



RYNAN[®]
SMART AQUACULTURE

Transforming Aquaculture with Efficient and Sustainable Solutions





Founded in 2022 as a division of RYNAN Technologies, RYNAN Smart Aquaculture delivers integrated solutions for sustainable shrimp farming. Our smart systems optimize water quality, improve disease management, and streamline operations, helping farmers boost productivity while reducing costs and resource use. We support efficient, eco-friendly practices that benefit both farmers and the environment.



DR. MY T. NGUYEN

Founder & Chairman of RYNAN Technologies Vietnam

Dr. My T. Nguyen is a successful entrepreneur and scientist, having built several flourishing businesses worldwide over the past 30 years. He holds over 200 certified patents worldwide. He returned to his hometown in Tra Vinh, Vietnam in 2004, with the mission of using technology and entrepreneurship to boost the local economy and improve living standards of Vietnamese people, by creating quality employment opportunities.



BRIAN NGUYEN

Founder & CEO of RYNAN Technologies Singapore

Brian founded RYNAN Technologies Singapore in 2015. As CEO, Brian focuses on building strategic partnerships with key industry players to expand the company's market reach. With a deep understanding of customer needs, Brian has positioned RYNAN Technologies as a trusted partner to businesses worldwide.

TOMGOXY® PARADIGM:

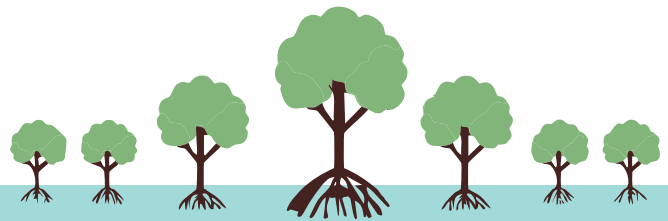
⚠ Challenges in Shrimp Farming

Shrimp farming faces several critical challenges that hinder productivity and profitability. Current production levels are low, averaging just 5.6 tons per hectare annually in 2020, with farmers relying on expanding land rather than optimizing existing resources. Disease outbreaks, such as EMS and White Spot Syndrome, contribute to losses of up to 50% in severe cases, exacerbated by inadequate biosecurity. High production costs are driven by dependency on imported raw materials for feed and inefficiencies in water, feed, and energy usage. Labor costs are also high, with a shortage of trained expertise.

Lastly, environmental degradation, due to unsustainable practices, not only pollutes local water bodies but also affects long-term viability, as farms continue to exhaust and pollute natural resources.

The TOMGOXY® PARADIGM is a discontinuous innovation that utilizes digital technologies to enhance the brackish water shrimp industry towards carbon-neutral greenhouse gas emission in a sustainable manner.

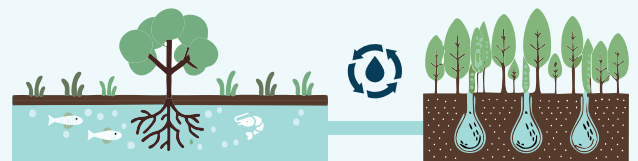
It encompasses 5 strategic criteria including:



Mangrove Preservation

Incorporation and conservation of mangroves within shrimp farming systems, allocating 50% of the land for mangrove plantations, compared to the conventional approach of 80% land use for water treatment and only 20% for shrimp growth.

Mangroves contribute to GHG emission sequestration and organic waste absorption, improving water quality naturally.

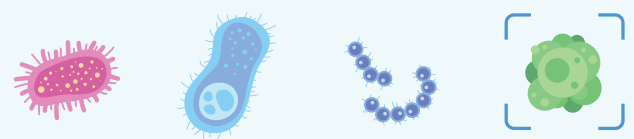


Circular Farming

The system reuses 100% of wastewater, significantly minimizing water pollution and maximizing sustainability.

The system aims to recycle filtered wastewater back into the farm to reduce water usage and pollution into natural waterways as part of our sustainability approach.

The circular farming system promotes a self-sustaining ecosystem, which can boost farmers' income by adding value through diversified aquaculture.



Disease Outbreak Monitoring

Real-time monitoring of the biological, chemical, and physical properties of water and shrimp to effectively detect and prevent disease outbreaks.

