



Chriwa®

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Photographer cover picture: Yoji Okata / Minden Pictures
Nest of puffer fish, Amami Oshima, Japan

Editorial



Dear customers and business partners,

I am delighted to present to you in this brochure and technical news as well as highlighting our company's philosophy and passion for water.

We are driven by sustainability and the consistent implementation of quality in order to strengthen and further increase the added value and business success of our customers. Our actions have been governed by the satisfaction of our customers since the very beginning of our development and sales activities for water and waste water treatment plants in 1973. Today, we deliver our plants to more than 110 countries.

Our parent company, Chriwa Holding, is home to various companies with special expertise in all areas pertaining to water and waste water treatment technology.

These are:

- Chriwa Wasseraufbereitungstechnik GmbH
- CUSS Chriwa Umwelt-Systemtechnik und Service GmbH
- FaProTec GmbH

The high level of in-house production and our vast product variety in addition to our company structure and organisational form, combined with the qualification and personal commitment of our employees, create the prerequisites required to assure our product quality and timely rendering of services. Moreover, this is also ensured by the continuous further development of our process technologies and the optimisation of plant and process concepts in all areas of the company.

Our standing business partners include both, well-known multi-national enterprises and medium-sized companies – including renowned companies from the international beverage and food industry.

We would like to thank our customers and business partners for the long-standing and trusting partnership and look forward to continuing our excellent business relationship.

Yours truly

Our goal is water of highest quality

Our guiding principles

The Chriwa philosophy is to combine the best possible customer satisfaction with the highest level of quality.

We are consistently developing our process technologies and optimising plant concepts. We supply our customers with reliable, sophisticated and robust plants that comply with all international design and safety standards. These high standards, in terms of plant safety, prompted us to build-up our own (pressure) vessel manufacturing around 40 years ago.

Chriwa operates its own powerful data processing system. In addition to designing and constructing our plants with 3D CAD software, we have developed our own process visualisation and process control programs that always allow our customers to overview the plant operation and enable online maintenance using special remote programs.

The continuous modernisation process across all divisions of the company guarantees our customers plant solutions according to state-of-the-art research and development. Our certified quality management as well as the on-going training of all our employees contribute to this.

Innovation know-how

Individual solutions for customised projects

Under the parent company Chriwa Holding, our specialists in water and waste water treatment are developing new technologies for a wide range of applications.

Business areas:

- Beverage industry / Breweries
- Food industry
- Process water for the industry
- Municipal waterworks
- Seawater / Brackish water desalination
- Water recycling / Water reclamation
- Surface water treatment
- Removal of arsenic, fluoride, radon, radium, uranium
- Treatment of polluted groundwater and water from soil rehabilitation
- Waste water treatment plants for municipalities
- Waste water recycling / Waste water reclamation
- Energy from waste and residues
- Swimming pool technology
- Exceptional technologies

We develop, plan and implement custom-tailored water treatment plants based on specific requirements and the given raw water quality. Our modular design allows us to adapt to changing conditions at any time.

Since the year 2000, strategic partnerships have been formed and further companies have been integrated into the Chriwa Group in order to enhance innovative strength, safeguard know-how and expand business areas. For instance, this relates to the areas of standard applications in waste water technology, membrane process technology or pool water treatment. All company divisions have been operating independently since 2010 under the umbrella of our holding company.

This enables us to quickly implement the latest developments and current research results, contributing significantly to the conservation of resources and protection of our environment.

For a better world

Custom-tailored plants and services

The design of a plant begins at the source, so to speak, with the analysis of the raw water, an assessment of the requirements at the customer's premises, an inspection of the surroundings and clarification of the task.

The project planning of a plant is closely linked to the specific demands of our customers based on their production-specific requirements. Our extensive engineering expertise and our leading edge process technologies provide solutions that are always finely tuned to industrial applications. Many years of experience in calculation, design and planning of plant systems always provide the optimum cost-effective solutions in all process and treatment technologies.

