

## Industrial Water Treatment





## **We are BWS – Better Water Systems**

**We accompany your projects from  
planning to commissioning and beyond**

### **Industrial Water Treatment**

... is much more than a technical task waiting to be solved. Clean water is our passion! Well-balanced consulting through expertise, economic concepts and an optimal execution in terms of plant construction are some of the tasks we are happy to execute for our customers day by day.

Our team combines more than 400 man-years of practical experience in water treatment throughout all kinds of industries. Your advantage: we know and understand your processes and are able to deal with your task in an uncomplicated and straightforward way.

### **Plant Construction**

For us, plant construction is the precise intermeshing of process engineering know-how, sound planning and structured project management. Tried and tested installation teams, our own commissioning engineers with expert knowledge, who train your employees and familiarise them with the plant, are elementary components of our philosophy. Whether in modular design, as a container plant or as an individually designed complete plant, we will meet your requirements and combine the most diverse technologies to create a functioning treatment plant.

### **Service**

... as we understand it is offered to you for a lifetime. After the end of a plant construction project, we stay in contact with you through various services and help you quickly and unbureaucratically with your daily business.

### **Digitalization**

... is a lived reality for us. With our Predictive Maintenance concepts your plant works measurably more reliable. We achieve this by networking intelligent measurement and automation technology with your internal and our outsourced service processes. The degree of networking is defined according to your individual requirements.

**Engineering  
& Project  
Management**

**Installation  
Startup  
Training**

**Service  
&  
Maintenance**



# Project management & Engineering

## Services and Tools

Project management and engineering are the key to realization of individual technical systems. The multidisciplinary project teams at BWS are always led by an experienced project manager. This project manager leads the project according to a system that has proven itself over many years: our Project Management Process (PMP).

Clear communication with you, an efficient management of resources in the individual project phases and a comprehensible management of changing requirements during the course of the project are the main focuses, to name but a few.

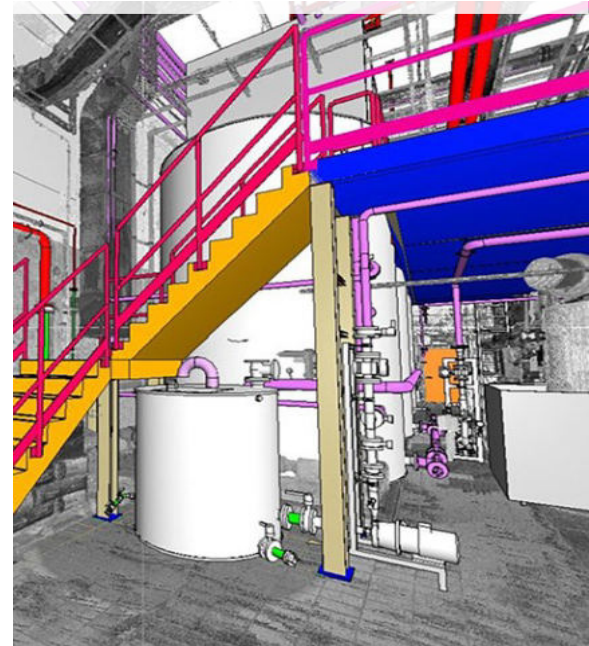
By means of the project management process and the use of coordinated planning and controlling tools, we ensure our customers on-schedule project implementation even in tight time frames and demanding conditions, such as conversion projects during ongoing production.

In addition to professional project management, detailed engineering knowledge in all specialist disciplines using modern planning tools is crucial. The BWS planning team always guarantees our customers an optimal solution by:

- ◆ Use of the latest 3D laser scanning technology to record existing structures
- ◆ 3D-Plant Planning
- ◆ Use of "intelligent" P&I diagrams with all component information
- ◆ Use of system-specific design and modelling software
- ◆ Future-oriented planning approaches and plant automation concepts with regard to energy efficiency and customer-specific predictive maintenance concepts
- ◆ Broad process knowledge in all proven technologies and product independent planning approach



3D-Scan of existing structure



Planning of a new plant



## Industrial Water

For every need

### Process Water

We develop, build and install the tailor-made treatment plant for process water for the respective task. Raw water can be surface water, well water, brackish water, rainwater or drinking water, but also treated wastewater.

### Water recycling

Recycled water can be returned to the process or used for other purposes. Water recycling plants thus significantly reduce operating costs in production and conserve resources.

### Cooling Water

Well-functioning cooling systems are an important prerequisite for smooth operation in industry. Cooling water treatment plays a decisive role here. We analyze your cooling water circuits and optimize them in such a way that no hardening deposits, corrosion, biofilms, health hazards or other production impairments occur.

