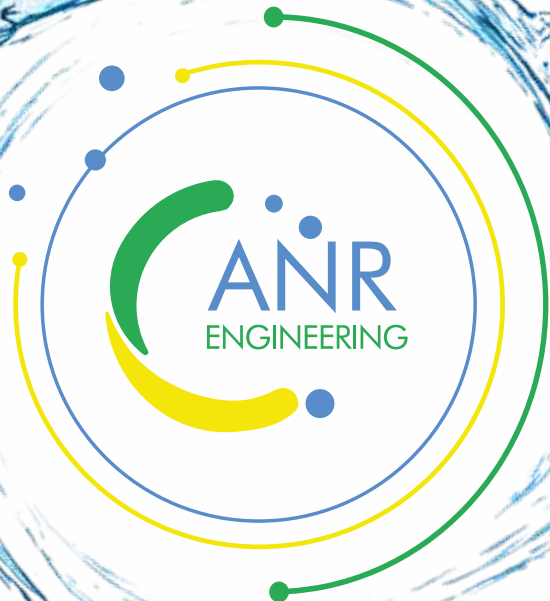


# INDUSTRIAL WASTEWATER & WATER TREATMENT

[www.anr-engineering.de](http://www.anr-engineering.de)



## Who we are

Water is an essential element for human, animal and plant life, as well as an indispensable resource for the economy. Water also plays a fundamental role in the climate regulation cycle.

ANR Engineering GmbH is a company with years of experience in design, manufacture and installation of wastewater and water treatment plants for several industries with own production facility located in Germany.

Our aim is to conserve this important resource and to significantly reduce the costs associated with industrial wastewater treatment. In this regard, we have been a reliable partner for more than 15 years. ANR Engineering GmbH offers reliable solutions for the sustainable and sustainable use of water, energy and resource recovery.

Your project is our focus!

Dr. Rustam Kialbekov  
Founder



**MADE IN GERMANY**

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Our services:



Monitoring  
of wastewater  
issues using  
own laboratory



Design and  
construction of  
WWTP



Own production  
located in  
Germany



Installation and  
start up



After-sales  
services



## Why you should choose us

"The customer is king", is a principle to which many service providers ascribe themselves.

For us it is not just a motto, customer satisfaction is very important to us. We are a strong partner for our customers in the field of industrial wastewater treatment.

Our solutions are based on innovative technologies to achieve high efficiency at low operating costs. The unique experience and qualifications of our team allow us to solve the most complex and non-standard tasks.

Our experts know what is important in your industry. We support you in the implementation of your goals and ideas.

As a modern and innovative company, we offer a full range of service for industrial wastewater treatment.



We offer solutions and equipment for:



Mechanical  
wastewater  
treatment



Physical- chemical  
wastewater  
treatment



Biological  
wastewater  
treatment



Sludge  
dewatering



Reuse  
of wastewater



Water  
treatment



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## Mechanical treatment

Mechanical wastewater treatment involves the separation of solid and suspended particles in the treated wastewater. Most often, the principle of mechanical treatment is used in the preparation of wastewater for their subsequent finer physical-chemical or biological treatment.

Mechanical treatment devices are used for mechanical treatment of municipal and industrial wastewater . In the purification process of municipal wastewater, they are used in the fase of removing solid matter from wastewater that may be floating or dispersed (plastic bags, rags, leaves, pieces of wood or other substances). In the case of industrial wastewater, they are used to remove parts of raw materials that may interfere with the proper operation of treatment plants (clogging of pipelines, pumps, etc.). Devices for mechanical wastewater treatment are used also for reduction of organic load from wastewater(BOD<sub>5</sub> and COD).





### We offer the following equipment:

- **Screens any type**  
According to your demands we choose between drum, step or static wedge wire screens
- **Sand removers**  
We have several versions of classification, separation or sand washing equipment
- **Oil/fat remover**  
This equipment helps to remove petroleum byproducts, vegetable and animal oils and industrial lubricants
- **Filters any type**  
We offer three types of filters: cartridge sediment filters, single media and multimedia filters





## Physico-chemical treatment

Physico-chemical treatment of wastewater focuses primarily on the separation of colloidal particles. This is achieved through the addition of chemicals (called coagulants and flocculants).

