

WEDECO LBX series

ENVIRONMENTALLY FRIENDLY UV DISINFECTION
FOR LIQUIDS WITH LOW TRANSMITTANCE

WEDECO
a xylem brand

UV Disinfection Systems - LBX Series

The LBX series fulfils all the requirements for safe, economical and environmentally friendly disinfection of liquids with low UV transmittance:

- Waste water
- Drinking water
- Process water
- Sugar syrup

The LBX series combines the WEDECO Spektrotherm® UV lamp with a hydraulically optimized reactor chamber.

The tight positioning of the lamps enables the treatment of water with low UV transmittance. Electronic ballasts specifically configured specifically for the Spektrotherm® HP lamps are used to increase efficiency and lamp lifetime.

The result is an extremely compact design, improved economy and maximum disinfection performance even with turbid water.

ADVANTAGES

- ▶ Max. disinfection performance at low UV transmittance
- ▶ Effective, environmentally friendly inactivation of harmful bacteria, viruses, yeasts and parasites
- ▶ No toxic by-products (e.g. THM by using chlorination)
- ▶ Compact design
- ▶ Superior lamp technology
- ▶ Fully-automatic wiping system
- ▶ Vario system for continuously adjustable control of the UV output (Spektrotherm® HP lamp)
- ▶ Continuous monitoring using a highly selective calibrated UV sensor

| Type | Flow rate approx.* m³/h | Flange connection | Power consumption (kW / kVA) | Reactor dimensions W x H x D mm |
|----------|----------------------------|-------------------|---------------------------------|------------------------------------|
| LBX 3 | 2,8 | 1 1/2 * | 0,10 | 935 x 135 x 100 |
| LBX 10 | 12 | DN 50 | 0,34 | 930 x 280 x 200 |
| LBX 20 | 24 | DN 80 | 0,60 | 930 x 323 x 245 |
| LBX 33 | 33 | DN 80 | 0,76 | 930 x 348 x 275 |
| LBX 50 | 52 | DN 100 | 1,10 | 930 x 398 x 315 |
| LBX 90 | 86 | DN 150 | 1,50 | 1.530 x 388 x 275 |
| LBX 120 | 134 | DN 150 | 2,30 | 1.530 x 428 x 315 |
| LBX 200 | 230 | DN 200 | 3,70 | 1.535 x 510 x 400 |
| LBX 400 | 368 | DN 250 | 5,90 | 1.535 x 585 x 470 |
| LBX 550 | 576 | DN 300 | 8,80 | 1.540 x 720 x 600 |
| LBX 750 | 778 | DN 400 | 11,60 | 2.400 x 825 x 700 |
| LBX 1000 | 982 | DN 400 | 14,50 | 2.400 x 895 x 770 |

* 400 J/m²; UV transmittance = 70 % per 1cm at the end of the lamp lifetime. Spektrotherm® UV lamp in models larger than the LBX 90. All specifications are subject to change without notice.

WEDECO LBX system components

Spektrotherm® UV lamp

Higher light yield and a lower heat generation at the same time: WEDECO Spektrotherm® UV lamps reach a temperature of just 100° C in operation. For comparison: Medium-pressure lamps reach temperatures of 600 - 800° C. Thanks to this, WEDECO Spektrotherm® UV lamps become less susceptible to varying water temperatures.



The new spectrum emission controller (SEC) handles all control and monitoring functions



