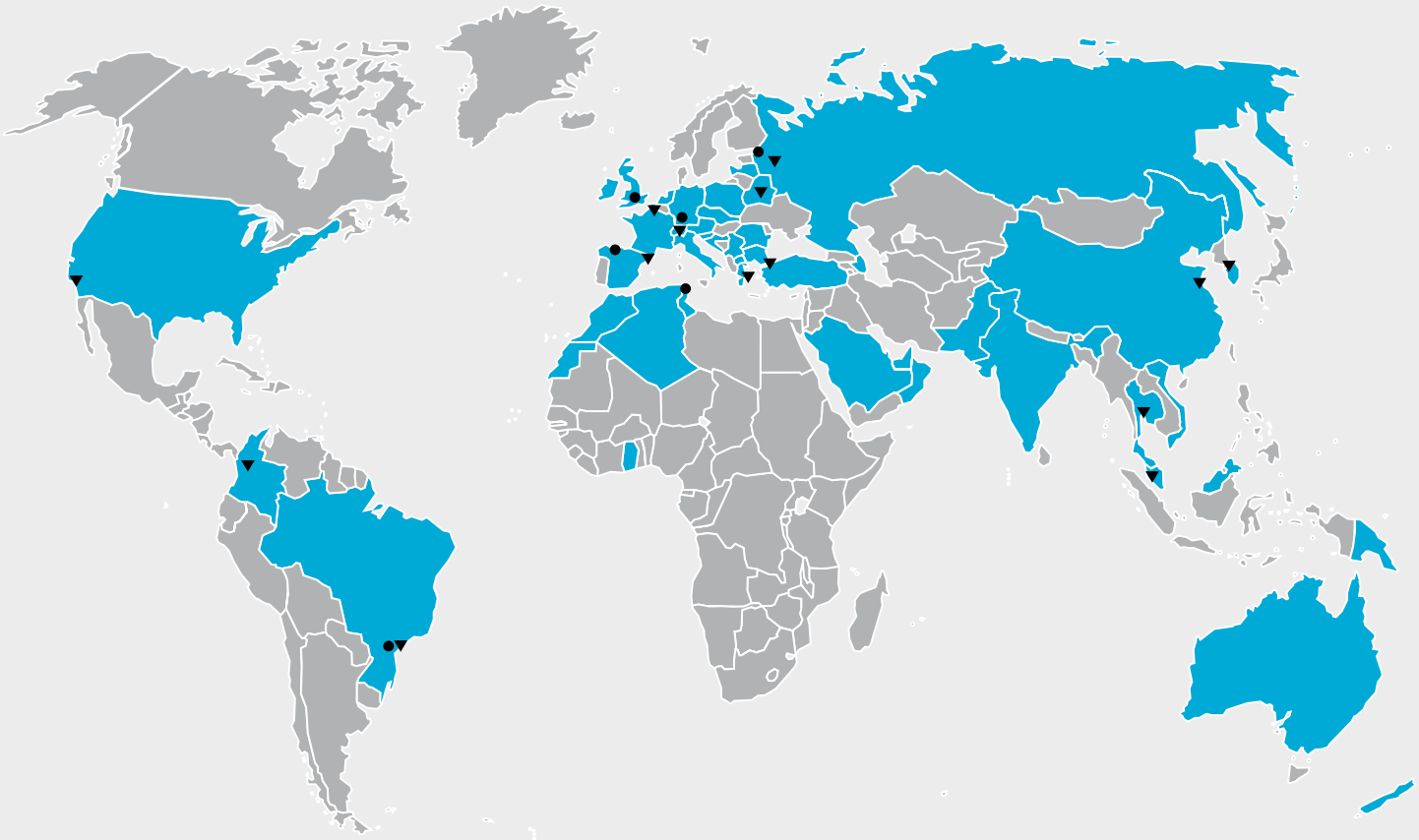
WEHRLE offers a wide range of services for all project phases and tasks required from Consulting to Contracting. This allows you to experience our extensive Know How using our innovative concepts for wastewater and waste treatment.

From the development of a new treatment plant to the extension or modification of an existing asset – we will assist and guide you. We analyse your requirement and develop a demand-orientated concept. We can quickly check your samples using our own laboratory. To optimise the concept further we are able to carry out on-site pilot trials.

We will also assist after Take-Over: assisting in operation, carry out operator training and advise in plant optimisation will ensure the successful project. We can also operate the plant for you. Complete systems or components can be hired from us, if only temporary treatment is required. WEHRLE is an economic and customer orientated plant engineering company offering in-house design, build and operate solutions.

Consultancy	Feasibility studies, consultancy and advice on optimise treatment options / concepts
Plant extensions & upgrades	Plant extensions and upgrades of existing wastewater treatment plants
Efficiency analysis & optimisation	Analysis of process parameters to optimise the wastewater treatment system; Benchmarking
Laboratory analysis	Analysis of effluent samples in own laboratory
Laboratory trials	Biological degradation trials, Membrane screening, Activated Carbon trials, Flocculation / Precipitation trials, Settling trials, etc. in own laboratory
On site piloting	On site pilot plants, Optimisation and verification of design prior to installation
Project support services	Installation supervision, Commissioning, Operator instruction and training
Maintenance & Service	Maintenance contracts ensure quick response from our engineering team; Service support contracts for plant operation and optimisation
Spare parts & Online-Shop	Supply of Spare and Wear parts Order parts and chemicals simply using the online platform
Rental plants & Components	Rental of complete units and components for the wastewater treatment; If desired including operation
Operation	Plant operation by WEHRLE: individual Operation and Management concepts

WEHRLE worldwide



Our services and plants for wastewater, waste treatment and water conditioning are in worldwide demand. We have established a global network of offices and experienced cooperative partners to be within reach for our customers.

● Office ▼ Cooperative Partner

WEHRLE

WEHRLE Umwelt GmbH
Bismarckstr. 1–11
79312 Emmendingen
Germany

T: +49 7641 585-0
www.wehrle-umwelt.com
info@wehrle-umwelt.com

Link WEHRLE company video