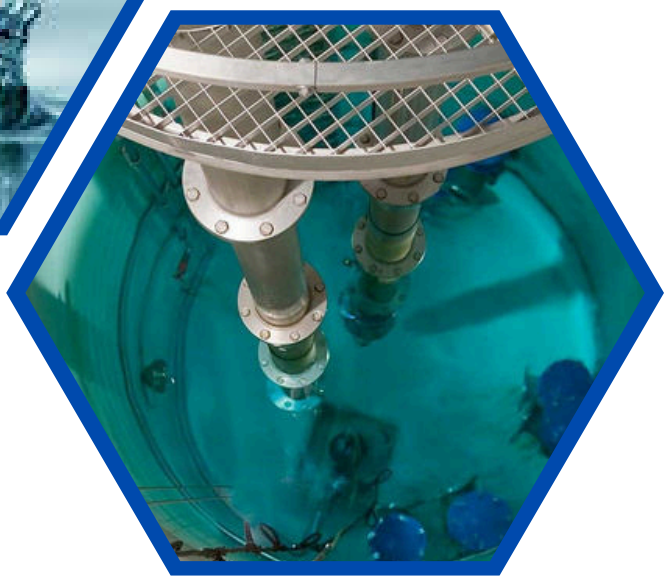


LifeTech

WATERSOLUTIONS

Vibrant Solutions for a Pure Future

MADE IN GERMANY

WATER TREATMENT & WELL REGENERATION

SUSTAINABLE AND EFFICIENT

Sustainable strategies for an essential resource

LifeTech is a values-driven organization committed to the mission of revolutionizing our utilization of one of our most vital resources—water. We emphasize facilitating access to clean drinking water and implementing efficient wastewater treatment solutions.

OUR PHILOSOPHY

Life Tech Watersolutions is dedicated to leveraging cutting-edge ultrasound technology to sustainably safeguard global water resources. The vision is unequivocal: a world in which clean water is universally accessible, and microplastics along with other pollutants are effectively eliminated in a resource-efficient manner.

The ongoing advancement of technology, strong collaboration with research institutions, and the enhancement of environmental consciousness are fundamental components of the company's strategy.

POLLUTANTS
IN OUR WATER SUPPLY

Studies indicate that as many as 700,000 microplastic particles per square kilometer can be identified in German rivers, while pharmaceutical residues are present in 75% of surface waters.

These contaminants pose a threat not only to aquatic ecosystems but also to human health, as they infiltrate the food chain through drinking water.

Conventional water treatment methods, including filtration, sedimentation, and biological processes, are increasingly encountering limitations in their ability to eliminate micropollutants. Hormones and antibiotics, in particular, are frequently found in trace amounts; however, even minimal concentrations can have significant impacts on the environment and living organisms. Additionally, pathogenic microorganisms and multi-resistant bacteria present an escalating threat to public health.

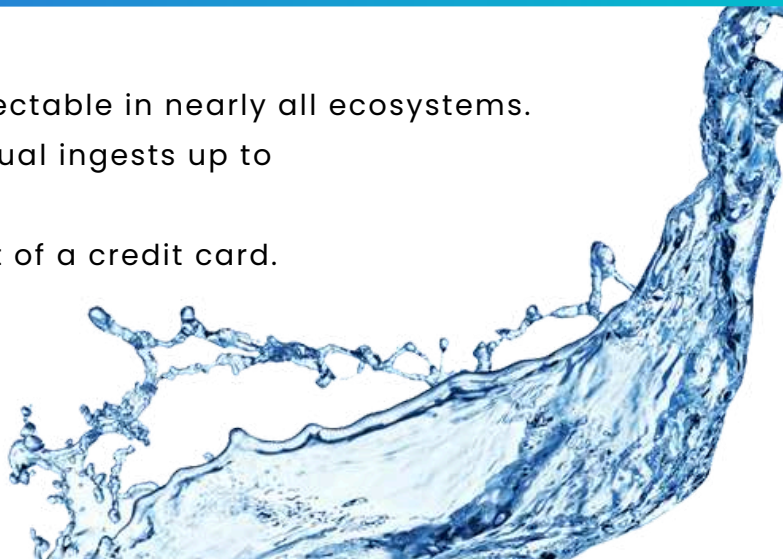
Innovative technologies are essential to guarantee sustainable and comprehensive water purification.

Particular attention is directed towards the ongoing discourse regarding the implementation of a fourth treatment stage in wastewater treatment facilities, which is deemed essential for addressing the micropollutant issue. Ultrasound-based systems represent a vital component for a clean and secure water future.

