



**ANI**  
WATER SOLUTIONS

# ANI Water Solutions Pvt. Ltd.

Sustainable Solutions for Water  
& Waste Water Treatment

*"In nature there are neither rewards nor punishments; there are consequences."*

*-Robert Green Ingersoll, 1833-1899*



## ANI Water Solutions

ANI Water Solutions India Pvt. Ltd. is an innovative enterprise offering bespoke and state-of-the-art solutions for the disinfection and treatment of fluids and surfaces. A joint-venture enterprise of two renowned Swiss clean-tech companies, AquaNetto Ltd. and IMETH Ltd., ANI Water Solutions specialises in the disinfection and treatment of air, water, waste water, and surfaces by means of ultraviolet irradiation in combination with complementary methods of treatment.

## Mission

ANI Water Solutions supports environmentally-friendly and socially-sustainable projects according to well-defined criteria with the goal of achieving the highest possible value on-site. To this end, we provide open-architecture, energy-efficient and cost-effective solutions for the treatment of air, water, waste water, and surfaces in the private, public, industrial and commercial sectors, according to the client's needs and requirements, local conditions, and environment. Specifically, ANI Water Solutions positions itself as a key player in the water treatment sector, bringing together multiple stake-holders, methods of treatment, markets and applications.

## Vision

Disinfection and treatment units and systems, which are respectful of and integrate well with their environment, contribute to further decreasing the negative environmental impact of treatment processes and increasing the efficiency of resource use. Socially sustainable solutions integrate all concerned parties, from public authorities, private clients and non-governmental organisations, to providers of peripheral products, specialists in complementary technologies, and of course, the end-user, with the aim of bringing together entire communities in order to guarantee open access to cleaned water and air for all. A sustainable approach to developing open-architecture solutions relies primarily on the inclusion of all stakeholders and the maximisation of value on-site.

## Quality

ANI Water Solutions is committed to providing solutions that satisfy the highest quality standards and meet the internationally recognised requirements of the German and Austrian regulatory agencies. At ANI Water Solutions commitment to quality and sustainability is paramount.





## Environmentally-friendly and sustainable solutions with complementary technologies

Environmentally-friendly treatment methods leave a negligible footprint on the environment. Disinfection by ultraviolet (UV-C) irradiation remains till-date the most effective, efficient, and economical physical method for the elimination of bacteria and viruses; it requires relatively few resources, negligible contact time, and generates no waste or harmful by-products. Nevertheless, water and air are often contaminated with more than just microorganisms; therefore, an environmentally-friendly, effective and efficient solution must combine the most appropriate complementary treatment methods in order to respond to different applications.

## Ingeniously simple designs and an open-architecture approach

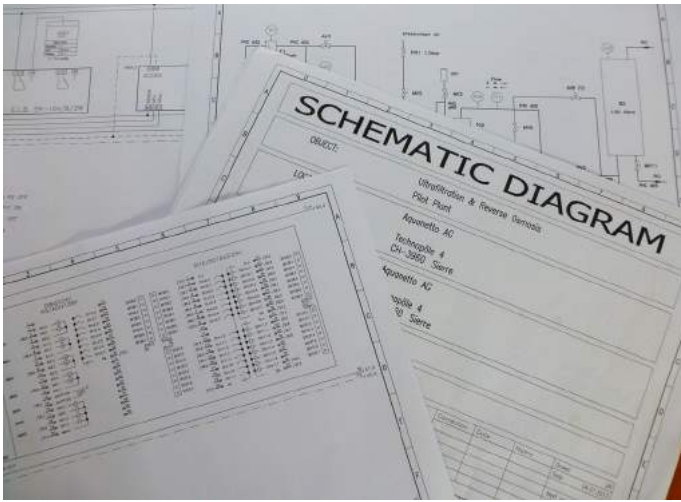
All solutions developed by ANI Water solutions are selective-modular in nature and are based on an open-architecture approach. Moreover, the selective-modular arrangement permits the integration of a variety of complementary treatment methods inter alia, physical methods such as filtration or ultrasound, or chemical methods such as flocculation or advanced oxidation processes. Each solution is customised to the specific application and needs of the end-user, maximising added-value on-site by creating local jobs, respecting the local environment, regional safety standards, and most importantly, by making the end-user independent and autonomous in the management and operation of their units and systems.



