

Disinfection



Semiconductors



Taiwan

# Disinfection of Acid Wastewater Discharge in Taiwan

## The Challenge

A leading semiconductor foundry in Taiwan, internationally renowned for its advanced manufacturing technology and continuous innovation, needed to treat Acid Wastewater Discharge (AWD) in its backend discharge system. Multiple analytical instruments, including COD,  $H_2O_2$ , IPA, and Acetone, monitor discharge data against export standards: COD: 150 ppm, Acetone: 5 ppm. Exceeding these standards can result in significant fines and, in severe cases, the environmental protection authorities may require the plant to stop production until improvements are made.

The system was experiencing bacterial clogging in the feed tubes of analytical instruments, leading to abnormal readings. Maintenance personnel must frequently clean the feed tubes and calibrate the instruments, resulting in high labor costs. Subsequently, 5-micron filters were installed before the analytical instruments, which reduced the frequency of bacterial clogging but was ineffective due to increased maintenance and consumable costs caused by the need to replace filters twice daily.

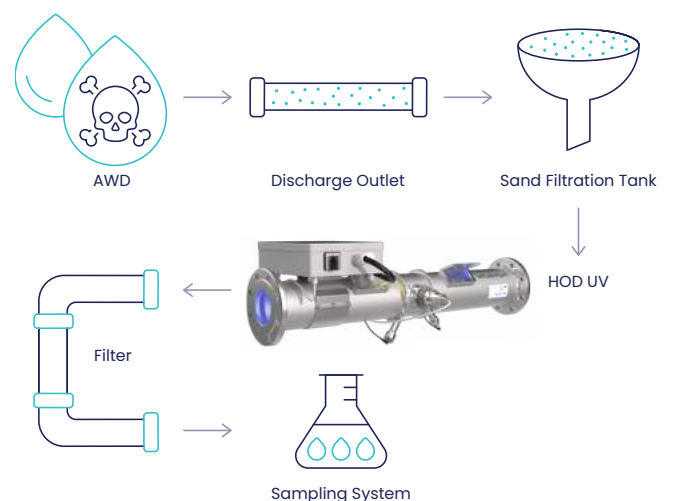
## The Solution

Atlantium's HOD™ (Hydro-Optic Disinfection) UV system, RS104 series, was selected to address the bacterial clogging issue in the AWD sampling system. The HOD UV's unique design allowed for precise bacterial inactivation.

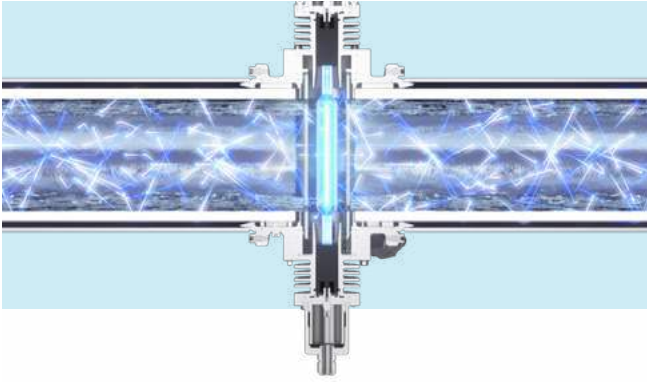
By installing the HOD UV system before the sampling system, the frequency of bacterial clogging was minimized, ensuring smoother operations and more accurate discharge data readings.

Atlantium HOD UV systems effectively inactivate pathogens and bacteria. This is achieved by combining ultraviolet water disinfection technology with hydraulic and optic principles. The HOD UV system features the unique Total Internal Reflection (TIR) technology that recycles UV light energy, ensures homogenous UV dose distribution, provides superior power (kW) efficiency compared to traditional UV, and achieves unprecedented micro-organism inactivation.

### Process



The HOD UV system acted as a critical line of defense by disinfecting the water before it reached the sampling system, preventing bacterial buildup in the feed tubes of the analytical instruments. The previously required 5-micron filters, which needed daily replacement, were also replaced less frequently after the installation of the HOD UV system.



## Results

The clogging issue in the analyzer feed tube was resolved, significantly improving operational efficiency. Filters, which previously had to be replaced twice a day, now only require replacement once a month. This change resulted in a substantial reduction in maintenance labor and costs. With fewer disruptions to the operation.

### Total Colony Count Test

| FAB F15 | Before sand filtration | After UV          |
|---------|------------------------|-------------------|
| P5      | $1.4 \times 10^5$      | $1.2 \times 10^3$ |
| P6      | $5 \times 10^2$        | Not detected      |
| P6      | $2.1 \times 10^2$      | Not detected      |
| P34     | $3.6 \times 10^2$      | Not detected      |

Sample unit: Scientific Testing Center



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## About us

For more than two decades, Atlantium Technologies has helped to ensure water safety with its innovative HOD™ (Hydro-Optic Disinfection) UV technology and novel approach to performance, monitoring, and control. Atlantium's superior, environmentally friendly water treatment solutions ensure stable, efficient, and dependable production.

With thousands of full-scale installations for leading brands in various industries globally, we're committed to consistently meeting our customers' water quality needs, ensuring pure results.