Physical and chemical treatment is considered the most effective for use for effluents contain a high proportion of impurities in dissolved or colloidal form. The task of the physico-chemical method is to eliminate completely these contaminants.

The process is based on the interaction of chemical reagents with each other and with impurities contained in water: hydrophobic substances are separated from hydrophilic ones, they are concentrated, and physical parameters change. Hydrophobes precipitate or are converted to foam. This method is used for deep cleaning, removal of toxic insoluble elements.

Based on many years of experience, our specialists will select for you the optimal line of equipment of our own production.





### We offer the following equipment:

- **DAF (dissolved air floatation) units**  
A water treatment process that clarifies wastewaters by the removal of suspended matter
- **Settlers**  
A primary treatment technology for wastewater; designed to remove suspended solids by sedimentation
- **Polymer preparation stations**  
Automated system for the liquid or powder polymer preparation, designed for homogeneity in flocculant concentration
- **Floculators**  
A type of plug-flow reactor coagulation / flocculation system consisting of a long serpentine pipe with a specific length and diameter
- **Chemical dosing stations**  
Chemical dosing is the adding of chemicals into wastewater or sludge to achieve required conditioning
- **Electrocoagulators**  
Electrocoagulation as an alternative method to classical coagulation reduce the need for chemicals due to the fact that the electrodes provide the coagulant





## Biological treatment

Biological wastewater treatment harnesses the action of bacteria and other microorganisms to clean water.

Biological wastewater treatment is a process that seems simple on the surface since it uses natural processes to help with the decomposition of organic substances, but in fact, it's a complex process at the intersection of biology and biochemistry.

Biological wastewater treatment method, also known as the conventional method, is a common and widely used method of treatment. It takes into account biodegradation bleaching by taking aid of several micro-organisms, fungi, bacteria, yeasts, and algae. This is a cheap and easy process that goes through a combination of aerobic and anaerobic processes.



### We offer the following technology`s:

- **SBR**  
Aerobic process / removal of excess activated sludge with sedimentation  
The essence of this technology is the implementation of all stages of the biological treatment process sequentially in one reactor
- **FBR**  
Aerobic process / removal of excess activated sludge with flotation  
A significant difference of this technology is the separation of activated sludge in special flotation plants
- **MBR**  
Aerobic process / removal of excess activated sludge with membrans  
Membrane bioreactor is a combination of membrane treatment - micro- or ultrafiltration with the process of biological wastewater treatment with activated sludge
- **EGSB**  
Anaerobic process / several methods for excess of activated sludge  
This anaerobic technology includes a reactor with an expanded bed of granulated sludge





## Sludge dewatering

Sludge dewatering is the practice of minimizing waste by volume to prepare for its effective disposal. Sludge originates during the process of treating wastewater before the water can be released back into the environment. Sludge is the by-product extracted from the slurry during the process of industrial or municipal wastewater treatment. Sludge dewatering separates sludge into liquids and solids for waste minimization.

It is important to note that dewatering is not intended to treat the sludge or liquid, it only separates the solid and liquid components so that it is easier and more cost-effective to handle the separate phases for final disposal. Once the sludge has been dewatered, both the solid and liquid components may contain contaminants that will need to be treated separately.



### We offer the following methods of dewatering:

- **Decanter centrifuge**

Decanter Centrifuges are able to treat continuously a small-medium and large quantities with high solid content, extracting the greatest part of suspended solid, and generating a dryer sludge

- **Filter press**

An industrial filter press is a tool used in separation processes, specifically to separate solids and liquids. The machine stacks many filter elements and allows the filter to be easily opened to remove the filtered solids, as well as easy cleaning or replacement of the filter media

- **Screw press**

Screw Press is made of a cylinder containing the screw, moving and stationary discs, solid chamber, motor and gear. A strong and self standing chassis support the working parts, altogether with flow accessories and safety components





## Reuse of wastewater

In order to assist you with your sustainable water management policies, we offer numerous technical solutions for reusing purified wastewater. Avoiding discharges whilst increasing available water at a lower cost is one of the key advantages of wastewater reuse, especially in regions affected by water shortages and drought.

