

Water disinfection systems of UST

For the industrial water treatment

Disinfection with ultraviolet light.

Electromagnetic waves with a spectrum of 280 to 180 nanometre (nm) represent the short waved **ultraviolet light: UVC**. The irradiation at that wavelength is **damaging the cell structure of bacteria, viruses**, algae and other microorganisms. **At 254 nm the DNA of microorganism is most effectively disrupted**. In result they can no longer reproduce and die-off subsequently.

The UVC emitting elements in **ULTRA V** are focused on precisely that wavelength of 254nm. The process does not require extended holding time like other disinfection methods, **the effect shows instantly**.

Enhanced disinfection with UVC + OZONE

OZONE is the strongest force of oxidation applied in water disinfection. The method is most effective, dissolving the cell membrane of any microorganisms, even humic substances, pesticides, cyanide, phenol are oxidized by ozone. It also reduces odour.

ULTRA V/O3 is combining the instant disinfection of UVC and the powerful oxidation through OZONE. The system operates with a special emitter generating irradiation of 254nm for the direct disinfection. Additionally, electromagnetic waves of 185nm are produced which are used to crack oxygen molecules to enable the formation of O₃ (ozone). For the process ambient air is introduced to the system, no additional substances are required.

Advantages of **ULTRA V**

- Highly efficient, extremely short residence time
- Very safe, efficient also with resistant bacteria
- Environmentally friendly as no chemical toxins are required
- **Cost effective: Investment of 1 – 20 T€ per unit offsets substantially higher operating cost using Biozid; regular payback time < 6 month**
- Simple operation, no dosing equipment, no expandable items
- Minimal efforts for maintenance

UST Umwelt-System-technik.

Dedicated to build the best water treatment solutions

The company, **established 1991 in Gera/ Thuringia is a small and innovative firm, specialized on the design and production of water treatment devices.**

Since 2004 over 15,000 devices using UVC for the water disinfection have been installed all over the world. In 2018 **ULTRA V was introduced with a special focus to provide solutions for larger capacities in the field of industrial water treatment.**

Over the last years **ULTRA V** units have been proving their effectiveness in a wide range of industries, such as vegetable packaging, production of adhesion and forming of glass and metal. **ULTRA V ensures germ-free water in vegetable washing machines, it is eliminating legionella in cooling water circuits and reduces COD in waste water.**

ULTRA V



Water disinfection with UVC and OZONE



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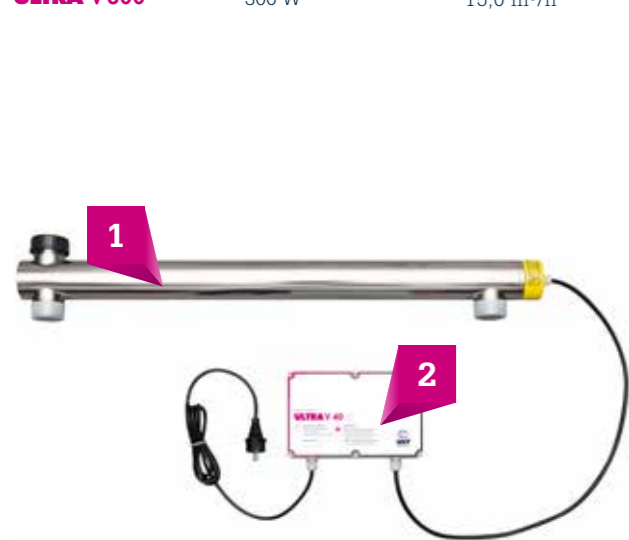
www.ust-gera.de



ULTRA V

UVC - Through flow device

| | Electrical power | 99.99% Desinfection guaranteed at: |
|--------------------|------------------|---------------------------------------|
| ULTRA V 40 | 40 W | 2,3 m³/h |
| ULTRA V 75 | 75 W | 3,1 m³/h |
| ULTRA V 120 | 120 W | 6,0 m³/h |
| ULTRA V 150 | 150 W | 7,5 m³/h |
| ULTRA V 300 | 300 W | 15,0 m³/h |



General

- Flow rate (max.): 20 – 40 m³/h
- Temperature (max.): 40°C



Reactor 1

- Stainless Steel 1.4404
- Surface: electropolished
- Connections: DN 50
- Operating pressure: 6 bar max



Ballast 2

- Type: electronically
- Voltage: 110 – 230 VAC
- Frequency: 50/60 Hz

ULTRA V_k

4-beam UVC - Through flow device

| | Electrical power | 99.99% Desinfection guaranteed at: |
|---------------------|------------------|---------------------------------------|
| ULTRA V 0.6k | 600 W | 50 m³/h |
| ULTRA V 1.2k | 1.200 W | 100 m³/h |



