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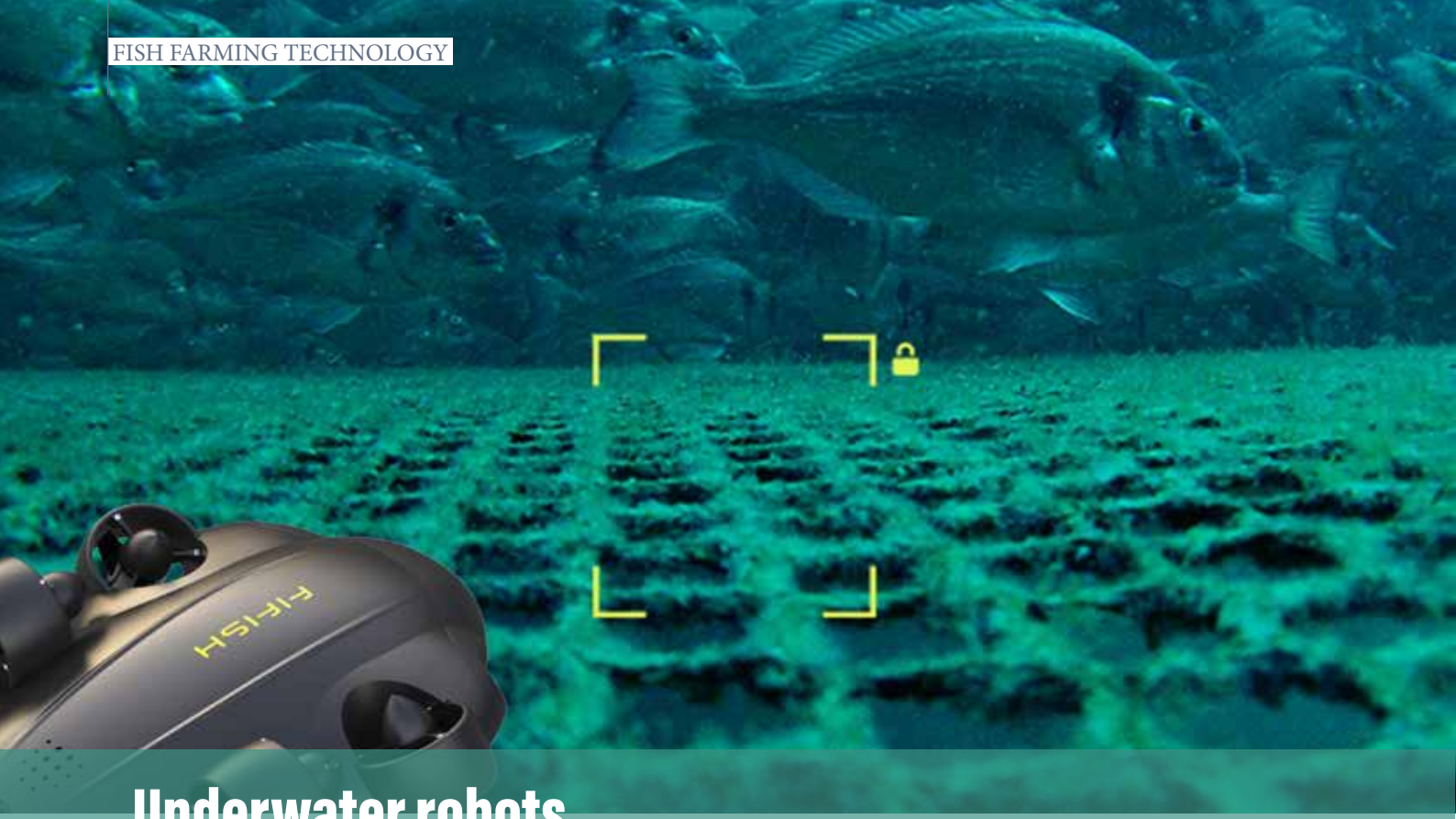


Underwater robots

How AI is helping fish farmers to redefine aquaculture operations

by Qysea Technology, China

The development and deployment of compact ROVs (remotely operated underwater vehicles) in recent years have immensely helped professionals overcome technical challenges and human risks involved with underwater operational work and deep-sea inspections, especially in the world of aquaculture.

Ensuring compliance with hygiene and health standards, maintaining fish farm infrastructure and equipment in proper operational conditions, as well as certifying the integrity of fish farms can come with various critical challenges.

QYSEA addresses and overcomes these challenges by providing aquaculture farms with durable, simple-to-use, and affordable advanced underwater systems for daily fish farm operation and maintenance.

Technology & innovation

In light of recent breakthroughs and developments, QYSEA Technology and its innovative research and engineering team have launched an AI-based vision platform allowing users of its FIFISH Underwater Robots to achieve precise underwater and active visual locking capabilities.

QYSEA's newly developed AI Platform includes a range of adaptive position and vision locking systems for its entire line of FIFISH ROVs. Among these dynamic features, the Vision Lock system allows operators to visually secure onto selected targets across any underwater environment with ease and precision.

The user needs to simply touch, swipe or pinch-zoom towards the area of interest on their device screen and the ROV then intuitively adjusts its position, locking the target at the screen center.

