

## IOT Council – Make IOT, easy. Case study of IOT-ezy and The Fish Farmer



As Singapore pushes ahead with its ambitious "30 by 30" vision aiming to produce 30% of the nation's nutritional needs locally by 2030 local producers like The Fish Farmer are stepping up with innovation and resilience. Operating sustainable fish farms off the coasts of Lim Chu Kang and Changi, they play a vital role in strengthening food security. However, scaling aquaculture in Singapore's dynamic climate presents major operational hurdles from fluctuating water quality to post-harvest storage risks.

To overcome these challenges, they partnered with IOT-ezy to implement a comprehensive monitoring and alert system that harnesses IoT and AI technology. Their journey offers a compelling example of how digital transformation can boost efficiency, prevent losses, and drive smarter farming.

### **Sensor-Driven Monitoring: Real-Time Alerts from Sea to Shore**

One of the biggest operational risks for sea-based fish farms is fluctuating dissolved oxygen (DO) levels which, during certain weather conditions, can drop dangerously low and result in mass fish mortality within hours. Water temperature also plays a critical role, influencing fish health, feeding behaviour, and oxygen availability.

To combat this, The Fish Farmer installed LoRa-enabled water quality sensors in each sea cage to continuously track DO and temperature. These rugged sensors transmit live data wirelessly to a cloud dashboard accessible on both mobile and desktop devices. If DO levels fall below safe thresholds or if water temperatures shift dramatically, the system automatically triggers instant alerts giving staff time to activate aerators, adjust feeding, or intervene as needed.

This proactive system ensures faster decision-making and dramatically reduces reliance on manual water testing, which was once labour-intensive and often too late.

## Smarter Insights Below the Surface: AI-Powered Fish Counting

Beyond environmental monitoring, *The Fish Farmer* also modernized how they manage inventory. Traditionally, tracking fish population, size, and growth required manual sampling, a tedious and imprecise process involving netting fish and estimating numbers time-consuming, labour-intensive, and prone to errors.

To streamline this, the company adopted an AI-driven video analytics system that uses underwater cameras to automatically detect, count, and estimate the size and weight of fish in real time. These AI models analyse footage to provide accurate and eliminate guesswork from harvest planning.

This shift from manual to automated inventory tracking saves hours of labour weekly, reduces fish stress, and enhances accuracy directly supporting better operational decisions and more sustainable farming.



## Mitigating Cold Room Failures: Preserving the Catch

The company also tackled vulnerabilities onshore especially within cold storage. With seafood being extremely temperature-sensitive, any malfunction in cold rooms can result in spoilage worth hundreds of thousands of dollars.

In any cold chain business, maintaining consistent temperatures is crucial particularly for highly perishable products like seafood. Even brief temperature spikes can lead to bacterial growth, spoilage, and devastating financial loss. For *The Fish Farmer*, this risk became very real during a Chinese New Year holiday.

The cold storage unit began to experience a temperature rise. In most traditional setups, such a malfunction might not have been discovered until products were

already compromised. But thanks to [IoT-ezy temperature monitoring solution](#), the system detected the temperature anomaly immediately and triggered an alert.

Staff were able to intervene promptly, stabilizing the environment before any seafood was lost. If left unaddressed, the temperature shift could have resulted in the spoilage of stock worth over \$1 million a staggering potential loss averted through timely action.



## Proactive Monitoring for Peace of Mind

Rather than relying on periodic checks or human oversight alone, the installed system uses wireless temperature and humidity sensors that feed real-time data to a centralized dashboard. If conditions deviate from preset thresholds, alerts are pushed instantly to staff via mobile or desktop platforms.

This system not only enables quicker response times but also provides historical data for audits, pattern analysis, and compliance.

## From Farm to Future: The Bigger Picture

As Singapore and the region grapple with climate shifts and rising demand for local produce, digitally enabled farms like The Fish Farmer are leading the way. Their experience shows how integrated IoT solutions whether monitoring oxygen levels in open waters or tracking cold room conditions can turn risk into resilience, and challenges into competitive advantage.

In a world where every degree matters, real-time insights are the new currency of sustainability and security.

Video Link, From Farm to Table which shows our solution, both AI and IoT in action.

<https://youtu.be/6wUVVNpmPk8?si=fukuSUpfpVcn8AMS>