Wastewater reuse is the process of converting municipal wastewater (sewage) or industrial wastewater into water that can be reused for a variety of purposes.

Types of reuse include urban reuse, agricultural reuse (irrigation), environmental reuse, industrial reuse, planned potable reuse, de facto wastewater reuse (unplanned potable reuse). For example, reuse may include irrigation of gardens and agricultural fields or replenishing surface water and groundwater (i.e., groundwater recharge).



### We offer the following equipment:

- **Any type of filtration**

According to your demands we choose between sand filters, adsorption filter, mechanical filters, micro-, ultra- and nanofiltration

- **Reverse osmosis**

Reverse osmosis (RO) is a water purification process that uses a semi-permeable membrane to separate water molecules from other substances

- **Ozonation**

Ozonation is an effective way to treat water contaminated with industrial contaminants, pesticides, organics, BOD, and COD. WWTP uses Ozone as a water polisher that reduces BOD/COD to safe levels. Reduction of processing costs and elimination of penalties associated with the disposal of contaminated water are the principal benefits

- **UV treatment**

UV light is able to inactivate microorganisms, reducing the microbial load in thin film of drinking water and wastewaters. The germicidal effect consists of damaging the nucleic acid, thus preventing the replication of microorganisms





## Water treatment

There are many uses of water in industry and, in most cases, the used water also needs treatment to render it fit for re-use or disposal. Raw water entering an industrial plant often needs treatment to meet tight quality specifications to be of use in specific industrial processes.

Water treatment is used to optimize most water-based industrial processes, such as heating, cooling, processing, cleaning, and rinsing so that operating costs and risks are reduced.

Industrial water treatment seeks to manage four main problem areas: scaling, corrosion, microbiological activity and disposal of residual wastewater.

Common industrial water treatment methods are filtration, softening, reverse osmosis, nanofiltration, adsorption and UV treatment.

Our team will offer you best solution suitable for your needs.





### We offer the following equipment:

- **Any type of filtration**

According to your demands we choose between sand filters, adsorption filter, mechanical filters, micro-, ultra- and nanofiltration

- **Reverse osmosis**

Reverse osmosis (RO) is a water purification process that uses a semi-permeable membrane to separate water molecules from other substances

- **Ion exchange / Softening**

Ion exchange gets rid of magnesium and calcium by binding to a resin, a small, negatively-charged sand-like bead.

- **UV treatment**

UV light is able to inactivate microorganisms, reducing the microbial load in thin film of drinking water and wastewaters. The germicidal effect consists of damaging the nucleic acid, thus preventing the replication of microorganisms





## Modular treatment plant

The modular containerized system can be easily transported either by land or sea. As all of the wastewater treatment equipment is preinstalled and factory tested, onsite installation work is limited. A range of process technologies can be installed in our modular, mobile systems, making them suitable for municipal and industrial wastewaters. The different containerized modules used for wastewater treatment depends on the specific project requirements and the effluent standards that need to be achieved.

The following main modules available:

- Mechanical pre-treatment
- Physical- chemical treatment (flotation)
- Water treatment/ reuse
- Sludge treatment



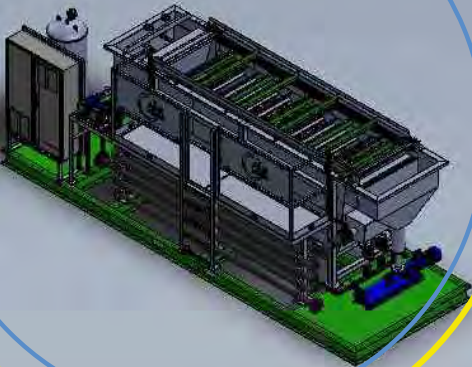
We offer the following modulare equipment:

