

A close-up photograph of a middle-aged man with grey hair and a beard, wearing a white lab coat over a blue and white striped shirt and a grey tie. He is looking towards the left of the frame, pointing his right index finger at a whiteboard. The whiteboard has some faint, illegible markings. The background is a bright, out-of-focus laboratory or industrial setting.

# WFI and Pure Steam in Best Quality

GENERATION, STORAGE, DISTRIBUTION  
AND MONITORING

"With BWT, you can turn water into solutions."

BWT's optimally available systems ensure that your processes are safe. You should have the best service – and so you should choose BWT.

#### EXCELLENCE IS OUR STANDARD

Is standards-compliant water quality ensured every second? Does the manufacturing process meet state-of-the-art requirements regarding efficiency, sustainability and cost-effectiveness? BWT builds, delivers and installs convincing turnkey solutions and uses a wide range of proven standard systems.

#### EXCEPTIONAL PRODUCTION

Another advantage: our production sites. BWT handles its own development, production, inspection and documentation all over the world – from proven EDI modules to completely pre-qualified, performance-tested, completely pre-assembled systems for Purified Water and Highly Purified Water, Water for Injection (WFI) as well as Pure Steam.

## WE GENERATE PURE CONFIDENCE

Critical Utilities – the simplest thing in the world? Not for your production requiring Water for Injection (WFI) and Pure Steam of the highest quality level and according to the international pharmacopoeia. That is why you should place your confidence in a partner that accepts this challenge in full – from engineering via manufacturing to the life cycle service: BWT Pharma & Biotech.

#### COMMUNICATING EFFICIENTLY

From pre-treatment to the Point of Use: BWT implements turnkey solutions for your Critical Utilities project – in the fastest way possible and with a central project manager as your responsible contact person.

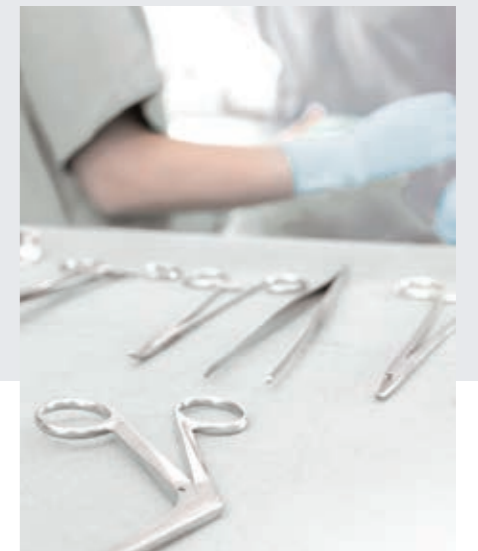


#### TWO PROCEDURES, EFFICIENT PROCESSES

WFI is the critical raw material for pharmaceutical production. The qualities at the Point of Use are regulated in the international pharmacopoeia, such as USP, Ph. Eur. and JP. For a long time, the Ph. Eur. prescribed distillation as the only method for the production of WFI. Recently this was expanded – as it was in other pharmacopoeia as well – to include cold production procedures for the production of WFI. BWT has many years of experience using both techniques.

#### BECAUSE LIVES ARE AT STAKE

In complex applications, it is not the individual expert that is important but the effective cooperation of many different participants. BWT's global team has impressed its customers for decades and has completed thousands of successful projects around the globe.