### Wastewater

Wastewater from industrial production is usually contaminated with many different substances. This requires effective wastewater treatment to achieve the required limit values. At the same time, the plants should operate energy-efficiently and conserve resources.

### Recovering valuable materials and energy

Our technologies recycle important valuable materials and heat from partial water streams and wastewater, which you can reuse in your process or use for other purposes. In this way, we help you to significantly reduce operating costs.



## Always the right plant

By combining suitable processes

### Chemical-physical processes

... belong to the most flexible and robust processes in water technology. In many industries they are among the most frequently chosen treatment processes. By selecting individually adapted treatment chemicals and in combination with our plant components, which have been specially developed for different load cases, we achieve significantly better and more economical treatment results than those achieved with conventional plants.

### Biological processes

... purify waste water with organic load. Therefore they are mainly used in the food industry, chemical industry and paper industry. In aerobic processes, microorganisms decompose the organic compounds with the help of oxygen, whereas anaerobic processes take place under exclusion of oxygen. Depending on the requirements, we select the optimal biological waste water treatment from our wide range of biological processes.

### Membrane processes

... have gained more and more importance in the last decades due to the rapid development of membranes. Regardless of whether it is reverse osmosis, nanofiltration, ultrafiltration or microfiltration - BWS will be pleased to advise you with our extensive experience in the fields of process water treatment, water recycling, bath maintenance, selective separation, concentration of valuable substances, as well as wastewater treatment.

### Ion exchange processes

... are able to take over the fine purification for very high water qualities and can be used in different areas just like membrane processes. They are used for the final purification in waste water treatment as well as in process water purification, the production of demineralized water and the recovery of valuable materials. With our know-how we provide you with the best solution for your individual needs.

### Thermal processes

Under certain conditions, thermal processes can be the treatment method of choice for limited or infectious wastewater volumes. BWS also has the optimal solution for you.





## Industry Expertise

For the automotive industry and their suppliers

### Washing and Leak Testing Systems

The tightness of vehicles with rainwater simulation is an important quality test criterion before all cars are delivered. For this reason, leak test systems are often installed in combination with car washes as continuous systems with conveyor belts at the end of the final vehicle production. For individual checks, leak test systems are specially provided as cabin systems, on customer request also in combination with a car wash or extended test scope. BWS supplies washing and leak test systems including water recycling technology on a turnkey basis.

### To treat process water and waste water

... in the automotive industry and its suppliers economically and in an environmentally efficient manner requires comprehensive knowledge of the production processes down to the smallest detail. Being connected with our expertise in process engineering and technologies, we close cycles, save water and energy and thus meet the high demands of our globally active automotive clients and their suppliers. And, of course, in compliance with the manufacturing equipment regulations!

### Our Portfolio

- ◆ Service water treatment
- ◆ Deionized water
- ◆ Circuit water systems
- ◆ Extended service life of process baths
- ◆ Chemical-physical wastewater treatment
- ◆ Treatment of oily wastewaters
- ◆ Biological wastewater treatment
- ◆ Water recycling
- ◆ Washing and Leak Testing Systems
- ◆ Energy generation from wastewater
- ◆ Evaporator plants
- ◆ Zero-Liquid-Discharge (ZLD)
- ◆ Plant refurbishment and maintenance
- ◆ Consumables service



## Industry Expertise

For the food, beverage and consumer goods industry

### Water

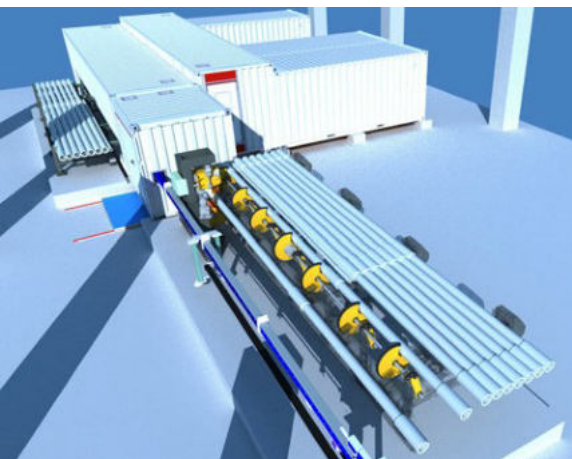
... is a basic raw material for the food industry. In many cases the water quality is directly linked to the product quality. BWS sees itself as a bridge and system integrator for plant construction – with the goal to unite quality requirements and economic efficiency. With expertise, commitment and in-depth knowledge of your production processes we deliver custom-fit solutions, where standard approaches hardly meet your demand! Based on the goal of handling water as a resource in a sustainable and economic way, BWS relies on an integrated water management approach. We take over partial or complete services for you.

