

SAFE INTAKE WATER

A new concept for generating high-quality safe intake water based on Waterbrane™ technology



Aquadren
TECHNOLOGIES

Your water. Our business.

Waterbrane™ solution

All intake water constitutes a potential source of contamination, especially if harmful biological substances (so-called pathogens) are transferred from the external environment to internal production areas. Contamination may have disastrous consequences, making biosafety precautions essential. The Waterbrane™ solution from Aquarden Technologies is based on leading water purification technologies which prevents the import of pathogens, ensuring biosafe intake water. In the fish farming industry, the demand for water recycling is also rapidly increasing - in order to increase production, decrease environmental footprint, and achieve better control of the fish farm. Safe intake water is crucial for achieving these benefits.

This makes water purification and biosafety go hand in hand.

When biosafety is crucial

Biosafety is a key concept when it comes to effective and sound production in all areas engaged with intake water, not least with fish farming.

There are different ways to provide safe intake water. Typically, either filtration or UV treatment is applied. However, pathogens are not readily removed by conventional filtration means, and membranes are often prone to fouling. When it comes to UV treatment, vira hidden in suspended solids/ particles are shielded, making this treatment less effective. To overcome these challenges Aquarden Technologies has developed a solution combining ceramic membranes with UV. This offers several advantages.

The Waterbrane™ based solution

The best way to avoid unwanted organisms is to employ a double barrier comprising both membrane filtration and UV-treatment. Aquarden's Waterbrane™ based solution utilizes this double barrier with superior results.

As shown on the illustration below, intake water is first rinsed through ceramic membranes, ensuring removal of unwanted bacteria and suspended solids. The removal of particles allows the subsequent UV treatment to eliminate any remaining vira. This way the treated water is completely free of pathogens.

The ceramic membrane is made of silicon carbide, and is extremely robust. It removes particles larger than 0.1µm from the intake water very efficiently. Subsequently the intake water – virtually free of particles – can be treated very effectively with UV.

No more membrane fouling

A permanent decrease in permeate flux caused by irreversible membrane fouling is well recognized as a critical problem for membrane operations with intake water. However, the Waterbrane™ solution operates with a robust ceramic membrane made of silicon carbide (SiC). This ceramic membrane, with its unique design, has a significantly slower fouling rate compared to traditional polymer membranes. It endures thorough cleaning methods with the harshest chemicals without deteriorating (from pH 0-14), and can easily withstand rinsing at high pressures and temperatures.

The membrane is very suitable for intake water as it removes all particles larger than 0.1µm, and in combination with a unique cleaning technique, it provides a much higher flux than standard microfiltration systems. This is a first prerequisite. Clean filters are of paramount importance for delivering clean intake water.



Effective cleaning technique

On top of this membrane technology, Aquarden has developed a special cleaning technique for the membrane.

With this cleaning technique you will experience a higher flow per hour and reduced chemical costs.

A completely automated solution with online access, including automated back-flush and CIP (Cleaning In Place) operations, makes it possible to keep a very high flux with CIP cleaning only every 7 -14 days.

Based on these ceramic membranes and the special cleaning technique, the CIP chemistry can be re-used up to 4 cycles. This allows for recirculation of the cleaning chemicals and thereby provides great savings in chemical costs.

Our membrane maintenance method prevents sludge accumulation, and efficiently dislodges particles and stuck debris.

UV treatment

After membrane filtering follows UV treatment. Due to the low amounts of suspended solids after the membranes, the effect of the UV treatment is significantly enhanced, and ensures no vira in the water. By combining the ceramic membranes, the special cleaning technique and the high quality UV treatment, it is possible to achieve excellent water quality. With Waterbrane™, you will be able to deliver intake water which is approved not only for use in fish farming but also for other food handling processes.

At Langsand Laks A/S, the Waterbrane™ based solution has been successfully implemented to improve biosafety standards without compromising flow capacity.



Winner of the EU's environmental award

In 2016 Aquarden won the EU's environmental award for the most sustainable product in Denmark.

The Waterbrane™ based solution Main benefits:

Biosafe solution: The total solution ensures the removal of bacteria, parasites and viruses, thereby ensuring a safe production without any worries for disease outbreak.

High flux: The maintenance method minimizes fouling of the membranes which provides a stable and improved permeate flux.

Optimal re-use of chemistry: An enhanced cleaning technique reduces the amount of CIP chemistry.

Multiple uses: Intake water is of such high quality that it can be used both as intake water but also for other food processes (e.g. fish slaughter)

Cost-effective: Our solution provides a strong business case as treated seawater is much more costs efficient, with great savings generated from an improved permeate flux.

Easy maintenance: The complete automated solution with minimal service eases the maintenance process.

Scalable: A fully scalable solution, from 0.5 m³/h to several hundred m³/h.



A Waterbrane™ based solution, installed at Langsand Laks A/S.

The Atlantic Sapphire company Langsand Laks A/S, produces Atlantic Salmon, in Hvide Sande, Denmark.

Langsand Laks A/S runs a large recirculated aquaculture system with Waterbrane™ based technology from Aquarden. Today, Langsand is able to:

- Deliver a flow of 120 m³/hour to the plant.
- Conduct cleaning of membranes only every 7-14 days.
- Have a 100 % automated back-flush and CIP system with on-line access.

About Aquareden

Provider of total solutions

Aquareden Technologies is a leading Danish cleantech company. We are experts in sustainable treatment of water and water purification technologies. We design and build solutions for solving the toughest water challenges.

Our mission is to help our customers meet the highest standards for water treatment by providing green and effective solutions.

Our proprietary and prize-winning SCWO system destroys all organic and toxic compounds in wastewater completely and efficiently, and reuses energy and water.

Based on our expertise, we offer optimal solutions with the best combination of technologies. We are always open for a professional dialogue with focus on building long-term partnerships and customer relations.

With in-house laboratory, production facilities in Denmark and dedicated employees, we offer tests, consultancy, turnkey systems, and services - all customized to meet your specific requirements.

We invite anyone interested in water purification to visit us in Denmark.



Aquareden TECHNOLOGIES

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