From mort identification and retrieval to evaluating damages of fish farming nets and infrastructures, activating the AI Vision Lock unleashes a range of smart capabilities that ensure selected subjects are at the center of focus, alongside improving operating efficiency and resistance against currents for the user.

Once locked onto the selected target and if the posture of the ROV -such as its pitch, direction, and rolls- is changed by currents, the FIFISH can intuitively re-adjust its position towards the original point of focus.

The key technology behind QYSEA's AI platform is the Dead Reckoning Inertial Navigation System (DR-INS). FIFISH ROVs utilise their built-in accelerometer and gyroscope to measure the acceleration and angular velocity of objects, as well as their computing systems to actively estimate and calculate the position, attitude, and velocity of objects in motion which results in a stabilised and smooth real-time target locking.

The technology has been mainly used through aircraft, submarines, missiles, and space shuttles, where its technical threshold can be quite high. As a creative breakthrough within the fish farming and marine industry, the QYSEA R&D team has taken the lead in applying this technology to ROVs for the first time, successfully launching the AI Vision Lock platform following numerous trials and iterations.

The company's advanced compact underwater drones and Vision Lock system brings disruptive and essential changes across the fish farming industry, further enhancing the capabilities of professionals in the field.

Essential applications in aquaculture

The annual aquaculture production contributes to nearly half of the world's marine-based product consumption. However,

its rapid development has also been accompanied by various challenges; traditional fish farming operations have relied on labor-intensive methods for inspections, as well as harmful breeding practices as a trade-off to increase their efficiency.

Deploying compact ROVs into the world of aquaculture has greatly reduced human-based and fish-breeding risks. With the recent AI Vision Lock upgrade, the FIFISH can quickly locate and lock onto damaged areas around the fishing net and implement a quick repair operation with its Net Patching Kit add-on tool. Through these modernised methods, the marine industry can experience immense improvements in its standards and operations.

Vision Lock also serves as an essential tool for monitoring fish behavior and feeding activities. With station holding and underwater hovering capabilities, the FIFISH ROV can fully secure and maintain its underwater posture for the entirety of the operation as a seamless and hassle-free task.

QYSEA's AI Vision Lock platform and its applications also span numerous other professional fields and introduce a new level of operational efficiency and capabilities for its ROV users. From underwater filming and discovery missions to advanced operational tasks, QYSEA's latest comprehensive APP upgrade pushes the industry of compact ROVs to new and exciting heights.

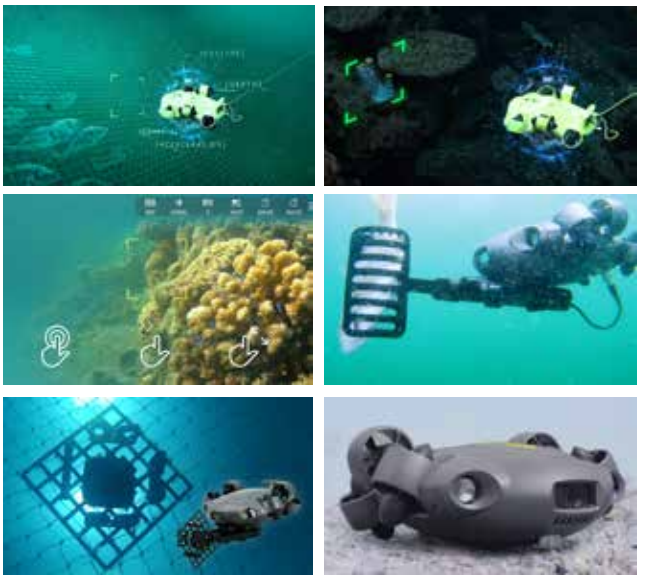
Subsea productivity solution

QYSEA's latest model, the 'FIFISH V6 EXPERT,' is a professional-class underwater robot and aquaculture productivity solution. Equipped with all-new multi-attachable tooling capabilities, this model delivers a fully-sealed and rugged build, 4K underwater imaging, and clarity for the user, all the while applying its patented design to achieve 360 degrees of flexible and free underwater movement.

The company's interface opens up the possibility to integrate with a wide range of professional-level tools that can tackle numerous industry-specific scenarios. The presence of an on board mort remover and net patch kit also boosts its capabilities in the world of aquaculture.

The 'Mort Remover clamp' is specially designed for fish farmers to efficiently transport sick fish and harmful elements, away from their operational areas, where the Net Patch Kit delivers a quick solution for securing hole damages at a moment's notice.

With continually expanding add-on capabilities, this underwater robot will have far-reaching applications throughout the marine industry. These essential ranges of work include inspections of livestock, maintaining underwater infrastructures, operating out at distant remote fish farms, quality sampling of subsea environments, and much more.



About QYSEA Technology

Established in 2016 within the heart of China's technology and manufacturing hub, QYSEA is committed to delivering exceptional expertise in the R&D, manufacturing, and sales of underwater robots.

As a company, it has broken numerous industrial barriers to establishing a leading market position with their ROV technologies, proudly garnering recognition for their innovations (CES, Future Maker, GIC) and functionalities (iF Design, Good Design).