



# Water Solutions for the AQUACULTURE Industry

**WATER TECHNOLOGIES**

# Veolia: aquaculture industry experts

Aquaculture is a critical food source to meet current and future global consumption requirements. One billion people around the world depend on fish today as their primary means of animal protein. In providing farm-raised fish to replace declining wild species, the aquaculture industry supplies more than 50% of the fish consumed by humans worldwide today.

Veolia Water Technologies offers the industry's leading solutions for environmentally responsible and sustainable aquaculture.



**Productivity  
increases by  
30%**

## Industry challenge

Land and water availability

Animal welfare and performance

Operational conditions and technical risk

Environmental impact, sustainability, and regulatory and consumer risks

Profitability

## Veolia's response

- Significantly reduced water consumption
- Less land required due to reduced footprint

- Healthier and more disease resistant fish
- Better animal welfare due to improved overall conditions

- Reduced exposure to outside influences
- Improved control over biological performance
- Reduced technical risk

- Reduced impact and load on the natural environment
- Sludge and effluent recovery
- Reduced physical and carbon footprints
- Reduced regulatory and consumer risks

- Reduced installation and operational costs
- Lower energy costs



# Increase productivity, increase profitability...

The Recirculating Aquaculture System (RAS) is designed to increase productivity and profitability. Its water treatment components are capable of accommodating the high feed inputs, growth rates and stocking densities required for the operation's financial viability.

- Increased production, lower mortality and more efficient use of fish tanks
- Applicable to a wide variety of species
- Reduced costs: installation, operation, energy
- Reduced physical footprint



- 30 to 60 gallons of water used per lb of fish produced
- Up to 99% of the water is reused through closed-loop system
- Reduced water and carbon footprints; reduced environmental impact
- Conforms to the most stringent regulations

