

The best and most sustainable solution for removal of total combined chlorine in indoor pools!



KEY PRODUCT FEATURES

- Splits peroxide molecules (H_2O_2) into hydroxyl radicals ($\cdot OH$)
- Removes organic chloramines and toxins from the water
- Keeps operating costs low and offers a long lifespan

DAISY® + Advanox™ to reach the lowest combined chlorine concentration of < 0.2 ppm !

WHAT IS ADVANOX™ ?

Advanox™ stands for “Advanced Oxidation” and is a state-of-the-art water treatment system designed to **reduce organic substances and organic chloramines in water** by oxidation reactions with powerful hydroxyl radicals ($OH\cdot$).

Hydroxyl radicals are one of the most powerful oxidants, do not form any harmful by-products and are able to oxidise the most difficult compounds including cosmetics, pharmaceuticals and toxins to provide excellent water quality without harmful by-products.

ALWAYS IN COMBINATION WITH DAISY®

DAISY® + Advanox™ : The best and most sustainable solution for reduction of total combined chlorine in indoor pools!

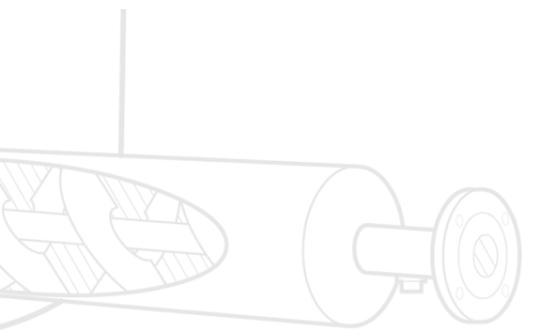
The Dryden Aqua Integrated System DAISY® was designed to significantly **reduce inorganic chloramines including harmful trichloramines (NCl_3) as well as the formation of THMs** in all swimming pools. When DAISY® is used in combination with Advanox™, the lowest combined chlorine concentration of < 0.2 ppm and the lowest THMs levels can be achieved. Unlike medium pressure UV systems, Advanox™ does not produce harmful THMs, consumes less energy and offers significantly lower operating costs!





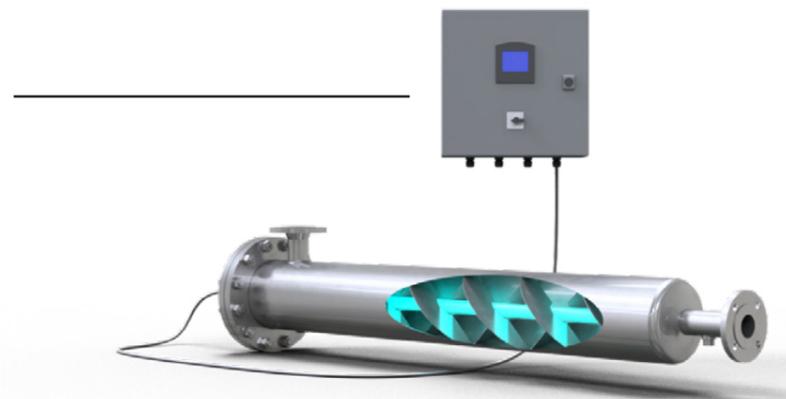
ADVANOX™ ADVANCED OXIDATION

The most efficient oxidising agents are free radicals. These highly reactive radicals **completely oxidise organic substances and organic chloramines in the water without forming any harmful disinfection by-products (DBP's)**. Disinfection with OH• radicals is called advanced oxidation. With ADVANOX™, Hydroxyl radicals are produced by UV-irradiation of Hydrogen peroxyde (H₂O₂).

