



## OVERVIEW

The “NONCON 5000” Series is a “flow through” fluoropolymer style of ultraviolet (UV) water and wastewater disinfection systems.

Unlike our other systems where the UV lamps are immersed in the water (using protective quartz sleeves), the “NONCON 5000” uses non conductive transparent fluoropolymer tubes (aka Teflon) to transport the water close to the UV lamps.

The UV lamps are positioned in the air and shine germicidal rays (@ 254 nm) through the fluoropolymer tubes directly at their intended targets, microorganisms. Lamps are not in the water.

## FEATURES

- Stainless steel disinfection reactor
- Low-pressure high-output UV lamps
- Fluoropolymer flow through tubes
- Multi-voltage power (120-277)
- UV monitoring
- Lamp status and run time indicators
- 45 psi pressure-rated
- Remote electronics
- Environmental temperature management
- Air release valves
- Drain ports



## OPERATIONAL OVERVIEW

Systems use special fluoropolymer (FEP) tubes to transport water, wastewater and other liquids in close proximity to the UV lamps. The fluoropolymer tubes are transparent and allow UV light in the 254 nm range to penetrate the tube's walls and disable microorganisms. Lamps are positioned around the tubes in a reflective reactor.

The tubes are manufactured in the United States from a high quality polymer resin. The tubes, which are highly transparent, are neutrally charged (the "non-conductive" in "NONCON") and thus, not susceptible to fouling and scaling from positively charged minerals. In traditional UV systems, the quartz sleeves need to be cleaned.

Over 100 years ago, scientists found that when pathogens were exposed to UV light, their reproduction was limited. The light resided in the UVC range of the spectrum. Specifically, they discovered that light in the 254 nanometer (nm) range was the most effective. When pathogens are exposed to UV light, their cells become damaged and this inhibits reproduction. UV light damages the cell's DNA and RNA and once damaged, they are unable to replicate and therefore, rendered harmless.

The amount of damage is a result of the intensity of the UV light multiplied by the time the water is exposed to the light (time x intensity). The dosage, referred to as microwatts, is often expressed as mJ/cm<sup>2</sup>. Doses > 30,000 microwatt dose (30 mJ) are accepted for wastewater disinfection.

NONCON - FEP TUBE



### APPLICATIONS

- Wastewater
- Process waters
- Opaque liquids
- Juices, milks, beverages

### OPTIONS

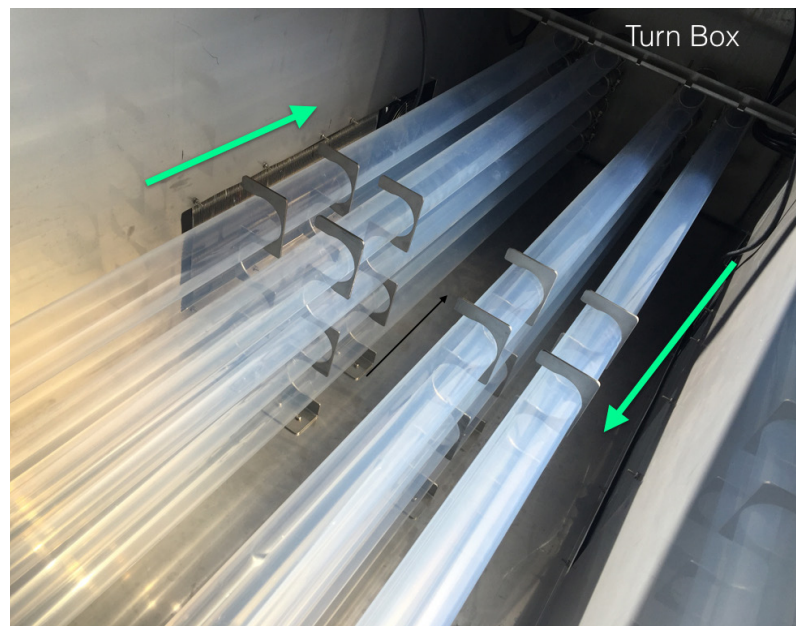
- 80 psi
- PLC controls
- Open channel
- Skid mounting

## CONFIGURATIONS

Piping connects to the “NONCON” reactor via flange or in the case of larger projects, directly into a poured concrete channel. Water or wastewater enters a pressurized transition box and then feeds into a bank of transparent tubes. Water and wastewater travels through the tubes and exits into the discharge pressure box. Tubes are rated at 45 psi.