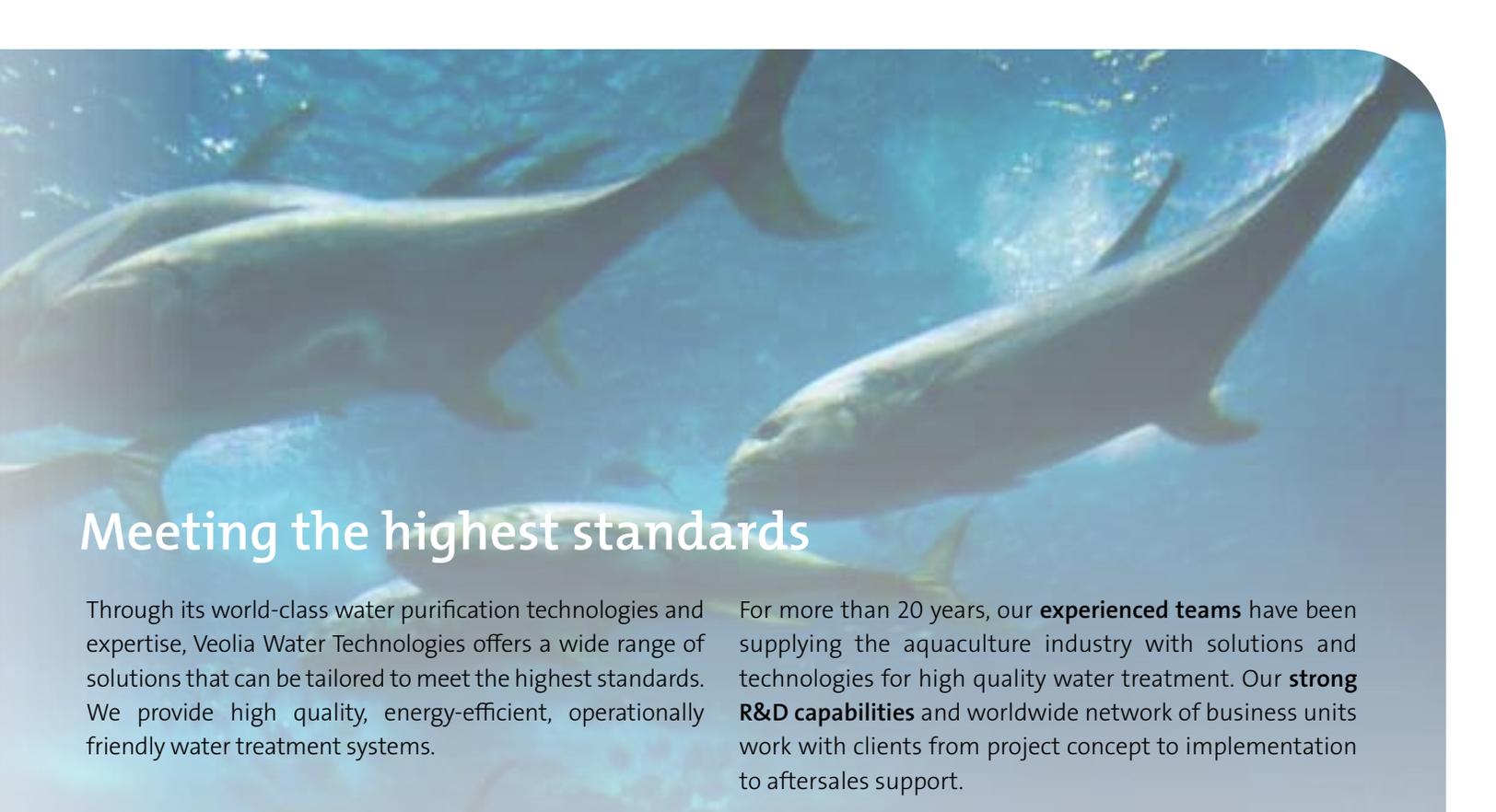
## ... in a sustainable way

Veolia's sustainable RAS solution reduces water consumption by reusing water through continual treatment and delivery to support a wide variety of species, including cold water, tropical, fresh and salt water.

The RAS plant removes organic matter, total ammonium nitrogen, suspended solids, CO<sub>2</sub>, N<sub>2</sub> and harmful bacteria/virus. It also optimizes pH and alkalinity.



**Up to 99%**  
water reuse



## Meeting the highest standards

Through its world-class water purification technologies and expertise, Veolia Water Technologies offers a wide range of solutions that can be tailored to meet the highest standards. We provide high quality, energy-efficient, operationally friendly water treatment systems.

For more than 20 years, our **experienced teams** have been supplying the aquaculture industry with solutions and technologies for high quality water treatment. Our **strong R&D capabilities** and worldwide network of business units work with clients from project concept to implementation to aftersales support.

## A state-of-the-art technological solution

Our **Kaldnes® RAS** semi-closed loop system, with aeration and particle removal, is designed to maximize production while reducing pollution and water consumption.

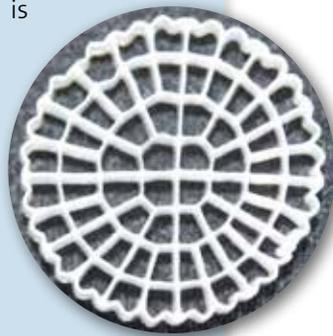
The compact design of our technologies reduces overall system footprint and land requirements.

### Biological treatment:

Our **AnoxKaldnes™ MBBR** (Moving Bed Biofilm Reactor) allows micro-organisms to grow on sheltered surfaces inside moving plastic carriers, creating a continuous biofilm process without any risk of clogging or need for back flushing.

The MBBR process is compact and well suited for treatment of large water flows while being very robust and easily operated, with a minimum need for maintenance.

AnoxKaldnes invented the MBBR process in 1985. So far, there are over 500 installations in more than 50 countries.



