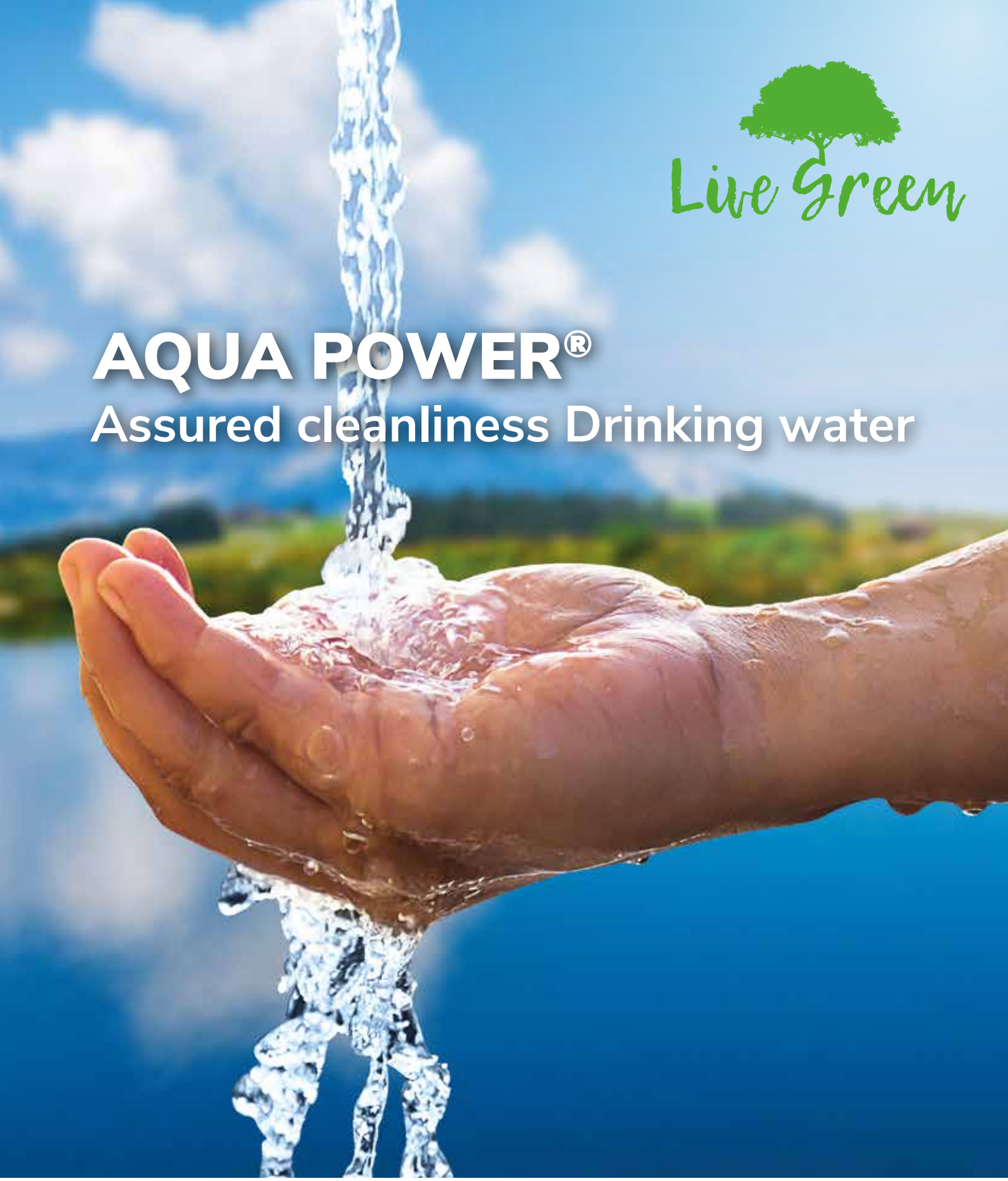


The Aqua Power® water-sterilisation process is a patented, two-component product to quickly and simply produce hygienic cleanliness in drinking water.

I have been concerned with the subject of water in the heart of southern Styria for 25 years. The first company was La Mer Brunnenbau, which already had a product developed on my own being used for water sterilisation.

Daniel Bader, active in water treatment for 25 years.

From that, the idea arose to also develop a chlorine-free product for fountains and pools facilities. The result was a water additive that became commercial following approvals and testing.

Then came a time when I grappled with the topics of Legionella, microbes and bacteria even more intensely because my best friend died as a result of a Legionella-caused illness.

As a result, numerous contacts were made with manufacturers of water disinfection agents. Among them was also the renown chemist, Dr. Hosni Khalaf, who, like me, has been involved with this subject for 25 years.