Be it EHEDG guidelines or KTW rules, we always work according to the highest quality standards, environmental standards and safety standards.

### Our Portfolio

- ◆ Demand analyses, feasibility studies and economic feasibility studies
- ◆ Planning for the construction or optimization of complete water systems
- ◆ Treatment of well, surface or city water to the required process quality in accordance with drinking water, mineral and table water regulations or brewing water quality
- ◆ Chemical-physical wastewater treatment
- ◆ Dissolved air flotation (DAF)
- ◆ Biological wastewater treatment (anaerobic/aerobic)
- ◆ Water degassing
- ◆ Dechlorination
- ◆ Water recycling
- ◆ Cooling water systems
- ◆ Energy generation from wastewater
- ◆ Zero-Liquid-Discharge (ZLD)
- ◆ Plant Maintenance
- ◆ Consumables Service





## Industry Expertise

### For the Chemical and Oil & Gas industry

#### Environmentally compatible treatment

... of process water and wastewater from the oil and gas industry poses special challenges on the treatment technologies due to the material inventory. Volatile substances such as methane,  $H_2S$ , benzene, mercury and NORM (= Naturally Occurring Radioactive Material) with fire, explosion or carcinogenic potentials must be kept away from employees, neighbours and the environment. BWS has relevant experience in dealing with the specific inventory of substances from crude oil, natural gas and reservoir water.

We are familiar with the project flow in the oil and gas industry and support you with HAZID and HAZOP studies within the scope of risk management. Whether you need assistance with BImSchG approvals or the consideration of occupational safety and explosion protection requirements: BWS economically combines all individual aspects to a holistic solution.

#### NORM Descaling

Naturally occurring radioactive materials (NORM), such as uranium and its decay products, are stored everywhere in the earth's crust. When the coveted raw materials are extracted deep from the ground, the radioactive elements also reach the earth's surface via the extraction facilities. These are concentrated in hard encrustations on the inside of the conveying pipes and other equipment.

In order to decontaminate these radioactively contaminated pipes and equipment, BWS has developed a fully automatic cleaning system based on high-pressure water jet technology, including the associated water circulation system. This decontaminates the conveying pipes and other equipment so that they can be reused.

#### Our Portfolio

- ◆ Demand analyses and economic feasibility studies
- ◆ Basic & detail engineering and approval planning (BImSchG)
- ◆ Pilot tests with competent process engineering support
- ◆ Treatment of well, surface or city water
- ◆ Cooling water filtration and conditioning
- ◆ Chemical-physical wastewater treatment
- ◆ Biological wastewater treatment (anaerobic/aerobic)
- ◆ Energy generation from wastewater
- ◆ Zero-Liquid-Discharge (ZLD)
- ◆ Exhaust air systems (adsorptive or catalytic)
- ◆ Plant maintenance
- ◆ Consumables Service



## Industry Expertise

### Other Industries

#### Process water treatment

... of a special kind: computer-controlled, electrolytic manufacturing processes are increasingly being used for shaping high-strength nickel-chromium-based stainless steels. Electrochemical machining, or ECM for short, guarantees residual stress-free material removal, smooth transitions and a smooth surface. The removal principle is based on anodic metal dissolution by electrolysis.

A highly saline electrolyte solution is used as “process water”. Due to the high density, the material behaviour is not comparable with other aqueous solutions. Chromium (VI) and nickel as well as other metal particles must be specifically detoxified and removed by the process water treatment after manufacturing in the machine tool. After a multi-stage cleaning process, the electrolyte solution is returned to the manufacturing process. Narrow tolerances for conductivity, temperature and pressure must be maintained, as must the absence of particles in the electrolyte. Once all parameters have been reliably met, nothing stands in the way of efficient machining of the special steels.