Microplastic particles (<5 mm) are now detectable in nearly all ecosystems. Research indicates that the average individual ingests up to

5 grams of microplastics weekly –

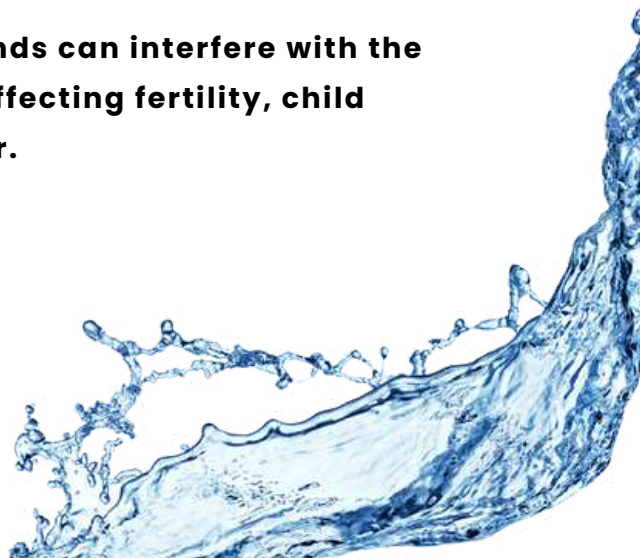
That is equivalent to the weight of a credit card.

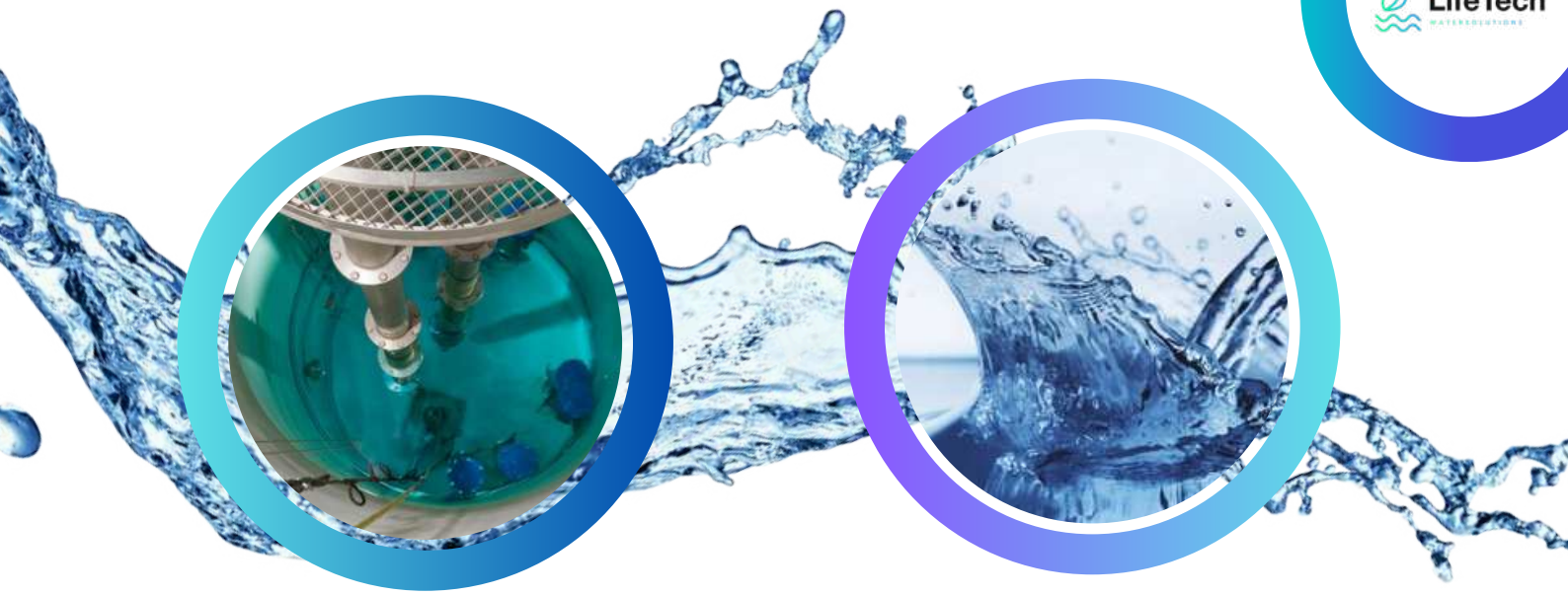


OUR TECHNOLOGY REMOVES AMONG OTHER ITEMS, THE FOLLOWING POLLUTANTS

Microplastics, antibiotics, hormones, viruses, bacteria, PFAS, pharmaceutical residues, microorganisms, and a multitude of other substances.