The structural design is carried out using the latest 3D design software. This ensures optimum utilization of space and hygienic plant designs to eliminate dead ends, amongst other things. Clear identification of pipe systems, assemblies or other plant parts after commissioning is also of benefit during maintenance and servicing work.

Made in Germany: We design and produce vessels and equipment ourselves. The individual components of our Chriwa water treatment plants are fully pre-assembled and tested at our company headquarters in Hambühren. Final installation is completed on-site by our own qualified specialist personnel, to turnkey standard if required.

A clear delivery and service description provides cost transparency and assurance. We organize global shipments from Germany, prepare the required documentation and are AEO-certified.

View on Mount Ararat in Armenia,
near mineral water treatment plant, 720 m³/d
and soft drink water treatment plant, 1.440 m³/d

Total Water Management

Everything from a single source

Based on the goal of a sustainable and economical use of the resource „water“, the Chriwa Group focuses on a holistic solution spectrum.

This technical expertise is consolidated by many years of experience gathered across a wide range of industrial sectors worldwide. All to our customers' benefit.

- Custom-tailored water treatment from well construction consultancy to the finished product
- Waste water treatment to energy recovery from waste water and residues
- Water recycling and reclamation for process water, irrigation and other uses



Mineral and Table Water

From the depths of the earth to the table

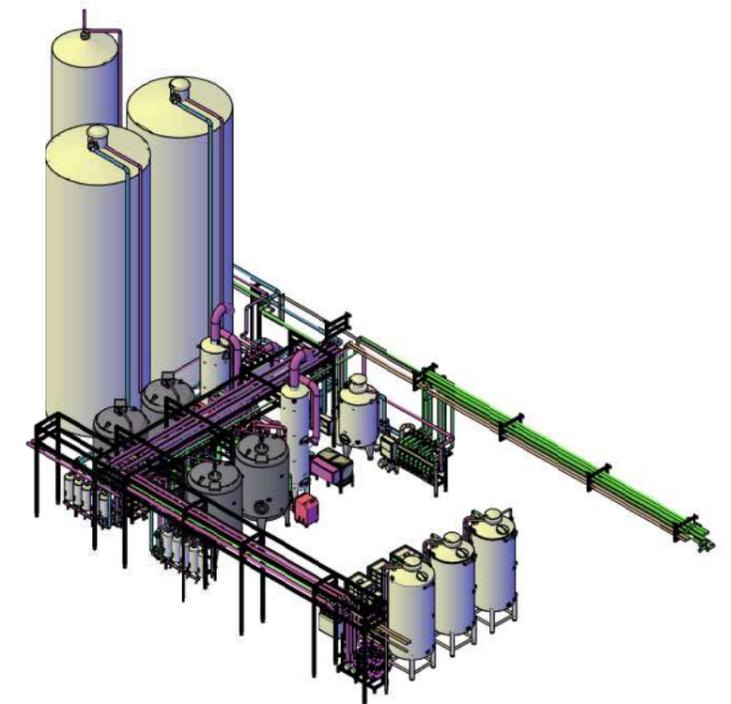


Mineral water treatment plant in Germany, 2.400 m³/d

Mineral and table water is generally obtained from underground springs. It is bottled directly at the source. The purity must be safeguarded and deviations in mineral content must be minimized.

In Germany, mineral and table water require official recognition and are defined by the Mineral and Table Water Ordinance. The water must be treated by different processes, depending on the source, to always maintain the desired quality. For instance, elements like iron and manganese are filtered out or the water is refined using special degassing systems.

Chriwa water treatment plants guarantee to maintain the original purity and composition in compliance with the Mineral and Table Water Ordinance.



Complete layout plan of a mineral water treatment plant, 2.400 m³/d

Food and Beverages

Quality of life right from the start



Soft drink water treatment plant in Peru, 16.800 m³/d

In the food and beverage industry, strict regulations govern the purity and safety of food for human consumption.

Water is an essential element in their production. Different processes are used that substantially enhance the product quality depending on the water quality available at the start of the production process.