This advanced monitoring system ensures that shrimp health and water quality are controlled, reducing disease-related losses by up to 40%.

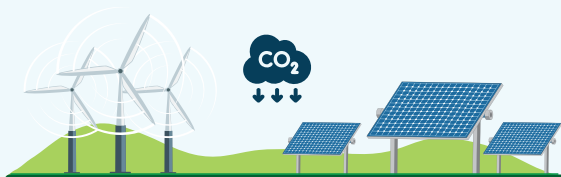


Resource Efficiency

Optimized use of water, land, and electricity, allowing farms to use land more effectively. TOMGOXY® enables 50% of the land to be dedicated to shrimp growth, compared to the traditional 20%.

High-efficiency oxygenation systems dissolve oxygen into the water, supporting shrimp growth while saving up to 30% on energy compared to traditional systems.

These innovations reduce operational costs and improve energy efficiency across the farm.



Renewable Energy

Transitioning from fossil fuel-derived energy to renewable sources like solar or wind power, helping farms achieve carbon-neutral operations.

Integrating TOMGOXY technology into systems helps shrimp farmers reduce their energy consumption by 80%, resulting in a substantial reduction of carbon emissions by 40%.

TOMGOXY® INTENSIVE DIGITAL POND

TOMGOXY® Intensive Digital Pond by RYNAN Technologies redefines shrimp farming with smart, automated, and eco-friendly systems. Designed for maximum efficiency, faster growth cycles, and lower risks, it empowers shrimp farmers to scale profitably while meeting global sustainability goals

- 1 GEOREFERENCED LOCATION QR-CODE
- 2 MULTIFUNCTIONAL SYSTEMS
- 3 LED LIGHTS
- 4 WATER QUALITY MULTI-SENSORS
- 5 REMOTE CONTROLLER AND INTERNET GATEWAY
- 6 SIPHON OUTLET



TOMGOXY® Intensive Shrimp Farm: Data-Driven Growth for a Sustainable Aquaculture Future



Smart Farm Management with Data

AI-driven monitoring turns shrimp farming into a predictable, data-backed business, reducing losses and boosting yields by up to 20%.



Optimized Oxygenation for Growth

The PSAU-500 maintains stable oxygen 24/7, enabling survival rates of over 95% and faster growth for more profitable harvest cycles.



Solar Energy Powers Profitability

A 500 kWp solar system produces 640,000+ kWh yearly, cutting grid dependency and saving up to 70% in energy costs while lowering emissions.



Mangroves for Long-Term Value

Each farm integrates 2 ha of mangroves, absorbing 236 tons of CO₂ annually – boosting ESG impact and unlocking premium export markets

SALICORNIA - Pioneering Sustainable Aquaculture



Located in Duyen Hai town, Tra Vinh Province, Vietnam, our farm has a span of 8 hectares and was built in November 2020, with operations starting in November 2021. The farm integrates TOMGOXY technology to boost shrimp farming productivity and sustainability. With a stocking density of 300-400 shrimp per square meter, the ponds operate using only 20-30% of water volume per cycle. The feed conversion ratio (FCR) is between 1.1 and 1.2. We produce shrimp of various sizes according to market demands.



1000m² Ponds
(Optimized stocking density: 300-400 shrimp/m³)



Smart LED Lighting
(Boosts shrimp feeding efficiency by 10-15%)



Georeferenced Location QR-Code
Track and verify pond performance for traceability and certification compliance



Centralized Oxygenation System
(Ensures consistent oxygen levels across ponds)

TOMGOXY®

R&D farm built with TOMGOXY design and devices

This model demonstrates the 50:50 Growout to Water treatment area versus traditional intensive farms that allocate 20:80 Growout to Water treatment.

Power station Central Oxygenation System

TOMGOXY Shrimp Ponds 1000sqm

Installed with water quality sensors for real-time water quality measurements.

Specially designed ponds with intank waste discharge system.

Equipped with automatic feeder and oxygenation system.





TOMGOXY Shrimp Ponds 500sqm

Specially designed ponds with in-tank waste discharge system.