- **Pesticides and herbicides: These chemical agents are employed in agriculture and may leach into groundwater through soil and surface water. They can disrupt reproductive function, harm the nervous system, and possess carcinogenic properties.**
- **Nitrate and nitrite: Nitrate and nitrite primarily originate from agricultural fertilizers and manure. In the body, they can be converted into nitrosamines, which are known carcinogens. Additionally, nitrate can diminish the oxygen-carrying capacity of blood in infants, resulting in the condition commonly referred to as "blue baby syndrome."**
- **Drug residues: Pharmaceuticals and their degradation products infiltrate waterways through wastewater. They can foster the emergence of bacterial resistance and adversely affect both flora and fauna.**
- **Microplastics: Tiny plastic particles originating from cosmetics, clothing, and various products can infiltrate waterways through wastewater. These particles may be consumed by fish and other organisms, thereby entering the food chain.**
- **Per- and polyfluorinated chemicals (PFAS) are utilized in a range of industrial products and can infiltrate the environment through air and water. These substances are persistent, bioaccumulative, and may adversely affect human health, including thyroid function, immune system performance, and reproductive capabilities.**
- **Hormonally active substances: These compounds can interfere with the hormonal equilibrium in the body, adversely affecting fertility, child development, and increasing the risk of cancer.**





WELL-REGENERATION

WATER-PURIFICATION

A TECHNOLOGICAL ADVANCEMENT NUMEROUS ADVANTAGES

- More economical than traditional methods
- Eco-friendly - devoid of chemical usage
- Reduces substantial energy expenses
- for all wells and water connections
- Inactivation of detrimental components
- Safeguards the well structure and piping.
- Save sustainably—without activated carbon, chemicals, or disposal expenses.

Completely Eco-Friendly

OUR INNOVATIVE AND PATENTED TECHNOLOGY IS FOUNDED ON

- HIGH-FREQUENCY ULTRASOUND
- MODIFIED UV UNITS
- OZONE SYSTEMS

Our systems are entirely environmentally sustainable. We refrain from utilizing harmful chemicals or other substances for water treatment or well regeneration.

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WATER PURIFICATION HIGH ULTRASONIC FREQUENCY

DISTINCTIVE TECHNOLOGY CAVITATIONCLOUD FOR WATER PURIFICATION

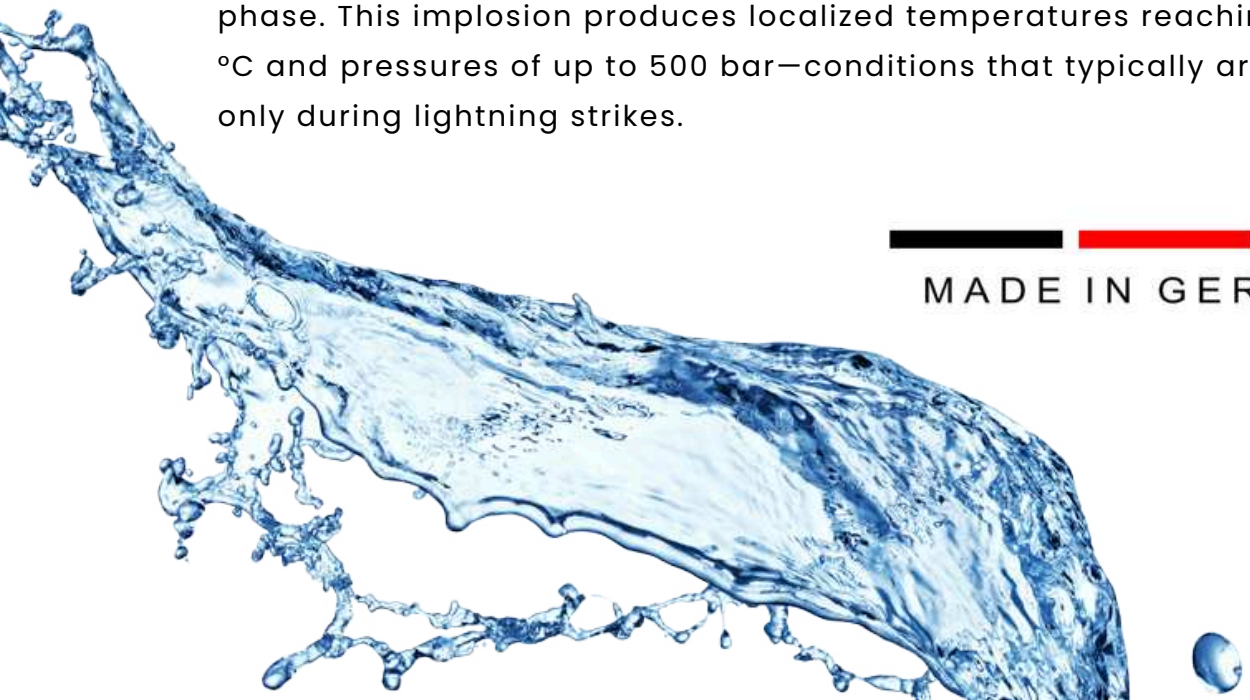
Sustainable, Efficient, and Cutting-Edge

Years of development by our German engineering team are now evident in this distinctive and sophisticated technology. It effectively removes and inactivates organic pollutants, including viruses, bacteria, and pharmaceutical residues such as antibiotics and hormones. The elevated temperatures and pressures produced during cavitation enable us to diminish minute inorganic particles, such as microplastics.