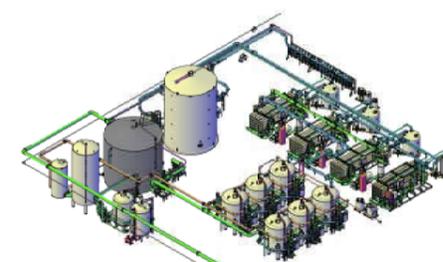
In the beverage industry, for example, the key factor in the production of soft drinks, lemonades or juices is an excellent and consistent water quality and the product water standards that ensure that the finished product always has the same taste. Different water treatment processes are used depending on the type of raw water and hydro-chemical conditions as well as the product-specific requirements.

Of course, Chriwa's scope of services also encompasses all aspects of industrial and process water technology in these industries.

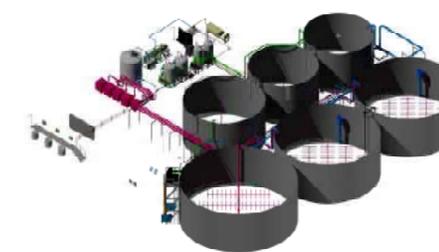
These services are complemented by waste water treatment and reuse plants, which make available the treated waste water for less discerning purposes such as process water, irrigation etc.

Chriwa is a long-standing partner to major global beverage companies.

Complete layout plan



Water treatment plant, 16.800 m³/d



Waste water treatment plant, 1.400 m³/d

Breweries

Malt is the soul of the beer, water is the body



Brewery in Korea, Ultrafiltration, 6.200 m³/d

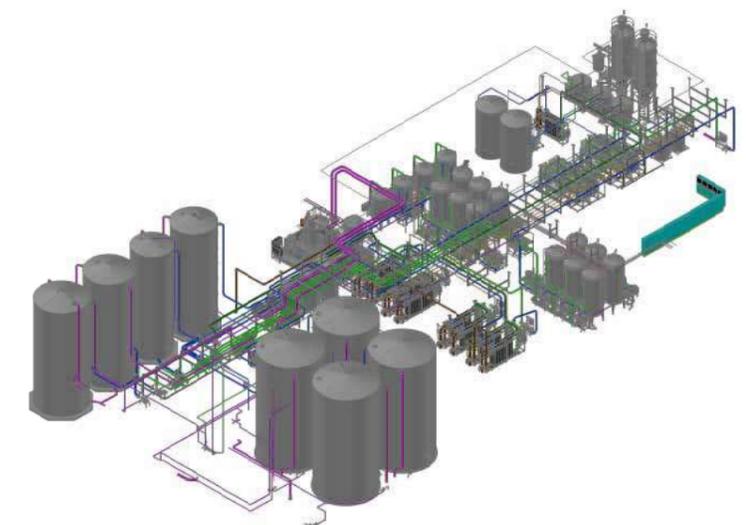
Over ninety percent of beer is pure water. No wonder that the quality of the water has a significant impact on the beer's taste and quality. That is also how philosophers describe the essence of beer: malt is the soul, water is the body.

But water is not only an integral raw material of beer. Countless other production and ancillary processes in breweries require water of varying qualities.

Raw water can have significantly different qualities. Our water treatment technologies enable specific and reliable processing. Each water is perfectly adapted to the respective process using state-of-the-art methods.

To ensure full compliance with national and international regulatory standards for waste water discharge, CUSS Chriwa Umwelt-Systemtechnik und Service GmbH has developed special processes for breweries. These include aerobic and anaerobic processes for waste water treatment.

Furthermore, it is possible to use the energy generated from biogas to provide the factory with power or thermal energy. Our intelligent and energy-saving processes for water recovery improve the economic efficiency.



