AquaMaof

ECOshrimps

Complete Land-Based Commercial Shrimp Production Solution

An introduction to global shrimp production
A complex challenge

With global production of 4.66 million tons in 2018, the global shrimp market is expected to reach 5.83 million tons by 2024. However, traditional pond culture is struggling to keep up with global demand due to high incidence of shrimp diseases, high mortality rates, and low production densities requiring vast areas of land for production in environmentally sensitive habitats, such as mangrove forests.

AquaMaof's shrimp RAS R&D Center
Harnessing innovation to address a global demand

Years ago, AquaMaof opened a Shrimp R&D center in Southern Israel. The Facility's aim has been to develop the technology to enable the intensive indoor commercial production of Shrimp (Litopenaeus vannamei).

During these years, AquaMaof has been successful in adapting its proven RAS technology for shrimp production. The company has achieved high-density shrimp production, high survival rates, and low Feed Conversion Ratio (FCR) in a disease-free environment, with very low bacterial count in the water, with zero use of antibiotics.

Additionally, AquaMaof's technology facilitates control over the color of the shrimp, enabling production of a high-quality end product. The technology also enables partial harvest in different sizes, while maintaining low operational costs.

AquaMaof ECOshrimps: A complete RAS-based shrimp production solution
First-of-its-kind comprehensive response

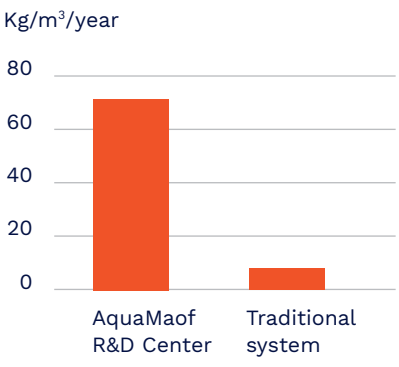
AquaMaof ECOshrimps is a complete end-to-end technology solution for commercial shrimp production.

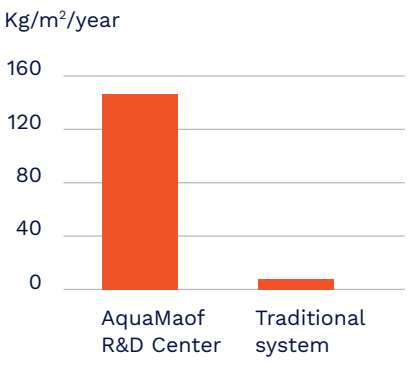
The solution incorporates a range of innovative techniques in multiple areas, such as water treatment, energy efficiency, shrimp nutrition, process engineering, and others. This "clear water system" includes tanks equipped with extended surface area to enable the intensification of shrimp production.

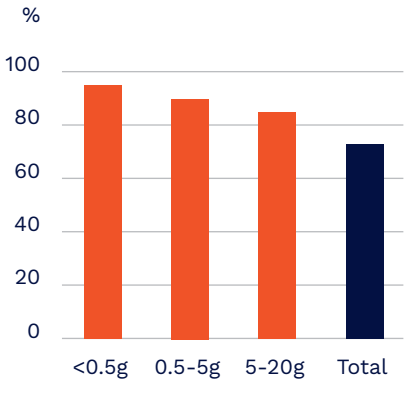
AquaMaof's ECOshrimps solution incorporates: shrimp grow-out & nursery tanks, water circulation system, biological filter system, settling tanks, drain system, Oxygen Dissolving System, feeding system and a range pf support and backup systems.

The AquaMaof ECOshrimps solution ensures excellent water quality, creating an ideal growing environment for shrimp production. The discharged water goes through a series of treatments before being discharged to the sewage system, promoting cost effectiveness through low energy and water consumption while reducing impact on the environment. Moreover, AquaMaof has developed a special feed that provides the specific nutritional needs of shrimps cultured in its clear water RAS system.

AquaMaof RAS R&D Center Research results







Annual production
AquaMaof's R&D center produces over 70kg of market size shrimp per m^3 per year, compared to traditional pond production of up to about 9 kg/m3 per year (assuming 3 cycles per year).

Annual yield
Shows a comparison between the annual yield (kg shrimps per m^2 tank foot print) of market size shrimp produced in AquaMaof R&D center versus traditional production.

Survival rates
This table shows survival levels in 3 stages of shrimp production, shown as percent of shrimps surviving the phase. Last bar is the total survival through the whole production cycle: from PL12 to market size.