- **Mechanical pre-treatment**  
Containerized solution, using screens and filters. Installed capacity up to 100m<sup>3</sup>/h
- **Physical- chemical treatment (flotation)**  
Containerized solution, using our DAF in combination with flocculators and chemical dosing. Installed capacity up to 100m<sup>3</sup>/h
- **Water treatment/ reuse**  
Containerized solution, using filters and reverse osmosis. Installed capacity up to 100m<sup>3</sup>/h
- **Sludge treatment**  
Containerized solution, using decanters, filter presses or screw presses in combination with chemical preparation and dosing systems and filters. Installed capacity up to 30m<sup>3</sup>/h





## Pretreatment test unit



What type of wastewater treatment plant is the most economical for me? What exit parameters can I obtain? What are the operational costs? How much sludge will I produce and how to dispose? Pilot testing enables our customers to verify the best feasibility of the proposed treatment processes.

Our skid mounted pretreatment plant on the basis of our DAF is fully equipped with chemical dosing and completely automated.

The test unit is designed for a nominal capacity of 20 m<sup>3</sup>/h, the actual capacity depends on the pollution load of the wastewater.

It can be use a physical chemical pre-treatment or as FBR (Flotation Bio Reactor) to separate sludge from water.





**Fully mounted on a support frame with the following main components:**

- Flocculation unit
- Flotation unit
- Flocculant pump
- Automatic pH measurement & control including dosing pump for neutralizer agents
- Coagulant dosing pump
- Compressor
- Flow measurement
- Electric control cabinet



# Applications

We offer full service for wastewater and water treatment in the following industries.



Dairy industry



Potato processing



Meat & Poultry processing



Fat & oil industry



Fish & crustacean processing



Fruit & Vegetable processing



Grain Mills & Bakeries



Beverages





Chemical industry



Wood processing



Rendering & Fish meal



Metal working



Oil and gas extraction



Pharmaceutical & cosmetics



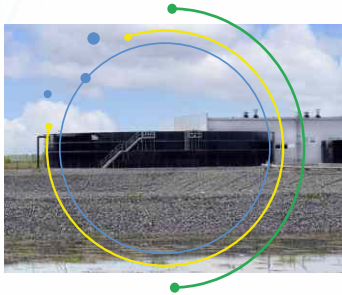
Pulp and paper industry



Textile industry & tannery



# Projects



## Milk & cheese processing plant

- Full cycle of wastewater treatment
- Amount of wastewater up to **4000 m<sup>3</sup>/day**
- Discharge into the river



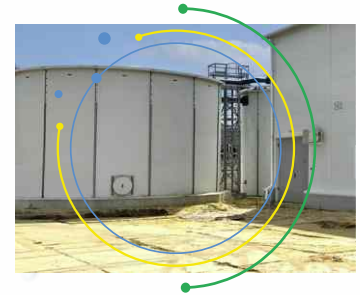
## Meat processing plant

- Chemical physical wastewater treatment
- Amount of wastewater up to **2000 m<sup>3</sup>/day**
- Discharge into urban WWTP



## Potato flakes production

- Full cycle of wastewater treatment
- Amount of wastewater up to **2000 m<sup>3</sup>/day**
- Discharge into the river



## Mayonnaise production

- Chemical physical wastewater treatment
- Amount of wastewater up to **400 m<sup>3</sup>/day**
- Discharge into urban WWTP





# Projects



## Cosmetic production

- Chemical physical wastewater treatment
- Amount of wastewater up to **400 m<sup>3</sup>/day**
- Discharge into urban WWTP



## Wheat processing plant

- Chemical physical wastewater treatment
- Amount of wastewater up to **1200 m<sup>3</sup>/day**
- Discharge into urban WWTP



## Vegetables processing plant

- Full cycle of wastewater treatment
- Amount of wastewater up to **400 m<sup>3</sup>/day**
- Discharge into the river



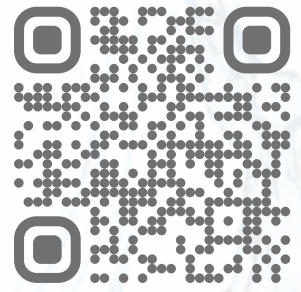
## Wood processing plant

- Chemical physical treatment of rainwater
- Amount of wastewater up to **1200 m<sup>3</sup>/day**
- Reuse of treated wastewater





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\*our business card  
for your phone