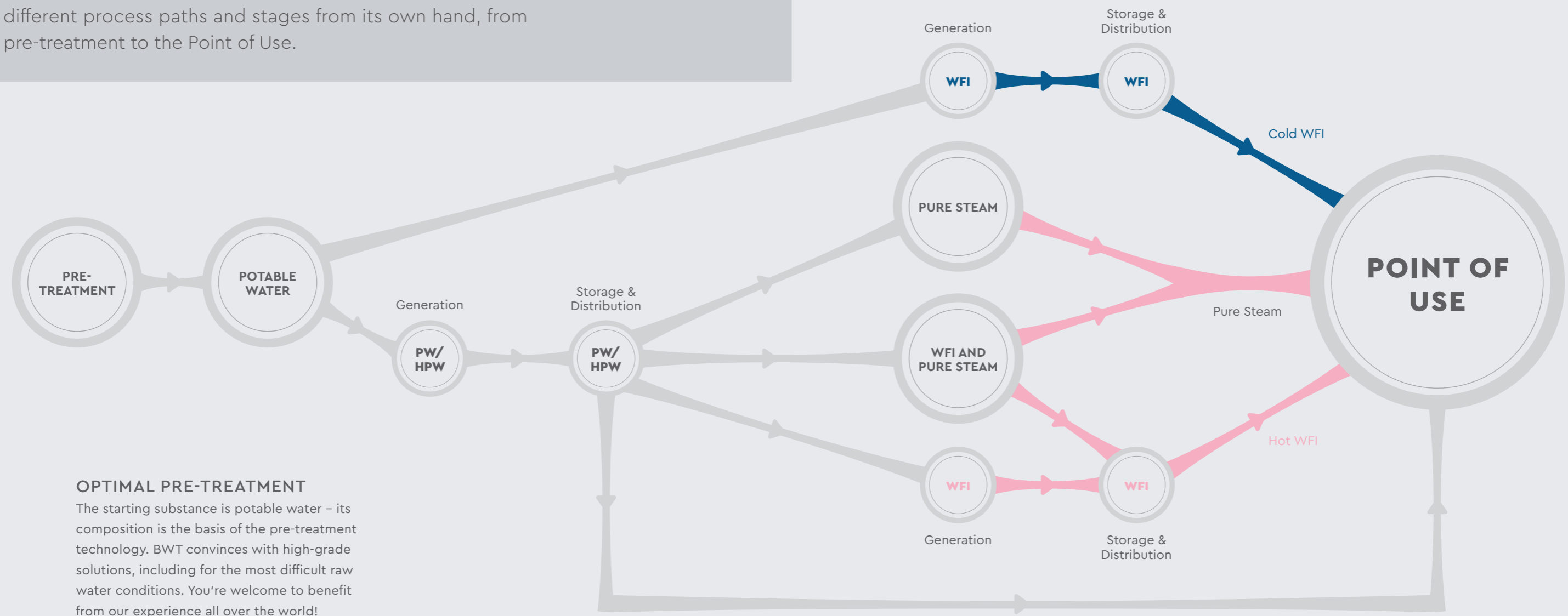
# COMPLETE SOLUTION FOR WFI AND PURE STEAM

Generating, storing and distributing WFI and Pure Steam made from potable water or Highly Purified Water – it takes experience and process knowledge to achieve this demanding objective: to the point, conform, 100 percent reliable utility quality. BWT offers different process paths and stages from its own hand, from pre-treatment to the Point of Use.



## STORAGE AND DISTRIBUTION INCLUDED

WFI must be stored and distributed in a way that assures its quality is preserved. A challenge that you can easily leave to BWT's integrated storage and distribution system. The solution is called LOOPO. The system analyzes, sanitizes, monitors, controls and documents the complete process – fully automatic.