Through the implementation of innovative processes, we not only guarantee a high level of water purity but also actively contribute to the protection of the environment and human health. Our systems operate without the use of chemicals, establishing a solid foundation for sustainable water utilization.

Physical principles and mechanisms

Ultrasound denotes sound waves with frequencies exceeding the human auditory range (above 20 kHz). Elevated frequencies are employed specifically in water treatment to activate physical and chemical processes. The energy from ultrasonic waves is utilized to dissolve and fragment contaminants. The fundamental principle is cavitation: the sound waves generate minute gas bubbles in the water, which expand during the low-pressure phase and implode with significant force during the high-pressure phase. This implosion produces localized temperatures reaching up to 5000 °C and pressures of up to 500 bar—conditions that typically arise in nature only during lightning strikes.



MADE IN GERMANY

PURIFY WATER WITH HIGH FREQUENCY ULTRASONIC

LifeTech

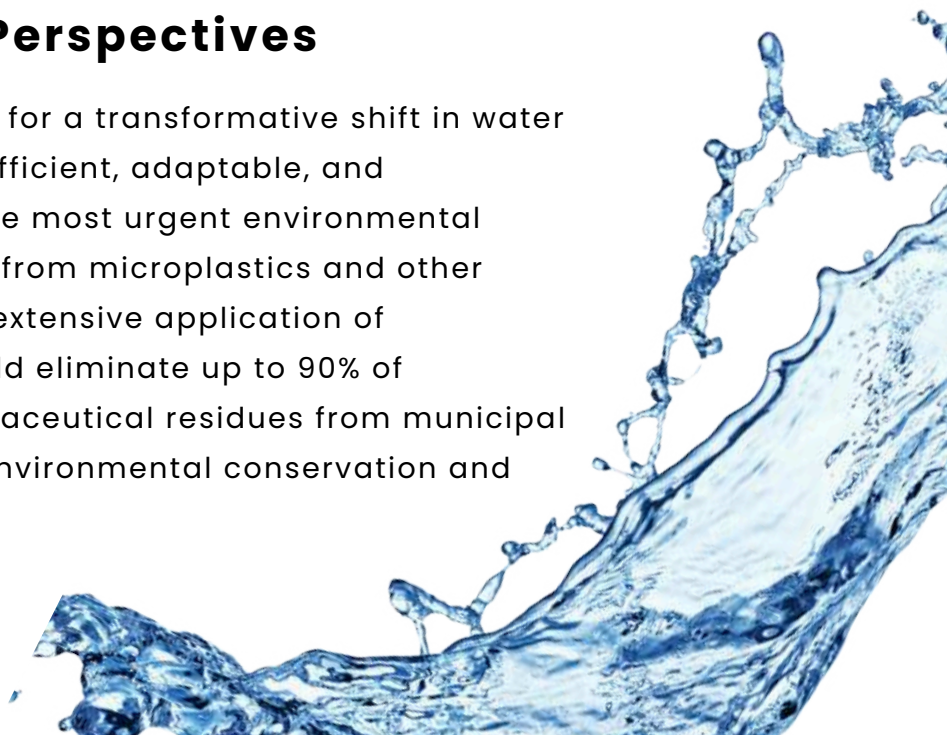
SUPERIOR TO TRADITIONAL METHODS

Procees	Micro-plastics	Hormone	Antibiotics	germs	Operational expenses	Utilization of chemicals
Sand	low	extremely low	extremely low	minimal quantity	low	no
Activated carbon	medium	medium	medium	minimal quantity	medium	no
Ozone	minimal quantity	high	high	high	high	and
Ultrasonic	high	high	high	extremely high	mittrl	no

The Future of Water Treatment:

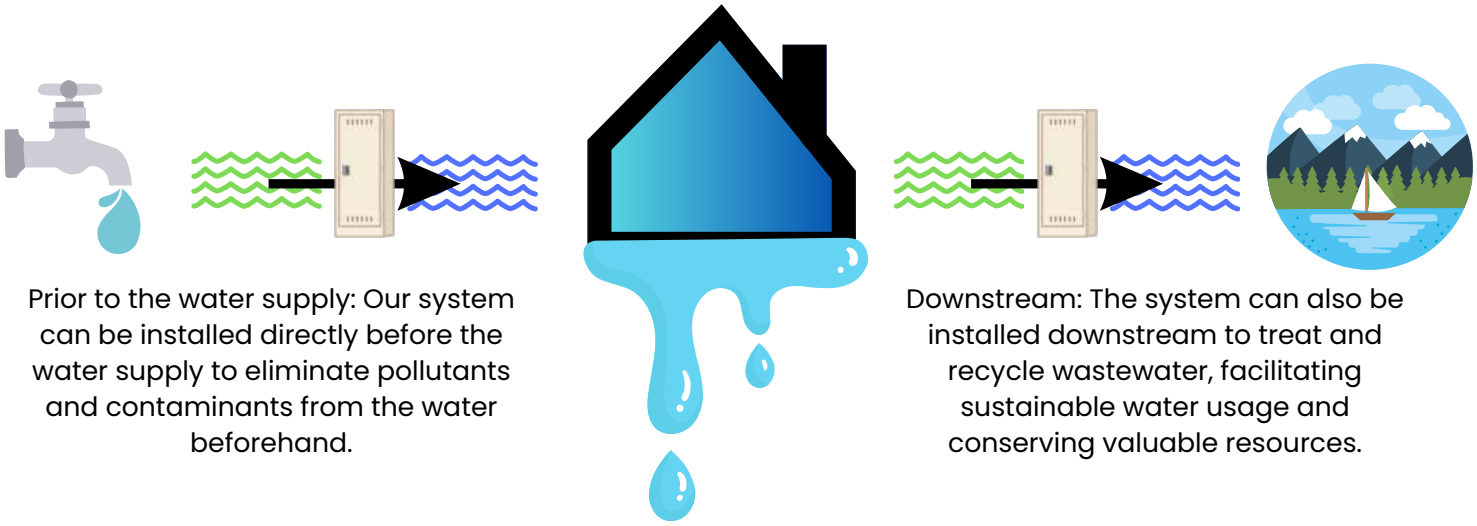
Current Status and Perspectives

Ultrasound technology is poised for a transformative shift in water treatment. It presents a highly efficient, adaptable, and sustainable solution to one of the most urgent environmental challenges of our era—pollution from microplastics and other contaminants. Statistically, the extensive application of contemporary technologies could eliminate up to 90% of microplastics and 80% of pharmaceutical residues from municipal wastewater. The prospects for environmental conservation and public health are substantial.



TAP WATER & WASTEWATER

Our most extensive system is capable of treating up to 100,000 liters of tap water, process water, and wastewater each hour. We can tailor your system, even on a smaller scale, to meet your specific requirements.

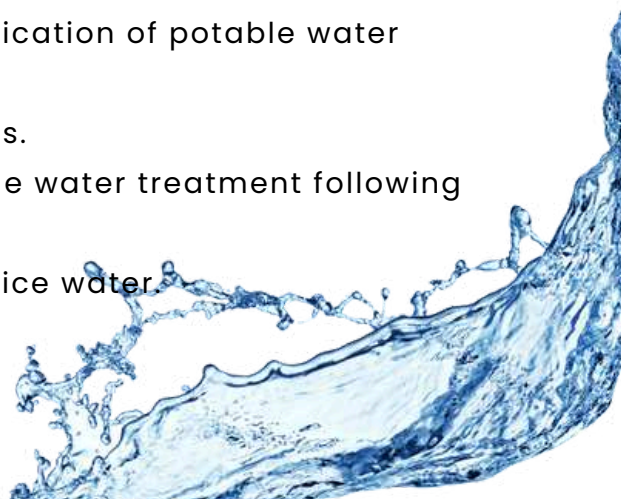


Prior to the water supply: Our system can be installed directly before the water supply to eliminate pollutants and contaminants from the water beforehand.

