



UV Units for
drinking water



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The best in UV for over 40 years

Berson: the pioneers and innovators in UV disinfection and advanced oxidation

Introducing Berson

Founded in 1972 by Hans Berson, the company has over 40 years' experience in UV technology. Berson was a pioneer in the introduction of UV for drinking water in Western Europe in the early 1980s and since then has expanded the application of UV technology globally. The Berson InLine UV design, introduced in 1995, has become the standard for medium pressure UV applications for drinking water worldwide. The company is based in Nuenen, in the Eindhoven Region in the Netherlands (number 1 Smart Community in 2011). Berson was acquired by British multinational Halma p.l.c. in 1988 and, together with sister companies Hanovia in the UK and Aquionics in the USA, is the global leader in UV for water treatment.

UV Applications

Berson offers a wide range of UV systems for drinking water, wastewater and water reuse validated by DVGW, USEPA and NWRI. These validations ensure end-users and authorities can be confident that the performance of the UV system is appropriate for the application. Berson also offers systems for treating injection water in oil and gas field recovery. Berson's water applications range from disinfection to advanced oxidation for the removal of organic (micro) contaminants.



Innovation

With a strong focus on innovation through cooperation with internationally renowned institutes such as Imperial College London, UNESCO-IHE, KWR and Wetsus, as well as key suppliers, Berson continues to improve the disinfection performance, system efficiency and maintenance friendliness of its systems.

This ensures customers have effective systems with a low total cost of ownership.

The company is dedicated to ensuring safe drinking water, safe bathing water and water security all over the globe. Its systems can be installed centrally at a treatment works, locally for satellite disinfection in the distribution network, or at the point-of-entry, providing bacterial reliability right to the consumer's tap.

Global Network

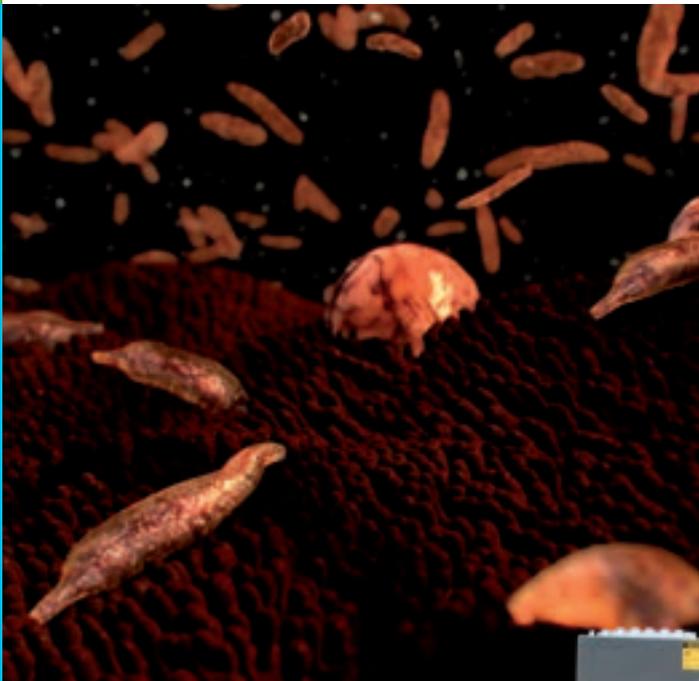
A global sales and service network, trained by Berson, ensures customers worldwide with the right products and outstanding service, ensuring the long-lasting performance of their UV systems.

Quality

Quality is one of Berson's main drivers. The company holds both ISO 9001:2000 and 14001:2004 and continues to improve its processes to meet customers' needs.



UV and drinking water safety



Inactivation by UV-light

UV light inactivates microorganisms (bacteria and viruses) by altering their DNA, preventing replication or infection.

Effective against chlorine-resistant pathogens

Even at low doses, UV provides a 4-log inactivation of chlorine-resistant pathogens such as *Cryptosporidium* and *Giardia*. UV is therefore used for drinking water treatment worldwide as an additional *Cryptosporidium* barrier.

UV is cost-effective in multi-barrier systems

In areas where chlorine is required to provide safe drinking water at the consumer's tap, UV provides an additional level of safety and allows lower chlorine consumption.

The cost of UV in multi-barrier systems is significantly lower than ozone or membrane filtration.





- Effective, reliable and efficient
- No disinfection by-products
- Used worldwide

No disinfection by-products

UV does not produce the harmful disinfection by-products (DBP's) commonly associated with chlorine (THMs) or ozone (bromate) and does not alter the taste or odour of the water.

Photolysis & Advanced oxidation using UV and hydrogen peroxide

Hydrogen peroxide forms hydroxyl radicals under UV irradiation. These radicals readily oxidize the organic compounds that cause taste and odour issues, as well as residuals from pesticides, herbicides and pharmaceuticals.

Used worldwide

Since the introduction of UV for drinking water treatment in Europe, it has spread to the USA and the rest of the world. UV is not only used by municipal water supply companies but also by major bottled water and soft drinks brands and pharmaceutical manufacturers.