## Promoting a collaborative and participative approach with multiple stake-holders

At ANI Water solutions we blend the collective inter-disciplinary expertise of specialists in the domains of water and fluid hydraulics, biology and chemistry, information technology and electronics, marketing and analysis. Collaboration with industry experts in manufacturing ensures the quality of our unique solutions. Professors from technical universities and their staff support ongoing research and development, testing and accreditation. We equally value our relations with partners, suppliers, distributors, and clients; thus, transparency, honesty, and reliability form a cornerstone of our daily practices and work and enable the development of durable and fruitful cooperative relations based on trust, long-term investments and planning, and training.





## Solutions and services

At ANI Water Solutions we undertake the design, development, engineering, supply, installation, testing, commissioning and maintenance of bespoke water and waste water disinfection and treatment systems.

### Primary services include:

- Solution development
- Engineering of customised water treatment systems
- Integration of diverse combinations and complementary technologies
- Assembly of components, units, and systems
- Installation of units and systems
- After-sales service
- Consultancy

### Our secondary services are offered in collaboration with third parties:

- Water analysis
- Maintenance

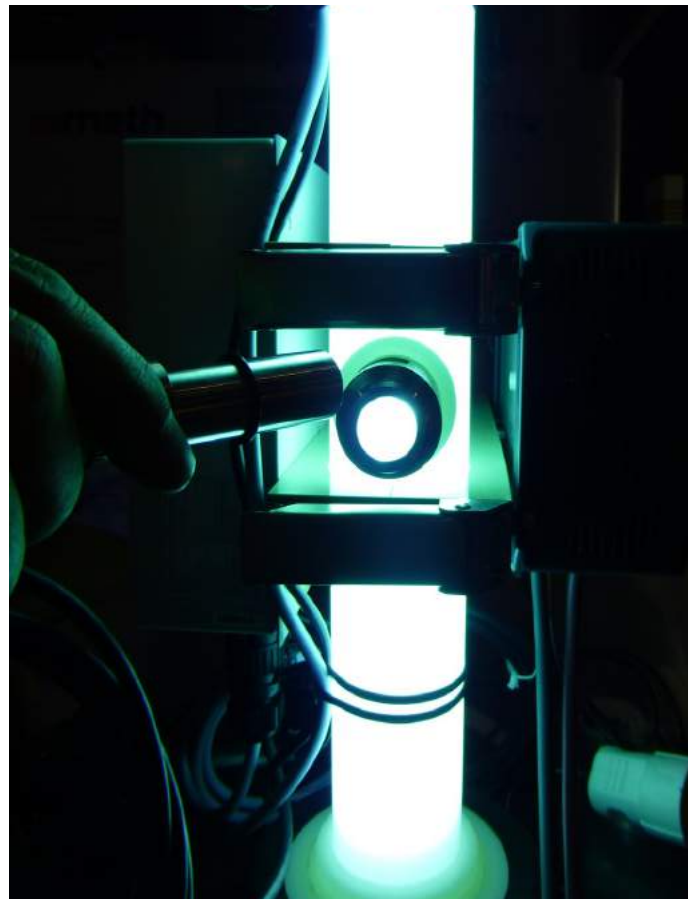


## Process Design

ANI Water Solutions' extensive in-house process knowledge, coupled with up-to-date technology, enables a range of process design services to be provided. A complete conceptual process design can be produced to meet a client's particular requirements; both P & I diagrams and complete functional design specifications can be produced as required.

## Mechanical Design

ANI Water Solutions also provides more traditional mechanical design services such as structural design, component details, fabrication and pipe work design, layout and general arrangements. These models enable clients and the respective planning authorities to get an accurate picture of the size and general layout of a project and generate added-value to engineering at an early stage



## Advanced UV-C disinfection units and systems

ANI Water Solutions UV-C disinfection units and systems are based on a selective modular approach and are ideal for new installations as well as retro-fits.

