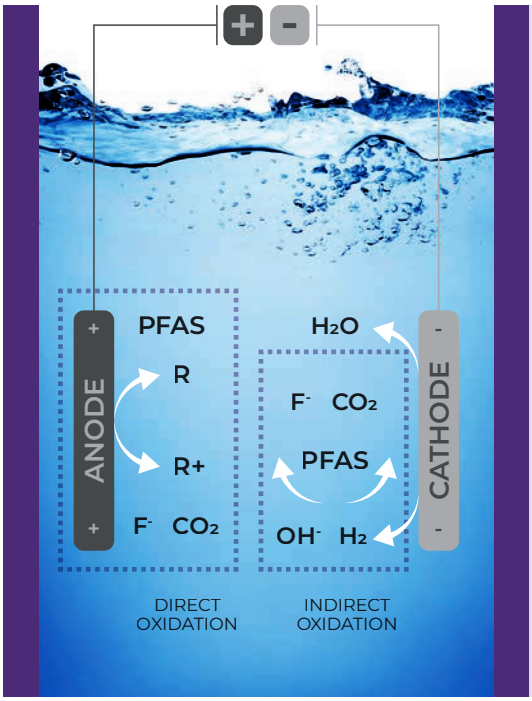
ONSITE PFAS DESTRUCTION

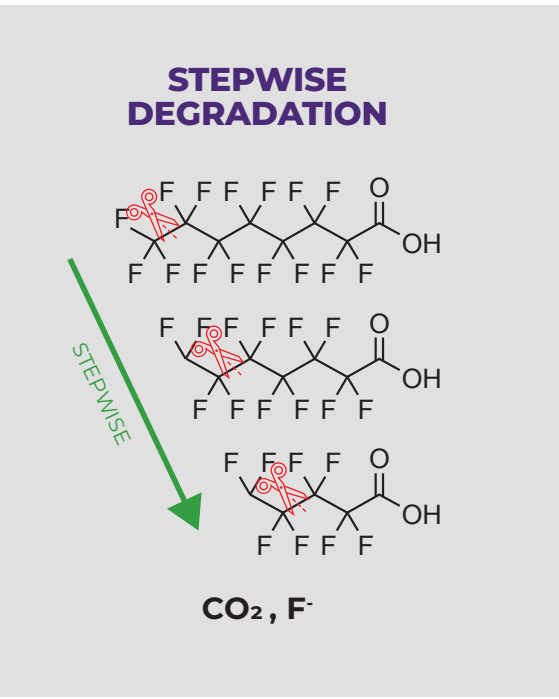
OVIVO

OVIVO'S PATENTED ELECTROCHEMICAL OXIDATION (EO) SYSTEM, FEATURING E2METRIX TECHNOLOGY, LEVERAGES MORE THAN A DECADE OF EXPERIENCE IN DEVELOPING, DESIGNING, FABRICATING AND DELIVERING COMMERCIAL EO SOLUTIONS FOR A WIDE RANGE OF APPLICATIONS AND CONTAMINANTS.

All the features from our commercial EO reactors – industrial, robust design, optimal hydraulics from CFD modeling, ease of maintainability, automation, energy efficiency, remote operation on multiple platforms – have been incorporating into EO for Onsite PFAS Destruction.

In electrochemical oxidation (also known as electro-oxidation), an electrical current is passed through water being treated continuously in an EO reactor. Direct electron transfer at the anode surface, and oxidants generated in the water lead to breaking these C-F bonds into carbon dioxide (CO_2) and fluoride (F^-), both which are harmless at these low levels. When EO is integrated with concentration and polishing steps, this integrated treatment solution can significantly reduce the treatment costs vs current adsorption only approaches. Moreover, EO can be easily operated at the site of capture, avoiding transportation and liability concerns.