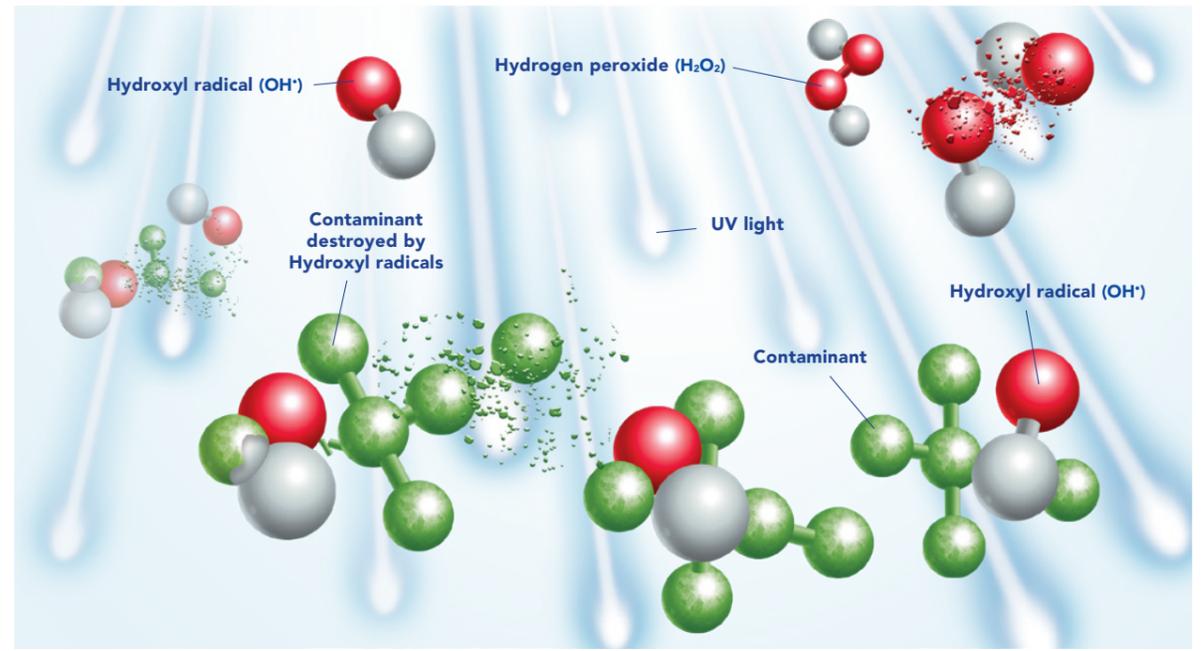


i **UNIQUE REACTION CHAMBER DESIGNED FOR ADVANCED OXIDATION**

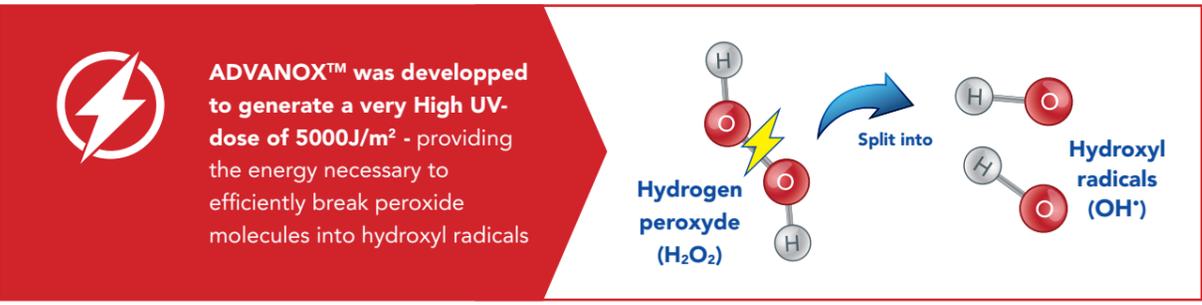
Thanks to its unique reaction chamber, ADVANOX™ ensures that water is mixed properly and comes as close as possible to the lamp to ensure the highest & strongest possible UV radiation. This feature is essential for the Advanced Oxidation Process (AOP).



THE STRENGTH OF FREE RADICALS	
	in eV
Hydroxyl radical (OH•)	2.86
Atomic Oxygen (O•)	2.42
Ozone (O ₃)	2.07
Persulfate (K ₂ S ₂ O ₈)	2.00
Percarbonate (2Na ₂ CO ₃ · 3H ₂ O ₂)	1.80
Hydrogen Peroxide (H ₂ O ₂)	1.78
Chlorine (Cl)	1.36

