



# PURE DRINKING WATER ANYTIME, ANYWHERE

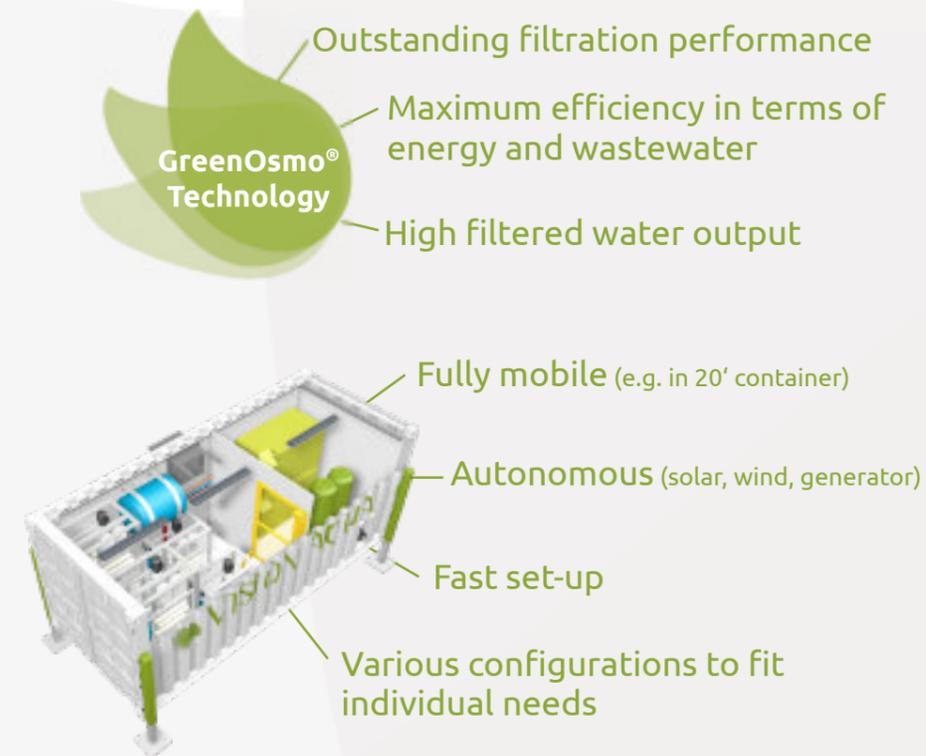
Mobile and modular container system for water treatment with state of the art **GreenOsmo®** Technology to supply pure drinking water

# HIGH-END WATER FILTRATION PORTABLE AND AUTONOMOUS

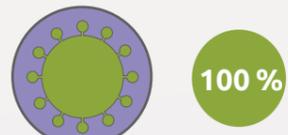
# CLEAN DRINKING WATER IS A BASIC HUMAN NECESSITY

## Pure drinking water of outstanding quality

We produce modular reverse osmosis water filtration systems in 20' containers according to individual specifications and requirements.



### Filter performance



Filtration of bacteria and viruses



Filtration of drug residues



Filtration of radioactive substances



Pure water

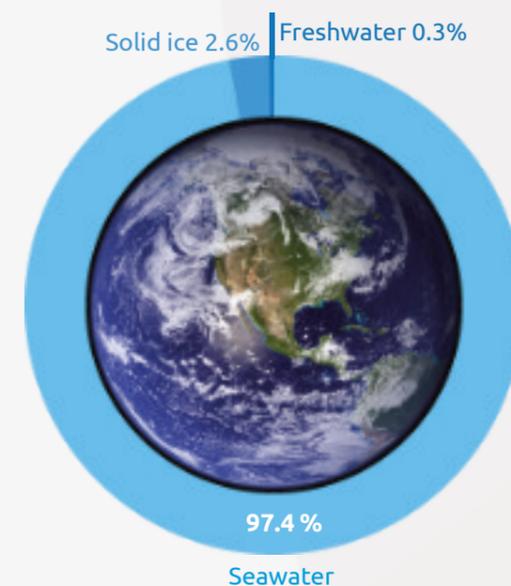
Project management from planning to commissioning

Unique solutions with guaranteed success

- Pure drinking water from 144,000 litres per day
- Drinking water for approx. 30,000 people per day
- Safety-relevant drinking water treatment
- HETEK system for safe installation
- Fail-safe concept
- Use in severe conditions
- Stand-alone operation
- Various additional configuration options

## Freshwater resources

Water covers a large part of approx. 71 % of the Earth. However, only 0.3 % of the global water reserves are freshwater which is very unevenly distributed on earth. For example, Africa and the Middle East frequently experience exacerbated water shortages, which often leads to armed conflicts and crises.