Dr. Khalaf developed a process protected by a number of patents. I further developed this procedure for use in connection with water circulation in residential housing and companies.

The Aqua Power® water sterilisation process and the “LiveGreen” company arose in order to proudly make access to clean, safe drinking water possible for all living things with the Aqua Power® water sterilisation process.

We are located in Wagna (previously Flavia Solva), where, at that time, the Romans built the first water pipelines. They already knew: “Water is life” and we want to provide our contemporary contribution to implementing this wisdom with our products.

Your, Daniel Bader

High efficiency water sterilisation with Aqua Power®
The Water-sterilisation process

The Aqua Power® water sterilisation process is concerned with the hygienic cleanliness of water as it effectively destroys harmful biofilms (e.g. Legionella, bacteria, algae, fungi, protozoans) in water supply systems and drinking water devices (water lines, watering- and dosing devices, tanks for water and ice storage etc.), while the recommended application quantities are not dangerous to humans, animals or the environment.

The Aqua Power® water sterilisation process – chlorine dioxide solution is a patented system with a high degree of purity and outstanding stability.

The set comprises a liquid component and a powder as the activator. In contrast to alkali, peroxidic or manganese-containing products such as hydrogen peroxide, Aqua Power® is approved per the current drinking water regulation for the disinfection of drinking water without exception.

The Aqua Power® water sterilisation process has a neutral pH value (pH 7) and is ten times stronger than the usually used **Ca- or Na-hydrochloride**.

Live Green

Uses for the Aqua Power® water sterilisation process:

- Fountains containing microbes
- Microbe-containing pipes
- Legionella
- Environmental contamination
- Malfunctions in the general water system circulation
- The most varied microbial contamination
- Agriculture

Advantages of the Aqua Power® water sterilisation process:

- Approved per the current drinking water regulation for permanent disinfection of drinking water
- Usable immediately after a 90 minute reaction time
- 100% biologically degradable, decomposes within 24 hours under sunlight
- Highly effective against: Pseudomonas aeruginosa (Pseudomonades, Pseudomonas)
- Escherichia coli and coliforme bacteria
- Legionella / Legionella pneumophila among others
- No development of microbial-resistance
- Eliminates biofilms
- No heavy metals (silver, copper)
- Effective across the entire drinking water pH range
- Will not irritate skin, eyes (with proper dilution in water)

Permanent water sterilisation:

The alternative solution is permanent water sterilisation in the context of approved additives that are prescribed in the national drinking water regulation (for example potable water decree 2001 in Germany, Austrian foods book) and in the European drinking water directive.

Here, in turn, is now the reason for finding a technology that:

- is safe and user friendly
- is managed cost-effectively with minimal personnel
- featuring reliable action but with low risk for the user

Here, the technology for the on-site generation of the disinfection agent in the Aqua Power® water sterilisation process has proven itself.

Aqua Power® water sterilisation process application:

The Aqua Power® water sterilisation process is a patented, two-component system for safe, rapid and stable chlorine dioxide production on-site. The set comprises a liquid component A and a powder tablet component B as the activator.

The Aqua Power® water sterilisation process is activated in that the powder component B is simply added to the liquid component A. The reaction time is 90 minutes and the chlorine dioxide is then ready to use.

This active solution should be stored in a cool, dark place and can be used for at least three months. After this time the concentrate decomposes into a solution of salt and water. Both initial components can be stored for at least two years.

Aqua Power® water sterilisation process dosage quantities:

According to § 11 of the drinking water regulation, 0.2 mg chlorine dioxide are to be added per litre of drinking water for permanent drinking water disinfection. This corresponds to approx. 70 ml Aqua Power® chlorine dioxide solution per m³ drinking water.

For shock disinfection of pipes and water conducting systems 6 – 30 mg of chlorine dioxide per litre should be dosed. This corresponds to approx. 2 – 10 l Aqua Power® chlorine dioxide solution per m³ of drinking water.

The reaction time should be at least three hours.

The chlorine dioxide solution is dosed into the flow of water that is to be disinfected in proportion to quantity by using a membrane pump.

Applications	Chlorine dioxide concentration	Dosing quantities for Aqua Power® chlorine dioxide solution
Disinfection of drinking water	0,2 – 0,4 mg / l	70 – 140 ml / m³ Drinking water
Shock disinfection of cold and warm water systems	6,0 – 30 mg / l	2 – 10 l / m³ system volume

Practical example:
1 litre Aqua Power® chlorine dioxide solution is sufficient for 15,000 litres of drinking water

A single family house is estimated to use 400 litres of water per day, which is 146 m³ of water per year. This is 10 litres of Aqua Power® chlorine dioxide solution per year, costs amounting to approx. 200 euro.