Complete layout plan of a brewery water treatment plant, 6.200 m³/d

Seawater Desalination and Drinking Water

For life and survival



Desalination plant for drinking water in Saudi Arabia, 60.000 m³/d

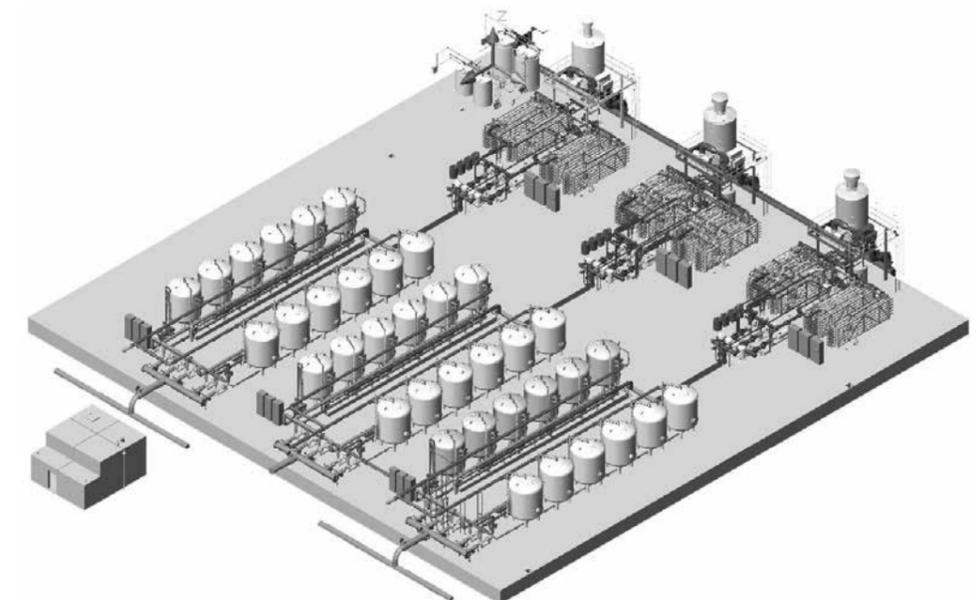
Drinking water is simply irreplaceable. It is our most important and the most controlled consumable.

The EU Directives and Europe's drinking water regulations have been established as a global standard by the World Health Organization (WHO) as the coordinating authority for international health care.

Chriwa has designed, realized and installed many drinking water treatment plants according to these demanding international and national standards.

Seawater desalination has become the most important technique for producing drinking water. Chriwa has been familiar with this technology for decades and has consistently developed its technology and plants.

Each project requires individual solutions. We can deliver optimally adapted technology in this field, including containerised systems for fast and mobile support.



Complete layout plan of a desalination plant, 60.000 m³/d

Industrial and Process Water, Specialized Plants

Water for the industry

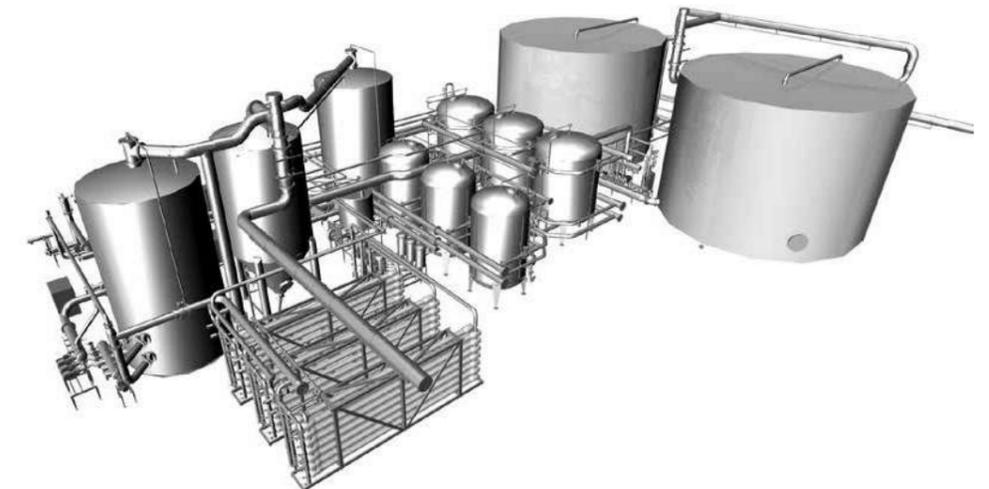


Demineralization plant in Colombia, 2.400 m³/d

Industrial processes are reliant on a smooth and uninterrupted water supply.