Globally an estimated 2 billion people live without access to clean drinking and sanitary water. Only about 5 % of the world's sewage is treated. As a consequence, many people, especially in developing countries, suffer from water-related diseases. An estimated five million people die from water-borne diseases and impurities each year.

However, the number of unreported cases is likely much higher. Even with unlimited access to water, drinking water supply is not always guaranteed. In many places, bodies of water and groundwater are so polluted that they are not fit for human consumption and can only be used after considerable cleaning efforts. Access to essential freshwater significantly differs in quantity and quality in different parts of the world.

# VISION AQUA

the source of all life in its purest form

# 144,000 L PER DAY PRODUCED IN A 20' CONTAINER

# GreenOsmo® Technology THE EVOLUTION OF WATER FILTRATION

## Water needs to be clean and safe

Today drinking water is often considered a human right and should be accessible for everyone when needed, free of contamination in your own home. Only then you can be sure that your health is not at risk.

Ever since SARS-CoV-2, we have to pay more attention to hygiene to avoid diseases. Especially in the poverty-stricken regions of the world, polluted water and thus the spread of diseases is a problem.

Here VISION AQUA starts with our GreenOsmo® Technology!

## Safety-relevant drinking water treatment

Water treatment systems must be able to remove all kinds of impurities.

We offer solutions for water purification of freshwater, brackish water, as well as chemically contaminated water from almost all sources, with a drinking water treatment capacity of 6,000 l/h in the smallest configuration of the container.

In the maximum setting, drinking water production can be expanded to 8,000 l/h if need be.

We produce mobile, modular, and climate-independent water filtration systems in containers for humanitarian operations in a wide variety of situations. We configure our water filtration systems on demand, to individually supply various required quantities of drinking water.

Individual sensors for drinking water monitoring can be installed, to provide optimal contamination control. VISION AQUA GreenOsmo® EU units can be used in different container sizes, which allows for individual configuration and mobile use suited to project needs.



20' container including HETEK base system

## The history of reverse osmosis

Reverse osmosis (a membrane process) has been a well-known concept for decades, which was already used by NASA for the Apollo missions in the late 1960s. Part of the drinking water was recovered from the astronauts' urine with the help of reverse osmosis. The reverse osmosis process saved up to 60 % of drinking water on board the Apollo missions.

Today, NASA uses reverse osmosis as drinking water treatment for its astronauts on missions at the international space station ISS.



## Our system: The progression of reverse osmosis

The development of GreenOsmo® Technology was focussed primarily on four factors:

GreenOsmo® stands for constant drinking water quality, with very high efficiency, low water consumption, and large volume production.

GreenOsmo® Technology developed by VISION AQUA currently achieves an energy efficiency of 1.3 watts per litre of ultra-pure water, with outstanding ultra-pure water to wastewater ratio of 1 : 0.8 (for every litre, we only produce 0,8 litres of wastewater).

A complex rinsing and control process developed by VISION AQUA increases drinking water production by approx. 30 % and reduces energy consumption by approx. 50 % compared to conventional systems. We need less energy and less water to produce an ultra-pure result.