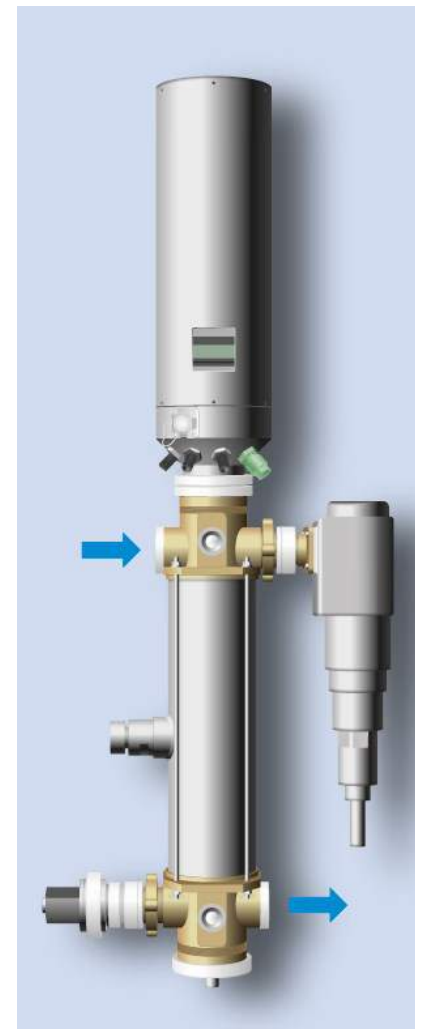
Salient features present in all systems include:

- Patented Head-Piece enabling a modular assembly
- State-of-the-art security sensors
- Patented safety shut-off valves
- Economic Consumption-Conditioned Operation
- Extremely easy to assemble, install, and operate
- Minimal tools required for assembly and installation
- No tools required for regular maintenance

## Industrial Water Treatment Equipment

Modern industries need quality water for their processes. ANI Water Solutions has the capability to supply the following systems to thermal power plants, textiles, paper, and sugar industries, steel mills and oil refineries:

- Raw Water Treatment
- Demineralization
- Reverse Osmosis
- Chemical Injection Systems
- Condensate Treatment Systems
- Condensate Polishing Plant



## Wastewater Treatment Equipment

From simple domestic wastewater treatment to complicated power plant wastewater treatment systems, ANI Water Solutions will treat wastewater to meet the statutory needs and the client specifications.

- Grit Removers
- Bar Screens
- Clarifiers
- Diffused aeration systems
- Surface aeration systems
- Sludge thickeners
- Sludge dewatering
- Waste water recycling

## Waste Water Recycling

ANI Water provides cost effective solutions in the treatment and recycling of industrial wastewater.

Environmental considerations dictate that the maximum possible volume of waste water that may be recycled.

Our expertise includes:

- Effective Treatment for SDI reduction
- Ultra filtration
- Reverse Osmosis
- Complete "Zero discharge" solutions



## Unique resources and core competencies

ANI Water Solutions' unique resources lie in its vast experience of developing solutions for diverse applications in the water and waste water treatment sectors. ANI Water Solutions collaborates closely with AquaNetto Ltd. and IMETH Ltd. The sharing and transfer of knowledge and technologies between enterprises and technical staff continues to lead to the development of innovative treatment solutions, making use of state-of-the-art technologies and the latest know-how.

ANI Water Solutions staff possess core competencies in:

- Water disinfection and treatment services
- Water management services
- Environmental sciences
- Ultraviolet irradiation technology
- Air disinfection and treatment
- Solution engineering and development
- Electrical engineering

Complementary areas of expertise include:

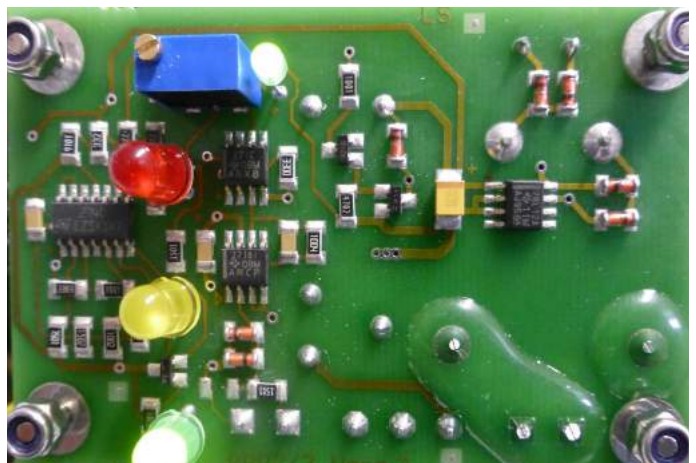
- Water quality analysis
- Filtration and membrane based processes
- Ultrasound
- Advanced oxidation processes
- Electrolysis
- Electromagnetic treatment

Extensive experience in the treatment of water, air, and surfaces by ultraviolet irradiation, has led to the development of patented AquaNetto solutions which are integrated in systems offered by ANI Water Solutions. These extremely ingenious units and systems reflect a high level of technical expertise and creativity and maximise shared benefits by their open-architecture and selective modular approach.