General

- Flow rate (max.): 100 m³/h
- Temperature (max.): 40°C
- Lamps: 4



Reactor 1

- Stainless Steel 1.4571
- Surface: electropolished
- Flange: 2 x DN 100 / 125 / 150
- Turbulator: 2 x Gitter grid
- Operating pressure: PN 10/ PN 16



Ballast 2

- Type: electronically
- Voltage: 110 – 230 VAC
- Frequency: 50/60 Hz

ULTRA V/TS

UVC - Submersible emitter

| | Electrical power | Number emitter |
|------------------------|------------------|----------------|
| ULTRA V 42/TS | 42 W | 1 |
| ULTRA V 82/TS | 82 W | 1 |
| ULTRA V 120/TS | 120 W | 1 |
| ULTRA V 150/TS | 150 W | 1 |
| ULTRA V 84/MTS | 84 W | 2 |
| ULTRA V 126/MTS | 126 W | 3 |



General

- Temperature (max.): 40°C



Emitter 1

- Length: 485 mm (V42/TS | V84/MTS | V126/MTS)
- 675 mm (V82/TS)
- 975 mm (V120/TS | V150/TS)



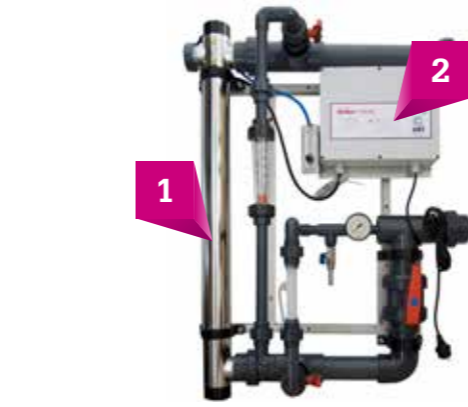
Ballast 2

- Type: electronically
- Voltage: 110 – 230 VAC
- Frequency: 50/60 Hz

ULTRA V/O₃

UVC + OZONE through flow device

| | Electrical power | 99.99% Desinfection guaranteed at: |
|----------------------------------|------------------|---------------------------------------|
| ULTRA V 41/O₃ | 41 W | 2,3 m³/h |
| ULTRA V 87/O₃ | 87 W | 3,1 m³/h |
| ULTRA V 120/O₃ | 120 W | 6,0 m³/h |
| ULTRA V 150/O₃ | 150 W | 7,5 m³/h |



General

- Flow rate (max.): 20 m³/h
- Temperature (max.): 40°C
- Dimension (LxBxH): 1200x450x300 mm



Reactor 1

- Material: Stainless Steel 1.4404
- Surface: electropolished
- Water connections: DN 50
- Operating pressure: 2–3 bar



Ballast 2

- Type: electronically
- Voltage: 110 – 230 VAC
- Frequency: 50/60 Hz

ULTRA V

Application & focus*



Cooling circuits / Cooling towers



Legionella



Drinking Water



Escherichia coli, Vibrio cholerae



Fish farming



Algae



Irrigation / greenhouse farming



Norovirus, Fungi



Vegetable washing



Escherichia coli



Waste Water



BOD & COD

*UVC and ozone providing disinfection regardless of the type of microorganism or their numbers.

Installation 2020 / 2021

ULTRA V40: February 2020 / Manufacture for windows / **process water treatment** / 2 m³ water tank

A small UVC-system for the disinfection of process water, used to clean glass surfaces of produced windows

ULTRA V150/O₃: June 2020 / production with injection moulding / **cooling water treatment** / 50m³ water reservoir, throughput of 15 m³/h

Injection of ozone to the water reservoir, Biozid dosing was subsequently reduced to zero

ULTRA V240 / MTS: July 2020 / production of adhesion / **cooling water treatment** / storage tank with 8m³, throughput 12 m³/h

Installation of 2x 2 submersed UVC-lamps, each with 120 W, instant success

ULTRA V150/ O₃: November 2020 / vegetable packing / **process water for the vegetable washing** / 8 m³/h circulation

Through the injection of ozone, the bacterial contamination on vegetables very substantially reduced, the expiry date of the packed product was significantly extended

ULTRA V600: February 2021 / HQ **water fountain** / 45 m³/h

The unit with 4 lamps safely disinfects the circulated water for water games

ULTRA V1.2k: June 2021 / Glas manufacture / **cooling water treatment** / 90 m³/h

The system with 4 lamps and a total electrical performance of 1200 W reduced the Biozid consumption to almost zero and keeps the circuit free of legionella