Chriwa produces water treatment plants tailored to the needs of its customers. The spectrum includes e.g. process water in the chemical industry, cooling water in the steel industry, boiler feed water and condensate reclamation in power stations.

Customer-specific water treatment plants ensure the sustainable use of water and energy resources to optimize processes, reduce costs and protect the environment.



Complete layout plan of a demineralization plant, 2.400 m³/d

Waste Water Treatment

Focus on the environment

CUSS GmbH (Chriwa Umwelt-Systemtechnik und Service GmbH) develops solutions with excellent price-performance ratios, which are customised to the individual requirements. For this reason, we have established an outstanding reputation and realized a wide range of successful projects over the last 35 years.

Fields of application for waste water treatment

- Soft drink industry
- Breweries
- Dairy industry
- Distilleries
- Fruit juice industry
- Municipalities

Flexibility in plant design

- Aerobic or anaerobic in a wide range of designs
- Concrete, steel or plastic film tanks
- Considering on-site conditions and requirements
- Audit to exactly determine the precise quantity and quality of incoming waste water
- Use of state-of-the art, innovative components

Options available on request

- Increased operating reliability with emergency tanks and integration of intelligent control systems to minimize human error
- Automatic protection against waste water outside normal limits, such as excessive organic content, pH values, temperature and chlorine
- Modular expandable units for maintaining the strictest discharge limits
- Sludge treatment and biogas use
- Intensive training courses on operation and system support held by our process specialists
- SCADA visualisation systems
- Realization as turnkey project

The benefits:

- Robust and proven plant technology for excellent operational reliability
- Low operating costs due to optional energy recovery and reuse of treated waste water for internal processes
- Efficient collaboration based on partnership supported by close contact from initial enquiry right up to successful handover and beyond



Anaerobic Waste Water Treatment

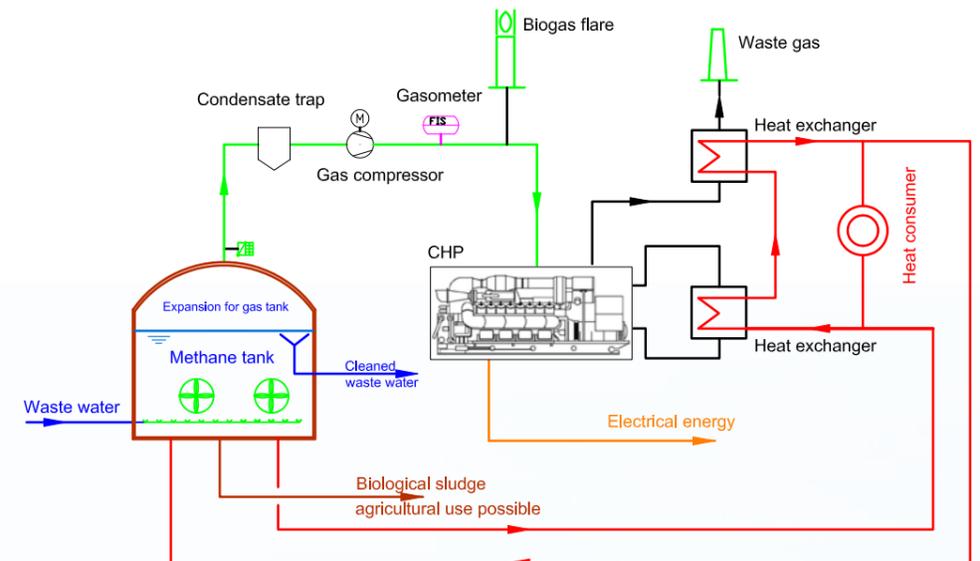
Waste to Energy

Anaerobic waste water treatment has gained in significance over the last few years and offers many advantages in industries with heavily polluted waste water.

