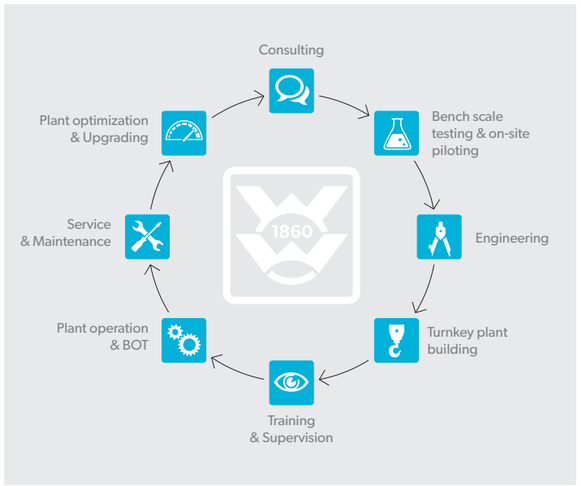
Services for Existing Plants

In addition to plant engineering and construction WEHRLE offers a full service package for water treatment:

- Plant benchmarking
- Plant efficiency optimization
- Plant performance increase
- Plant modernization
- Plant operation
- Rental plants for production peaks or plant revision periods

Do not hesitate to contact us – we are glad to support you!



WEHRLE-WERK AG

Plant engineering from one source for the entire water path

Since 1982, WEHRLE sets benchmarks as pioneer and technology leader for the treatment of very difficult and complex wastewater. The wide range of available process technologies allows intelligent process combinations to fulfil the requirements and expectations of the client in the best possible way. WEHRLE consults, plans and builds plants and also offers corresponding services such as piloting, efficiency optimization and retrofit of existing plants.

Especially for applications in the industry also factors beyond the used technology are important: a reliable performance in case of possible variations of wastewater volume and loads in the industry (e.g. caused by seasonal production or changes of product lines) and by all climate conditions, as well as a modular design for future upgrades of the production and easiest operation, to enable a simple outsourcing of the plant operation. The stable high effluent quality of WEHRLE plants allow an easy, optional upgrading, e.g. to use the treated water for reuse / recycling and therefore, to save costs for process water, heat energy and possible softening.

WEHRLE is dedicated to the company's history: As family-owned company reliability, longevity and openness with clients and partners are our top priorities. The clients of WEHRLE trust in this philosophy – in over 45 countries and on 5 continents.

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09/11/2021

SERVICE PACKAGE I: CONCEPT DEVELOPMENT

WEHRLE

Services to find the ideal wastewater treatment concept

Leachate or industrial effluent treatment differ a lot from common sewage treatment. Therefore, conventional process technologies do often not suffice to achieve sustained treatment objectives. Bad investments or high operation costs are a frequent result.

WEHRLE offers a wide range of services to find the best possible process combination, to choose the ideal plant dimensioning and to guarantee the client an economic plant operation on a long-term basis.

Overview Services

Consultancy	Feasibility studies, consultancy and advice to optimise treatment procedures / concepts
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, optimization and verification of design prior to installation
Rental plants & Components	Rental of complete units and components for the wastewater treatment; if desired including operation