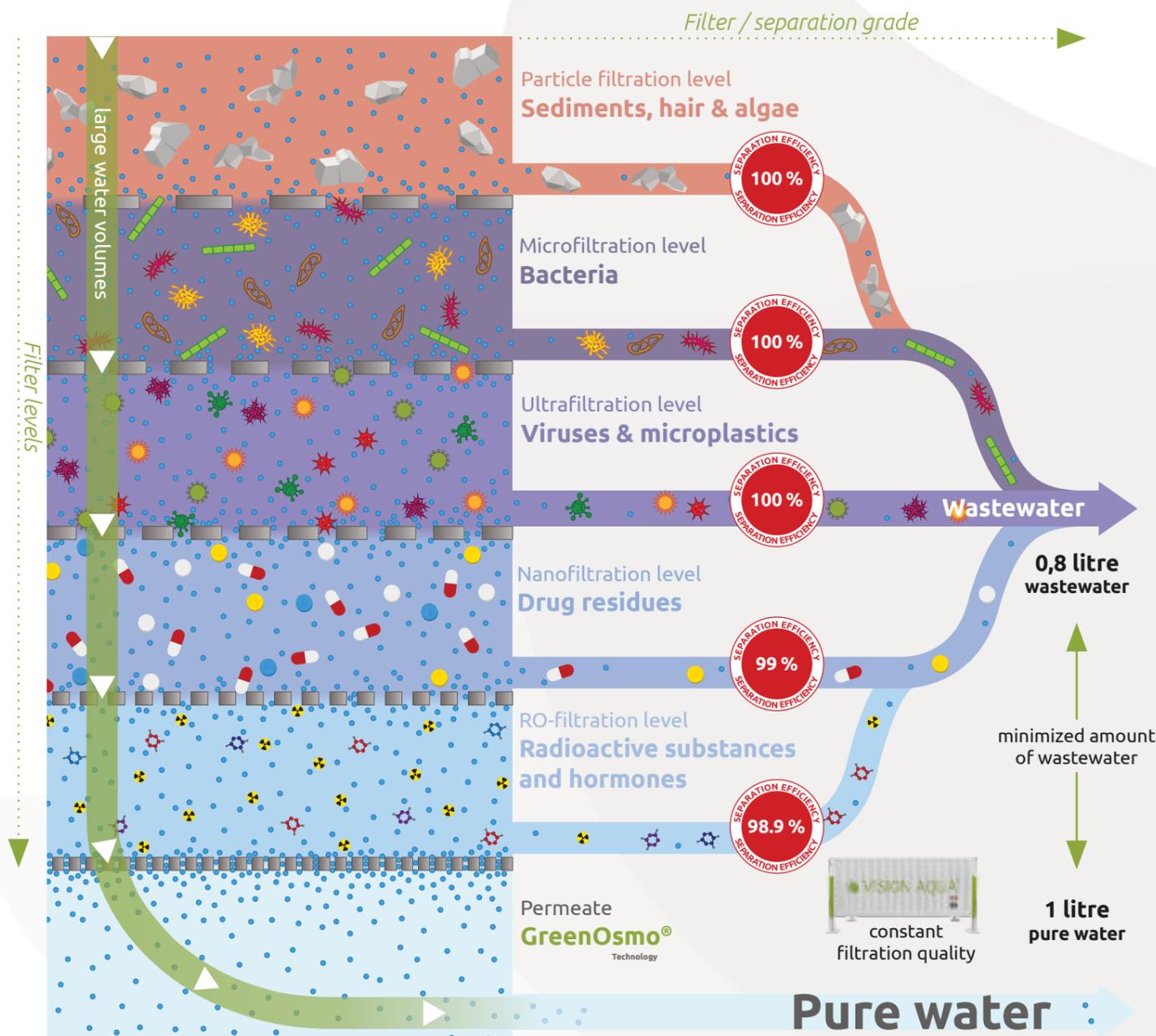
# FILTER LEVELS AND GRADES

## ONLY PURE WATER REMAINS

# ADVANTAGES

## OF THE VISION AQUA CONTAINER

The GreenOsmo® principle:  
All pollutants filtered out - pure water remains



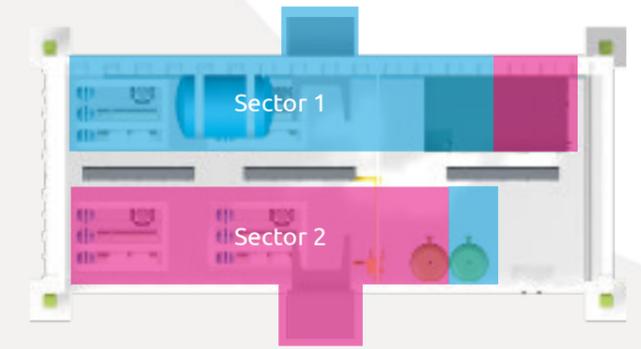
### Smallest configuration - 144,000 l / day

In the smallest configuration stage, the 20' container produces around 144,000 litres of pure drinking water per day. Assuming a consumption of approx. 4-5 litre of drinking water per person one container can supply more than 30,000 people daily with pure drinking water. The drinking water quality produced by our GreenOsmo® Technology is significantly better than the limits set by the German Federal Drinking Water Ordinance.