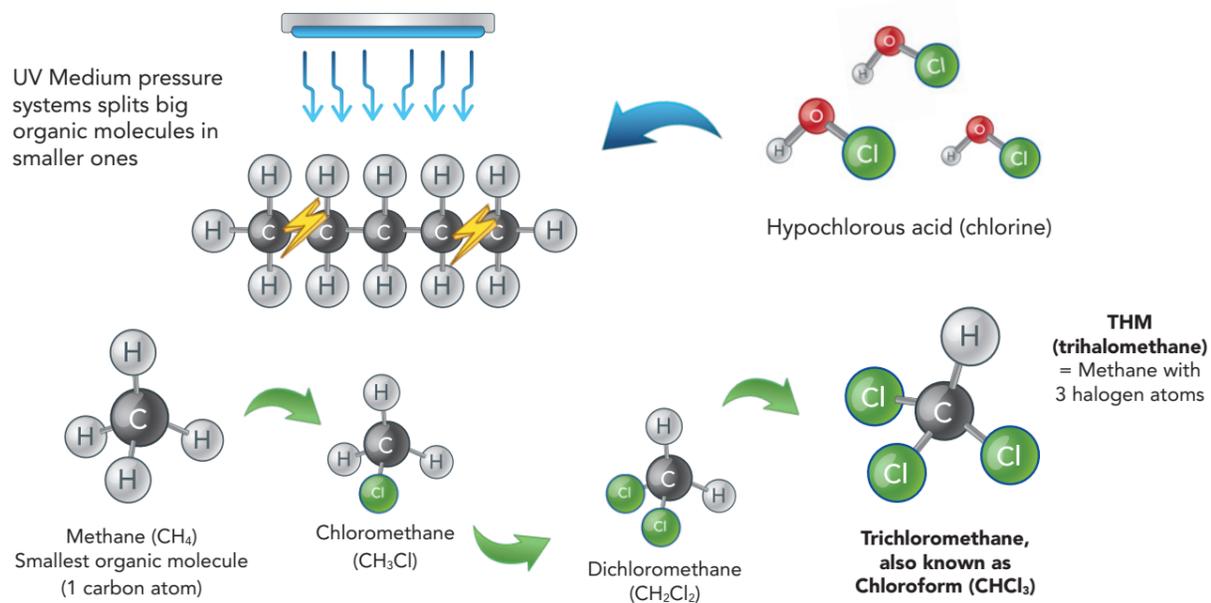


With ADVANOX™, UV irradiation is not used to disinfect the water, it is used to generate free radicals for Advanced Oxidation!



Why is Advanox™ a far better solution than UV medium pressure systems to reduce combined chlorine in swimming pools?

While Medium pressure UV systems are more effective at reducing total combined chlorine than low pressure UV systems, they also have many unwanted side effects. The number one reason we do not recommend using medium pressure UV to reduce combined chlorine in swimming pools is because they only partially break down large organic molecules. These smaller components then react with chlorine in the water to form THMs (chloroform).



Chloroform (CHCl₃) is one of the 4 trihalomethanes (THM's). It is dangerous for humans because it passes through lung tissue to enter the bloodstream. It damages the nerve system. Chloroform is one of the oldest known anesthetics and it is now suspected to be carcinogenic. Babies and pregnant women are vulnerable and should not be exposed to chloroform or other THM's in high concentrations.

ADVANOX™ represents a much more effective & healthier solution than UV Medium pressure systems. It is also a perfect alternative to ozone with much lower CAPEX and OPEX*!



UV MEDIUM PRESSURE	ADVANOX™
⊗ High power consumption	✔ 5 to 10 times less power consumption
⊗ Generates harmful THMs (chloroform)	✔ Reduces the formation of THMs (chloroform)
⊗ Shorter lamp lifespan (≈ 8,000 hours)	✔ Longer lamp lifespan (≈ 12,000 hours)
⊗ More heat = more scaling of the lamp	✔ Less heat = less scaling problems of the lamp

*capital expenditures (CAPEX) and operating expenses (OPEX)

ADVANOX™ ALWAYS IN COMBINATION WITH DAISY® (AFM® + APF®)

Our Dryden Aqua Integrated System DAISY® (AFM® + APF®) was designed to significantly **reduce inorganic chloramines including harmful trichloramines (NCl₃)** as well as the **formation of THM's** in all swimming pools!

Thanks to DAISY®, the level of inorganic chloramines will be **2 to 5 times lower compared to a traditional sand system** while the level of organic chloramines will be slightly higher. By efficiently removing organic chloramines on the other hand, **ADVANOX™ is the perfect match to DAISY® to reduce the total combined chlorine to less than 0,2 ppm (mg/l).**

Important: These results will only be achieved with AFM®. With sand, chlorine demand will be much higher than with AFM® and the combined chlorine will consist of a large majority of "inorganic" chloramines and few "organic" chloramines.