## OPTIMAL PRE-TREATMENT

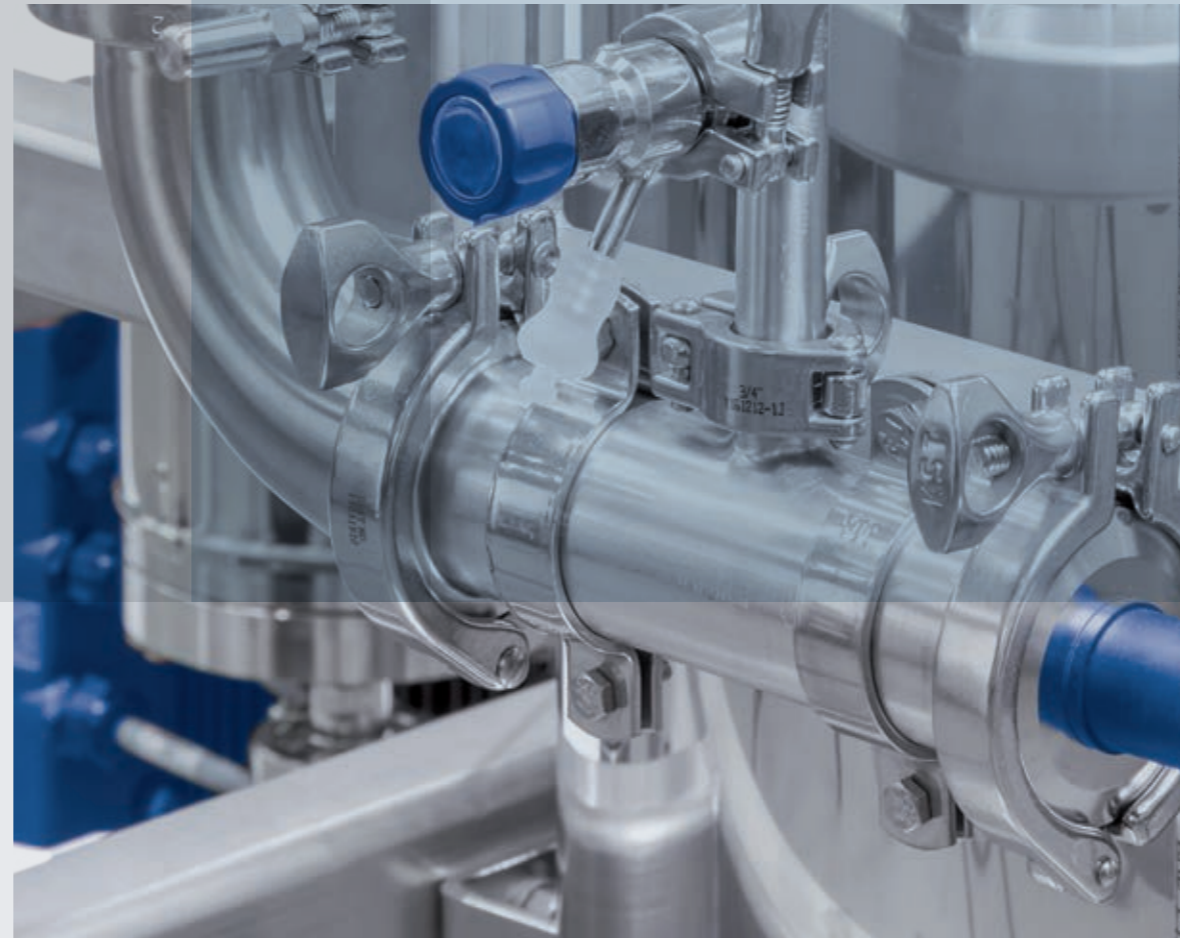
The starting substance is potable water – its composition is the basis of the pre-treatment technology. BWT convinces with high-grade solutions, including for the most difficult raw water conditions. You're welcome to benefit from our experience all over the world!

# FULLY AUTOMATIC TO PERFECT RESULTS

MULTITRON, MULTISTILL, VAPOTRON, COMBITRON – these are the top performers for WFI and Pure Steam generation at the latest technological standard. LOOPO H takes on the hot storage and distribution of the WFI. Use these components to create a highly efficient and reliable complete solution – exactly coordinated to the scale of your needs.

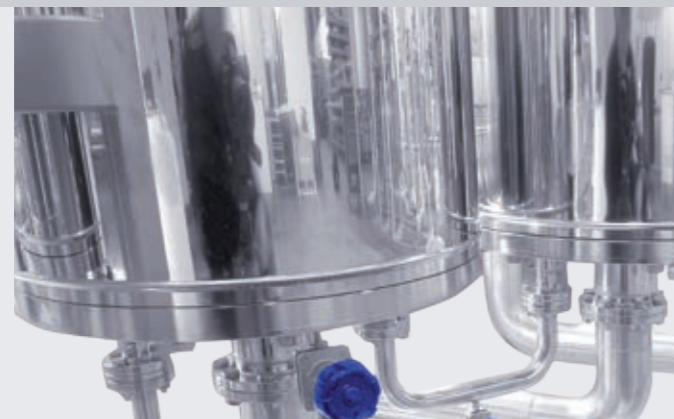
## LOOPO H

Turnkey, high-grade distribution system for cGMP-compliant storage and distribution of WFI. LOOPO H also takes on the monitoring and control of hot WFI loops.



## COMBITRON

A particularly economic way to combine the generation of WFI and Pure Steam: With COMBITRON, you will not only reduce your investment costs, but also the required footprint by up to 30 percent in comparison to separate WFI and Pure Steam systems.



## MULTITRON

Efficiency through flexibility – with MULTITRON, variable performance requirements are at your disposal. The multi-column distillation system is particularly economic at producing WFI in a natural circulation procedure – both for large and small quantities.