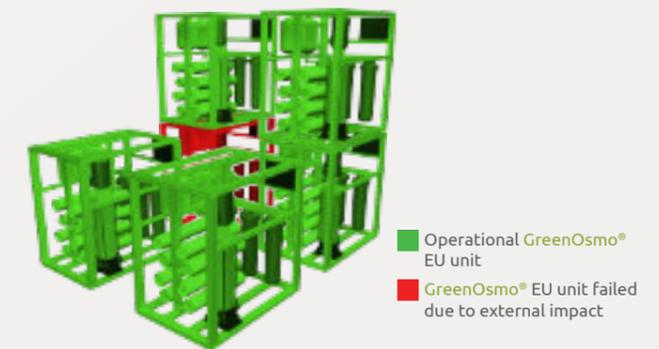
### Partial operation with renewable energy

Due to the redundant design of the GreenOsmo® EU units, partial operation of units is possible. For example, a single GreenOsmo® EU unit can operate with the help of solar or wind energy. The energy requirement of a GreenOsmo® EU unit is approximately 1.4 - 1.5 kW. Depending on how much power is available, other GreenOsmo® EU units can be switched on individually.



### Double safety and redundancy

Drinking water production is divided into two technical sectors. In addition, the sectors are built redundantly among each other in modular units. Should a sector fail, drinking water production can continue. If individual components fail in a sector, the failure does not lead to a complete shutdown of the drinking water production.



### Modular operation in an emergency

If anything in the container is mechanically damaged, the individual units can also be exchanged with one another. E.g. the individual units from different sectors can be combined and continue producing drinking water in limited quantities even during the most severe damage.

# ADVANTAGES OF THE VISION AQUA CONTAINER



## Decentralized control

The individual units and sectors are always controlled decentrally. Although this requires more effort during the initial training of the user, it is an invaluable advantage in critical situations. If the system is damaged by external impact and fails in part, it is still possible to operate the sectors and units individually.



## Pure water applications

- Civil defence - supply of the population and emergency services with drinking water
- Food and drug production
- Cleaning of technical devices
- Use as cooling water
- Medical use/field hospitals
- Agricultural irrigation



## Stand-alone operation

Two diesel generators are optionally available for the 20' container to supply the GreenOsmo® EU units with sufficient energy, to be installed inside the container. Each generator has a standard diesel tank volume of 51 l which allows operation at a 3/4 load for approximately 12.9 hrs. Larger diesel tanks or the combination of the generators with renewable energies are also possible.

