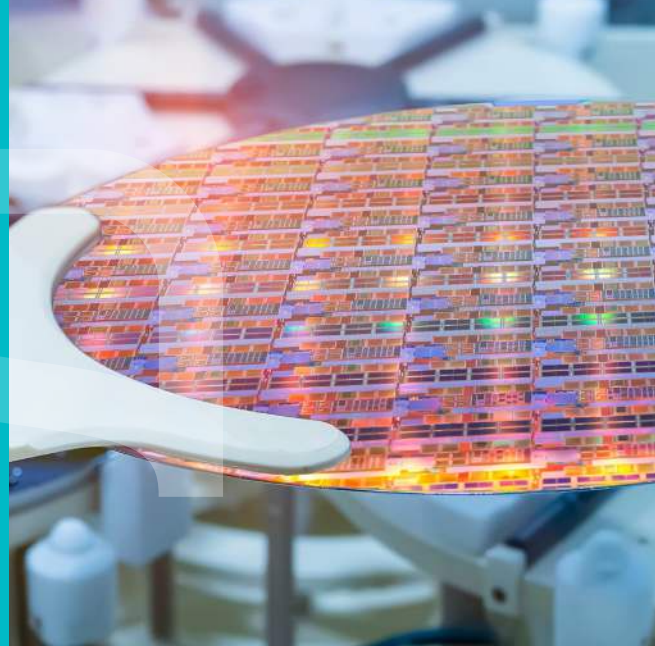


# TOC Reduction

## HOD™ UV



### Background

In today's world, various industries such as power, Photovoltaic (PV), and semiconductors, require a consistent Ultra Pure Water (UPW) supply for their manufacturing processes. To meet this demand, businesses need efficient and reliable water treatment systems capable of reducing Total Organic Carbon (TOC) and other contaminants to the strictest levels. Exceeding the TOC limit in UPW can have detrimental consequences. High TOC levels (over 200 ppb) in the power industry can cause corrosion and fouling in boilers and turbines, reducing efficiency, increasing downtime, and costly maintenance.

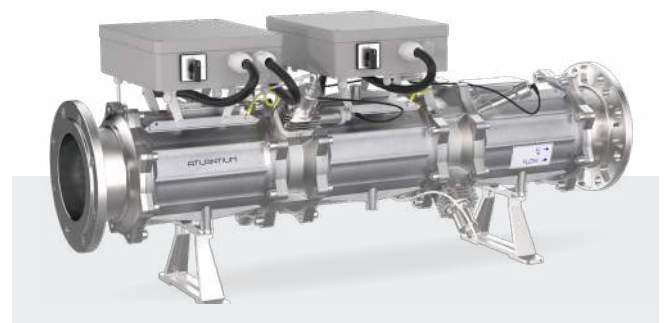
Similarly, in the PV industry, excessive TOC levels (over 20 ppb), can lead to impurities in solar cell production, reducing the overall efficiency and longevity of solar panels. In the semiconductor industry, elevated TOC levels (over 5 ppb), can contaminate microchips and other sensitive components, causing defects and yield losses. Atlantium's HOD™ (Hydro-Optic Disinfection) UV is designed to meet UPW requirements, ensuring pure results, and minimizing downtime.

Chosen by leading manufacturers in Taiwan, China and India, the HOD UV is a cutting-edge technology that utilizes a powerful combination of ultraviolet light and an advanced dual-sensor configuration to deliver superior TOC Reduction performance.

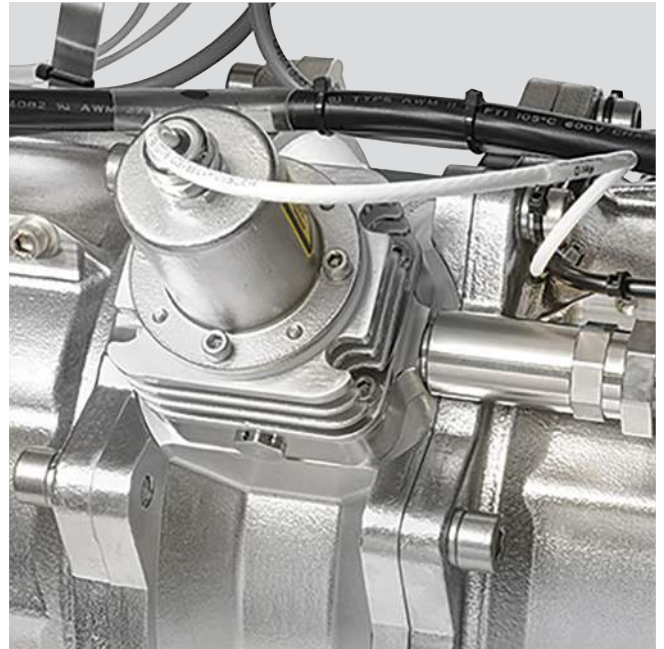
### HOD Medium Pressure UV Key Benefits

**15 times fewer lamps and a smaller footprint!**

- MP VUV lamps produce polychromatic wavelengths from 185 and above
- HOD UV reduces the undesired formation of the  $H_2O_2$  traces
- VUV lamps have higher intensity than conventional UV, enabling using fewer lamps
- Fewer lamps enable installing a sensor per lamp, which monitors & controls each lamp separately, enabling real-time control & optimization for ultimate efficiency



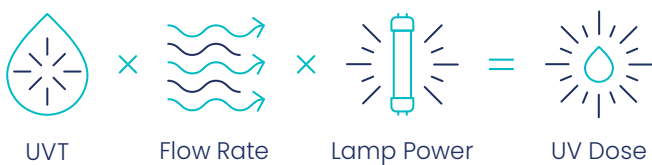
# HOD™ UV Technology Overview



## Real-Time Monitoring & Response to Changing Water Conditions

The UV Dose depends on three parameters:  
UVT, flow rate, lamp power.

