

Ultraviolet Technology

UV Disinfection in Soft Drinks & Bottled Water

How Does Ultraviolet Work?

Ultraviolet energy causes permanent inactivation of micro-organisms by disrupting DNA so that they are no longer able to maintain metabolism or reproduce. The maximum effectiveness occurs at between 240nm and 280nm, with the most effective wavelength typically at 265nm. The Hanovia Arc Tube produces these wavelengths in abundance.

All bacteria, spores, viruses and protozoa (including Cryptosporidium and Giardia oocysts) are permanently inactivated by UV.

Why do leading Soft Drinks Manufacturers Choose UV?

Major soft drinks groups around the World use UV disinfection. Producers trust UV to provide microbiologically pure water and ingredients, which help protect the flavour and shelf life.

Soft drinks and bottled water producers build their reputation around the purity of their product, emphasising the fact that it is natural. UV is the only effective method of treating bottled water without compromising marketing assets.



Most Efficient

- ▶ No micro-organisms survive UV disinfection
- ▶ Treatment is effectively monitored
- ▶ Permanent accurate treatment records are produced, so all batches can be traced. Ideal for ISO9000, BS5750 etc.
- ▶ UV is the most cost effective method of water disinfection

Superior to Alternatives

- ▶ Chlorine is often unacceptable because of flavour effects
- ▶ Sterile filtration does not remove all the spores from the water
- ▶ Pasteurisation is expensive in capital equipment and running costs
- ▶ UV is the most environmentally friendly way to reduce the number of viable organisms, without causing further pollution

No Detrimental Effects

- ▶ UV has no effect on pH, colour, flavour and aroma
- ▶ UV has no detrimental effect on product stability
- ▶ UV leaves no residue
- ▶ Overdosing is not possible

Safety

- ▶ No hazardous chemicals are required
- ▶ No toxic by-products are produced

Applications

Water Supply

Town's water should be free from micro-organisms. However, well water may be contaminated and town's water can pick up infection in the plant. EU laws require food and beverage water to be microbiologically pure.

- ▶ UV treatment of water stops all contamination at source
- ▶ UV treatment enables bottled water producers to guarantee the quality of the product even when the source fluctuates
- ▶ UV permits reuse of water to improve availability and plant profitability, without risking the quality of the product

Water Treatment Plant

Softeners, demineralisers and filters are frequently installed at water intake points to improve the quality of the water. All such equipment is known to become infected and will release micro-organisms into unprotected water. UV treatment at this stage ensures that water quality is maintained.

CIP Rinse Water

The final rinse water of the CIP is typically the purest source water available, but may contain micro-organisms which need to be inactivated. If chemical sterilants are used, solutions can be left in the pipe-work, tankers and tanks, where they mix with incoming product and may leave taint. UV treatment of the rinse water is better because:

- ▶ UV leaves no taint
- ▶ UV treatment of CIP rinse water is cost effective and safe
- ▶ UV is compatible with hot detergent
- ▶ UV is not affected by acid or alkali in cleaning fluid

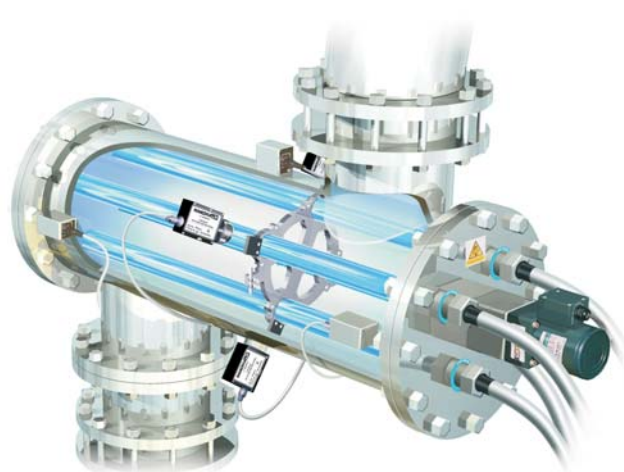
Flavourings and Additives Make-up Water

Hanovia UV systems supply disinfected water on demand and so are ideal for all powder and liquid ingredient mixing requirements.

Packaging Plant

UV is effective for:

- ▶ Bottle rinse, UV treated water is used to rinse out any cleaning fluids or plastic residues which could otherwise affect flavour
- ▶ Both disposable and recycled glass or plastic Jetting (injection of water into bottle at capping) Should be done with UV disinfected water



Hanovia UV Systems

Compact and Easy to install

- ▶ Hanovia UV systems conveniently fit into existing pipework in most process areas
- ▶ Minimum site preparation
- ▶ Pre-assembled units available pre-wired and skid mounted, requiring only connection to electrical supply
- ▶ Silent operation
- ▶ Can interface with most computer controlled continuous and batch processes

Inexpensive and Simple to Maintain

- ▶ Simple and safe operation easily understood by operators
- ▶ Designed for remote operation
- ▶ Replacement of Arc Tubes is quick and simple

Rigorous Quality Control (ISO 9001)

- ▶ All Hanovia stainless steel chambers and Arc Tubes built to the highest possible standards
- ▶ Every Arc Tube is individually checked and each completed system tested and run before despatch
- ▶ Test certificates always supplied

All Hanovia Disinfection Systems Include:

- ▶ Disinfection Chamber
- ▶ Arc Tube
- ▶ Control / Power Supply Cabinet
- ▶ UV Monitor
- ▶ Automatic Wiper (Optional)

UV Dosing

The UV dose required for the plant should be decided in conjunction with a Hanovia specialist, who will also advise on installation.



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