Equipped with Automatic feeder and oxygenation system.

Mangrove Woods

20,000 planted mangroves for removal of excess nitrates.

246.4T CO2 absorption/year.

Intake Water Treatment Ponds

Unique engineering design for ultra-fine filtration to remove sedimentation and other unwanted particles.

Ready-to-use Storage Reservoir

RYNAN Algalsonic installed for removal of algae within pond.

Sample model farm installed with:

8 hectares in area
4 hectares for mangroves

4 ponds of 1000m²
9 ponds of 500m²

Shrimp Disease Management

RYNAN® VIBRIO KIT

Measure the concentrations of aquatic microorganisms in shrimp ponds, including V.Parahaemolyticus, V.Alginolyticus, V.Owensii using specially prepared agar dishes and artificial intelligence (AI) analysis through the TOMGOXY app to establish management procedures.

BENEFIT

Proactive Disease Prevention:

Detect Vibrio bacteria early to prevent costly disease outbreaks, ensuring healthier shrimp and fish stocks and higher yields.

Fast and Reliable Results After 24 Hours:

Get accurate, on-site results within 48 hours, allowing for immediate action to protect your farm's water quality and livestock.

Cost-Effective & Sustainable Farming:

Reduce reliance on antibiotics and expensive treatments by addressing Vibrio issues before they escalate, promoting more sustainable aquaculture practices.



RYNAN® VISION BUCKET

With the TOMGOXY app, you can quickly and easily use AI analysis to measure and track the length, and weight of shrimp.



BENEFIT

Accurate Shrimp Health Insights:

Leverage AI-driven image analysis to accurately monitor shrimp size, weight, and health, enabling real-time tracking of growth and early detection of issues.

Early Disease Detection:

Detect early signs of diseases like EHP and abnormal growth patterns in shrimps, allowing farmer for quick interventions such as targeted treatment or isolation, minimizing the impact on the overall shrimp population.

Data-Driven Farming Efficiency:

Paired with the TOMGOXY App, gain access to historical data and trends to make smarter, informed decisions that optimize future production cycles and boost farm productivity.

Water Quality Management

RYNAN® ALKALISENSE

Measure total alkalinity through titrimetric analysis and high-precision metering pump; providing accurate measurements of alkalinity components such as:

- CALCIUM CARBONATE (CACO₃)
- MAGNESIUM CARBONATE (MGC₃)
- SODIUM CARBONATE (NACO₃)

BENEFIT

Reliable Alkalinity Control:

Ensure precise measurements of crucial alkalinity components, allowing for informed adjustments that directly contribute to shrimp health and growth.

Optimized Water Conditions:

Maintain stable alkalinity levels to create a balanced aquatic environment, which helps minimize disease outbreaks and improves overall shrimp survival rates.

Streamlines Operations:

Automate alkalinity testing and integrate data with the TOMGOXY app, reducing manual labor and enabling quick, informed decisions that enhance operational efficiency and productivity.



RYNAN® SPECTRO

A compact & portable spectrophotometer specifically designed for aquaculture water quality analysis. This design offers swift and precise measurements, enabling users to identify up to 12 parameters and inorganic compounds present in shrimps ponds.

BENEFIT

Comprehensive Water Quality Monitoring:

Capable of identifying up to 12 key parameters and inorganic compounds, the device helps farmers maintain optimal water conditions for shrimp health and growth.

Fast and Accurate Results:

With precise measurements delivered quickly, farmers can take timely action to address any water quality issues, reducing the risk of disease and improving productivity.

Portable and User-Friendly:

Its compact and portable design makes the device easy to use directly at shrimp ponds, providing on-site, immediate analysis without the need for lab equipment.



RYNAN® MULTISENSE

Compact multi-parameter water quality sensors give real-time measurements and warnings for DO, temperature, salinity, and pH levels. This sensor can be used as a handheld device or in conjunction with the RYNAN® Multifunctional Device.

BENEFIT

Real-Time Water Quality Monitoring:

Instantly track critical parameters like dissolved oxygen (DO), temperature, salinity, and pH, ensuring optimal water conditions across multiple ponds for better shrimp health and growth.

