



Introduction to Aquagenesis

Potential Investment Opportunity – Aquagenesis | [Placeholder]

November 2024



Introduction to Aquagenesis

Driving innovation in sustainable aquaculture solutions, Aquagenesis is committed to revolutionising the industry with cutting-edge technologies and environmentally responsible practices.

Company Name: Aquagenesis Pte Ltd ("Aquagenesis")

Headquarter: Singapore

Year Founded: 2024



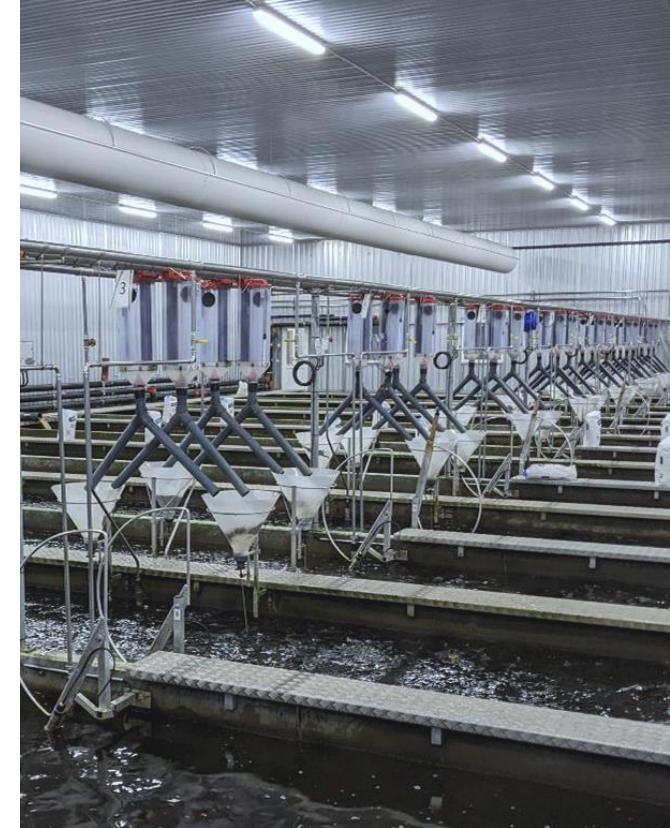
Overview: Aquagenesis is an aquaculture project development and investment company specialising in designing, developing and supplying **comprehensive, turnkey advanced technology-enabled sustainable aquaculture solutions**.



Technology: Our expertise lies in the creation of **cost-effective, highly efficient and ESG-compliant Recirculating Aquaculture Systems (RAS)**. Within our closed-loop state-of-the-art RAS facilities, we provide full-scale solutions tailored for **commercial and sustainable fish production**.



Engagement Models: As an aquaculture project development and investment company, Aquagenesis can either provide solutions in key markets through **local strategic partnerships or take full ownership** of projects.



Bringing together an international team with expertise and passion

Pioneers of RAS technology with over decades of deep experience and expertise in providing RAS technology for aquaculture globally.

Yoav Dagan
Project Advisor



- Co-founder of AquaMaof with **over 30 years of experience** in developing and managing aquaculture projects, **in particular, RAS**.
- Began career in **hatchery and genetics**, worked with **various aquaculture species** including trout, seabass, seabream, sturgeon and tilapia.
- Worked on **Wall Street at Goldman Sachs and Lehman Brothers** in M&A, with an academic background in **business and finance**.
- Started developing **RAS systems** in 1995.
- Expertise in the **technical side of RAS systems and production**, with a strong background in **biology, integrating fish, water chemistry and organic matter feed**.
- Served as **technical director for RAS projects** in various countries, including China, Indonesia, Ecuador, Brazil and Peru.

