THIS IS
JUDO

Judo COMMERCIAL / INDUSTRIAL
JUDO WATER TREATMENT, BACKED BY MORE THAN EIGHT DECADES OF KNOWLEDGE AND EXPERIENCE

JUDO Water Treatment, a name you can trust

Founded by Julius Dopslaff in 1936, JUDO has a long history of R&D and innovation, including international norm developments and is now generally recognised as one of the leading figures in the water treatment industry in Europe. Decades of research and innovation in the industry mean, we are able to offer products and solutions MADE IN GERMANY, to meet the requirements of almost all applications from domestic and industrial water usages up to complete treatment for swimming pools. We take pride in providing the solution that is right for the job at hand not just technically but in terms of investment and running costs as well. The high quality levels of JUDO products and systems is backed up by a wide range of international approvals as you would expect of the company that introduced the world's first ever precision dosing and sediment filtration systems ... JUDO.

Experience puts us in the lead

It is this attention to innovation that not only makes up our past, but also shapes our future, our ongoing pioneering spirit. All our products and systems are designed and engineered right down to the last detail at our own facilities in Germany, which have grown and been enlarged along with our market constantly updated and streamlined to ensure the quality of production itself, is reflected in the quality of the products we produce. Despite this 21st. century approach, JUDO remains, at heart, a family company with well trained and skilled staff ready to successfully take on the task of providing exactly the right solution to water treatment projects of which ever size globally.

An innovative approach and an individual solution

Nothing at JUDO is 'off the shelf'. The wide range of products and systems JUDO offers, allow for the individual confection of systems tailored to the particular problem at hand, from private houses to institutions and industry, heating systems and industrial applications. We understand that different applications and raw water supplies require different levels of treatment to obtain the quality required for optimal use. Mains water, ground water, surface water, sea water and many other types all pose their own individual challenges in applications such as heating/cooling systems, manufacturing, laboratories where the problems to be addressed are all varied.
ACTIVE IN MORE THAN 50 COUNTRIES WORLDWIDE

Present where we are needed.

QUALITY MADE IN GERMANY

Product concept, engineering, testing, production and quality control, all in our facilities in the south west of Germany. JUDO products comply with the stringent German standard’s requirements supported by a range of international approvals from North America to Australia.
One of the most widely used stages in water treatment is filtration. Most water supplies are not suitable for use in drinking or process water applications in their natural state. There are a range of filtration methods that can be applied to address this problem:

Depending on the type of filtration used, water of a potable or process quality can be obtained from surface water with high dirt loads, well water with high pollution levels, brackish water and even sea water.

Systems made up of stages including flocculation, sedimentation, filtration and the latest in ion exchange and membrane technologies, depending on the application at hand are put together at JUDO to provide an individual solution for a specific project.

A system’s efficiency depends on its flow and the stages in which treatment takes place. For example first iron and manganese removal followed by stages removing colour and acidity. This final stage, for example, can be achieved with the aid of activated carbon systems to clear and help balance the water.
Filtration

JUDO compact container unit incl. plate settler for gaining potable water from rivers, lakes and wells in accordance with WHO guidelines

JUDO compact container unit with surface water filtration system for a fish factory at Lake Victoria, Tanzania

Filtration unit Government house, Nigeria

Unit with 2 stage of filtration

Plate settling unit

Boiler feed water treatment: multi-layer filter, decarbonisation and softening, skid mounted
BACKWASH PROTECTIVE FILTER

JUDO backwash protective filters are fitted with stainless steel mesh screens (silver coated in some models) which retain particles swept in with the incoming water supply. The standard filter rating on JUDO units is 0.1 mm with optional sizes between 0.03 and 0.5 mm also available depending on application.

The JUDO PROFI range of backwash protective filters comes in sizes ranging from ¾” to 8” (DN 200) and is fitted with a long-life screen which does not have to be removed for cleaning. Dirt build up on the screen surface can be monitored through the generous viewing glass and backwash is started by turning a hand wheel on the unit to open a flush valve. Hollow arms then rotate up and down across the screen surface vacuuming the dirt off and flushing it out of the system without interruption to the water flow through the filter. The units are engineered to ensure a quick clean up with low water consumption.