## MULTISTILL

The robust falling film distillation system provides continuous WFI generation. With patented integrated pre-heating and separating system for long lifecycles with continuous high performance.



## VAPOTRON

Fast and comfortable while yielding desired results: The Pure Steam generator VAPOTRON offers a convincing option due to its precise pressure regulation and excellent Pure Steam quality in accordance with EN285.



MULTITRON uses the natural circulation procedure – for maximum operational reliability. The integrated degassing unit results in an even lower conductivity of your WFI.

#### EFFECTIVE SELF-MONITORING

A MULTITRON system monitors, controls and documents your distillate automatically and permanently. Distillates with, for example, excessively high conductivity or insufficient temperature are automatically discarded.

# MULTITRON PERFORMANCE BROUGHT IN ROW

Generating WFI using distillation – at small or large scales, and as energy-efficient as possible: Multi-effect distillation system in the MULTITRON series are perfectly designed to meet these requirements. With one or eight columns, according to requirements, budget and level of desired efficiency.



#### TUBE BUNDLE HEAT EXCHANGERS

Advantage BWT: Multitron's unique double-plate tubular bundle heat exchanger is installed in each column completely without a holding bracket, i.e. without any constricting fixing mechanism. This leaves the heat exchanger enough room to expand. This free space prevents thermal-mechanical strain, which in turn benefits the system's lifecycle.

Material quality as a factor: orbitally welded seams and smooth surface polishing increase the functional reliability and hygiene of the system.



Power output regulation of 20 to 100 percent and state-of-the-art control technology ensure optimized, energy-efficient operation.



# MULTISTILL THE ECONOMY OF PUREST WATER

The MULTISTILL falling film distillation system continuously generates WFI – at the highest level of cost-effectiveness. The robust system processes a surprisingly broad range of feed water qualities. The basis of this tolerance is a completely optimized and patented construction in which the distillation process takes place. The system covers a performance up to 13 m<sup>3</sup>/h.

Both the pre-heating system, as well as the 3+ separation system are unique and integrated in the columns. This improves the performance and extends the lifecycle of the system.

### 3+ TECHNOLOGY

In the 3+ separation system, an intelligent construction uses gravitational and centrifugal forces to generate the purest WFI reliably and under all kinds of conditions – with an amazingly broad range of feed water qualities.



### LOAD CHANGES HANDLED OPTIMALLY

A unique advantage of the BWT brand: Due to a pre-heating unit integrated in the columns, the falling film evaporator can adjust extremely well to load changes, while the performance can be regulated comfortably and seamlessly via the heating steam pressure and feed water volume.



### CLEANER THAN THE STANDARDS REQUIRE

The WFI generated in the MULTISTILL not only meets the current specifications of the USP, Ph. Eur. as well as other pharmacopoeia, but clearly exceeds them.

# VAPOTRON THE INDESTRUCTIBLE PURE STEAM GENERATOR

Robust, long-lasting and proven in hundreds of applications worldwide: VAPOTRON, the reliable Pure Steam system for the generation of sterile and pyrogen-free Pure Steam. The compact construction saves space, a large panel facilitates the operation using validated AQU@VIEW software.



The intelligent construction on a stainless steel frame means less space is required for the piping.

## COST-EFFECTIVE AND POWERFUL

VAPOTRON works like the first column in a multi-effect distillation system. Advantages: low energy consumption, very regular Pure Steam pressure fed into the Pure Steam network, low pressure fluctuations even at high removal volumes.

Very fast generation, highest utility quality, precise pressure regulation – the system made of 316L leaves nothing to be desired.



VAPOTRON has proven itself as a stand-alone system for the particularly economic production of Pure Steam.

## BROAD RANGE OF APPLICATIONS

VAPOTRON systems are true all-rounders and prove themselves in the sterilization of systems, tanks and piping as well as other applications in the cGMP area. For requirements to sterilize autoclaves, VAPOTRON systems can also be equipped with an additional degassing stage to reliably comply with the quality requirements according to EN285.



The savings in investment costs and space can amount to up to 30 percent when you combine WFI and Pure Steam generation in one system: COMBITRON.

#### INDIVIDUALLY PROGRAMMABLE

Using AQU@VIEW, COMBITRON is easy and comfortable to operate. The SPS control with touchscreen panel handles the complete monitoring of the system.