Improved Efficiency:

Reduce manual labor with automated, real-time data collection, allowing farmers to quickly spot issues and take action, saving time and resources.

Portable and Easy to Use:

Compact and easy to deploy across various ponds, the sensor offers flexibility and convenience, making water quality management simpler and more efficient for farmers.

Farm Aquatic Systems



RYNAN® OXYGEN GENERATOR

Ensures a stable supply of pure oxygen for shrimp ponds. With its fully automated system, it continuously produces and maintains high-quality oxygen in aquaculture systems to mitigate oxygen fluctuations.

BENEFIT

Maintains Stable Oxygen Levels:

The generator produces high-purity dissolved oxygen, minimizing daily fluctuations and ensuring a stable environment crucial for shrimp survival and organic matter decomposition, which helps keep pond conditions optimal.

Prevents Oxygen Loss, Optimizes Distribution:

With its fully automated system, the generator minimizes oxygen loss and evenly distributes oxygen throughout the pond, improving water quality and reducing the risks associated with low oxygen levels.

Remote Control and Monitoring:

Integrated with the TOMGOXY app, farm operators can remotely monitor and adjust oxygen levels in real time, enhancing efficiency and saving time by reducing the need for manual checks and adjustments.



RYNAN® SMART LED

RYNAN specialized lighting solution designed specifically for shrimp farming. Its unique light recipes, incorporating blue and green spectrums, enhance the shrimp's ability to metabolize food efficiently.

BENEFIT

Boosts Shrimp Growth and Efficiency:

The optimized blue and green light spectrum enhances shrimp metabolism, leading to faster growth rates and improved feed conversion. This results in higher yields and reduced feed costs, making it highly beneficial for farmers and distributors alike.

Remote Monitoring and Precision Control:

Integrated with the TOMGOXY app, farmers can control and adjust lighting conditions remotely, ensuring optimal growth environments and making data-driven decisions that enhance productivity and reduce labor.



RYNAN® MULTIFUNCTIONAL DEVICE

An automated system that ensures smooth water circulation, precise dissolved oxygen delivery, and accurate feed administration, minimizing oxygen loss and efficiently collecting waste at the bottom of the pond for siphoning.

BENEFIT

Improves Water Circulation and Oxygen Distribution:

Replaces traditional paddlewheels, ensuring even oxygen levels and healthier shrimp growth with minimal energy use.

Automates Water Quality and Feeding:

Monitors oxygen, temperature, salinity, and pH while automating feeding, reducing labor and improving shrimp health and feed efficiency.

Cost-Effective and Sustainable:

Designed for TOMGOXY ponds, the device cuts energy costs and enhances farm efficiency, supporting sustainable and productive shrimp farming.



RYNAN® ALGAESONIC

Use low-power ultrasonic waves to hinder algae growth, preventing access to sunlight and nutrients. The algae sink, disintegrate organically, and avoid toxic release, protecting aquatic life. Used in water reservoirs.

BENEFIT

Non-Chemical Approach:

RYNAN Algaesonic avoids the use of harmful chemicals, protecting aquatic ecosystems.

Reduction in Harmful Algal Blooms:

Reduce harmful algal blooms by up to 80%.

Reduced Water Treatment Costs:

By preventing algae growth, the need for expensive water treatment processes is minimized.



TOMGOXY® Smart Shrimp Farming Solution

A complete shrimp farming management platform developed by RYNAN Technologies, that combines IoT monitoring devices, and cloud services with AI-driven data analytics for precision shrimp farming.

SUSTAINABLE SOLUTIONS

Precise Monitoring

Improving shrimp yield and quality through real-time monitoring on mobile app.

Sustainable Technology

Utilizing advanced technology to enhance practices and improve efficiency.

Data-Driven Intelligence

Leveraging quantitative data to make informed decisions that maximize productivity and profits.

Integrated Aquaculture Network

A connected aquaculture network with mobile and AI tools to monitor ponds in real time, reduce risks, and maximize yields through data-driven decisions



Interested in our products? Contact us for a quote!

If you have any questions about RYNAN Smart Aquaculture and our solutions, or just want to learn more about what we do, We would love to hear from you.





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