- The filters should be changed at least twice annually
- The membrane pump is subject to an annual inspection by an authorised expert company

The Aqua Power® water sterilisation process in a warm water system:

Chlorine dioxide at a high application concentration of 6 – 30 mg / l for shock disinfection does not degrade as quickly at 45 °C because the speed of decomposition depends not only on the temperature but rather also on the concentration. In any case, the chlorine dioxide is practically maintained for the duration of disinfection in warm water systems.

The degradation of biofilm by chlorine dioxide has been described in many publications.

Our product is produced on-site.

In contrast to chlorine, it exists in water as dissolved chlorine dioxide. As a consequence, there are clearly fewer by-products because only oxidising processes take place and no chlorine reactions occur (Krasner, 2009). The development of halogen alkanes*, however, is clearly lower than with free chlorine.

Moreover, chlorine dioxide has greater antibacterial activity and longer dwell time in the system than chlorine (Schwartz et al., 2003; Loret et al., 2005). A number of studies with Legionella (Walker et al., 1995), various viruses and biofilms verify this disinfection capability by chlorine dioxide. Additionally, chlorine resistant parasites such as Cryptosporidium parvum can also be inactivated (Chauret et al., 2001).

The principle of action is different compared to chlorine. Chlorine dioxide penetrates into the cell via the cell membrane and reacts through oxidative processes via free radicals (Baribeau et al., 2002). However, it does not react with reduced sulphur compounds or secondary and tertiary amines, which would, for example, lead to an increased chlorine requirement (Thompson, 1993). A further advantage of chlorine dioxide is that it is less corrosive as compared to free chlorine. Studies with iron pipes show that the rate of corrosion with chlorine dioxide treatment is even lower than with non-treated pipes (Eisnor et al., 2004).

**Halogen alkanes (alkyl halogenides) are compounds in which a hydrogen atom of an alkane is replaced by a halogen atom (that is, by fluorine, chlorine, bromine or iodine).*

Range of application

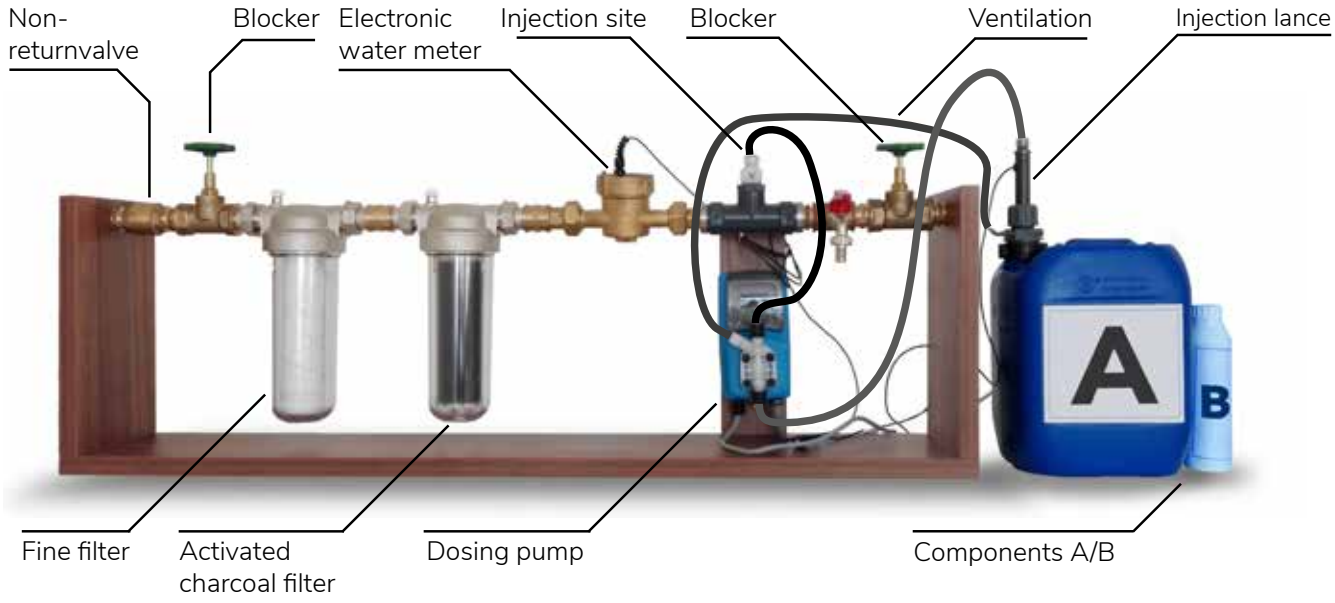
The Aqua Power® water sterilisation process is low in corrosive effect.

The Aqua Power® water sterilisation process can be applied wherever safe, rapid, sustained disinfection of drinking water, water storage tanks or piping systems are required.