JUDO JRSF backwash protective filters are sized from 1” to 8” and are fitted with 2 filtration areas each containing a long-life stainless steel filter screen which holds back particles swept in with the water supply. Cleaning is done by reverse flow through each screen individually lifting dirt off the screen and flushing it out whilst leaving the second screen free to continue filtering.

JUDO protective backwash filters are installed to combat the effects of corrosion, excessive water consumption, and damage to controls and appliances caused by sediment influx and, as such are a valuable protective measure in the home, as they are to commerce and industry. In several countries, the use of this type of filter is already anchored in the plumbing code.

All units available in manual and automatic backwash versions.
Balancing a water system properly, is not just about removal. Some problems are addressed by adding elements to the water chemistry by dosing. Flocculants to make dissolved substances physically filterable, Chlorine for bacterial protection, Polyphosphates to stabilise hardness, all depending on the application required.

There are different types of dosing pumps available, all based on the volume of treated water and application requirements.

WADOS dosing pumps are flow controlled for precise dosing and suitable for use in mains supplies for chemical dosing.

UNIDOS dosing pumps require an external control or switch.
Softening

Hardness levels in raw water vary greatly, depending on location. Softening systems are used in areas where the water hardness level, and the scaling it causes, is a problem and full or partial softening is required.

Softening is achieved using the ion exchange principle. This involves replacing calcium and magnesium ions dissolved in the water with sodium ions. The salt level in the water is not effected.

The JUDO i-soft TGA range of softening systems starts basically with a single DIN-DVGW approved unit, which can then be extended into a battery of several individual units as per the project requirement. The first, and to date only, fully automatic softeners also available for large water volumes, which automatically adapts the ratio of hard and soft water where incoming hardness levels fluctuate. The stagnation-free operation, automatic regenerations and disinfection systems all underscore the high levels of system’s hygiene.

The JUDO CONTISOFT delivers softened water around the clock and stagnation-free. The system consists of single DIN-DVGW approved units with all the advantages this offers for installation, maintenance and systems hygiene. Plus points here, to mention just a few, are: automatic regeneration, disinfection system and pre-assembled systems.

JUDOMAT softening systems offer efficiency both in terms of performance and economics. They are available in a variety of sizes and combinations, depending on application required. All systems share the features of low investment and running costs, low salt and water consumption, as well as a long working life thanks to high grade material and robust technology.
Desalination by ion exchange is a chemical process to remove dissolved salts from water. Ion exchange resins are able to exchange with ions present in the water. There are cation and anion exchangers. Depending upon the system combination used and the regeneration method, various qualities of water can be produced.

In the JUDO dual bed total demineralization unit, the water flows through a bed with a cation exchange resin and then another with an anion exchange resin. The water produced is free of dissolved salts. Because the exchange capacity of the resin is limited, regeneration must be carried out after the resin is exhausted. The cation exchange resin is regenerated with an acid while the anion exchange resin is regenerated with an alkali. The salts absorbed are released together with excessive regenerates as waste water for neutralisation. A new operating cycle can then begin.

JUDO full demineralization systems are used in boiler feedwater treatment, for air conditioning systems, in laboratories and in paint manufacturing. Further areas of application are to be found in the electroplating industry as well as in the manufacture of printed circuits in the electronics industry. Mixed bed desalination systems are used in systems requiring extremely pure water to improve water quality and as safety filters.
Multi-stage fully automatic JUDO demineralization equipment in research institute to supply various water qualities.

JUDO partial demineralization unit with additional softening unit as a 40' compact container mounted ready for operation.

Mixed bed ion exchange duplex unit

JUDO mixed bed desalination unit
REVERSE OSMOSIS

The reverse osmosis process (RO) is a tried and tested method of removing dissolved salts from a water in an environment friendly and rational way. Desalination is a purely physical process limiting the use of chemicals in the system to any pre- or post-treatment stages required. Salt removal occurs through a semi-permeable membrane which retains not only the salts in solution but also organic matter. The pure water thus obtained is constantly available and any waste water created can be safely fed to drain.