Energy Technology • Environmental Technology • Manufacturing

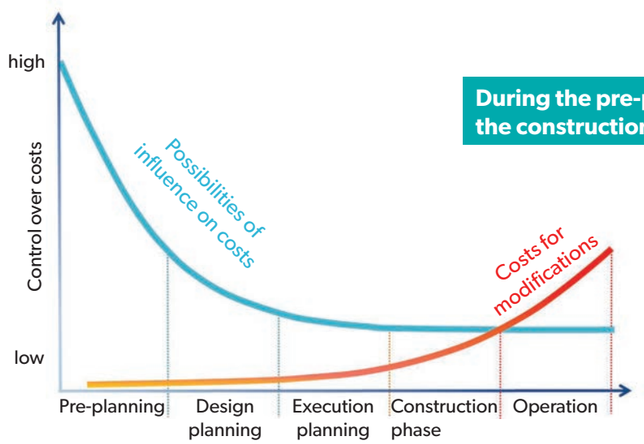
Consultancy

Water Mapping / Feasibility studies / Plant engineering

There are usually several possibilities to find a solution for wastewater treatment. Yet which one is the best, most reliable and most economic method? Does the respective concept take the conditions on site, in the factory or on the wastewater production site into consideration? Have the characteristics of the wastewater to be treated been adequately observed while developing the concept and is the plant dimensioning suitable for anticipated changes with regard to composition and volume without being over-dimensioned or unnecessarily expensive? As client, how can I make sure to have made a safe investment?

We take these questions into account! If desired, WEHRLE develops a tailor-made treatment concept together with the client, without fixing the results beforehand and by taking into consideration the client's needs. WEHRLE supports the client in Water Mapping, the permit planning and carries out feasibility studies also for the treatment of partial streams.
The results gained may later be converted into plant engineering to ensure the necessary flexibility for an ideal adaption to the client's requirements and a proper dimensioning to avoid unnecessary additional expenses with regard to purchase and operation.

During the pre-planning phase 70-90 % of the construction costs are determined



Graphic illustration of control over costs (Source: Sevis)

Rental Plants & Components

To absorb peaks and to adapt the treatment capacity

For a quick installation and a temporary use to absorb peaks or to adapt to different wastewater conditions with regard to volume and concentrations.

- **Bioreactors with aeration system**
- **Ultrafiltration containers**
- **Reverse Osmosis containers**
- **Balance tanks**
- **Filter systems**
- **Activated carbon adsorbers**
- **Dosing units**

Laboratory Analysis

To determine the wastewater characteristics

We directly analyze effluent samples in our own laboratory. We are specialized in the relevant measurements for wastewater treatment, such as COD, nitrate, nitrite, ammonium, acid capacity, total N, total P, filterable substances, sludge parameters, dry matters, dry residues.

Laboratory Trials

To determine and optimize the treatment concept

The laboratory trials allow to verify the determined performance of the treatment concept based on real wastewater conditions.

MBR Laboratory trial	Helps to determine the performance of the MBR Technology for specific effluents in a short time. Provides data for the plant dimensioning and the anticipated use of consumables for operation on industrial scale.
UF Filtration trial	In an UF filtration trial, the flux output of the membranes, the retention of certain components and possibilities for membrane cleaning for liquids and sludges are determined. The results contribute to the dimensioning and operation of the UF plant.
Membrane screening NF/UO	The membrane screening helps to identify the adequate membranes for the separation of organic compounds or salts from liquids. The results assist to dimension the plant more cost-effectively.
Activated carbon adsorption	By producing adsorption isotherms, the load capacity for COD and AOX for specific effluents are determined and the expected activated carbon consumption is shown.
Jar tests	The Jar test for flocculation / precipitation trials of specific wastewater components helps to identify the adequate chemicals and the respective consumables quantities as well as the response times for an ideal separation of pollutants.
Anaerobic degradation trials	An anaerobic degradation trial allows to determine the substrate degradation and the gas formation capacity for liquids, solids and sludges and thus possible potentials for electrical energy production and heat supply.

On-Site Piloting

To confirm the treatment concept and to optimize the plant dimensioning

By carrying out semi-technical tests in own pilot plants on site, we can practically show the client the performance potentials of the different treatment steps and also the treatment result for his wastewater directly.

The available pilot plants are:

Aerobic Processes	Anaerobic Processes	Membrane Processes	Mechanical/Chemical
BIOMEMBRAT® MBR Container	BIODIGAT® SB EGSB-Reactor	Nanofiltration	Activated Carbon
BIOMEMBRAT® MBR Skids	BIODIGAT® AS Activated Sludge	Ultrafiltration	Flotation