

GLOW 300 & 5000 SERIES

Horizontal Open Channel UV Wastewater Disinfection to 500,000 GPD



OVERVIEW

Ultraviolet “UV” open channel disinfection is an accepted method for reducing microorganisms in wastewater.

The **GLOW** package treatment systems utilize horizontal channels to disinfect flows up to 500,000 GPD (higher flows in other brochures).

Wastewater enters the channel and once inside, it is exposed to UV light. The UV lamp used for germicidal disinfection produces the majority of its light in the 254-nm wavelength. At this wavelength, UV light destroys bacteria, protozoa, viruses, molds, algae and other microbes. This includes fecal coliform and such waterborne diseases as: E-coli, hepatitis, cholera, as well as many others.

Systems integrate energy efficient low pressure high output UV lamps. These lamps last over 12,000 hours and produce over 90% of their light in the 254 nm range.

The **GLOW** systems come with stainless steel channels or may be installed directly into pre-poured concrete with a liner or brackets.

FEATURES

- Stainless steel channel with transition boxes
- Built in level control weir with drain
- Low pressure high output UV lamps
- Flexible flange connection sizes
- Remote stainless steel electrical enclosures with protective window kits
- Lamp status and running time indicators

OPTIONS

- Stainless steel liner for concrete
- Stainless support brackets for concrete
- UV monitoring
- Ballasts on the modules
- Remote On/Off
- Programmable Logic Controls (PLC)
- Online UV transmission monitoring

HORIZONTAL UV



GLASCO UV

SYSTEM DESIGN

The following is a list of information required to size a UV wastewater disinfection channel system:

- Peak instant flow rate
- No flow situations
- Discharge permit
- UV transmission %
- Total Suspended Solids (TSS)
- Biological Oxygen Demand (BOD)
- Total Dissolved Solids (TDS)
- Iron and Manganese levels
- Installation location (indoor or outdoor)
- Understanding of plant treatment process
- Staffing level for system maintenance

OPERATIONAL OVERVIEW

Wastewater plants use horizontal open channel UV disinfection systems for flow up to 500,000 US GPD.

The **GLOW 300 & 5000** Series comes with a packaged stainless steel channel with transition boxes.

Disinfection modules are installed horizontally in the channel. Modules connect to a remote Ballast Control Center (BCC) via waterproof cables.

A UV sensor reads the output of a single lamp and displays the output in %. Lamp operational status in the form of LEDs and system run time are displayed with the UV output under a protective window kit.

Lamps need to be replaced every 12,000 hours. Due to the harsh nature of wastewater, the quartz sleeves (the protective glass-like tubes that protect the lamps) need to be cleaned. Fouled quartz prevent the UV light from penetrating and will reduce system efficiency. Modules need to be hand cleaned on a periodic basis with a product that removes calcium, rust or lime.



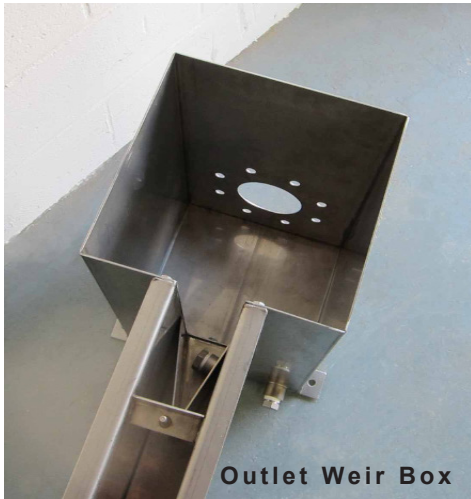
OPERATION

Plant connects to the the flange pattern in the transition boxes (no piping required for pre poured concrete). Wastewater flows into the channel and passes by the UV lamps suspended in the channel.

A weir maintains the appropriate water level to keep the lamps submerged regardless of the flow. This means that during both zero and peak flows, the lamps will always be covered and providing disinfection.