- Drinking water
- Fountains
- Water pipes, piping
- Water tanks
- Agriculture
- Food industry
- Camping-Boating
- The Aqua Power® water sterilisation process is used above all for the disinfection of drinking water on various types of surfaces (in gastronomy, kitchens, offices, at home, etc.) Used in swimming pools and other water tanks (such as for camping, on yachts, boats, etc.) and also in industrial containers and the like.

Disinfection installations for permanent operation

The Aqua Power® disinfection installation for permanent operation cleans our drinking water for the home, agriculture and industrial operations.



The water sterilisation liquid is measurable by means of measuring strips or a photometer.

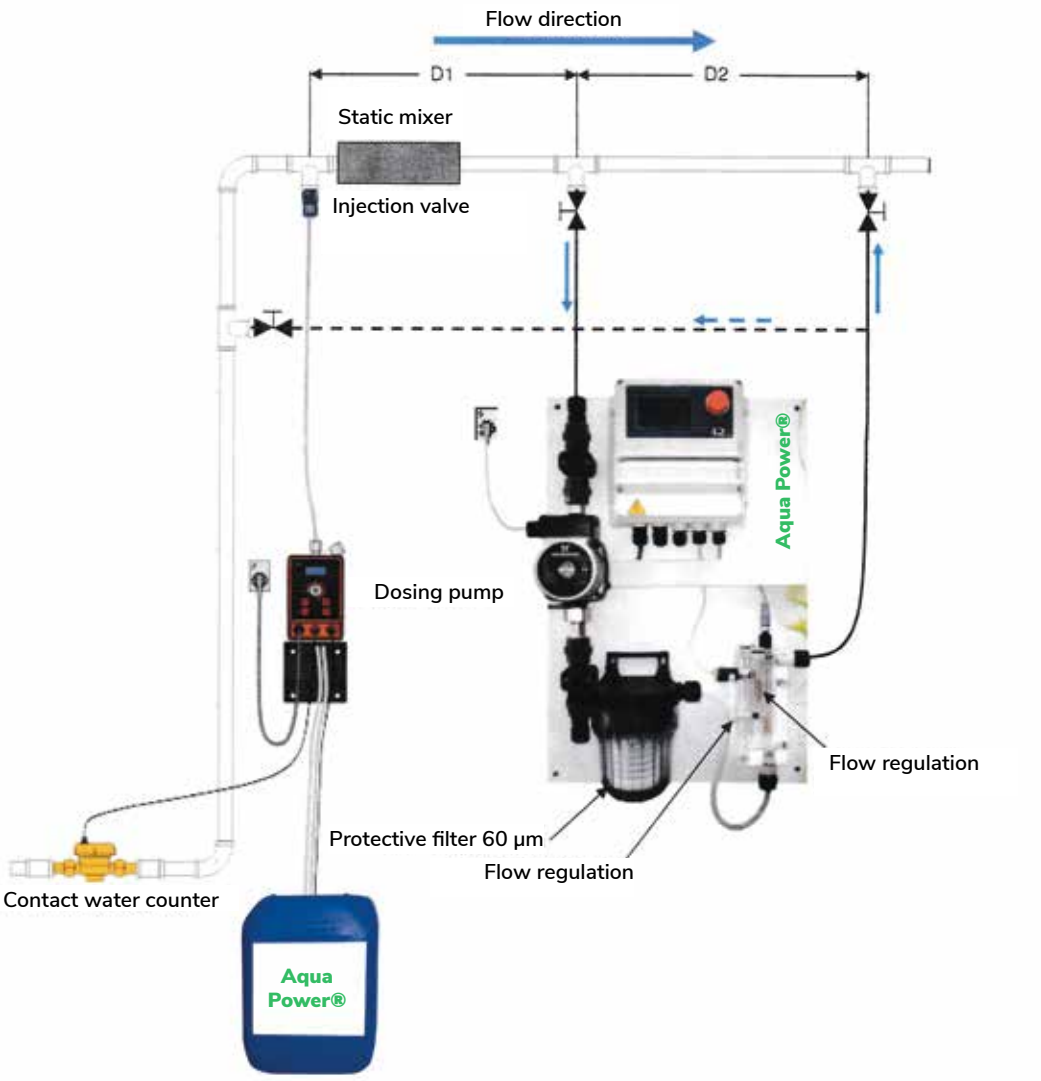
shock disinfection permanent

disinfection

Expandable through intelligent modular construction:

The Aqua Power® water sterilisation process can be easily expanded through the addition of components. Thus, for example:

- the content of chlorine dioxide can be permanently monitored.
- the pump settings can be controlled and readjusted.
- a level control display for the disinfection solution can be installed.
- calcium deposition can be combated and corrosion further diminished.



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