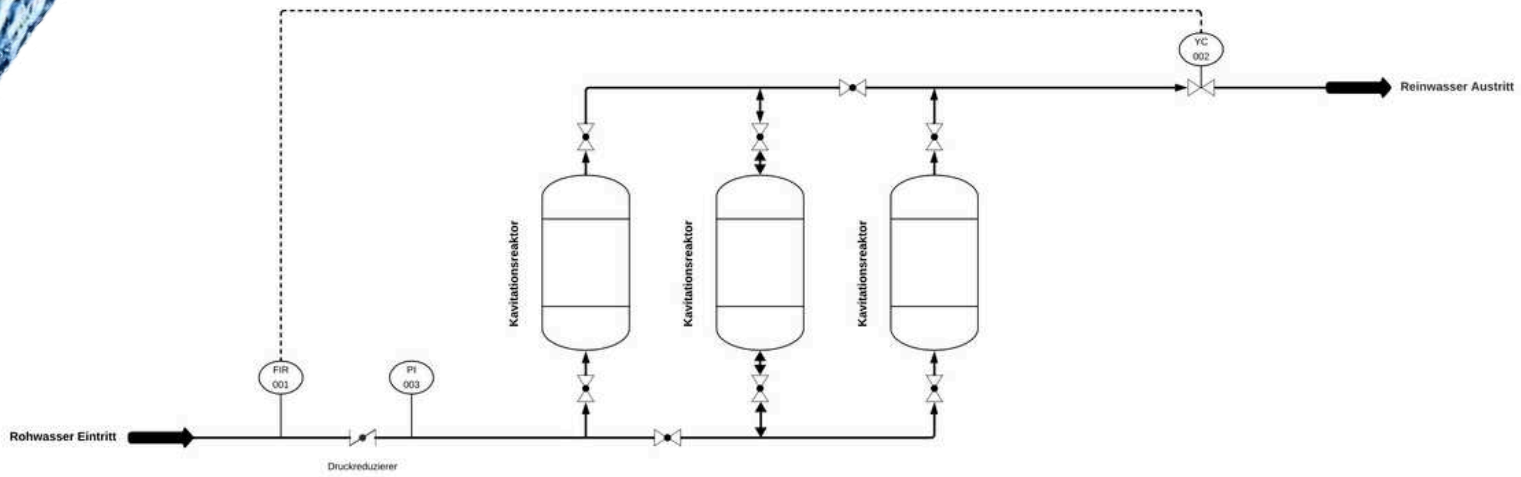
Downstream: The system can also be installed downstream to treat and recycle wastewater, facilitating sustainable water usage and conserving valuable resources.

AREAS OF APPLICATION ENCOMPASS

- **Cruise ships:** Guaranteeing the quality of tap water on board and the elimination of pollutants in wastewater.
- **Agriculture**: Water purification for agricultural operations and irrigation systems.
- **Wastewater treatment facilities:** Effective wastewater treatment and purification.
- **New construction initiatives**: Ensuring access to clean water in expanding urban regions.
- **Textile industry:** management of process water and wastewater treatment.
- **Clinics**: Sterile water for healthcare facilities.
- Urban groundwater wells: safeguarding and purification of potable water sources.
- **War zones**: Mobile water supply in conflict regions.
- **Environmental disasters**: Prompt and dependable water treatment following natural calamities.
- **Hotel amenities:** Potable drinking water and service water.



FLOWCHART (PFD)



To treat the introduced water, a microbubble or cavitation cloud is generated within the ultrasonic reactor. Our proprietary technology effectively inactivates organic pollutants, including viruses, hormones, and pharmaceutical residues. Due to the significant temperature differentials (up to 5,000 K), microplastic particles, among other substances, are transformed into carbon.

SUPPLEMENTARY MODULES

The ultrasound systems can be enhanced by us with the following modules customized for the process.

- Energy-efficient LED ultraviolet-C lamps
- Ozone enrichment system
- Desalination facilities
- Pre- and post-filtration for solid particulates
- Modules for revitalizing potable water

PLANNING YOUR SYSTEM

Customized to your specifications

We create bespoke systems meticulously designed to address your unique requirements. In addition to our standard models, we are equipped to fulfill all demands, irrespective of project scale. Our planning team will transform your visions into tangible outcomes.

This encompasses a thorough analysis of your current system and water quality. We also provide extensive service and maintenance for your equipment, although such interventions are seldom necessary in most instances. Our objective is to guarantee that your systems consistently function efficiently and reliably.

INSTALLATION

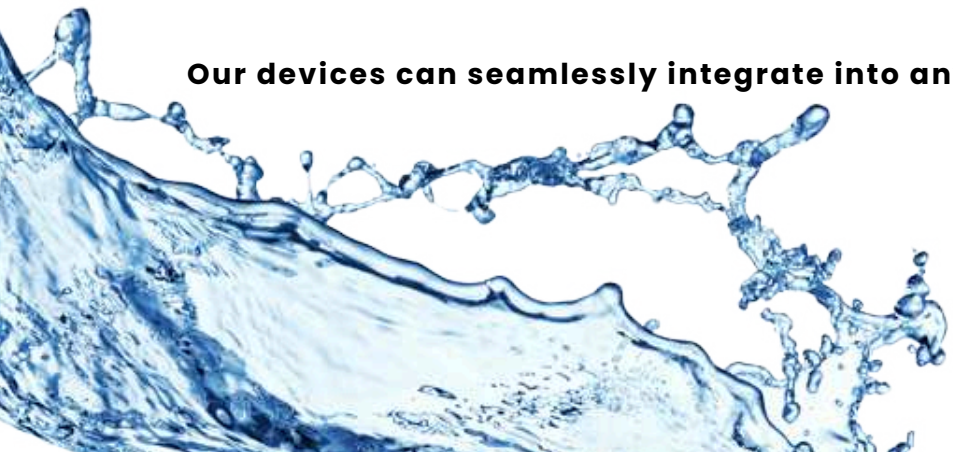
Global installation conducted by our specialists

Our modules can be installed globally by our skilled technicians. The entire installation process is streamlined and generally requires only a brief period.

