

# System LBX Series



Main applications: Waste water, drinking water, process water, sugar syrup







# New LBX UV type series – environmentally friendly disinfection even with limited UV permeability



WEDECO LBX UV systems for the disinfection of waste water

### Advantages of WEDECO LBX UV system

- Max. disinfection performance even with low UV permeability
- Effective, environmentally friendly inactivation of harmful bacteria, viruses, yeasts and parasites
- No toxic by-products (e.g. THMs produced during chlorination)
- Extremely compact design
- Superior lamp technology
- Fully-automatic wiping system
- Vario system for variable control of the UV output (Spektrotherm<sup>®</sup>HP lamp)
- Continuous monitoring using a highly selective calibrated UV sensor

The new generation of the LBX Series fulfils all the requirements for the safe, economical and environmentally friendly disinfection of liquids with limited UV transmission:

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

The LBX series combines the WEDECO Spektrotherm®HP lamp with a hydraulically optimised reactor chamber. The positioning of the lamps is particularly compact to enable the treatment of water with limited UV transmission. Electronic lamp management systems configured specifically for the Spektrotherm®HP lamps are used.

The result is an extremely compact design, improved economy and maximum disinfection performance even with turbid water. Performance rates in excess of 1,000 m<sup>3</sup>/h per reactor are now possible.



### Areas of application





#### Waste water

The UV disinfection process is now also used successfully all over the world for the treatment of waste water. The LBX series opens up new possibilities for economical use even with pumped waste water. 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 an ever expanding role in the light of declining water resources. UV disinfection can be used to maintain

### almost all microbiological standards with the appropriate preparation of the waste water. The waste water can therefore be safely reused.

### **Drinking water**

Drinking water with very low UV transmission as a result of contaminants (humic matter) in the water is predestined for use with the LBX series. Fields of use include, for example, surface water with a high humic matter content, filter backwash water etc.

### **Process water**

- · Recycling of all types of process water
- Cost savings through reduction of fresh water consumption and build up of waste water





- Disinfection of cooling circuits and rinsing water
- Destruction of residual ozone in process water loops

### Sugar syrup

The thin-layer design of the LBX series also makes it extremely wellsuited to the disinfection of viscose substances such as sugar syrup. Yeasts and spore-forming organisms are the main organisms that survive in sugar syrup. UV disinfection can drastically reduce the use of preservatives in the product. Even UV radiation using conventional UV sockets fails to change the product quality.



Settling basin

purification



### Harmful microorganisms stand no chance



Ultraviolet is light with very high energy levels and a wavelength of 100-400 nm. The UV-C area with a wavelength of 254 nm is particularly effective for disinfection



UV light inactivates microorganisms by changing the DNA/RNA genetic information and thus obstructing essential biochemical processes.

## Safe disinfection at 254 nm

The UV disinfection process is now also used successfully all over the world. Many water treatment plants, waterworks and industrial companies already use UV disinfection for the treatment of water and waste water. Bacteria, viruses, yeasts and parasites (e.g. Cryptosporidium and Giardia) are effectively inactivated by UV light. Unlike treatment with antibiotics and, increasingly, chlorination, UV disinfection does not result in the development of resistance. No dangerous by-products such as those experienced with chemical disinfection are produced.

# Inactivation of parasites (e.g. Cryptosporidium)

Extensive tests in the USA have shown that UV disinfection is now the most effective procedure for inactivating dangerous parasites (Cryptosporidum, Giardia) in drinking water.

### Comparison of the UV and chlorine disinfection procedures

LIV disinfaction			
with low pressure ++ +	+	++	None
Chlorination + +	+	-	THM, AOX, chlorite

++ = very effective + = effective - = hardly effective

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## WEDECO LBX system components





# WEDECO Spektrotherm<sup>®</sup>HP lamp – leading the market due to efficiency and safety

### **Emission spectra**



The Spektrotherm<sup>®</sup>HP lamp mainly produces an emission with a wavelength of 254 nm, which is at the upper end of the disinfection-effective spectral range.

> The latest generation of the WEDECO Spektrotherm®HP UV low pressure lamps is once more setting the standards in relation to UV-C output, ageing properties and viability.

Special doping of the Spektrotherm®HP lamp (amalgam alloy) and an electronic lamp management system developed specifically for this type of lamp provide excellent properties for operating the UV system.



Medium pressure lamps emit a broadband spectrum for the most part outside the disinfection-relevant spectral range. In addition, it is not possible to rule out the formation of undesirable by-products.

### ADVANTAGES

WEDECO Spektrotherm<sup>®</sup>HP lamps offer the following:

- 5-times greater UV-C output than conventional low pressure lamps
- 3-times greater efficiency compared with medium pressure lamps
- Stable UV-C output
- Improved ageing properties



## UV dose control with the WEDECO vario system

### ADVANTAGES

The WEDECO vario system offers the following:

- Constant UV dose (fluence) irrespective of water quality or flow rate
- Fully-automatic SPS control and visualisation with bus or SCADA connection
- Maximum disinfection safety
- Optimisation of the energy costs
- Easy operation and monitoring
- Continuous output regulation of the Spektrotherm<sup>®</sup>-HP lamp (above LBX 90)



Low water flow rate and improved water quality automatically result in lower UV radiation

WEDECO LBX devices can if desired be fitted with a fully-automatic dose control system. This unique performance characteristic of WEDECO technology makes it possible to adapt the necessary UV output exactly to the respective water quality and flow rate quantity. Overdosage is thereby avoided

The output of the Spektrotherm®HP lamp is continuously regulated for this purpose. The result is a considerable reduction in operating costs.

The strength of the radiation is recorded at a representative point in the UV reactor and along with the delivery rate signal is used to regulate the UV output.

Higher water flow rate and poor water quality automatically result in more intensive UV radiation



### **Technical data**

Туре	Flow rate approx.* (m³/h)	Flange connection	Power consumption (kW / kVA)	Reactor dimensions W x H x D (mm)
LBX 3	3	DN 25	0.10/0.10	1,200 x 210 x 145
LBX 10	12	DN 50	0.30/0.32	1,200 x 340 x 220
LBX 20	25	DN 50	0.60 / 0.63	1,200 x 380 x 250
LBX 33	34	DN 80	0.76 / 0.80	1,200 x 410 x 290
LBX 50	52	DN 100	1.10 / 1.16	1,200 x 460 x 340
LBX 90	90	DN 150	1.50 / 1.58	1,850 x 430 x 300
LBX 120	140	DN 150	2.20 / 2.32	1,850 x 470 x 350
LBX 200	230	DN 200	3.70 / 3.89	1,850 x 570 x 430
LBX 400	370	DN 250	5.90 / 6.21	1,850 x 630 x 500
LBX 550	580	DN 350	8.80 / 9.26	1,850 x 780 x 630
LBX 750	780	DN 400	11.60 / 12.21	1,850 x 880 x 730
LBX 1000	1,000	DN 400	14.50 / 15.26	1,850 x 950 x 800

\* 400 J/m<sup>2</sup>; transmission = 70% per 1cm at the end of the emitter service life. Spektrotherm<sup>®</sup>-HP lamp above LBX 90.We reserve the right to make technical changes and changes to the scope of delivery at any time.



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