Switch and control cabinet

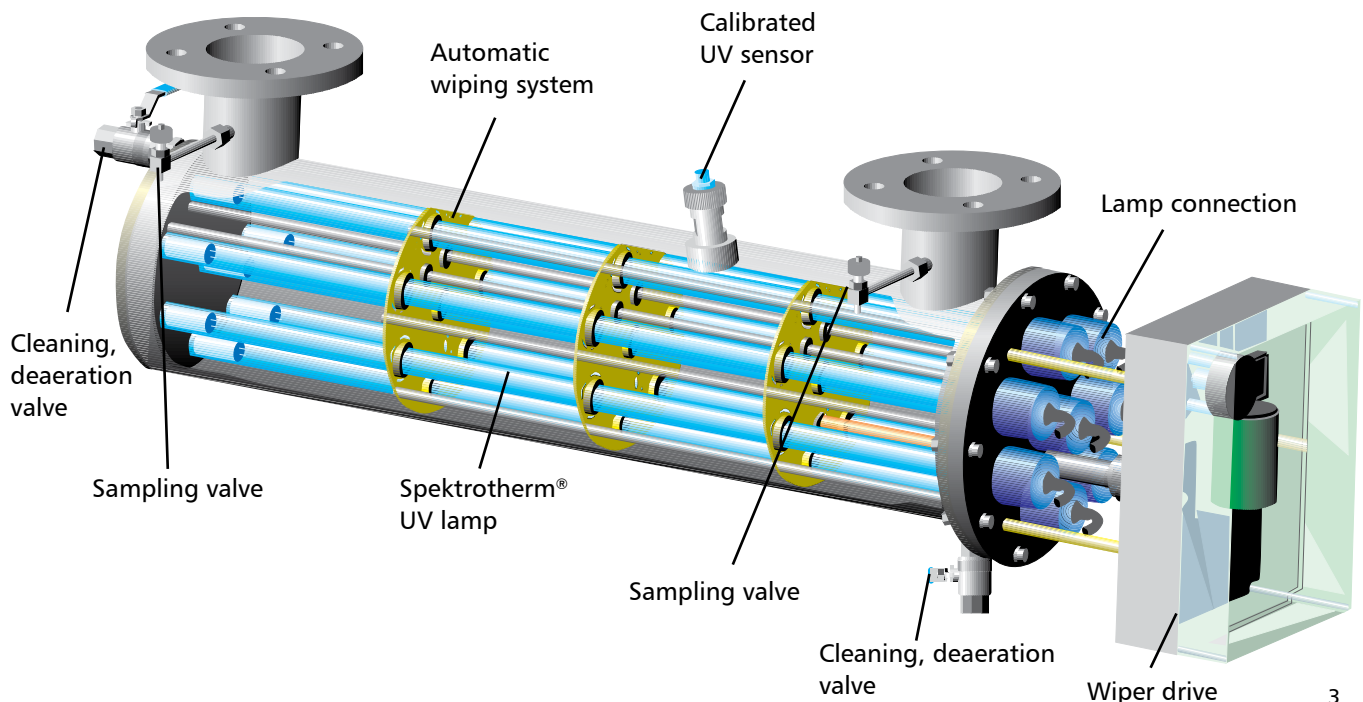


Electronic ballasts ensure that the Spektrotherm® UV lamps operate costeffectively and reliably



The stable, calibrated UV sensor, according to DVGW and ÖNORM, is an extremely precise measuring instrument

WEDECO LBX UV system with switch cabinet and automatic wiping system



WEDECO LBX Applications

Waste water

UV is used successfully for waste water treatment all over the world. The LBX series opens up new possibilities for the treatment of pressurized wastewater (i.e. not transported in open channels). Examples of suitable applications are:

- Irrigation of fields, parks, golf courses etc.
- Industrial process water at water treatment plants
- Waste water disinfection on ships

The reuse of biologically purified waste water plays a continuously expanding role in the light of declining water resources. UV disinfection can be utilized to maintain almost all microbiological standards after appropriate treatment of the waste water. Therefore waste water can safely be reused.

Sugar Syrup

The thin-film design of the LBX series also makes it extremely well-suited for the disinfection of viscose substances such as sugar syrup. Yeasts and spore-forming organisms are the main microbiological contaminants being able to survive in sugar syrup.

UV disinfection can drastically reduce the use of preservatives in the product without negatively impacting the product quality.