## Product development

In addition to its customised solutions ANI Water Solutions also offers a variety of standard and custom products:

- Slide-In Air Duct Racks for air disinfection and odour removal
- UV-C units for conveyor belt and surface disinfection
- UV-C units and systems for the disinfection and treatment of tanks and reservoirs
- UV-C units integrated in Third Party Systems for disinfection of swimming pools
- Units and components for integration in third parties and OEM systems



## Solution development

### Water Disinfection, Treatment, and Recycling Solution for the Real Estate Sector

- Solutions developed for the entire water cycle – from pre-treatment, disinfection and conditioning, to waste removal, recycling, waste-to-energy conversion, and treatment of water for secondary uses.
- Clean drinking water from every tap.
- Recycling of up to 60% of water consumed
- Energy saving heating systems
- Secondary uses of water for irrigation, washing and flushing, heating and cooling systems



### Mobile Water Disinfection Systems – Range of Water Kiosks

- Solutions developed for mobile decentralised water treatment, especially for rural environments and emergency situations.
- Adaptable to a wide variety of environments, local conditions, water quality, and power supply
- Easy to use interface and design for technically un-skilled personnel
- Avoids recontamination of stored water
- Easily integrated in social projects, small communities, and rural areas



### Water Storage Systems – Range of UV-C Disinfection Units and Systems

- Solutions developed to prevent recontamination of stored water and disinfection prior to consumption.
- Partially or entirely submersible units and systems disinfect the entirety of the reservoir, including the surfaces and air within
- No constraints on physical space required
- Space-minimising solutions

### Air Disinfection and Odour Removal Solutions - Air Duct Rack Series

- Solutions developed to disinfect circulated air and to remove fats and odours
- UV-C based disinfection combined with Vacuum UV Ozone treatment for odour removal
- Plug-and-play slide-in modules in a variety of versions, sizes, and power
- Ozone resistant and state-of-the-art security
- No need for bio-filters



## Skid-mounted UV-C disinfection, ultrafiltration and reverse osmosis treatment solutions

ANI Water Solutions' skid-mounted UV-C, ultrafiltration, and reverse osmosis treatment system is designed to handle heavily contaminated water and responds to a plethora of market applications, from potable and domestic use, to agriculture and irrigation. The skid-mounted system combines three physical treatment methods, namely, ultrafiltration, reverse osmosis, and UV-C disinfection.

The skid-mounted system comprises of two particle filters of different mesh sizes, an ultrafiltration unit, a reverse osmosis unit, two water storage tanks, an air compressor, security and check-valves, a main suction pump, auxiliary pumps, as well as a suite of different instruments such as flow-meters, pressure, temperature, and UV-C transmission sensors. The system is ingeniously designed to treat water contaminated with numerous substances, as well as coarse and fine particulate matter.

Water is first drawn directly from various potential sources (streams, rivers, lakes, reservoirs, ground water, brackish water or even sea water) by a pump and is transported to the skid connector. A check-valve positioned after the connector prevents the back-flow of water. As the water is passed through the first filter, which has a mesh-size from 300 to 2 microns, relatively large and medium sized particulate matter is removed. The filtered water is temporarily stored in an intermediate tank (with a capacity of 90 litres). Sensors within the tank detect the level of water and accordingly regulate the level of water in the tank, by commanding the main suction pump to increase or decrease the flow.

From the storage tank, water is pumped to the ultrafiltration unit and enters it from the bottom. With the use of pressure generated by the auxiliary pumps, water is passed through ultra-fine pores in a membrane which blocks the transfer of all particles above a certain molecular weight. The water is then stored in a second intermediate tank (with a capacity of 120 litres) which similarly regulates the level and hence, flow of water, automatically by the level sensors within.

From the second tank, the water is filtered a second time as it is passed through an extremely fine particle filter. Pressure and temperature sensors check the relevant parameters before the water is carried on to the reverse osmosis unit. A circular feed-back loop enables some water to be re-directed in order to regulate the pressure to the required levels.







The reverse osmosis unit sterilizes the water by removing all remaining impurities. The reverse osmosis unit features two outlets: one for the cleaned, treated water (permeate) and one for the concentrate, water which contains relatively more soluble substances than the permeate.