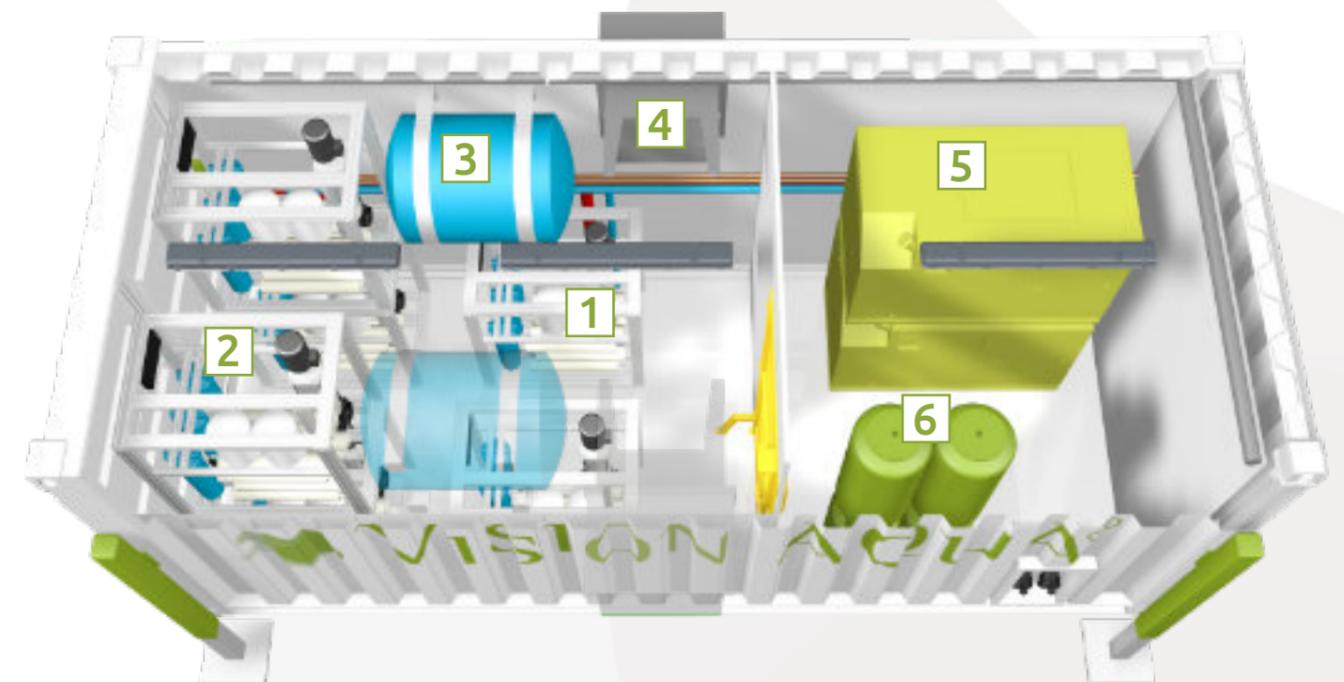


## Process water

Additionally, during the production of drinking water, process water can also be supplied. Although this water does not meet drinking water standards, it can be used for technical applications, the operation of sanitary facilities or irrigation systems. This process water can be germ-free, if required.

# LAYOUT OF THE VISION AQUA CONTAINER

## Design 20' container - Example



### 1. GreenOsmo® EU unit

Each GreenOsmo® EU unit has a production capacity of 24,000 l per day. An EU unit has the footprint of a Euro pallet (80 x 120 cm).

### 2. 2x GreenOsmo® EU units

Two units on top of each other are called a stack. Each stack delivers 48,000 l per day.

### 3. Storage pressure tanks (optional)

The storage pressure tanks serve as intermediate buffers and provide an emergency reserve of 300 l in the smallest configuration in the event of a complete failure.

### 4. Air conditioning

The air conditioning is in a dual design. The units are installed on both sides of the container and have a total output of approximately 10 kW.

### 5. Diesel generators (optional)

Two diesel generators for stand-alone operation which can also be used as an emergency power supply with a total output of approx. 40 KVA.

### 6. Sand filter (optional)

Should the container be operated with river or lake water, these sand filters capture coarse particles and sediments.

The 20' container is divided into two areas. The front area is air-conditioned and contains the GreenOsmo® EU units including the optional storage pressure tanks whereas the rear area includes the optional generators and sand filters.

# SPECIAL FEATURES OF THE VISION AQUA CONTAINER



## Air conditioning

By default, the insulated container is equipped with two robust air conditioners. These regulate the ambient temperature inside to avoid condensate build-up on the filter units and the container itself. The air conditioning units are only pushed outwards on a rail after the container has been set up on the site of operation. The container has no protrusions during transport.



## C-pipe connection

Thanks to standardized connections and available adapters, the container can be connected to all conceivable pipe systems. All connections are duplicated on the container to have an alternative connection in case of damage.

# SPECIAL FEATURES OF THE VISION AQUA CONTAINER



## Diesel generators (optional)

Optionally the container can be equipped with two soundproof diesel generators for redundancy. They are connected in parallel to each other and supply only half of the GreenOsmo® EU units and half of the other electrical systems. Both electrical circuits of the diesel generators are independent of each other.



## Raw water suction pump (optional)

Optionally, the container can be equipped with a suction pump, which is set up directly at the water source. The pump has a delivery rate of approx. 720 l / min. and can cope with heights of up to 40 m.