Aquaculture 4.0:
A comprehensive RAS-based seafood production solution

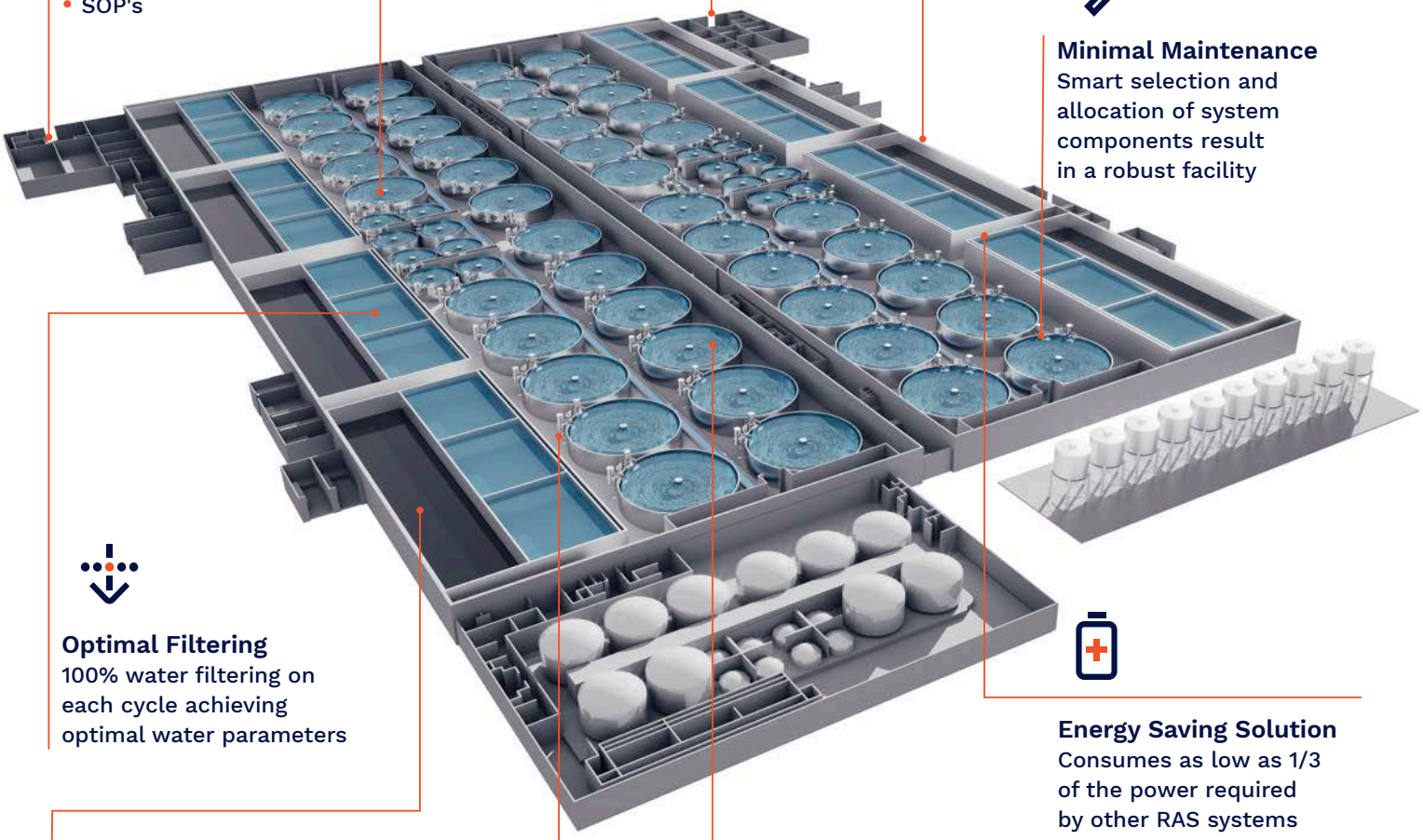
Bio-Security Control
The facility is designed in accordance with strict bio-security protocols
- Quarantine
- Disinfection
- Staff movement control
- Safety procedures for entering and exiting the facility
- SOP's

Industrial Production Tanks
- Robust tanks for lifetime usage
- Unique design with extended surface area and in-tank waste collector

Monitoring & Control
- 24/7 monitoring of all critical system components and water parameters
- Automatic activation of all emergency backup systems

Scalable Design
Easy adaptation of design to accommodate different species and annual production capacities

Minimal Maintenance
Smart selection and allocation of system components result in a robust facility



Optimal Filtering
100% water filtering on each cycle achieving optimal water parameters

Energy Saving Solution
Consumes as low as 1/3 of the power required by other RAS systems design

Minimum Liquid Discharge (MLD)
Achieved through implementation of proprietary water reuse technologies

Proprietary Oxygen Dissolving System
- More Oxygen with less energy
- Oxygen generated on site
- Waste heat recovered
- Oxygen level regulated in each tank

Low Feed Conversion Ratio (FCR)
Achieved through optimized feeding modes, advanced feeding management system and optimal water conditions

AquaMaof R&D Center - Production results

Main inputs for the production of shrimp at the AquaMaof's R&D center - demonstrating the system's high efficiency.

Input	AquaMaof R&D Center
Yield per tank footprint area ($kg/m^2/y$)	146
Use of water (m^3/kg)	0.1
FCR	1.3
Electricity (kwh/kg shrimps)	3.75
Labor (USD/kg shrimps)	0.32

About AquaMaof Aquaculture Technologies Ltd.

AquaMaof Aquaculture Technologies Ltd. is a privately-owned company, specializing in the field of indoor aquaculture technology and turn-key projects.

With over 30 years of experience, AquaMaof's team of technology and aquaculture experts has been providing research and development, as well as comprehensive design, production, operations and support solutions for aqua farming in over 50 locations around the world.

The Company's unique indoor fish production capabilities offer advanced, sustainable, and cost-effective solutions for today's fish-growing needs. From concept to operational fish production facilities, the company's cutting-edge RAS (Recirculating Aquaculture Systems) based solutions have been proven worldwide.

AquaMaof Group:

AquaMaof Aquaculture Intelligence | AMG Norway An AquaMaof Group Company | Dominion Aquaculture | ECOshrimps An AquaMaof Group Company | Global Fish

www.aquamaof.com info@aquamaof.com