Considering the increasing importance of environmental protection and resource conservation, biogas from the fermentation of organic substances offers considerable energy potential for the production of electricity and heat. Using sophisticated concepts and customer-friendly processing, CUSS has implemented many projects with anaerobic waste water treatment.

The release of unburned biogas into the atmosphere is prevented, which in turn protects the environment. The use of biogas replaces fossil fuels and operating costs are reduced significantly.

The use of combined heat and power plants (CHP) in combination with waste water treatment plants is a core component of our product portfolio and will become even more important in the future. In cooperation with the customer, we develop a tailored treatment concept embodying our extensive expertise and experience.



The benefits:

- Significant reduction of energy costs when operating waste water treatment plant
- Quicker amortisation time thanks to use of secondary energy sources
- The anaerobic sludge produced can be sold as fertilizer or seeding sludge for other plants
- Methane emissions are minimised, which contributes to environmental protection
- The anaerobic cleaning reduces water pollution, air pollution and unpleasant odors while minimizing pathogenic germs
- The substitution of fossil fuels reduces CO₂ emissions

Brewery waste water treatment plant with biogas production, 4.160 m³/d

Treatment Processes

Smart technologies

The extensive range of Chriwa water treatment technologies enables the individual and reliable treatment of different raw water qualities.

The result is product water perfectly customised to the respective process. In addition, intelligent water reclamation processes and well-engineered visualisation and data acquisition systems provide all the capabilities of modern and economic water management.

Our expertise encompasses all known mechanical, physical, chemical and biological treatment processes, such as the following:

- Flocculation
- Purification / sedimentation
- Milk of lime treatment
- Filtration
- Deacidification
- Oxidation
- Deferrisation
- Demanganisation
- Denitrification
- Ammonia removal / nitrification (oxidation/biological)
- Removal of arsenic, fluoride, radon, radium and uranium
- Detoxification / decontamination
- Adsorption / desorption
- Ion exchange (softening, decarbonisation, full desalination), special ion exchange process technologies
- High capacity spraying towers / gas strippers
- Micro- / Ultra- and Nanofiltration
- Reverse Osmosis
- Degassing systems (H₂S, CH₄, etc.)
- Gas impregnation
- Disinfection (ozone, chlorine, chlorine dioxide, etc.)
- Biological cleaning
- Neutralisation
- Chlorine electrolysis (tubular cell and membrane technology, robust compact system)
- ECA (electro-chemical activation)
- Dry filtration
- Bottle wash water recycling
- Special waste water recycling / recovery
- Other special processes

Waste water treatment technologies of CUSS Chriwa Umwelt-Systemtechnik und Service GmbH:

- Disinfection (ozone, chlorine, chlorine dioxide, etc.)
- Screening with automatic backwash
- Transport of solids and compression for volume reduction
- Neutralisation
- Biology
- Membrane bioreactor
- Anaerobic high-load process
- Float bed process with biofilm
- Trickling filters

Plant Design

The full range

We offer a comprehensive and sustainable system design considering all economic and ecological aspects:

- Custom-tailored plant design along with a durable plant construction, also incl. construction engineering
- Needs assessment on site or complete factory audits
- Consulting for drilling wells
- Hygienic plant design in compliance with EHEDG
- Construction planning with state-of-the-art 3D-based software
- Complete pre-assembly and testing of the single components in our German workshop
- Focus on water saving and energy recovery
- Excellent operational reliability and minimum maintenance due to perfectly coordinated custom-tailored treatment processes
- Low operating costs due to efficient energy and resource management
- Focus on the sustainable and environmentally compatible production of drinking water for a positive CO₂ balance
- After-Sales-Service and maintenance for the life of the plant thanks to long standing service partners around the world
- Organization of global shipments and preparation of the required documents, AEO-certified
- Financial strength to securely handle and execute turnkey projects
- Worldwide plant assembly and commissioning, both supervision and turnkey