The hypotonic concentrate is partly drained out of the system, and in part, is brought back into the second storage tank, and thus, back to the loop of the reverse osmosis feed. The loop system thus provides increases effectiveness and economy by re-treating part of the concentrate. Along the permeate outlet, three graded cylinders permit the operator to regulate the flow levels of the permeate, concentrate, and the feed to the reverse osmosis unit, as well as draw samples for testing as and when required.

The entire system is designed to facilitate operation and maintenance. The set-up of the system allows each filter to be cleaned efficiently by means of an automatic back-flush mechanism. In order to clean the first filter (300-2 microns), valves connecting the pipes towards the rest of the system are closed and water from the first storage tank is pumped back to the filter. The water enters the filter from the top and washes away all particulate matter which has accumulated on the other side of the mesh. The use of water from the first storage tank to clean the filter provides two advantages: first, as the water has already been filtered once the mesh is constantly being cleaned by relatively cleaner water, and second, potable water which is produced by the system is not wasted on cleaning the system. A similar principle governs the back-flush and cleaning of the ultra-filtration unit. As cleaner water passes through the mesh in the reverse direction it carries along with it all substances which remain on the surfaces of the mesh and the interior of the filter; the water is removed from the system alternately via one of two drain outlets.



Each of the two storage tanks feature an outlet which allows the operator to gain access to water before it is passed through the reverse osmosis system, and thus enables the system to cater to multiple applications at the same time. Water from the first storage tank is only filtered once while water from the second storage tank has passed through the ultrafiltration unit in addition. Hence, water drawn from the first storage tank may be used for agriculture and irrigation applications. In turn, water from the second storage tank may be used, after subsequent disinfection by UV-C irradiation (to eliminate remaining bacteria and viruses) for livestock, cattle, poultry, domestic use, etc. Disinfection of water by UV-C irradiation closest to point-of-use is always recommended as a subsequent step in order to guarantee protection against eventual and inevitable re-contamination along the distribution network.

## Mobile and stationary water kiosks

ANI Water Solutions' range of water kiosks are designed for all individuals and groups interested in providing disinfected potable water on-site, cleaned water storage, and centralised and decentralised water distribution. The water kiosks are available in several sizes and various versions depending on the quantity and quality of water to be treated, respectively.

The water kiosks are ideal for treating water contaminated with bacteria and sediments as well as water sourced from streams, wells, mountain lakes, or relatively unpolluted water delivered by lorry or the community. They may also be configured to treat water laden with large sediment particles by combining complementary treatment processes, (for example ultrafiltration and reverse osmosis offered in conjunction with partners), in order to treat water that is procured from polluted lakes, large rivers, waste water treatment plants, or that has a high concentration of chemicals and heavy metals.

ANI Water Solutions' range of water kiosks respond to a variety of applications, from on-site treatment to disinfection on-the-go. Specifically, water kiosks may be used to disinfect and treat water for urban residences, buildings, and large communities, as well as in small villages and rural environments. In addition, the water kiosks solution provides an efficient means for safely storing cleaned treated water, and may also be mounted on vehicles for decentralised distribution projects.

The small water kiosk solution is ideal for small-scale disinfection, storage, and mobile distribution and combines a central UV-C disinfection unit along with a particle filter. It may be adapted to respond to the needs of mid-sized communities and can serve several hundreds individuals. The water kiosks combine UV-C disinfection along with the appropriate complementary treatment method and be assembled in parallel to increase volume and capacity. The larger configurations of the water kiosk are offered as part of complete solutions developed with third parties. The water kiosk solution combines UV-C disinfection technology along with nano, micro and ultrafiltration, as well as other processes such as ultrasound. The larger kiosks may be effectively used for water treatment for large communities, refugee camps, humanitarian projects, and can serve several thousand individuals. ANI Water Solutions' water kiosks are suited for retro-fit in existing installations and are ideal for new commercial and social projects that seek to provide and guarantee access to clean water.

In summary, ANI Water Solutions' range of water kiosks offer the most effective and efficient treatment while including all stake-holders; a true symbol of international cooperation in water treatment.