Amit Fischer
CEO



- CEO of Aquagenesis with **over a decade of experience** in the aquaculture industry.
- Specialised knowledge and experience in **RAS aquaculture**, water supply systems design and advanced water treatment solutions.
- Expertise in **aquaculture project management, transformative initiatives and system engineering**.
- Supervised and managed projects for **various fish species**. Responsibilities encompassed **project management** from inception to completion, including proposal development, budgeting and engineering team oversight.
- Supervised **multiple RAS-based projects throughout Asia** (Vietnam, Thailand, and the Philippines) and **Europe**.
- Previously managed **engineering and operations for Bloom Aqua**, a global leader in RAS aquaculture systems.

Ran Fischer
Founder & CTO

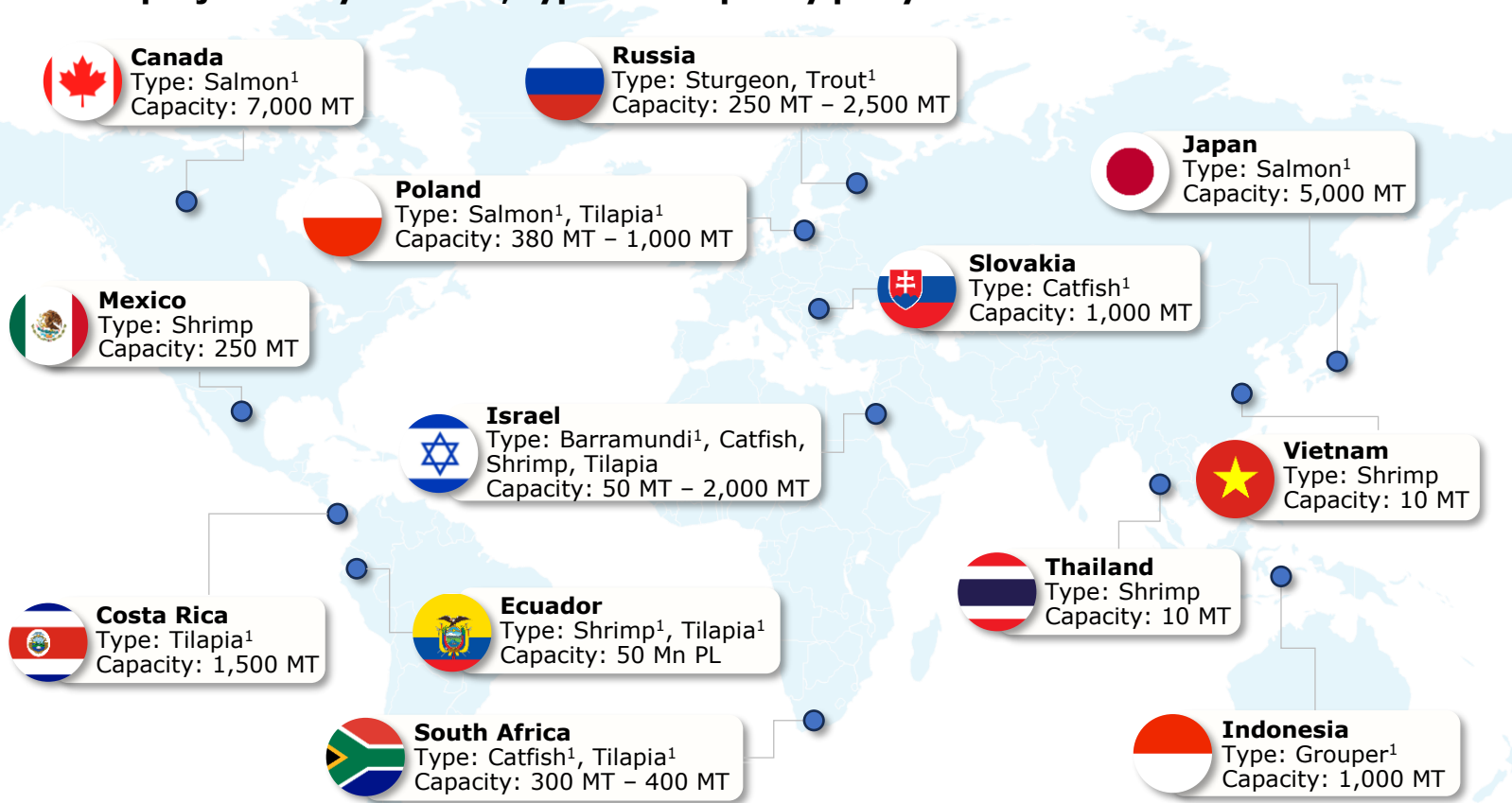


- Founder and CTO of Aquagenesis, a water and soil engineer **specialising in RAS for over 40 years**.
- Began career in **fish business** with traditional open ponds, working with **various fish species** like tilapia, carp, and mullet, in projects with **capacities ranging from 500 to 2,000 MT per year**.
- Introduced the **first tilapia RAS to Israel** in 1999.
- Developed **numerous aquaculture projects** from **initial concept to full implementation**.
