



LOOPO

Compact System for the Distribution, Sanitisation and Monitoring of Purified Water, Highly Purified Water and WFI

With the compact system LOOPO pharmaline, BWT Pharma & Biotech offers a solution for the distribution, sanitisation and quality monitoring of pure and ultrapure water. The rack-mounted system is a space-managing and reliable alternative to conventional stand-alone units and combines the following process components:



The LOOPO series is available in different builds with capacities of 5m³/h to 20m³/h (larger capacities available):

LOOPO C

PW and HPW cold storage and distribution with continuous ozonisation of the storage container

LOOPO CH

PW and HPW cold storage and distribution with continuous ozonisation of the storage container. Sanitisation with hot water is possible

LOOPO H

WFI hot storage and distribution

LOOPO – A Proven and Reliable Concept

LOOPO build

- Speed-controlled feed pump for water distribution
- BWT STERITRON electrolysis ozone generator with single- and multi-point online ozone measurement (LOOPO C and CH)
- Bewades UV radiation unit for destroying ozone until it is below the detection limit (LOOPO C and CH)
- Pressure, flow rate, temperature and conductivity measurement (optional online TOC measurement)
- For cooling the pure water during long circulation times, an additional double tube bundle heat exchanger can be integrated.
- Autonomous control with a dedicated CPU and validated software components for best operational safety

The following aspects were taken into account during the development of the LOOPO pharmaline:

- Design and manufacture in accordance with the GMP-guidelines, the recommendations of the "ISPE Engineering Guide" and the FDA guidelines
- All piping, free of dead zones, made from stainless steel SS316 L with Tri-Clamp connections and a surface roughness of the parts in contact with the water of Ra ≤ 0.8 µm
- Use of high-performance pumps for smooth and quiet operation
- Use of high-quality EMSR technology for the optimal acquisition and processing of measured values, including an easy-to-use system controller
- Plug & play philosophy: the assembly of the system in one frame, including the possibility of factory acceptance tests (FAT), results in short on-site installation times and thus in optimised project execution times. The system is already pre-qualified when it arrives at the installation location

LOOPO – Ensures Compliant Water Quality up to the Point-of-Use

Cold-water sanitisation of PW/HPW/WFI

With the compact system LOOPO, the entire storage and distribution system can be sanitised by adding ozone to the circulating water. Depending on the duration and frequency of the sanitisation operations and the quality of the generated pure water, an ozone concentration of about 20 to 40 ppb is used.

If the system is used together with an OSMOTRON treatment unit, a concentration of 20 – 25 ppb is absolutely sufficient for system protection. The sanitisation intervals and the duration of the sanitisation cycles can be selected on the controller to meet the existing requirements.

Hot-water sanitisation of PW/HPW/WFI

For WFI systems, hot-water sanitisation can be employed or as an alternative to ozone treatment. LOOPO-S includes the facility for hot-water sanitisation of the tank and the entire loop at temperatures of 80 to 85 °C. With POU coolers, cold withdrawals are possible as an option where required.

Process concept

A partial flow of pure water is taken from the tank via a bypass line and fed in the return line of the loop. This water passes through the ozone-generator cell, where it takes up dissolved ozone. This provides the tank system with complete protection.

The ozone concentration needed for this is about 20 to 40 ppb, depending on the water quality. The UV unit at the beginning of the loop breaks down the ozone to an undetectable level. During the night or production pauses, the UV unit can be switched off so that the entire loop is sanitised.



Advantages of ozone

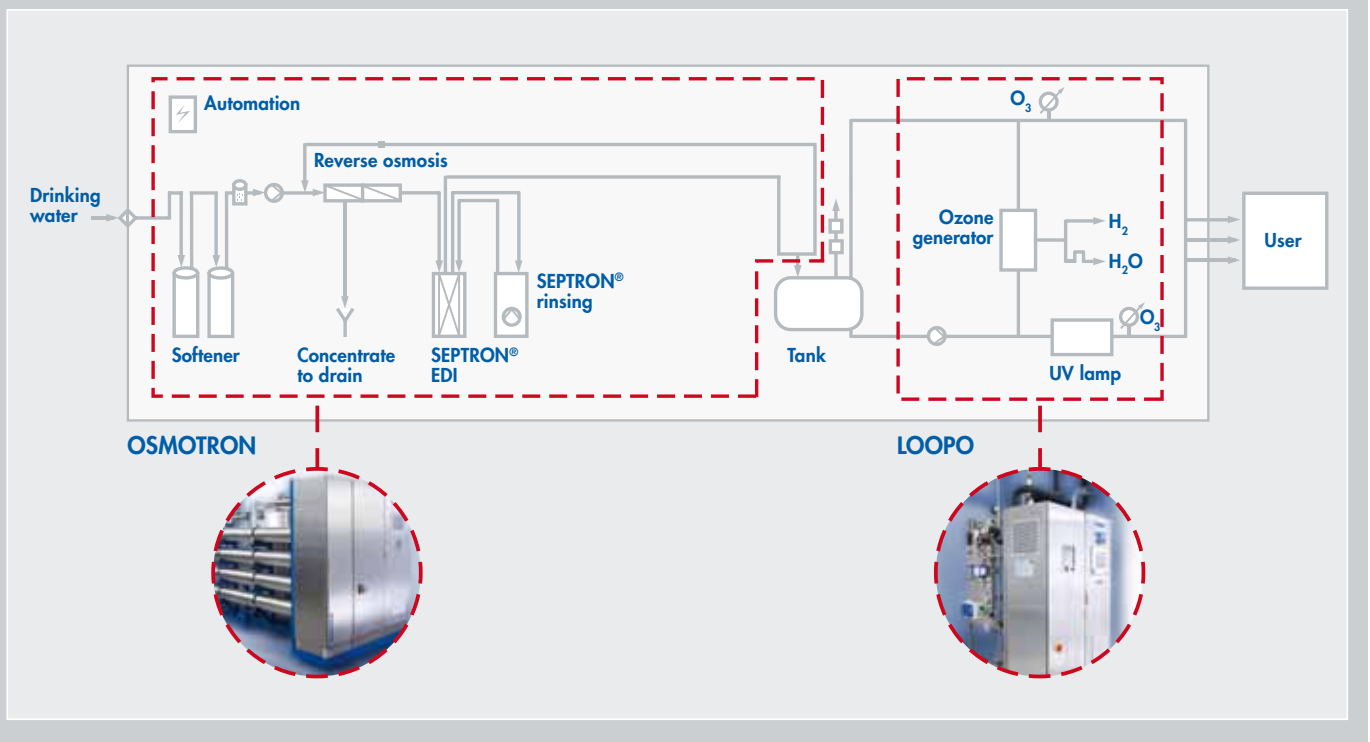
The advantages of the electrolytic generation of ozone are convincing:

- No contamination with ions because the ozone is generated directly from the pure water and dissolves in this water
- Effective reduction of the number of germs; TOC and endotoxins are reduced even at low concentrations of ozone in the pure water
- Continuous operation without the need for additional, periodic disinfection with chemicals and steam
- Simple installation and commissioning; little maintenance required; very low operating costs

Typical results which can be achieved by using ozone in pharmaceutical LOOPO Systems

	Total germ countl KBE/100ml	Endotoxins EU/ml
After OSMOTRON PRO	< 1000	< 0,25
Storage tank with ozone	0	< 0,06
Distribution system with daily ozone treatment	< 1	< 0,06

OSMOTRON PRO & LOOPO: A Perfect Team



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