Watch our DAISY® e-learning video on YouTube



FILTRATION WITH AFM®

AFM® does not support bacterial growth and prevents the biological conversion of urea to ammonia responsible for the formation of **inorganic chloramines (mono-di and trichloramines).**



COAGULATION & FLOCCULATION WITH APF®

APF® strongly improves filtration by removing dissolved pollutants. In combination with AFM®, the chlorine demand can be reduced by up to 80%. **Less chlorine means less combined chlorine.**



ADVANOX™ + DAISY® BENEFITS



Lowest combined chlorine < 0.2 ppm



Lowest THM's levels



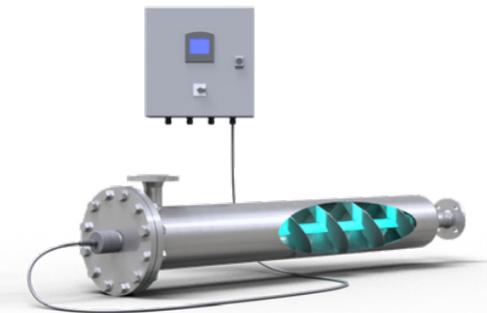
Safest & purest water



DAISY®

DAISY® significantly reduces oxidation demand and prevents at the source the formation of **inorganic chloramines & THM's.**

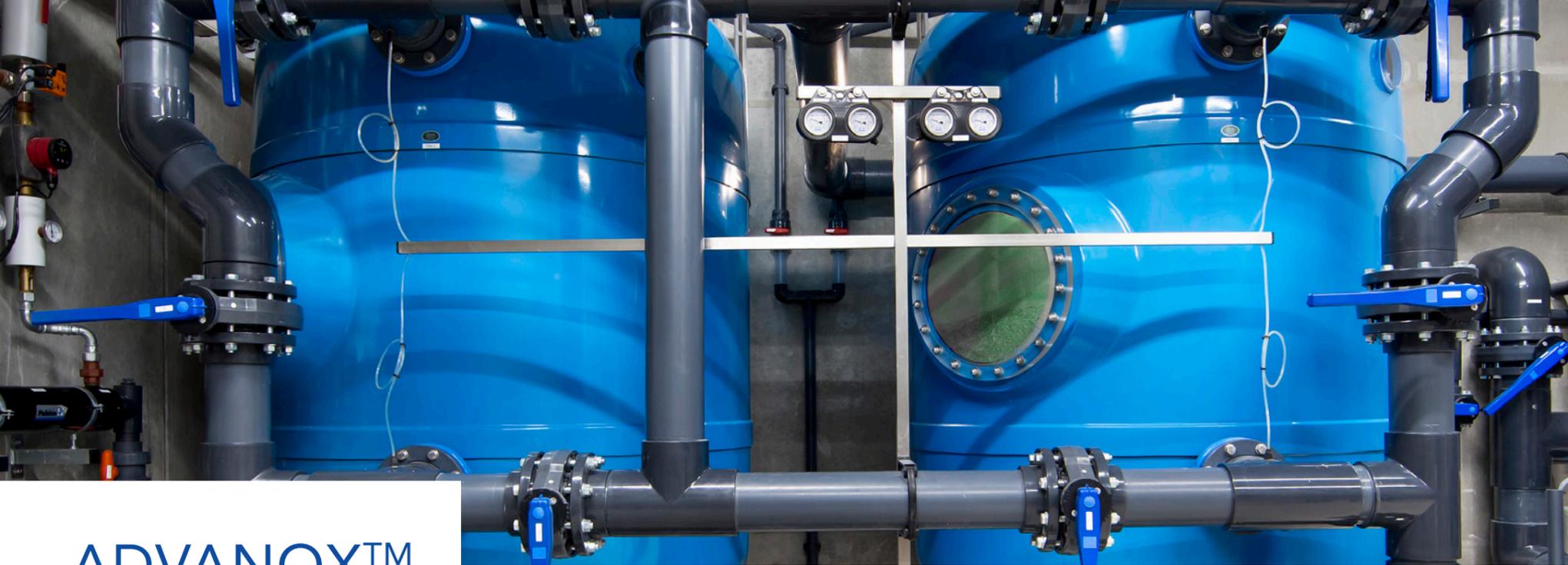
- ✓ Monochloramine
- ✓ Dichloramine
- ✓ Trichloramine
- ✓ THMs



Advanox™ ADVANCED OXIDATION

Advanox™ efficiently oxidises everything else including cosmetics, pharmaceuticals, toxins and **organic chloramines** to deliver with DAISY®, the lowest total combined chlorine levels and the highest water quality!