Professional and straightforward

We assure a professional and efficient installation, enabling you to swiftly reap the benefits of our technologies. Our team is always available to facilitate a seamless commissioning process.

Our devices can seamlessly integrate into any existing system.



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HIGH FREQUENCY ULTRASONIC WELL PROBE

GROUNDWATER WELLS REGENERATION PROBE

Efficiently clear obstructed wells using high-frequency ultrasound.

Problem:
Throughout the operational lifespan of a well, deposits accumulate within the pore spaces of the filter gravel pack. This accumulation results in a gradual decline in well performance and may ultimately lead to the well drying up entirely. The removal of these deposits poses a challenge, as the impacted areas are not mechanically accessible.

Previous solutions:
Numerous techniques exist for well cleaning, encompassing both chemical and hydromechanical approaches. Nonetheless, these methods present environmental hazards and may compromise the integrity of the well materials.
.

Our solution: High-frequency ultrasound

Our process employs high-energy ultrasound to liberate the filter gravel pack from performance-impairing deposits. Ultrasonic waves penetrate the pore spaces with minimal obstruction, effectively disintegrating deposits and biofilms. This effect reaches deep into the filter gravel pack and also cleanses obstructed pore channels.

Advantages of the process:

- Effective cleaning: Highly efficient elimination of deposits and biofilms.
- Environmentally sustainable: No chemical usage, no contamination of groundwater.
- Gentle cleaning: The well's material remains undamaged.
- Deep cleaning effect: Effectively penetrates deep deposits within the filter gravel pack.
- Versatile: Appropriate for wells of varying depths and diameters.

ULTRASONIC PROBE

FOR THE RESTORATION OF GROUNDWATER WELLS

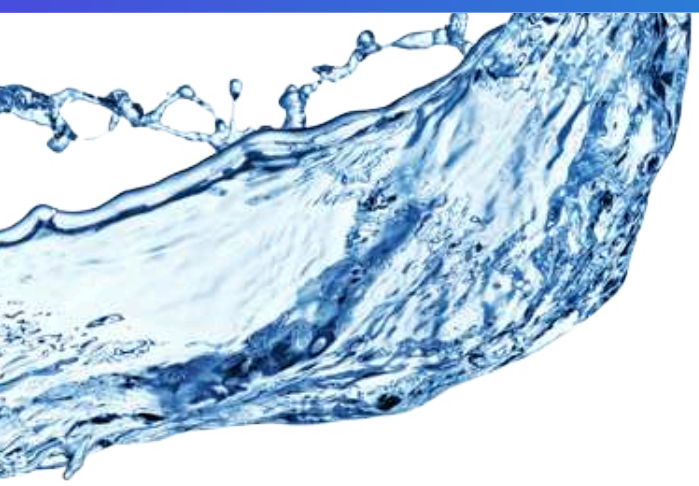
Our specially designed probe for cleaning groundwater wells is unparalleled globally. It penetrates deep into the filter gravel without the use of chemicals or high-pressure equipment. This innovative approach enables us to maintain the integrity of the well structure and considerably prolong its lifespan.

The probe functions at elevated ultrasonic frequencies beginning at 20,000 Hz and can efficiently clean wells with a diameter of up to 600 mm and a depth of up to 200 meters. The single-use application of the probe in the shaft also significantly conserves our time.

240 cm / ca 80 kg

Designed, developed and made in Germany

No chemicals are necessary, and the probe is entirely environmentally friendly. This eco-conscious technology guarantees a gentle cleaning process that safeguards both the well structure and the surrounding environment.



CLEAR ADVANTAGES

- Eco-friendly - free from chemicals
- Safeguard the fountain
- More economical than traditional methods
- Wells exhibit greater longevity.
- Manufactured in Germany

GROUNDWATER WELLS REGENERATION ADVANTAGES

Efficient purification and rejuvenation:

- Removal of deposits and biofilms: Our high-frequency ultrasonic probe efficiently eliminates deposits, biofilms, and other contaminants that may compromise the performance and longevity of groundwater wells.
- Enhanced water quality: The removal of contaminants leads to a substantial improvement in water quality, yielding clean and safe groundwater.
- Enhanced water permeability: Ultrasonic treatment elevates the water permeability of the well bottom, leading to increased water flow and improved well productivity.