Selected Destruction Performance

		% MASS REDUCTION	
WATER MATRIX	**MARKET**	**TOTAL PFAS**	**PFOA-PFOS**
RO Concentrate	Drinking Water, Municipal	87%	92%
Foamate	Drinking Water, Municipal	80%	85%
IX Resin Regeneration Solution	Drinking Water, Municipal	82%	> 99.9%
Contaminated groundwater	Site Remediation (AFFF)	76%	98%
Contaminated groundwater	Site Remediation (AFFF)	96%	99%
Raw Leachate	MSW Landfill	69%	99.2%
Foamate	MSW Landfill	98.9%	99.97%
	INTEGRATED SOLUTIONS	**> 99.9%**	**> 99.9%**

Integrated PFAS Destruction Solutions for Municipalities and Industries

The common treatment approaches for removing PFAS from water are separation using reverse osmosis, or adsorption using a media (ex. granular activated carbon, ion exchange resin). But in all these cases, the PFAS is simply separated from the water, leaving the possibility of PFAS being re-released to the environment. Moreover, these processes are costly.

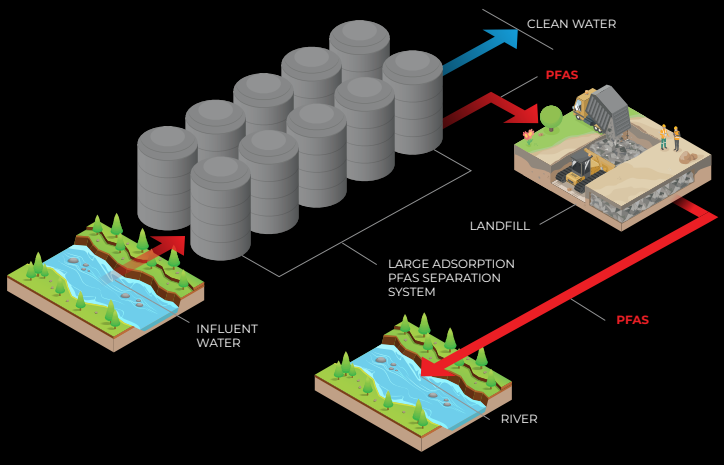
Utilities or industry must consider where the PFAS will end up. The ultimate disposal and destruction of the captured PFAS must be considered and onsite PFAS destruction offered operators with the greatest confidence with the lowest exposure.

Ovivo's EO System is at the heart of a complete, cost-effective treatment train for water and effluents. The optimal integration of EO includes a concentration step upstream from destruction and a media filter polishing step downstream. Concentrating the PFAS (100x-10,000x) in the feed to EO will optimize the direct and indirect oxidation reactions, resulting in a substantially lower capital expenditure and a lower energy consumption.

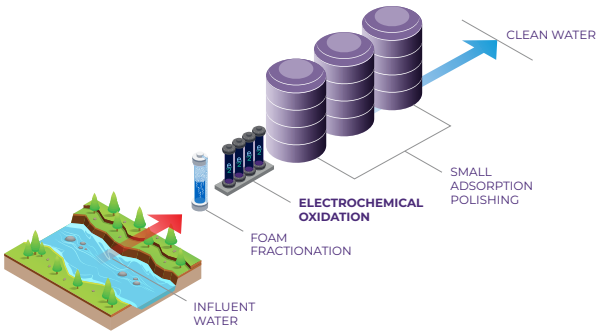
FULL AND COMPLETE DESTRUCTION IS FEASIBLE WITH EO, BUT THE COSTS ASSOCIATED WITH THIS COULD BE PROHIBITIVE. A SENSIBLE APPROACH, WHICH WILL BE PALATABLE FOR STAKEHOLDERS FINANCIALLY IS TO TARGET A 90-99% DESTRUCTION, WHILE USING A MEDIA POLISHING STEP DOWNSTREAM TO COMPLETE THE TREATMENT.

CONCENTRATION » **DESTRUCTION** » **POLISHING** »

CURRENT APPROACH



THE OVIVO SOLUTION



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