UV is also widely applied to disinfect wastewater before discharge, protecting recreational bathing water and fisheries as well as potential sources for drinking water.

In addition, UV plays an important role in water reuse, safeguarding users from infection and preserving valuable drinking water resources.



Berson InLine® system

Properties and key benefits

Compact and flexible design reduces capital costs;

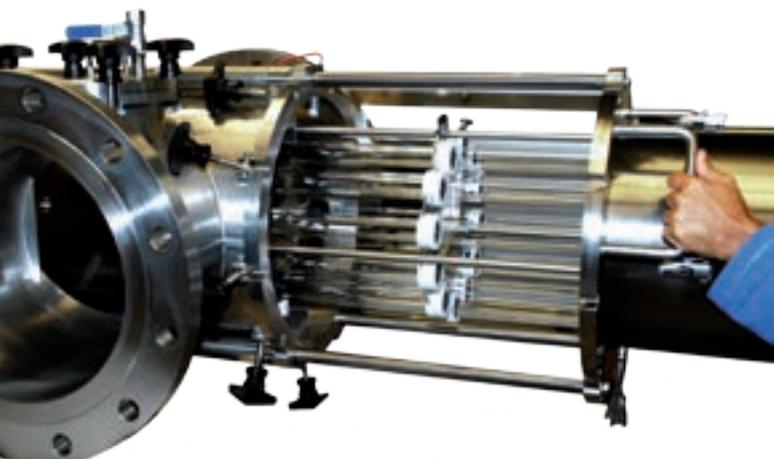
The Berson InLine® has an extremely small footprint, requiring very little extra floor space in a treatment building. UV units can be mounted horizontally and vertically in virtually any existing installation without many changes to piping. This reduces investment costs in both new and retrofit installations.

Ease of maintenance;

All wet parts are easily accessible and regular service can be performed by general maintenance staff trained by Berson's commissioning engineers without the need for lifting equipment. Berson also offers commissioning and maintenance service worldwide supported locally by trained service partners. Cyclops® design reduces operational footprint
Installed in places with very limited access or when frequent cleaning of the quartz sleeves is necessary, the Cyclops® allows single-sided access with a slide-opening hatch. Maintenance and cleaning can be carried out in a fraction of the time normally required.

6 UltraWipe® for clean sleeves;

The general wiping system maintains clean sleeves and therefore a higher UV dose. In case of excessive hardness or iron content in the water, sleeve fouling may still occur. The UltraWipe® offers automatic periodic chemical cleaning, using only chemicals that are effective and safe for drinking water applications.



Validated performance

Berson's UV systems are validated to the most stringent third party approvals, including DVGW, USEPA, JWRC, NWRI and NSF. In the case of the most internationally accepted regulations – DVGW and USEPA – our systems are validated under challenging hydraulic conditions (after a 90° pipe bend) using 240nm quartz sleeves to prevent potential Nitrate conversion. Validations are regularly upgraded to allow the application of the newest lamp and ballast technology.

Customized solutions;

Berson has a flexible approach towards adapting standard systems to meet our customers' special needs. UV reactors can be designed to fit any piping size and controls can be adapted to be integrated with all commonly applied process control environments.

Range of control options

Our ECTronicΩ and UVTronic+ offer a combination of local control interfaced with a central (SCADA) system through Modbus RTU, Ethernet IP or analogue communication. PLC-based control (all major platforms) is also available. Both UVTronic+ and PLC control allow multi-stream operation, saving on investment and operating costs.

- Proven
- Innovative
- Reliable



Key components

Electronic Lamp Drivers

Highly efficient stepless power control (30-100%), reducing energy costs and lamp aging. Maintain disinfection performance under variable conditions (flow, quality). CE and UL approved.

Conventional Ballasts

A solution trusted for over 30 years. Operates in the most challenging environments.

Medium-Pressure lamps

High output medium pressure lamps allow compact reactor design as less lamps are needed to achieve the required dose. This minimizes maintenance costs and down-time for replacing lamps and sleeves.

Quartz Sleeves

Long-life quartz sleeves selected for high transmittance. Doped sleeves available to avoid nitrite formation.

Control Panel

Electronic Ω , UVTronic or PLC monitor and control all UV functions and dosing. Can be set up to trigger valves and to communicate with a customer's SCADA systems (Ethernet, MODBUS). Allows multi-stream control.

UV Intensity Sensor

Either field-calibrated relative sensors or controlled absolute sensors monitor UV output to ensure the required UV dose is met. One sensor can monitor a group of lamps or, if required, one sensor per lamp can be used.

InLine® Reactor

Hydraulically optimized to achieve uniform and optimal UV dose distribution. Validated performance (USEPA, DVGW). Extremely small operational footprint. Allows both horizontal and vertical flow. Easy access for maintenance. Standard stainless steel 316L and chlorine resistant alternatives available. Pressure rated up to 16 bar (230 psi).

UltraWipe® Sleeve Cleaning

A combination of automatic mechanical wiping and chemical cleaning eliminates sleeve fouling and scaling. The sensors are wiped simultaneously.

A range of chemicals can be applied to offer enhanced cleaning and to meet local drinking water legislation.





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