#### We offer more Industry Expertise for

- ◆ Mining
- ◆ Facility Management / Building Technology
- ◆ Power plants
- ◆ Glass / Ceramics
- ◆ Paper and pulp industry
- ◆ Pharmaceutical industry
- ◆ Textile industry and Laundries
- ◆ Water works, public sector
- ◆ Environment and Energy





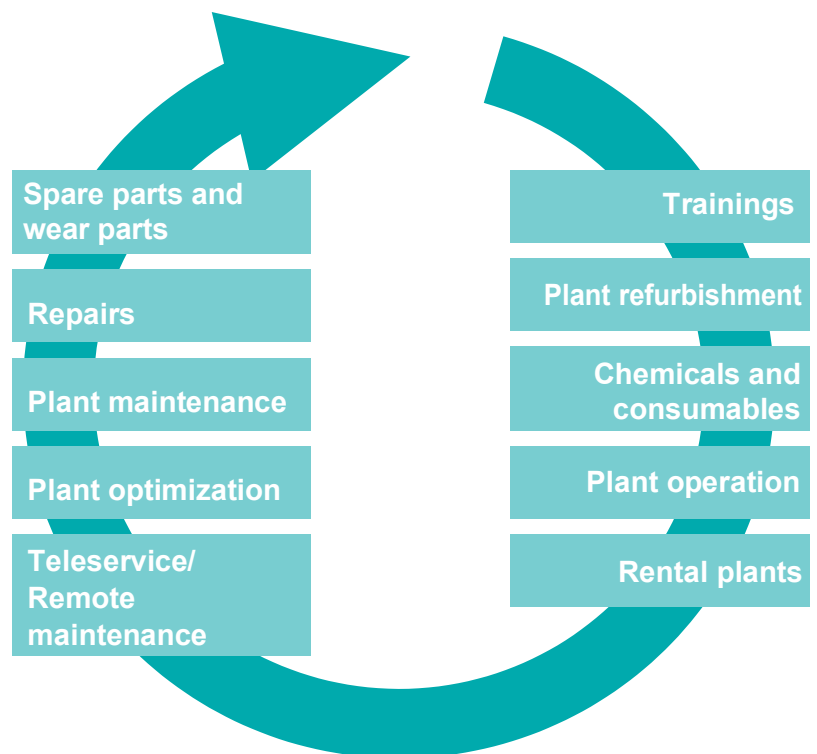
## Safe Plant Operation

With BWS-Services

### Fully automatic water treatment plants ...

... a promise that we gladly make and keep to our customers. You will receive intensive training for the operation of the plant by means of training courses and detailed documentation. Because in order to be able to use the technical and economic advantages in the long run, even the most modern plant technology requires your foresighted maintenance and operation.

Studies show that the plant investment only makes up about 20 % of the total life cycle costs. BWS therefore relies on a holistic approach that focuses on resource conservation and economic efficiency right from the design stage. In addition, BWS supports you during the plant operation with comprehensive services, so that you and the plant reach your goals permanently. Together with you, we develop a suitable service concept choosing from many available service modules.



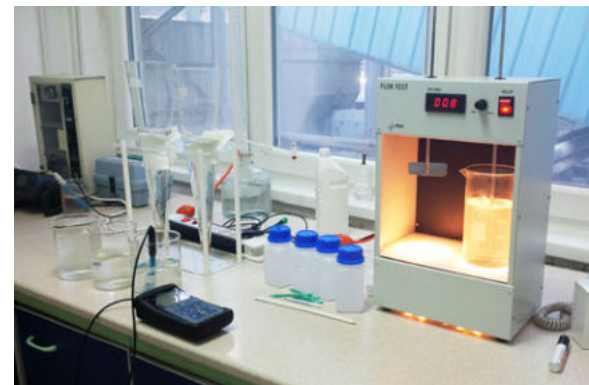


## Safe Plant Operation

### With BWS-Products for Water Treatment

With treatment chemicals and consumables tailored to the respective application and plant technology, we offer optimum results with holistically optimized operating costs at the same time. Our experience from the large number of realized projects and our own development are incorporated into the customer consultation and the production of the products. Our extensive range of chemicals and other consumables includes the following product groups:

- ◆ Adsorbents
- ◆ Activated carbon for water and air
- ◆ Antiscalant
- ◆ Car care products
- ◆ Belt fleece, filter bags
- ◆ Bentonite mixtures for waste water treatment
- ◆ Biocides & disinfectants
- ◆ Defoamers
- ◆ Dewatering materials and filter cartridges
- ◆ Filter materials for depth filters
- ◆ Filter fleece
- ◆ Flocculants (liquid and granulate)
- ◆ Hardness stabilizers
- ◆ Ion exchange resins
- ◆ Boiler & feedwater treatment agents
- ◆ Coagulants
- ◆ Corrosion inhibitors
- ◆ Machine and system cleaner
- ◆ Membrane cleaners
- ◆ Nutrients for biological wastewater treatment
- ◆ systems Neutralizing
- ◆ Organic splitters
- ◆ Oxidizing agents
- ◆ Heavy metal precipitants



# Industrial Process- and Wastewater Treatment

## par excellence



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