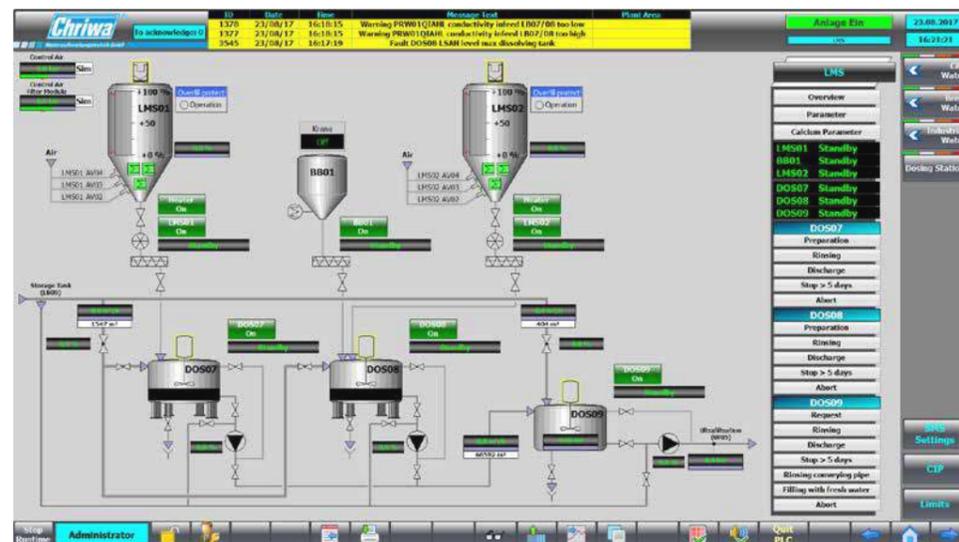


Process Visualisation

Security and transparency

Chriwa and Cuss water and waste water treatment plants are put into operation on-site by our qualified technicians and engineers.

Our process visualisation system ensures transparency with all processes and operational data acquisition during normal operation. All relevant processes are illustrated, logged and evaluated in a variety of statistics. The sophisticated SCADA system (e.g. IGSS or WinCC) is the basis for our well-engineered visualisation and operational data acquisition systems.



Lime-station

The user-friendly plant controls are generally operated via touch panels or via the SCADA system from the central monitoring and control computer. We offer manual to fully automated plants. The constantly controlled processes always ensure the highest possible product water quality and plant availability. Internet technology, remote diagnostic tools and flexible alarm systems help to maintain the smooth operation of the plant. Long-term archiving and a modern reporting system provide an evaluation of historical data at any time.

Service, Maintenance and Training

Trustful partnership

The partnership with our customers lies at the heart of our company philosophy.

With our global After-Sales-Service we provide all relevant spare and wear parts and take care of the servicing and maintenance work that is required, also based on a maintenance contract, if requested.

Modern process visualisation enables online maintenance using remote diagnosis with the shortest possible response time. It guarantees the quick rectification of a problem in the event of a breakdown.

Our customers' operating personnel are trained on site, based on an individual agreement, if requested.



Quality Management

Extract:

- Certification according to EN 1090-2 for structural components and kits for steel structures to EXC2 for load-bearing structures in all types of buildings
- Quality management system for welding fabrication according to Pressure Equipment Directive (PED) 2014/68/EU, attachment No. 3.1 and DIN EN ISO 3834-3
- Manufacturer of pressure equipment and piping according to the regulations AD 2000 leaflet HP 0
- Restamping authorisation for materials and products according to AD 2000 leaflet HP 0 section 4.2.2 and PED 2014/68/EU (transfer of material indication)
- Certified specialist according to Water Resources Act (WHG) by Technical Inspection Agency (TÜV Nord)
- Verification of suitability for plastics processing by German Association for Welding and Related Processes (DVS)
- Certified quality management systems according to DIN EN ISO 9001:2015
- Electrical engineering trade as subsidiary business
- Federal Association of Companies in the Gas and Water Sector Registered Association (FIGAWA)
- German Association of Gas and Water Registered Association (DVGW)
- AEO (Authorized Economic Operator) for customs simplifications / security
- Russian SRO license for project engineering and construction
- Ukrainian license for project engineering and construction





