

附件四、技術說明表



無繩漁具收放裝置

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簡歷：

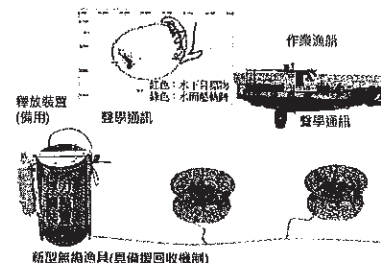
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市場及需求：

目前無繩漁具市場為一個新興市場，現階段以籠具捕撈業為主，目前較積極的市場在美國、加拿大，主要是為了降低籠具漁業對世界第三大瀕危生物北大西洋露脊鯨的衝擊；而南非在捕獲西海岸和南海岸岩龍蝦以及章魚時使用垂直繩索被認為是南非鯨魚糾纏的主要原因之一，南非西開普省福爾斯灣都有相關的實施無線捕魚規劃。此外，澳洲也積極透過補助計畫進行前期的無繩漁具相關計畫，也有澳洲的岩龍蝦漁民自願使用無繩漁具。而根據目前推無繩漁具推行的進度，美國、加拿大是最積極的推展國家且漁民的產值也高，參考 2016 年資料，美國龍蝦捕獲量達 6.7 億美元而加拿大漁民捕獲了價值 13 億加元的龍蝦和價值 5.9 億加元的雪蟹。且美國已經推行《大西洋沿岸漁業合作管理法；Atlantic Coastal Fisheries Cooperative Management Act》，加拿大則透過在漁業許可證添加保護北大西洋露脊鯨的《禁漁令》新條款，因此以產值總量與法規推行來看以美國、加拿大應為可觸及市場。

技術摘要（含成果）：

本研發團隊基於過去累積的既有技術和研發成果，在臺灣首次成功開發包括水面和水下漁具回收裝置的新型無繩漁具，同時結合聲學通訊技術，採用浮力調整為主和釋放浮球為輔的雙回收機制來提高可靠性使無繩漁具能具備高回收率，在歷經一年的試驗中已證明 95 % 以上的回收率，透過減少漁民財物和漁獲損失的方式來提供使用意願。另，經分析後可知北美市場潛力巨大，如以臺灣天然的海洋環境和強大的資通訊產業優勢來作為無繩漁具發展的後盾，僅需再串連北美漁具通路、提升售後服務和市場接受度，臺灣所發展的無繩漁具將具性能和價格的競爭優勢，成為未來漁業轉型與海洋生態永續的重要關鍵。

優勢：

- 高回收率，相對其他產品具備較高回收率，回收率需達 90% 以上
- 備援回收機制，現行產品只有一個回收機制，因此，當回收機制失效時漁獲就無法回收。
- 重置時間短，正常情形下漁民不需要重新繞線或充填高壓氣體，可降低重置時間。

競爭產品：

NOAA 東北漁業科學中心的漁具庫，已有包括來自不同製造商的無繩漁具相關產品；連結如下：

<https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-protection/borrow-northeast-fisheries-science-center-gear>

專利現況：

- (1) 本技術已有相關專利（中華民國專利申請號：發明第 I882903 號）。
- (2) 本研究團隊具有數十年研究經驗...

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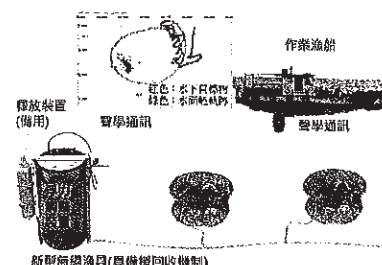


Ropeless Fishing Gear Handling System

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Experience :

- Ph.D., Department of Engineering Science and Ocean Engineering, National Taiwan University
- Associate Research Fellow, Ship and Ocean Technology Research Center, National Taiwan University (since Jan. 2020)
- Senior Ocean Engineering Advisor, Northland Power (Mar. 2017~Jul. 2019)
- Project Manager, NEC / KtS (Jan. 2013~Mar. 2017)
- Associate Engineer, Taiwan Ocean Research Institute (Mar. 2009~Dec. 2012)



Market Needs :

Currently, the ropeless fishing gear market is an emerging sector, primarily focused at this stage on pot and trap fisheries. The most active markets at present are the United States and Canada, mainly driven by efforts to reduce the impact of pot fisheries on the North Atlantic right whale, the world's third most endangered large whale species. In South Africa, the use of vertical ropes in the capture of West Coast and South Coast rock lobsters as well as octopus is considered one of the main causes of whale entanglement, and related wireless fishing initiatives are already being implemented in False Bay, Western Cape, South Africa. Additionally, Australia is actively promoting early-stage ropeless fishing gear projects through subsidy programs, and some Australian rock lobster fishers have voluntarily adopted ropeless gear. Based on current progress in promoting ropeless gear, the United States and Canada are the most proactive countries, with high fisher production value. For reference, in 2016, U.S. lobster landings reached USD 670 million, while Canadian fishers landed CAD 1.3 billion worth of lobster and CAD 590 million worth of snow crab. Furthermore, the U.S. has implemented the Atlantic Coastal Fisheries Cooperative Management Act, and Canada has added new provisions under its Fisheries Act through license conditions to protect North Atlantic right whales. Therefore, in terms of total production value and regulatory implementation, the U.S. and Canada represent the most accessible markets.

Our Technology:

Leveraging extensive research and technological expertise, a team in Taiwan has developed an advanced ropeless fishing system designed to improve reliability and efficiency. Their solution incorporates surface and underwater retrieval devices, acoustic communication technology, primary buoyancy adjustment, and an auxiliary float release mechanism. Recent tests have demonstrated recovery rates exceeding 95%, significantly reducing financial and catch losses for fishermen. Taiwan's natural marine environment, coupled with its strong information and communication technology industries, provides a strategic advantage in developing next-generation ropeless fishing gear. With North America emerging as a key market for sustainable fishing solutions, Taiwan-developed ropeless systems have the potential to gain a competitive edge by offering superior performance at a more affordable price. Strengthening distribution channels, after-sales service, and market acceptance will be crucial in positioning Taiwan as a leader in the transformation of global fisheries and the protection of marine ecosystems.

Strength :

- **High Recovery Rate:** Compared to other Products, it offers a relatively higher recovery rate, with recovery performance required to exceed 90%.
- **Redundant Retrieval Mechanism:** Current products only have a single retrieval mechanism, so if it fails, the catch cannot be recovered.
- **Short Reset Time:** Under normal conditions, fishermen do not need to rewind lines or refill high-pressure gas, which reduces reset time.

Competing Products :

The NOAA Northeast Fisheries Science Center Gear Lending Library already includes ropeless fishing gear products from different manufacturers. The link is as follows:

<https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-protection/borrow-northeast-fisheries-science-center-gear>

Intellectual Properties :

- (1) This technology is protected by relevant patents (Republic of China Patent Application No.: Invention I882903).
- (2) The research team has decades of research experience...

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