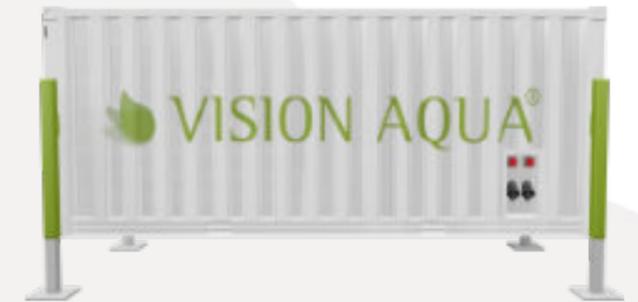
## Further filtration levels (optional)

The GreenOsmo® EU units can be equipped with flexible, additional post osmosis filters. For example, an additional activated carbon block can be installed to filter gases from the drinking water. If the water source used contains iron, suitable iron filters can be added. In the event of severe contamination of the raw water with bacteria or viruses, a maintenance-free LED UV-C sterilization is available.



## Storage pressure tank (optional)

Maintenance-free storage pressure tanks with a capacity of 60 - 450l are available for the 20' container. Drinking water is accessible from these storage pressure tanks without additional aids such as pumps.



## HETEK system (optional)

For a stable set-up of the 20' container, additional HETEK base stands and other special fixtures can be supplied.



## Sand filter (optional)

For operation with river or lake water, additional sand filters can be installed to filter coarse particles and sediments. Each sand filter supplies one of the two technical sectors of the container. Depending on the configuration, up to four sand filters can be used.

# SYSTEM SET-UP IN THE BASIC CONFIGURATION

## Basic equipment of a 20' container in the smallest configuration

Basic equipment	
Container 20' with insulation	1
GreenOsmo® EU unit	6
Air conditioning	2
Water installation	1
Electrical installation	1

## Additional interior fittings 20' container

Optional expansion	
Pramac GBW22P generator with Perkins engine	2
Automatic emergency power switch	2
HONDA suction pump WT 40 (petrol 4 stroke)	1
ATP measuring device - hygiene food test device	1
PCE-TUM 50 photometer	1
HI83399 Multi-parameter CSB photometer and pH meter	1
Sand filter system Luxus 800 mm Speck Prime 20	2
Storage tanks for drinking water - pressure tanks á 150 l	2
Camouflage paintwork	1

# TECHNICAL SPECIFICATIONS AND ADDITIONAL OPTIONS

Water section	
Drinking water treatment for freshwater	from 144 m <sup>3</sup> /24 h
Connection inlet side	2 x C-pipe
Connection outlet side permeate (ultra-pure water)	1 x C-pipe approx. 5 bar
Connection wastewater outlet side	1 x C-pipe
Raw water requirement	approx. 300 m <sup>3</sup> /24 h
Power supply	
4 x CEE plug	32 A
Supply voltage	~ 400 V
Power consumption	approx. 21 kW
Dimensions	
External dimensions mm (l x w x h)	6.058 x 2.438 x 2.591

## Options

### 1. Bottling

If required, a fully automatic bottle production and filling unit in a 20' container is available. Up to 1,300 bottles per hour can be produced and filled.

### 2. Drinking bag filling

If required, fully automatic drinking bag production and filling in a 20' container is also possible. Up to 1,500 drinking bags can be produced and filled per hour.

### 3. Drinking water fixtures

If the existing infrastructure is wholly damaged or contaminated, drinking water taps can be set up. These taps are made of stainless-steel and have UV-C LED sterilization installed. This prevents the contamination of taps and controls.

### 4. Drinking water tank

As an option, an external drinking water tank can be supplied, which is foldable and can be operational quickly. The volume ranges from 1,000 to 10,000 l. This tank can also be filled on a truck and transported directly to the deployment site.

### 5. Raw water tank

If a direct connection to a water source is not possible, raw water can be temporarily stored or pumped through additional raw water tanks until it can be supplied to the container.

### 6. Flexible use of components

Since all units are mobile installations, they can also be installed outside of a 20' container. Other locations such as boats or barges, trains, wagons, vehicles or deployment tents are suitable.



Find out more about our products and options:

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