Sustainable and eco-friendly solution:

- Chemical-free: In contrast to traditional cleaning methods, our ultrasonic probe operates without the use of harsh chemicals, thereby safeguarding the environment and preserving water quality.
- Low energy consumption: Ultrasonic treatment is energy-efficient and utilizes considerably less energy compared to alternative cleaning methods.
- Extended service life: Our durable ultrasound probe is engineered for prolonged use and is distinguished by its longevity.

Distinctive selling propositions:

- High-frequency technology: Our ultrasonic probe functions at an exceptionally high frequency, facilitating enhanced cleaning and regeneration.
- Modular design: The probe's modular design facilitates flexible adaptation to various well shapes and sizes.
- Durable construction: The probe is crafted from premium materials and engineered for operation in demanding environments.
- User-friendly: The ultrasound probe is designed for ease of use and does not necessitate any specialized prior knowledge.

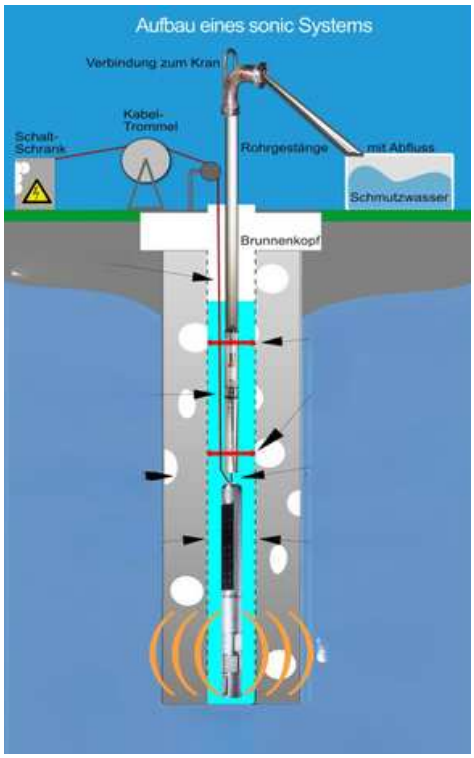
In a world where access to clean water is becoming increasingly limited, LifeTech Watersolutions AG positions itself as a leader in the battle against water scarcity and environmental degradation.

Our patented ultrasonic technology transforms well regeneration and water treatment, establishing new benchmarks in water management.

In contrast to traditional methods that frequently rely on harsh chemicals and contribute to environmental pollution, our technology offers a thorough and efficient cleaning process entirely devoid of chemicals. Robust sound waves effectively disintegrate deposits, biofilms, and contaminants, even in inaccessible areas, guaranteeing a gentle yet profound cleansing of pores.

GROUNDWATER WELLS REGENERATION PROCESS

Ultrasonic well regeneration resembles traditional methods, yet it provides considerable advantages. Below is a comprehensive description of the individual steps:



Preparation:

1. **Removal of the pump and riser pipes:** To facilitate access to the filter section, the pump and riser pipes are extracted from the well.
2. **Inspection with a television camera:** A television camera is employed to thoroughly evaluate the condition of the well and the filtration system. This facilitates the early detection of any damage or obstructions, enabling prompt repairs.
3. **Performance Test:** Prior to the actual cleaning, a performance test is conducted to ascertain the well's flow rate and water quality. These metrics serve as a benchmark for evaluating the effectiveness of the regeneration.

Cleaning:

- Mechanical pre-cleaning involves the initial removal of coarse dirt and deposits through mechanical means. This process can be facilitated, for instance, by utilizing a brush or a flushing pipe.
- Optional performance assessment: Following the mechanical pre-cleaning, an additional performance assessment may be conducted to quantify the impact of the pre-cleaning.
- Ultrasonic treatment: The essence of well regeneration lies in ultrasonic treatment. A high-frequency ultrasonic probe is maneuvered along the filter section from top to bottom. The sound waves efficiently dislodge deposits and biofilms from the surfaces of the filter gravel and the pore walls.
- Dirt removal: The contaminants dissolved by the ultrasonic treatment are promptly extracted following the procedure using an underwater pump. This pump is positioned directly above the ultrasonic probe.
- Sump cleaning: Ultimately, the sump cleaner is thoroughly cleaned to guarantee that no residues persist.

Afterwards**:**

- Optional camera inspection: To document the effectiveness of the cleaning and identify any remaining contamination, an additional camera inspection may be conducted.
- Performance Test: Upon completion of regeneration, a final performance test is conducted to assess the new flow rate and water quality of the well, thereby documenting the effectiveness of the intervention.
- Reinstallation of the pump and riser pipe: Upon completion of the regeneration process, the pump and riser pipes are reinstalled within the well.

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LifeTech-WaterSolutions.com

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TRT WORLD

Just 2 Degrees

Anadolu Ajansı

Deutsche Welle

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