Process Water

- Recycling of all types of process water:
This enables cost savings through reduction of fresh water consumption and reuse of waste water
- Disinfection of cooling water loops and rinsing water

Drinking Water

Drinking water with very low UV transmittance due to the presence of certain substances (e.g. humic matter) is predestined for using the LBX series. Fields of use include:

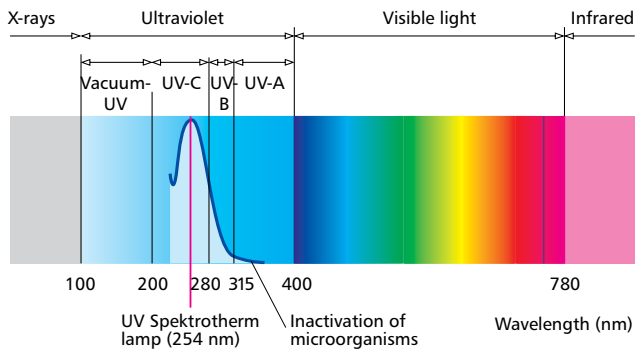
- Surface water
- Filter backwash water etc.



Harmful microorganisms stand no chance

Disinfection with ultraviolet light

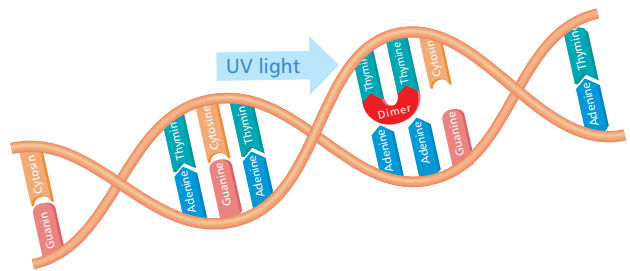
The deployment of chlorine, chlorine dioxide, hypochlorite and other chemical substances to disinfect liquids can result in effects which are detrimental to health and the environment. UV technology is the better alternative to chlorine disinfection. The intensively researched and technologically mature disinfection method with ultraviolet light is adapted from the natural action of sunlight.



Ultraviolet light is light with very high energy levels and a wavelength of 200 - 400 nm. One of the most effective wavelengths for disinfection is 254 nanometres (nm).

How UV disinfection works with liquids

The intensive UVC radiation, most strongly in the wavelength range of 254 nm, reaches the microorganisms and impacts directly on their DNA. By changing the DNA the cell division of the microorganism is interrupted – it can no longer reproduce itself and thus loses its pathogenic effect. With UV technology it is possible to destroy more than 99.99 % of all pathogens within seconds, without addition of chemicals, without harmful side effects, inexpensively, highly efficiently and absolutely reliably.



Ultraviolet light destroys microorganisms by changing their genetic information DNA.



UV system WEDECO LBX 120 with optional automatically wiping system

WEDECO Spektrotherm® technology



Leading the market due to efficiency and safety

The centrepieces of the WEDECO LBX UV systems are particularly energy-efficient UV lamps. They have a long service life, operate continuously even at varying water temperatures and are far superior to conventional UV lamps thanks to their particularly high efficiency.

The ideal choice for water disinfection

WEDECO Spektrotherm® UV lamps emit UV light mainly in the spectral region of 254 nm (nanometres). This UV light region is particularly effective for the disinfection of drinking water and waste water.

The special characteristic of the WEDECO Spektrotherm® UV lamp is its special amalgam/indium doping. Thanks to this, a constantly high UV light yield is achieved with a substantially extended lamp service life at the same time. In addition, liquid mercury can be done without by using this technology inside the lamp.

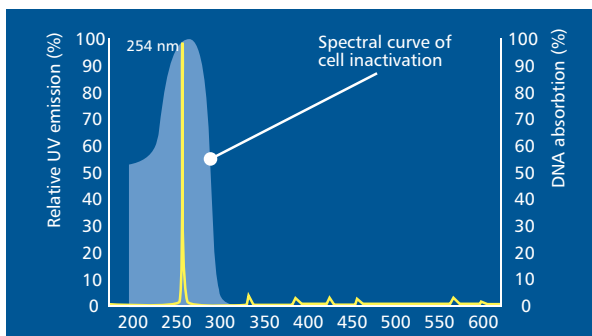
Long-life WEDECO Spektrotherm® UV lamp with the highest energy efficiency

WEDECO Spektrotherm® UV lamp can no longer be beaten with regard to economic efficiency. The light yield in relation to the energy expenditure is 3 times higher in comparison to medium pressure lamps.