- ✓ N-Chloramine
- ✓ N-Chloramino acid
- ✓ N-Chloramide
- ✓ N-Chloraldimine



Hydrogen Peroxide (H₂O₂) dosage

- a. Concentration H₂O₂ 35% :**
 ≈ 30 ml / m³/h going through the ADVANOX™ by-pass
- b. Concentration H₂O₂ 12% :**
 ≈ 90 ml / m³/h going through the ADVANOX™ by-pass

ADVANOX™ INSTALLATION IN 4 SIMPLE STEPS

ADVANOX™ Turnover rate

Because organic chloramines build up slowly in the pool water, we recommend treating the total pool volume with Advanox™ every 2 to 3 days. This turnover rate of 48 to 72 hours will be enough to reduce the combined chlorine concentration to the lowest levels.

**Easy calculation: Pool volume (m³) / 60 (hours)
 = ADVANOX™ By-pass flowrate (m³/h).**



1 Install a by-pass on the return line to treat the pool volume every 2 to 3 days through ADVANOX™

2 Ideally use a small by-pass pump to have a constant flow through ADVANOX™

3 Dose a small amount of Hydrogen peroxide before ADVANOX™ using a constant flow peristaltic pump.

4 Use a small FlowVis® flowmeter to control the flow in the ADVANOX™ by-pass

i Example

- Pool volume: 180m³
- ADVANOX™ By-pass flowrate: 180m³ / 60 hours (2.5 days) = 3m³/h
- Hydrogen Peroxide 35% - dosage = 90 ml/h



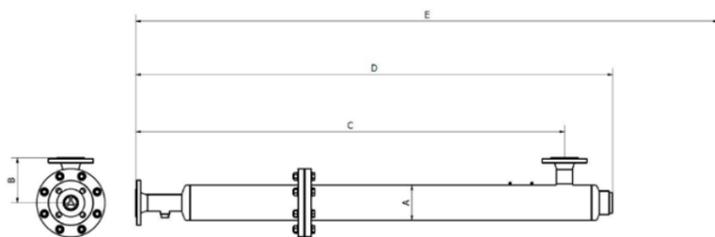


3 MODELS AVAILABLE

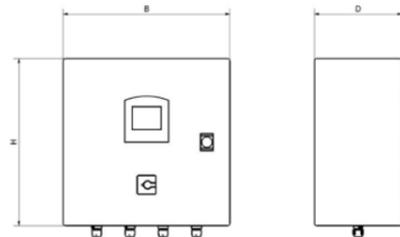


Product description	AOP-150	AOP-250	AOP-500
Pool Size (m ³)	<150m ³	<250m ³	<500m ³
Capacity in m ³ /h	2.5	4	8
Power consumption in W	385	660	660
Effective UV-C in W	110	200	200
Number of lamps	1	1	1
Reactor diameter in mm	90	130	200

ADVANOX™ DIMENSIONS



Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
150	88,9	144,5	1576	1750	3500
250	129	164,5	1576	1758	3516
500	204	202	1576	1772	3544



Type	H (mm)	B (mm)	D (mm)
150			
250	400	400	210
500			

Find on our website download section more information about ADVANOX™ including the installation and commissioning manual

Scan the QR code to go to our website download section
ADVANOX™ documents



LEARN MORE ABOUT ADVANOX™

Advanox™



LEARN MORE ABOUT DRYDEN AQUA & DAISY®

DAISY®



Learn more about our Dryden Aqua Integrated System DAISY®

Scan the QR code to go to our website download section

DAISY® documents



The Dryden Pool Academy is a new online training service designed by Dryden Aqua which will give you the opportunity to significantly increase your knowledge in swimming pools

Watch all Dryden Pool Academy sessions on YouTube