JUDO reverse osmosis systems with modern, energy-saving low-pressure membranes are compact units ready for connection, which are used for the continual, environmentally friendly production of desalinated water. A well-known principle found in nature, “natural osmosis”, is reversed in this process, in order to separate out the salts and other materials dissolved in the water by means of corresponding pressure and semi-permeable membranes. The water quality that can be achieved in this way now allows conventional desalination systems, using acid and caustic soda on ion-exchanger principle, to be largely dispensed with. JUDO reverse osmosis systems with stepped permeation can also achieve residual conductivities of below 10 to 5 μS/cm. JUDO reverse osmosis systems are in successful use in steam boilers, cooling and air-conditioning technology, glass-dishwashing machines, laboratories and for process water – in short, everywhere where special demands are placed on the water quality, improving the efficiency of existing systems. Computer-assisted design by our experts ensures the optimum co-ordination of pump pressure, membrane area, residual conductivity and system yield.
Reverse osmosis JOS 380 G-D

Reverse osmosis plant for the cooling-systems of a data processing center

Two identical reverse osmosis plants JOS 145 G-D
SEAWATER DESALINATION

JUDO supplied two modern and tailor made skid mounted sea water desalination units (capacity 120 and 500 m³ per day) to the community of Ithaca, Greece. A partnership built on exchange of knowledge and mutual trust.

Seawater desalination plant installed in containers at the site of Vathy (Ithaca)
Desalination Process
Two sea water desalination plants, which are completely installed in containers, were delivered and installed: One unit with a capacity of 500 m³/day in Vathy and a second unit which supplies 120 m³/day at the site of Kioni.

The sea water is either pumped through centrifugal pumps directly out of the sea (Kioni) or with submersible pumps out of concrete shafts which have a hydraulic connection to the sea (Vathy).

The pre-treatment stage starts with optional dosing of disinfection and flocculation agents. Suspended solids and other undissolved impurities are then filtered in a multi layer filter stage. An activated carbon filter station follows to prevent oxidizing agents from causing damages in the desalination stage. A further pre-treatment is dosing of sulphuric acid and antiscalant to stabilize all kinds of dissolved salts in the sea water which can cause membrane scaling. The pre-treatment is completed with cartridge filters that remove all residual particles with a size of more than 1 micron. The desalination itself takes place in a reverse osmosis unit, were the pre-treated water is pressed with nearly 70 bars through semi-permeable membranes. The sea water is separated in one stream called permeate with a low salt content. The permeate is used as a good quality drinking water, and the brine is flushed back to the sea. The high pressure pump system - used to pressurize the water - includes an energy recovery system, which recovers the pressure energy of the brine stream, so that the power consumption is reduced up to 35%.
SEAWATER DESALINATION

A post-treatment follows the desalination. To increase the hardness to a comfortable value for drinking water, it flows through a bed of calcium carbonate gravel with a higher inner surface. The hardness can be adjusted by the pH-value of the pretreatment or the calcium carbonate gravel bed.

As the last step, a prophylactic disinfection takes place, to prevent bacterial growth in the drinking water storage tanks. The complete desalination process is designed to reach an optimum of low energy and chemicals consumption as well as a good drinking water quality.

All process stages are automatically controlled by a state of the art PLC-System. Important information as sea water and drinking water quality or flow rates are visualized on a PC at the site of Vathy.
Seawater desalination

Legende:
1. sea water pump station
2. disinfection dosing unit
3. flocculation dosing unit
4. multi layer filter station
5. activated carbon filter station
6. pH-correction dosing unit
7. anti-scalant dosing unit
8. cartridge filter 1 micron
9.-10. high pressure pump with energy recovery turbine
11. reverse osmosis membrane stack
12. cartridge filter (chemical membrane cleaning system)
13. permeate flushing and membrane cleaning tank
14. chemical cleaning pump
15. permeate flushing pump
16. heater (chemical membrane cleaning system)
17.-18. hardness regulation system
19. intermediate storage tank for drinking water
20. pressure booster pump for drinking water supply
21. safety chlorination dosing pump unit
22. (public) drinking water tank
WATER-WORKS

Renewal of the existing water treatment unit

The capacity of the water treatment unit varies between 80 and 320 m³/hour.

Procedual steps

Step 1 is oxidation by means of oxygen transfer: for the oxidation of dissolved iron, and for the oxygenation of the water.

Step 2 is oxidation by means of potassium permanganate dosage; for the oxidation of the dissolved manganese, and for the development of a manganese dioxide layer.

