



Aquarden
TECHNOLOGIES

BECAUSE WATER IS SUPERCRITICAL

SuperOx®
Complete Destruction of Toxins

OUR VISION

Our aim is to be at the forefront of the industry by providing novel, efficient, and sustainable solutions to some of our most challenging wastewater problems, focusing particularly on the destruction of PFAS also known as 'Forever Chemicals'.

We believe some of the most persistent wastewater problems can be solved efficiently by destroying toxins completely and sustainably without generating further toxicity in the process. Our pioneering SuperOx[®] technology has proven to do so and has provided robust results that outperform other existing technologies.

Today we deliver industrial scale turnkey solutions that are for instance used by the defence industry for the safe and complete destruction of explosives and other hazardous materials.



Prize-Winning Technology

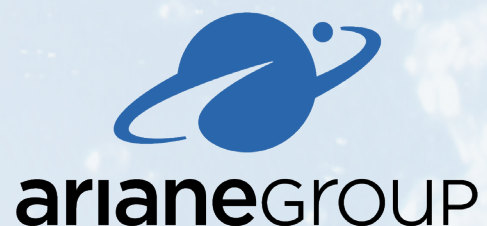
Since 2005 Aquarden has been developing the ground-breaking process of Supercritical Water Oxidation (SCWO) for the destruction of toxins. In 2016 we received the European Business Award for the Environment in Denmark for our significant contribution to sustainable development and innovation.

In 2023 our SCWO system operating with ArianeGroup's pyrotechnic process in France was awarded by the French Association of Pyrotechnics for the innovative and sustainable destruction of explosives.



OUR SUPERCRITICAL PARTNER

We have a close long-term partnership with aerospace and defence company ArianeGroup, European leader of space launchers. Together we have developed and implemented industrial SCWO processes for the destruction of energetic materials, chemical warfare agents, PFAS, and other hazardous toxins. We are now working diligently to implement SCWO solutions globally.



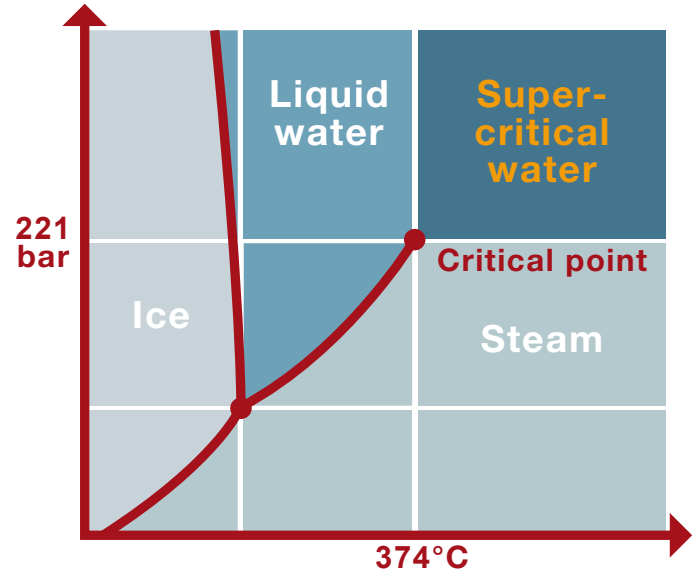
SuperOx[®] – Complete

SCWO Supercritical Water Oxidation

Our modular and industrial scale SuperOx[®] system uses Supercritical Water Oxidation to destroy highly poisonous toxins such as PFAS.

Water has several appearances: ice, liquid water, and steam. Supercritical water is simply a fourth state of water that exists above 374°C and 221 bar.

By mixing wastewater and oxygen at supercritical conditions, SuperOx[®] can fully destroy toxins within seconds, leaving only H₂O, CO₂, N₂ and minerals as harmless byproducts.



INPUT

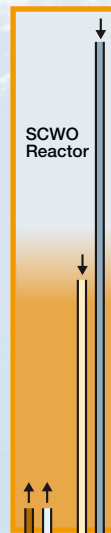
Energy Source
Electricity – no fossil fuels

Hardly-Degradable Organic Pollutants

PFAS, PAHs, phenols, APIs, solvents, oils, pesticides, etc.
100,000 ppm COD or more

Wastewater

Oxygen →



Water without toxins

→ Salts

OUTPUT

Energy Reuse
Built-in heat exchanger

Harmless Gasses
Organics form CO₂, H₂O and N₂
No toxic emissions

Reusable Heat & Water

Industries We Serve

Chemical



Pharmaceutical & Biotech



PFAS & Micropollutants



Oil & Gas



Aerospace & Defence



Destruction of Toxins

Environmentally Friendly

As a company dedicated to our environment, SuperOx® has been designed to run solely on electricity and is not directly reliant on fossil fuels.

Treatment is continuous and fully automated. In addition, SuperOx® is highly energy efficient as it reuses the heat released from the oxidation of toxins to heat up the incoming water, allowing heat recovery, water reuse, and a lower power demand.



High Destruction Efficiency

The table illustrates the oxidation efficiency of SuperOx® with a >99.999% destruction rate.

Compound	Before Treatment	After SCWO
Benzene (µg/L)	1600	<0.02
Toluene (µg/L)	990	<0.02
Ethylbenzene (µg/L)	19000	<0.02
m/p-Xylene (µg/L)	25000	<0.02
o-Xylene (µg/L)	44000	<0.02
Naphthalene (µg/L)	130	<0.02
COD (mg/L)	86000	<15

A Supercritical Invitation

Aquarden was founded in 2005 with headquarters in Denmark, comprising R&D, engineering, test, and production facilities. We offer full consultation, service, and support.

We invite anyone interested in the destruction of toxins to visit us at www.aquarden.com or at our headquarters to learn more about Supercritical Water Oxidation and our SuperOx®.

We are always open for a professional dialogue with focus on building long-term partnerships and customer relations.

Aquarden's PFASinator®

The End of Forever Chemicals

The presence of toxic per- and polyfluoroalkyl substances (PFAS) in our environment is a growing and acute global concern.

PFAS are nicknamed 'Forever Chemicals' as they are extremely bioaccumulative and highly persistent in nature. Through their widespread use in household products and industry, they leach into our environment and can accumulate in the human body for decades causing severe adverse health effects such as cancer and birth defects.

Several technologies exist to capture PFAS in water, but many conventional methods are unable to fully destroy PFAS, meaning significant levels of PFAS remain in the treated water.

Aquarden's SuperOx® has been recognized as a robust and sustainable solution for destroying concentrated PFAS wastes. Due to the high oxidation efficiency of SCWO, SuperOx® provides full PFAS destruction with no uncontrolled emissions.

SuperOx® can efficiently destroy PFAS in various types of concentrated wastes

- Spent ion-exchange resins, activated carbon, and other sorbents
- Wastewater from regeneration of spent sorbents
- Foam fractionation foamate
- Aqueous film-forming foam (AFFF)
- Membrane concentrates
- Sludge



SuperOx® PFAS destruction efficiencies with AFFF contaminated water

Compound	Before Treatment (ng/L)	After SCWO (ng/L)
PFHpA	6900	<1
PFOA	12000	<1
PFHxS	3400	<1
PFOS	5400000	<1
PFOSA	6200	<1
PFHxA	8500	<1
PFBA	4700	<1
PFHpS	14000	<10
PFPeA	2700	<1



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