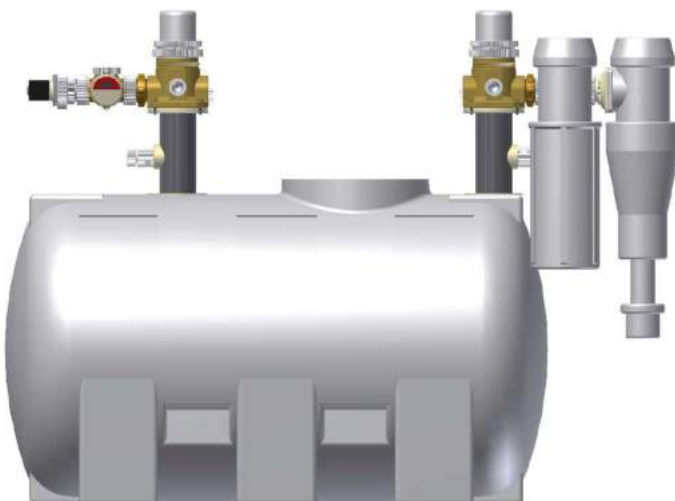




The water kiosk in essence consists of a selective-modular water disinfection unit that can be fit into a tank, cistern, water bag, or any other fixed or mobile water storage unit. It can be upgraded to a system with the combination of the appropriate peripheral products. A small pump inside the tank pumps water along the ultraviolet (UV) disinfection unit which instantaneously eliminates all bacteria and viruses. The selective-modular Water Kiosk unit consists of a unique patented Head-Piece, which enables the combination of different peripheral products such as water counters, filters, softeners, and valves, and a central UV disinfection reactor tube containing a low-pressure UV lamp in a quartz glass sheath. Each UV lamp is of the highest standard and has an exceedingly long life cycle of 16,000 hours, approximately 3-4 years. Each unit is equipped with an electronic control unit, a UV sensor, a safety valve, and in some cases a flow-former.

As security is of prime importance each Water Kiosk unit is fitted with a state-of-the-art sensor that is calibrated with a unique control unit and a patented safety shut-off valve. As soon as there is any risk of contamination or drop in UV transmission the unit automatically flashes a warning and the safety shut-off valve restricts the flow of water.

A key feature of all systems developed by ANI Water Solutions, and in particular that of its water kiosks, is the emphasis on ease of operation and maintenance. Each unit can be assembled on-site, dismantled and re-mounted for maintenance, and operated by local trained personnel with the bare minimum of tools and equipment. Put simply, if one is capable of mounting furniture from kits such as IKEA then one is capable of carrying out the minimum care-taking and operation of the kiosk. A secondary but equally salient feature of the water kiosk is the inclusion of a vein scanner. In the case of rationing or sale of water per capita or family the vein scanner provides a non-intrusive and an unprecedented level of security and reliability; it effectively allows one to monitor and guarantee each individual their ration of water per day.



As with all other solutions offered by ANI Water Solutions, the water kiosk can run on hybrid means of energy, from regular on-grid electric supply to photovoltaic panels, wind and hydro-electric turbines, generators, and even car batteries. Thus, by combining other environmentally-friendly forms of energy like solar and wind, the water kiosk greatly reduces operational costs as well as its environmental foot-print.

ANI Water Solutions at a glance...



### The unique features of our units and systems...

- Open-architecture approach as a basis for individual solutions
- Effectively combine complementary treatment processes along with UV-C disinfection
- Position-independent design and mounting
- Patented multi-functional head-piece that is capable of connecting with products from the majority of manufacturers and market segment leaders
- Assembled in series to provide an economic Consumption-Conditioned Operation (CCO)
- On-Off Grid operated – wide power range
- Control Unit is stand-alone, pluggable to the disinfection unit, and can be managed via a wireless connection
- Self-explanatory Human-Machine Interface (HMI)
- High standard of protection, quality control, reliability and safety

### ...provide numerous benefits for you...

- Appropriate technology and appropriate solution for your specific needs
- Units and systems may be installed in any position and are largely unhindered by the constraints of physical space
- CCO maximises energy efficiency and resource economy, permits higher capacities, and responds to actual needs
- New installation ideal for newly developed projects; easy retrofitting ensures that existing installations do not need to be completely removed
- Exceptional plug-and-play concept possible due to modular structure
- Minimal additional fittings, plumbing, or technical expertise required; adapt your solutions and upgrade without problem
- HMI facilitates easier maintenance by local staff and increases the already long product life-cycle

A complete treatment solution for the disinfection, treatment, and re-cycling of water and waste water as offered by ANI Water Solutions in close collaboration with partners and collaborators.