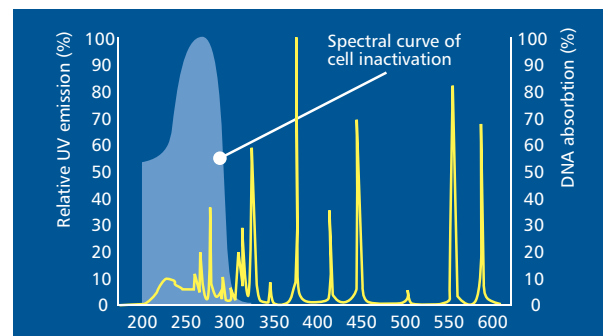
ADVANTAGES

- ▶ 5 times higher UV-C output than conventional low pressure lamps
- ▶ 3 times more efficient than medium pressure lamps
- ▶ Stable UV-C output
- ▶ Up to 3 times longer lamp life than medium pressure lamps

Emission spectra [wavelength in nm]



The monochromatic Spektrotherm® UV lamp emits at a wavelength of 254 nm, which is in the maximum of the effective disinfection range of the spectrum.



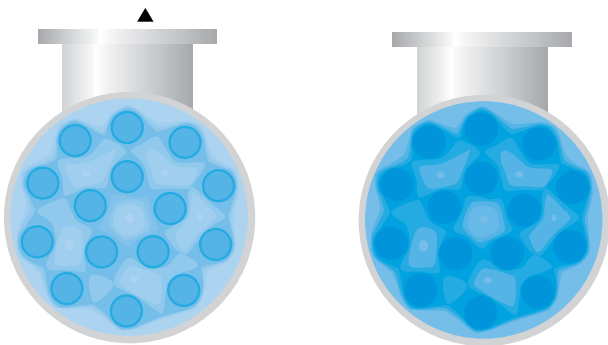
Medium pressure lamps emit a wide-band spectrum, most of which is outside the part of the spectrum that is relevant for disinfection. In addition, the formation of by-products cannot be excluded.

UV dose control with the variable system

WEDECO LBX systems can be optionally equipped with a fully automatic dose control. This unique feature of the WEDECO technology enables the output to be exactly adjusted to the water quality and flow. Overdosage is thereby avoided.

The output of the Spektrotherm® UV lamp is continuously controlled, resulting in substantial reduction of operation cost. The radiation intensity is determined at a representative point within the UV reactor and serves, together with the flow signal, to regulate UV output.

Low flow rate + improved water quality automatically reduces UV radiation intensity



| ADVANTAGES |
|---|
| ▶ Constant UV dose irrespective of changes in water quality or flow |
| ▶ Continuous output regulation of the Spektrotherm® UV lamp (for models larger than LBX 90) |
| ▶ Fully automatic PLC control and visualization via SCADA connection and telemetry |
| ▶ Maximum disinfection reliability |
| ▶ Optimization of energy costs |
| ▶ Longer lamp life and easy operation and monitoring |

High flow rate + poor water quality automatically increases UV radiation intensity

Automatic Wiping System prevent scale formation

WEDECO LBX UV systems are already designed for a quick maintenance. It can be dismantled easily for manual cleaning and is prepared to be connected with an optional chemical rinsing system.

Additionally the UV reactor can be equipped with an Automatic Wiping System to prevent scale formation on the quartz sleeves. As a result, the intermittent manual cleaning using chemical cleaning agents sleeves will hardly be required. The chemical free Wiping System employs PTFE/ Viton sandwich wipers which avoid formation of organic and inorganic deposits on the protective quartz tubes while being unaffected by the high intensity UV light at the lamp surface.



Xylem ['zīləm]

- 1) The tissue in plants that brings water upward from the roots
- 2) A leading global water technology company

We're 12,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to xyleminc.com.

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