- **Supervised projects in Asia** (Vietnam, Thailand and India) **Africa** (South Africa, Nigeria, Ghana) and **Central/ South America**.

Global track record in RAS projects

The founders' global RAS projects showcase a proven track record across diverse regions and species, forming the foundation of Aquagenesis' innovative solutions.

RAS projects - by location, type and capacity per year



Note¹: Denotes active projects

Aquagenesis has plans to expand into the **fastest-growing markets for Southeast Asia**, leveraging Project Rainbow and focusing on **high-quality, sustainable trout protein** to meet rising demand.

- Conduct market analysis and develop partnerships primarily in Indonesia and Vietnam to establish regulatory and logistical frameworks.
- Initial deployment of Project Rainbow in Bintan, Indonesia.
- Expand the Project Rainbow model across Southeast Asia, incorporating feedback from the initial site in Bintan to refine and scale the approach.

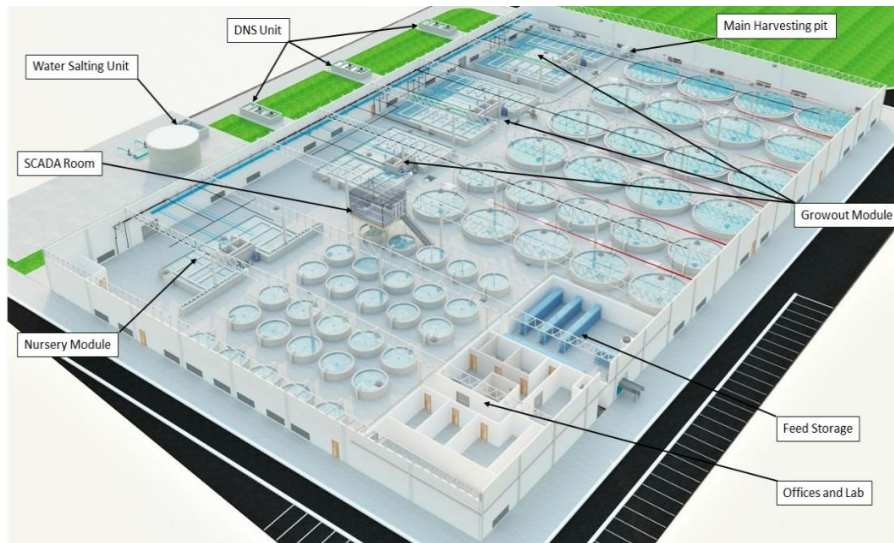
Outside of Southeast Asia, Aquagenesis is exploring expansion into **high-demand species such as grouper, pangasius, barramundi and yellowtail** in Asia and beyond, as well as **shrimp markets** in the **European Union and North America**.