Step 3 is a multi-media-filtration: for the filtration of undissolved impurities, duplex parallel multi-media filtration plant. Each with three filter units, diameter 2.200 mm.

Step 4 is disinfection: dosing of sodium hypochlorite solution for the prophylactic disinfection.
Filter base
Filter vessels and high pressure pumps
Filter vessels and filter connection
Filter vessels and filter connection
COAL MINE

The plant is a customized solution, developed for a coal mine in Kattowice (Poland). Conception, planning, installation, and service – all from a single source – JUDO.

In this specific application more than 3,000 m³ per day (800,000 gpd) of strongly polluted mine water is pumped from a maximum depth of 1,100 feet and then it is processed in a multistage water treatment plant.

The treatment process starts with aeration, flocculation, and sedimentation followed by filtration, adsorption and desalination of polluted water. JUDO combines traditional processes and state of the art water treatment technology to manufacture customized solutions that most often exceeds the expectations of our customers. The described plant in Kattowice produces 1,500 m³ (400,000 gpd) potable water and 1,500 m³ (400,000 gpd) demineralized process water per day.

Particular attention is paid to environmental and ecological concerns to ensure minimal usage of chemicals and maximum water recovery.

The total water capacity produced by this plant would be enough to satisfy the drinking water need of a European city with a population of approximately 30,000 people.
Coal mine

Desalination by reverse-osmosis

Customized plant in overview

Filtration and adsorption system

Flocculation and sedimentation

Softening

Desalination by reverse-osmosis

Customized plant in overview
26 Products

- Mobile degassifying system for heating systems HEIFI-AIR-FREE JHAF 60 and JHAF 400
- Pure water system for the manufacturing of artificial joints CERAMTEC
- Ultrafiltration unit PURE@ENTRY 1800
- Centrifugal separator JZA 150
- UV-disinfection unit JUV 30 - 180 TW
- Pure water desalination system CONTIPURE 1350
- Mobile degassifying system for heating systems HEIFI-AIR-FREE JHAF 60 and JHAF 400
Mobile degassifying and desalination or softening system for heating systems JHPC-T and JHPC-TG

Filtration and desalination or softening system for heating systems JUDO HEIFI-PURE & CLEAN JHPC 1

Sludge separator for closed heating and cooling systems JFS

Strainer for heating systems JSKF DN 65

Mobile softener for boiler feed water treatment JMHB

Mobile reverse osmosis for boiler feed water treatment JMHB-RO
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Description</th>
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<tbody>
<tr>
<td>1936</td>
<td>JUDO founded</td>
<td>The world’s first precision dosing unit, Impfbiene.</td>
</tr>
<tr>
<td>1939</td>
<td>First protective filter worldwide</td>
<td>First protective filter with point-rotation cleaning technology, PROFIL.</td>
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<td>1942</td>
<td>Backwash filter with point-rotation cleaning technology, PROFIL</td>
<td>Backwash filters with potential bacterial inhibiting seven Keimschutzklasse PROFIL-PLUS.</td>
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<td>1952</td>
<td>First protective filter with potential ceramic flush valve, LongLife class</td>
<td>Backwash protective filter with potential ceramic flush valve, LongLife.</td>
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<td>1962</td>
<td>First backwash filter</td>
<td>First leakage protection unit with German approvals, ZEWAPRESSSTOP.</td>
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<td>1975</td>
<td>First protective filter</td>
<td>Intelligent, fully automatic softening units for flow rates up to 20 m³/hr (88 gpm) i-soft TOA.</td>
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<td>1983</td>
<td>First backwashable, in loop heating water filter</td>
<td>Intelligent scale protection i-balance.</td>
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<tr>
<td>1985</td>
<td>World’s first, fully automatic water softener</td>
<td>World’s First! Quick and easy filter connection thanks to the single screw QUICK-CONNECTION technology.</td>
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<td>1993</td>
<td>First water softener DX-2 with German approvals worldwide (BIOQUELL range)</td>
<td>World’s First! Intelligent, fully automatic softening units for flow rates up to 20 m³/hr (88 gpm) i-soft TOA.</td>
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<td>1997</td>
<td>First backwashable, in loop heating water filter</td>
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<td>1999</td>
<td>World’s first intelligent, fully automatic water softener i-soft</td>
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<td>2002</td>
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<td>2017</td>
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