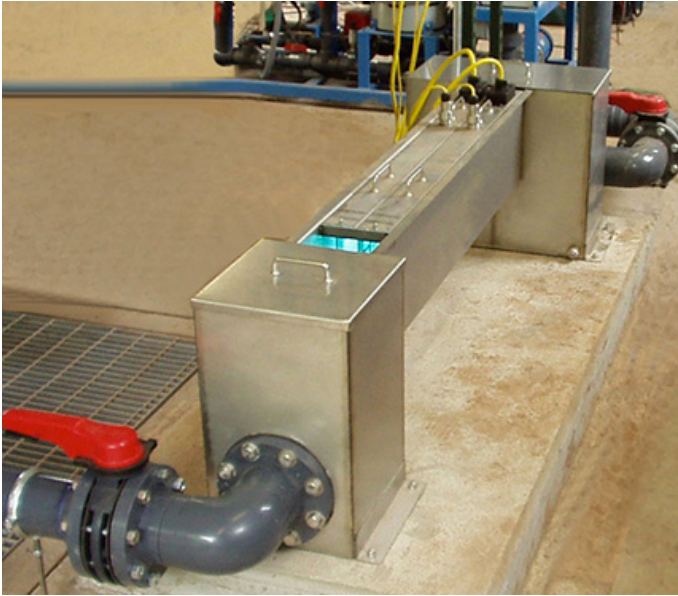
Modules and UV sensor are connected to the BCC via multipin waterproof connectors. Operators are able to disconnect power to the modules by undoing the connectors and removing the cable from the BCC.

The BCC also has an integrated fan cooling system. The filters need to be cleaned on a periodic basis to allow proper air flow to the ballasts.



REDUNDANCY

Redundancy requirements vary from site to site. In most cases, a single bank system designed to treat the peak flow is provided.



Redundancy may require two banks. These can be 1/2 flow banks or 100% redundant.



A "U" channel provides two banks connected by a "U" turnbox.



Two (2) bank "in-series" channel provides for redundancy or to treat 1/2 the peak flow

CONTROLS AND MONITORING

Each **GLOW** horizontal channel system comes with a remote NEMA 4x modified fan cooled stainless steel enclosure with window kit. This enclosure, the Ballast Control Center (BCC), houses the electronic ballasts and controls needed to operate the UV lamps.

The ballasts provide the required voltage to ignite the mercury vapor UV lamps. The ballast then regulates the amount of electricity flowing through the lamp so the right amount of UVC light is emitted.

In addition to providing power to the lamps, the BCC also displays lamp status, run time and UV output under a window kit.

The BCC comes standard with an On/Off switch and power disconnect switch. If required, BCC can be equipped with a Hand/Off/Auto (HOA) switch for remote on and off capability.

System are provided with UV monitoring devices. These monitor the output of the UV lamps. The display shows the status from 0 to 100% or can provide the actual UV output. System provides a 4-20 mA output.

* Some project specifications require the ballasts to be mounted on the module. If this is required, system will be provided as specified.



GLOW SERIES (assumes 65% UVT, 30 mJ and a discharge permit of 126-200/100 ml)

UNIT NAME	Flow Rate GPD	Flow Rate m3/Day	WATTS	CHANNEL DIMENSIONS L x W x H	ELECTRICAL DIMENSIONS W x H x D
GLOW-300-1-2	40,000	151	170	70" x 9" x 14"	18" x 24" x 10"
GLOW-300-2-2	80,000	303	340	76" x 12" x 20"	18" x 24" x 10"
GLOW-300-3-2	120,000	454	510	76" x 12" x 20"	18" x 24" x 10"
GLOW-300-4-2	150,000	568	680	100" x 24" x 20"	24" x 24" x 10"
GLOW-5000-2-2	250,000	946	680	136" x 20" x 20"	18" x 24" x 10"
GLOW-5000-3-2	400,000	1514	1020	136" x 20" x 20"	18" x 24" x 10"
GLOW-5000-4-2	500,000	1893	1360	144" x 24" x 20"	24" x 24" x 10"

* Dimensions are approximate and may be changed without notice. Sizing is based on bioassay data at end of lamp life 65% UVT, and a dosage of 30 mJ. Bioassay as by HydroQual. Sizing is based on 90% end of lamp life and 90% quartz sleeve fouling.

Systems operate on 120 - 277 volts 50/60 Hz.. Lamps will operate > 1 year

Typical spare parts to have on hand: Spare lamp, quartz sleeve and orings. Additional items to have on hand: Rubber gloves, eye protection, calcium, lime and rust remover and scrub brush.

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GLOW300-5-15