Germany Head Office / Factory

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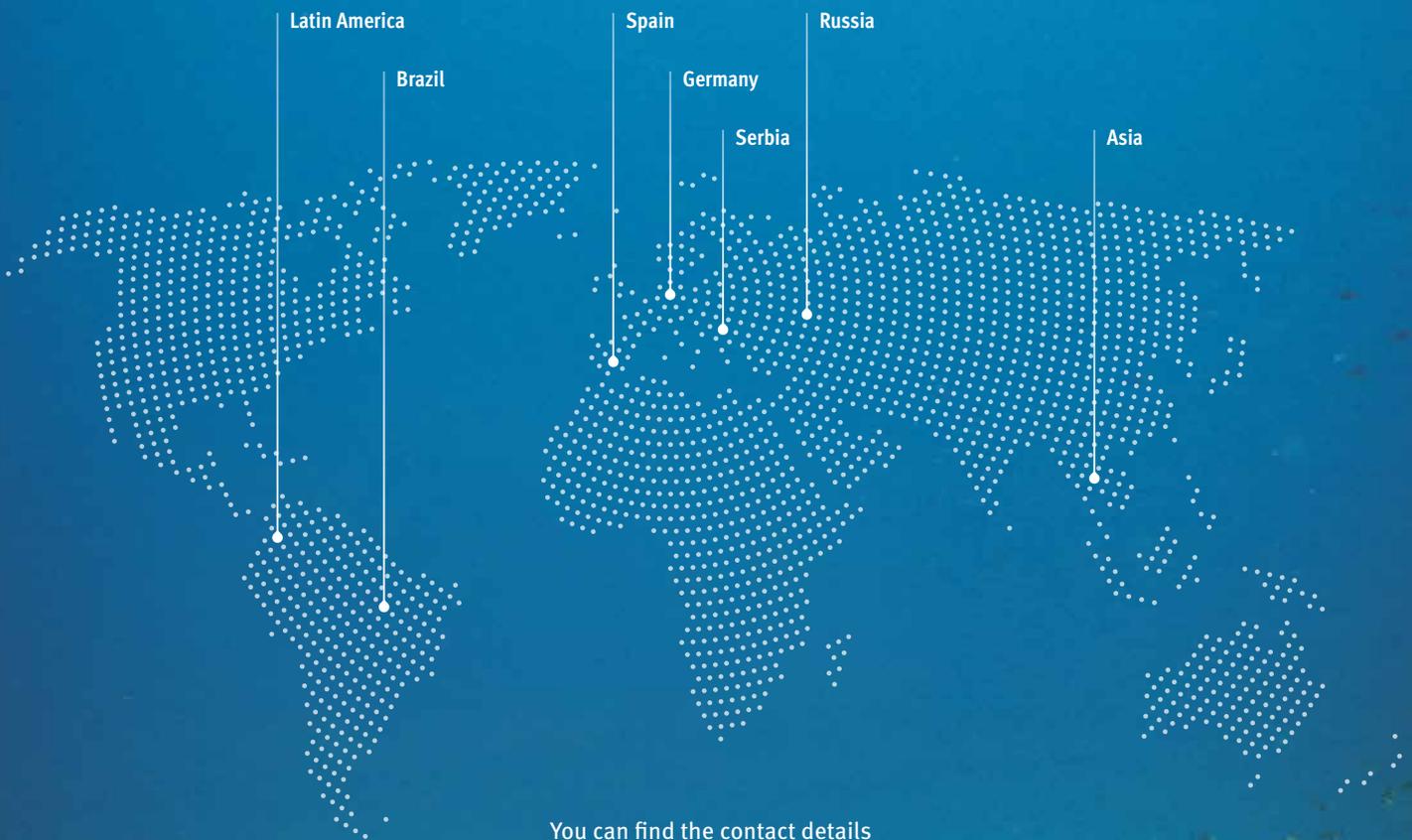
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Scan the code below
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about Chriwa

