

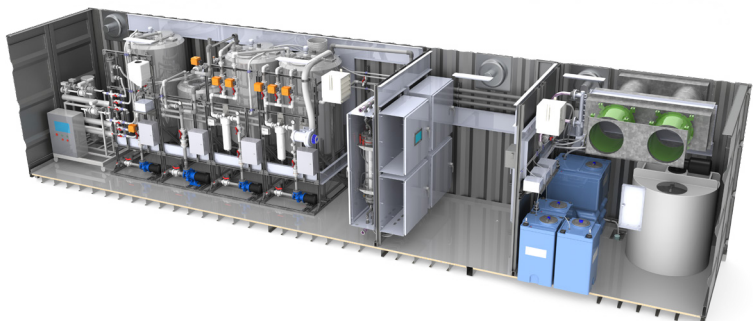
Axine's electraCLEAR™ PFAS Destruction in Semiconductor Manufacturing Wastewater

Challenges in Managing PFAS in Semiconductor Wastewater

Many semiconductor manufacturing operations, including photolithography, rely on PFAS-based compounds. Anticipated global regulations of these compounds present potential challenges for operations. Axine Water Technologies offers a solution to proactively address these challenges, while meeting environmental and sustainability goals. Axine's electraCLEAR™ electrochemical oxidation technology is a simple, cost-effective solution. Partnering with Axine allows semiconductor manufacturers to focus on core operations, unburdened by PFAS wastewater concerns, with results that are guaranteed.

A Timely Solution

Axine's electraCLEAR electrochemical oxidation process utilizes multiple types of electrode materials to produce powerful direct and indirect oxidizing conditions. Our highly advanced controls optimize treatment in real time to completely destroy PFAS molecules back to their harmless elemental building blocks. Customers are guaranteed to meet the most stringent regulations with no waste residuals.



Rendering of Axine's on-site system

Proven PFAS Destruction

electraCLEAR is the first commercial-scale electrochemical oxidation system with proven 3+ log (>99.9%) destruction of both long and short-chain PFAS compounds. Performance results from various sources and concentrations demonstrate the system's ability to deliver reliable performance even under challenging conditions. Table 1 provides comprehensive data of our PFAS destruction performance, validating electraCLEAR's efficacy across diverse compounds and concentrations in semiconductor manufacturing wastewater.

PFAS Compound [EPA 533+ 537.1]	Carbon Number	Before Treatment [ng/L]	Percent Removal [%]
PFTeDA	C13	30	> 93.33%*
PFTrDA	C12	20	> 90.00%*
PFDoA	C12	50	> 96.00%*
PFUnA	C11	125	> 98.40%*
PFDA	C10	50	> 96.00%*
8:2 FTS	C10	5	> 60.00%*
PFNA	C9	50	> 96.00%*
6:2 FTS	C8	50	> 93.60%*
PFOS	C8	50	> 96.00%*
PFOA	C8	70	> 97.14%*
PFOSA	C8	5.0	> 60.00%*
PFHpA	C7	75	> 97.33%*
PFHxS	C6	5	> 60.00%*
PFHxA	C6	150	> 98.67%*
PFMBA	C5	20	> 90.00%*
PFPeA	C5	350	> 99.43%*
PFMPA	C4	100	> 98.00%*
PFBS	C4	5	> 60.00%*
PFBA	C4	2,500	> 99.20%*
Total PFAS	--	3,700	> 98.38%*

Table 1 – Wastewater compounds and treatment results. * Indicates results under reporting limits for the PFAS compound of interest (2 ng/L for all PFAS except for PFBA which is 20 ng/L)

Advantages of electraCLEAR:

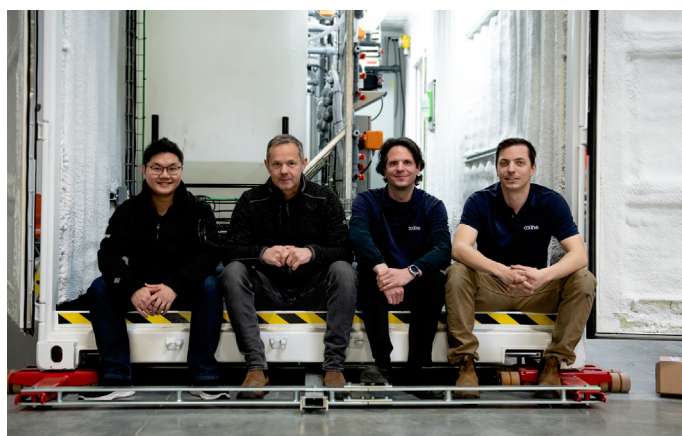
- **Complete PFAS Destruction:** Achieve >99.9% mineralization of PFAS molecules and other contaminants.
- **Powerful Technology:** Utilizes multiple electrode materials with advanced AI and Machine Learning for continuous real-time optimization.
- **Simple Integration:** Modular design facilitates easy integration in containerized or standalone configurations.
- **Process Safety:** Operates at ambient temperature and pressure, eliminating safety concerns associated with high thermal oxidation processes.
- **Guaranteed Performance:** Proven through over 130,000 hours of continuous full-scale operation, backed by Axine's Treatment-as-a-Service approach.



Axine's on-site system installation

Proven Technology with Guaranteed Results

With over 7 years of experience in destroying contaminants in industrial wastewater, Axine's electraCLEAR provides a safe, 24/7 on-site solution. With Treatment-as-a-Service, Axine guarantees compliance with current and future regulations, allowing our customers to focus on their core operations while we address their PFAS wastewater concerns.



Axine's expert team

Partner with Axine to safeguard your operations against PFAS regulatory challenges and ensure a sustainable, compliant, and efficient future for semiconductor manufacturing.

About Axine Water Technologies

Axine Water Technologies offers advanced on-site industrial wastewater treatment using electrochemical oxidation. With over a decade of experience and 130,000+ commercial hours, Axine helps manufacturers meet discharge permits, cut disposal costs, and mitigate litigation risks by destroying PFAS, solvents, and other contaminants.

Learn more at www.axinewater.com and connect with us on LinkedIn at www.linkedin.com/company/axine-water-technologies/.

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