ESG-compliant, indoor and land-based RAS

Indoor RAS facilities take aquaculture outside of the natural environment, eliminating water pollution, reducing the carbon footprint, removing the need for antibiotics and other chemical usage, while providing healthy, nutritious seafood products.

RAS Technology Facility

Land-based, indoor, circular and bio-secure infrastructure



Integrated and Proven Technologies:

Our technology merges highly efficient Israeli water management solutions – designed for arid conditions and applied across aquaculture, water treatment and recycling systems – with Danish innovations in fully developed, large-scale RAS systems.

Simplicity and Energy Efficiency:

Reliable systems with low operational complexity, leveraging gravity-based hydraulics and low-head. Highly efficient oxygen enrichment processes further minimise energy use.

Optimised HVAC (Heating, Ventilation and Air Conditioning) and Temperature Control:

Our water temperature adjustment systems provide reliable performance in challenging environments with a temperature differential of over 10°C, offering low operating and capital costs within a compact infrastructure that reduces both initial investment and ongoing costs.

Learning from Industry Challenges:

Drawing insights from large aquaculture projects such as Atlantic Sapphire and AquaBounty, which faced challenges with energy inefficiency, high OPEX and operational complexity, Aquagenesis has prioritised simplicity, efficiency and modularity.

Sustainable, Circular Solutions:

Our technology integrates RAS facilities with greenhouses, promoting water conservation and optimal nutrient utilisation. This synergy promotes energy efficiency, lowers water consumption, accelerates crop growth and reduces environmental impact, while potentially reducing CAPEX and OPEX by minimising the need for large-scale sludge or drainage treatment systems.



Aquagenesis aims to enhance its testing of **advanced solutions**, including **nanobubbles**, **electrochlorination** and **artificial intelligence/ machine learning** for predicting and optimising dissolved oxygen levels in water bodies. These technologies will be integrated within pilot facilities and implemented across all major facilities.

Aquagenesis' competitive advantages

With decades of hands-on experience and 'know-how' in RAS, the Aquagenesis team combines the best proven technologies and practices to create a reliable, efficient and streamlined system.

Team Expertise

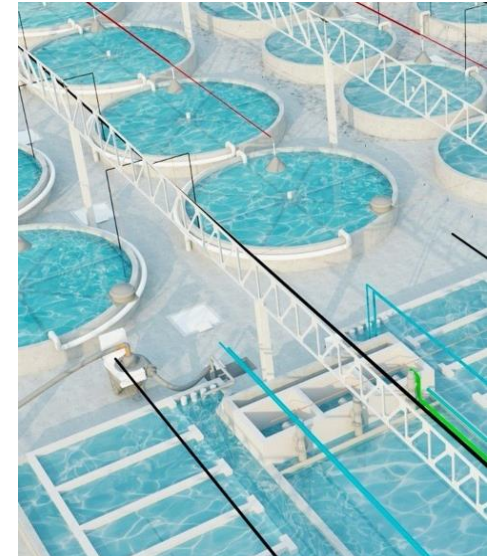
Aquagenesis draws upon its founders' decades of **extensive experience and knowledge in aquaculture**, underpinned by a **strong track record** across multiple RAS projects globally. The team's **hands-on experience** spans diverse RAS technologies and fish species from years of **design, development and implementation**.

This expertise has led to the development of the '**know-how**' and provided **valuable insights** into the **strengths and limitations of different components and approaches**, which are crucial for effective system design. This **deep-rooted knowledge** forms the **foundation of Aquagenesis' approach**.

Proven Technologies

Aquagenesis selects the **most effective proven technologies** and **integrates them into cohesive, high-performance solutions** that offer **operational simplicity, adaptability and flexibility**. Its integrated system includes the following proven technologies:

- 1 Advanced Solids Settling:**
Effective solids removal without mechanical filtration, minimising maintenance and complexity, and lowering energy requirements. It also utilises some of the denitrification process for balancing the pH.
- 2 Gravity-Driven Flow:**
Open flow with a low hydraulic head requirement (only 0.8 metres, compared to >6 metres in similar systems or pressure systems like most other technologies) for circulation and oxygen enrichment, yielding substantial energy savings.
- 3 Efficient Denitrification:**
Reduces make-up water needs to as low as 1-2%, maintaining system efficiency and sustainability.