### Solids removal:

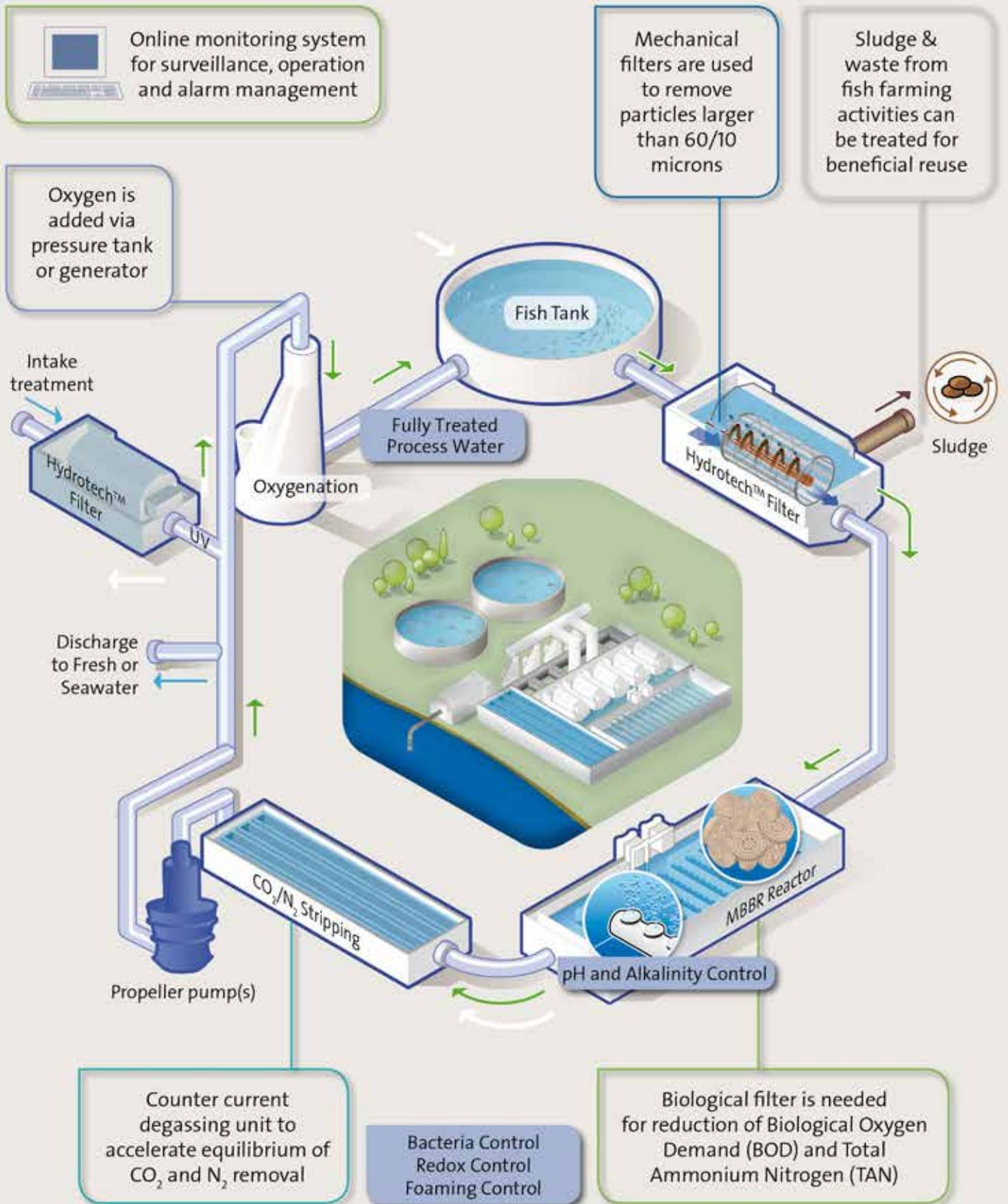
Following biological treatment, particle separation is achieved through our globally recognized **Hydrotech™ Drumfilters**. This proprietary technology was specifically designed for Aquaculture applications and was initially introduced to the market more than 25 years ago.

Hydrotech™ is the reference in the Aquaculture market, with more than 1,000 installations worldwide.

Hydrotech™ filters have a high hydraulic capacity, are easy to operate and provide a predictable result that our clients can rely on.



# Unique combination for impressive performance



# Resourcing the world

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