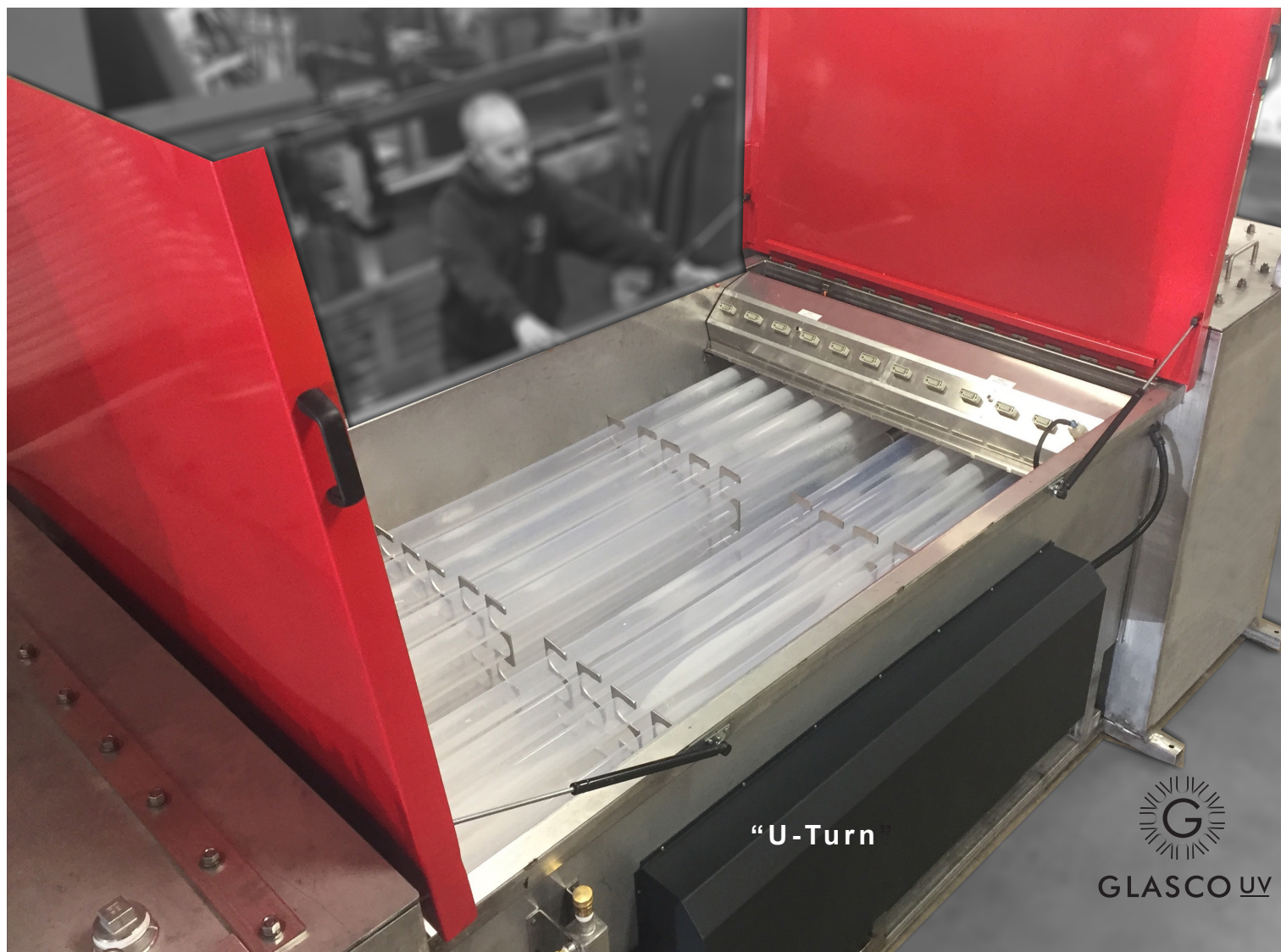
Systems can be provided with redundancy. This can be in the form of “in series”, “U-turn” or parallel.

Systems are designed based on a peak flow rate, a UV transmission percentage (UVT%) and information related to the plant’s discharge permit. The number of tubes and associated UV lamps are based on the biological testing (bioassay) testing and computational fluid dynamic (CFD) modeling can be supplied in various voltages.



In this “U-Turn” style set up, 2 banks are in the same channel

**NONCON - FEP TUBE**



# NONCON - FEP TUBE



“In Series”

## INSTALLATION DESIGN

The NONCON uses a remote Ballast Control Center (BCC). This stainless steel enclosure provides a single point of control for operators and removes sensitive components from reactor, which may be damaged in the event of moisture or flooding. The BCC houses ballasts, power controls, operating displays and UV monitor in a controlled environment. NONCON lamps (low-pressure high-output) are sensitive to temperature.

To maintain optimal lamp temperature, reactor will be provided with a heat exchanger.

System has flexibility when designing for redundancy. Standalone, banks “in-series”, “U-turn” box (shown above) or in parallel. Unlike traditional open channel UV systems, the FEP tube systems have very low maintenance costs due to the lack of quartz sleeve fouling.

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