# COMBITRON WFI & PURE STEAM COMBINED EFFICIENTLY

Low investment costs, less space required: Combine a WFI system with a Pure Steam system instead of investing in two separate systems – COMBITRON. The special feature of this system is a specially designed first column that makes it possible to use PS and WFI at the same time. The robust natural circulation procedure used in the COMBITRON guarantees maximum reliability, even at high loads.

#### DOUBLE THE LOAD? ANY TIME!

COMBITRON systems are customized and adjusted to the required volume of WFI or PS. A ratio of 2:1 to 1:4 is possible. The generation can take place in parallel or alternating.



#### LONG LIFECYCLE

In the natural circulation procedure, the heat exchangers of all systems are completely immersed in feed water – this prevents tension, thermal-mechanical stress, prevents wear on the equipment and extends the lifecycle.





# LOOPO H HOT FOR MAXIMUM HYGIENE

With LOOPO H, you can store and distribute your WFI hot and cGMP-conform. The turnkey distribution system regulates the WFI-temperature, monitors and controls the water quality in the ring circuit system and offers options for sterilization at 121°C to the Point of Use.

## CLEAN FINISH

Loopo H is arranged as a rack in order to save space – a compact alternative to conventional individual devices. The „H“ means that the device handles the hot storage and distribution of WFI. A speed-controlled pharmaceutical-compliant conveyor pump ensures an optimal adjustment to the hydraulic ratios in the distribution system.



All LOOPO systems are equipped with high-grade calibrated measuring equipment.

## SELF-MONITORING

The system keeps the temperature of the entire ring circuit and the tanks at a constant temperature, e.g. 65°C or 80°C. A sterilization with 121°C superheated water is also possible as an option. Cold removals can also be realized using PoU coolers.

## PERFECT INTERACTION

LOOPO H and WFI generators such as COMBITRON are optimally coordinated to each other: uniform components, uniform AQU@VIEW control, optionally uniform graphic visualization and a uniform documentation and validation package facilitate the process of acquisition, setup, official approval and operation.



## CONNECTION-READY

All LOOPO H systems are pre-assembled, fully functional, pre-tested and pre-qualified by being subjected to a Factory Acceptance Tests (FAT).

## SETTING PRIORITIES

The AQU@VIEW Point of Use Manager makes it possible, provided suitable technology is used, to prioritize or to block tapping points in order to optimally supply the PoU with WFI and protect persons and processes. With corresponding additional equipment, you can set the temperatures needed at the tapping points.



LOOPO H is designed for hot water storage.

"Let us do it -  
for you!"



## SERVICE CREATING VALUE FROM WATER

Your Critical Utility system is operating in the middle of your production? That makes system availability all the more important as a factor. Good to know: Even after you have started using the system, BWT will still be by your side, as a reliable, competent partner. Our AQU@SERVICE offers all services related to the operation of your system as a one-stop shop covering the complete life cycle of your system.



### QUALIFICATION GIVES YOU WINGS

Safe system operation in a regulated environment: Only the qualified service of the original manufacturer can ensure this in the long term. AQU@SERVICE will provide you with „waterproof“ documentation. Your administration and coordination efforts will be reduced significantly, and external audits and inspections will be carried out quickly and efficiently.



#### AVAILABILITY

Vitally important for you  
– and thus also for BWT.



#### PERFORMANCE

More performance with  
lower energy consumption!  
Sustainability through  
optimum use of resources.



#### QUALITY

For our products.  
For your processes.  
For all our lives.



#### SAFETY

Enjoy the good feeling of  
being in the best hands!

### QUICK SERVICE AT ANY SCALE

We're aware of flexibility as a competitive factor. In an emergency, we'll be on site in a flash, no matter where in the world. The agility principle also applies to more complex endeavors. For example, BWT can qualify, validate and document your conversion project. Or would you rather invest in a new system? AQU@SERVICE Upgrade will quickly answer any questions you may have and manage the recommended measures as a matter of routine.

### EXPERIENCE DICTATES WE DON'T TAKE HALF-MEASURES

BWT employs over a hundred specialized service engineers worldwide. Decades of experience make all the difference. One result among many: the manufacturer-independent AQU@SERVICE Audit. A BWT service engineer determines the condition, performance and potential of your system and recommends concrete measures to be taken to optimize your system – an interesting option even for users of third-party brands.



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FOR YOU AND PLANET BLUE.