Direct and accurate monitoring of each of these parameters individually is crucial for reliable and accurate UV Dose delivery.



## Integrated Water Quality Monitoring

- Integrated UV transmittance (UVT) sensor on each HOD UV system
- Continuously monitors UVT
- Optimizes system performance for actual, not estimated, UVT levels

## Accurate Lamp Performance Monitoring

- Dedicated lamp output sensor per lamp provides monitoring of each individual lamp's performance
- Ensures delivery of the required UV dose at all times
- Continuous adjustment of lamp power according to changing production variables such as flow rate and water UVT parameters individually is crucial for reliable and accurate UV Dose delivery.





## Real-Time Performance Data

- The most advanced operation module in the market
- Elaborate information about each individual lamp
- Configure output signals, operation modes and alarms
- User-based authorization management system
- Complete integration with control SCADA system

## Superior Power Efficiency

Total Internal Reflection (TIR) uses fiber-optic principles of recycling UV photons in the disinfection chamber to achieve higher UV dose levels with minimum kW consumption.

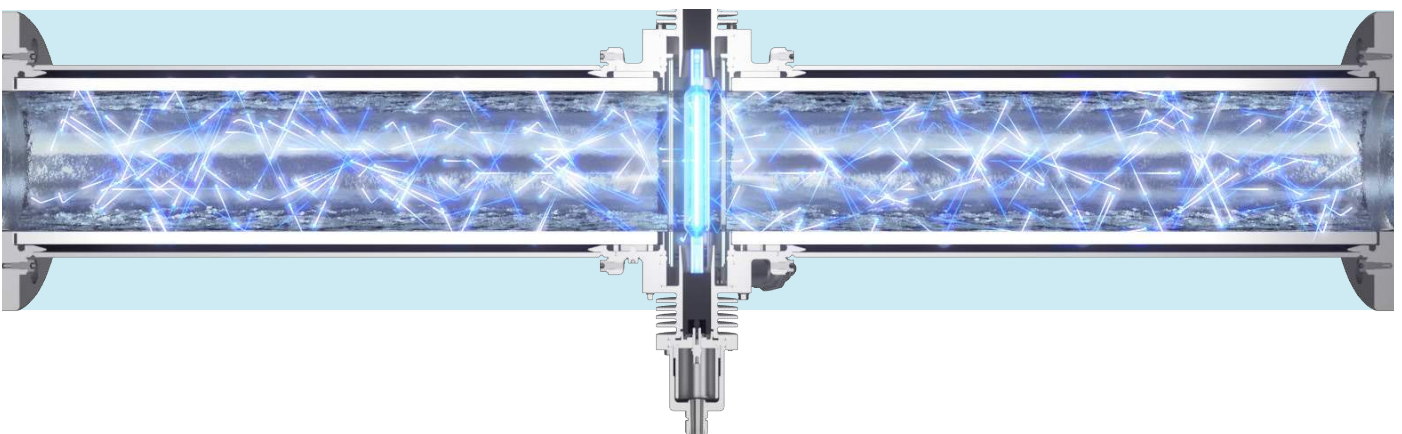
## Medium Pressure Lamps

### The advantage of the wide germicidal wavelength

The spectral sensitivity of microorganisms to wavelengths between 200-400nm is by now an established fact. Low pressure 254nm is too weak and unreliable to provide the required inactivation. Medium pressure lamps emit a broad germicidal spectrum providing complete protection against a wide variety of microorganisms while using minimal amount of lamps.

### Why low amount of lamps is so important?

- Accurate monitoring (enables a sensor per lamp)
- Reduced maintenance
- Recycles UV light energy using Total Internal Reflection (TIR)
- Offers most advanced system geometry with optimized hydraulic and optics
- Ensures homogenous UV dose distribution





HOD UV quartz sleeve (left) vs. conventional UV sleeve: due to the robustness and durability of the HOD sleeve no periodical replacement is needed



## No Quartz Sleeve Replacement

The HOD UV systems use a high grade silica quartz sleeve five times thicker than those used in conventional UV systems, and does not require periodical replacement.

## Quick and Easy Lamp Replacement

Lamp replacement does not require draining the system or depressurization and can be safely performed during system operation!

## Modular Design Enables Maximum Flexibility

HOD UV systems' core "building blocks" include a lamp and pipe section and independent ballast unit. Sections are added together according to the application and desired UV dose. Each section can operate independently from the rest of the sections.

This unique configuration allows for maximum flexibility in sizing, maintenance and operation:

- Overcomes space and head-loss limitations
- Allows for lamp replacement while system is in operation
- Increase capacity by adding more sections; no need to replace entire system