Comparative analysis

Aquagenesis' RAS production is energy-efficient, environmentally friendly and promotes higher survivability with lower CAPEX, creating sustainable and efficient systems without high upfront costs, setting it apart from other RAS providers.

Comparative Analysis of Freshwater Cold-water Aquaculture¹

Parameters	Aquagenesis (per kg produced)		Other RAS providers (per kg produced)
Water Usage ² (litre)	150 - 350	✓	400 – 800
Electricity Usage (kWh)	1.5 - 3	✓	6.5 - 10
Commercial FCR	1.1	✓	1.2
Footprint ³ (m²)	0.005	✓	0.008
CAPEX (US\$)	20 - 25	✓	35 - 40
Maximum Stocking Density (kg/m³)	180	✓	90 -100

✓ Better performance

Note¹: The comparison data is based on trout production figures
Note²: Without denitrification system
Note³: It refers to land footprint for the entire growing cycle, from eggs to market-sized products of >3kg

Aquagenesis' role in Singapore's ecosystem

Aquagenesis' vision is to become a premier provider of aquaculture projects and technologies, as well as a knowledge and innovation catalyst that supports sustainable aquaculture growth in Singapore and across the region.

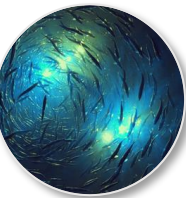


Singapore's Strategic Priorities



Enhance Food Security with Sustainable Seafood:

The **'30 by 30'** goal is Singapore's food security plan to meet **30% of nutritional needs locally by 2030**. Seafood has been identified as a **priority area** as it is one of the **more productive and resource-efficient food types**, a good source of protein and suitable for land-scarce Singapore.



Drive Innovation in Aquaculture:

Singapore aspires to **lead in aquaculture research and innovation**, transforming the sector to be **highly productive, climate-resilient and resource efficient**. The **Singapore Aquaculture Plan** fosters research and innovation, technology adoption and better farming practices.



Cultivate Local Talents:

Singapore is focused on **cultivating talent for the local aquaculture sector**, bringing together **Research and Development (R&D) talents** from local and overseas institutions, as well as key industry partners, to **build capabilities and capacity in aquaculture** within Singapore and beyond.

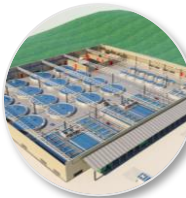


Aquagenesis' Role in Singapore's Ecosystem



Rollout of Fresh Rainbow Trout to Singapore:

Aquagenesis' **rollout plan** begins with **Project Rainbow (Bintan, Indonesia)**, which serves as a model for broader regional expansion by the Top Co, providing a steady supply of fresh rainbow trout to the Singapore market, boosting self-sufficiency and resilience in Singapore's seafood sector.



Expertise in Innovative Aquaculture Systems:

Aquagenesis' expertise lies in creating **cost-effective, highly efficient and environmentally friendly RAS**. Based in Singapore, Aquagenesis plans to **build local R&D capabilities** by collaborating with **research institutes, Institutions of Higher Learning (IHL) and industry partners** to reap strategic synergies in developing innovative and sustainable aquaculture solutions.



Contribute to Local Talent Development:

Aquagenesis aims to **establish a strong presence** in Singapore by **hiring key management, technical and research personnel locally**, and running its financial operations from Singapore. Aquagenesis seeks to strengthen Singapore's aquaculture ecosystem through **skills development and capacity building**.

Source: Investment Monitor, Singapore Economic Development Board, Singapore Food Agency, The Fish Site