

Portable Air Inflated Freezer Solarcell, Technology For Fisheries SME Sidoarjo Indonesia

Ronny Durrotun Nasihien, Muhammad Ikhsan Setiawan
Department of Civil Engineering, Narotama University, Indonesia
ronny.durrotun@narotama.ac.id , ikhsan.setiawan@narotama.ac.id

Agus Sukoco
Department of Management
Narotama University, Indonesia
agus.sukoco@narotama.ac.id

Abdul Talib Bin Bon
UTHM Parit Raja Johor, Malaysia

Abstract

Sidoarjo Regency is an area in East Java with an area of 714.24 km². Having a very strategic position, bordering Surabaya as the second metropolitan city in Indonesia, Sidoarjo has a positive impact on the growth of its region (sidoarjokab.go.id). Banjar Kemuning Village Sedati District Sidoarjo Regency is one of the villages in the coastal area. Utilization of marine products has become a daily activity of the people in the village of Banjar Kemuning. Catching activities that continue to be carried out unwittingly have an impact on the existence of fisheries resources themselves such as the decline in catch. Sea Picking is a traditional ceremony for fishermen in Banjar Kemuning Village, Sedati District, Sidoarjo Regency. Sea Picking Ceremony Banjar Kemuning Village Sedati District Sidoarjo Regency is a local tradition, as an expression of gratitude and thankful for the catch of fishermen so far. Sea Picking is held every year. Banjar Kemuning village community by bringing supplies from home then boating together to the sea. Portable technology marketing center of fishermen's air inflated structure freezer solarcells as a fresh fish market place for fishermen in Banjar Kemuning village, Sedati sub-district, Sidoarjo regency, solutions to solve problems faced by fishermen in order to reduce the impact of the smooth and safety impeded to the fish marketing service system. Solarcells water inflated structure freezer technology, in order to increase the promotion and marketing of fishermen products in the village of Banjar Kemuning, Sedati subdistrict, Sidoarjo regency, can meet the requirements of strength, comfort in space and speed in the construction of the inflated structure. This research Portable Air Inflated, Portable Freezer, Solar Cell, Technology For SME In Sidoarjo, East Java, Indonesia, grant of Kementerian RISTEK DIKTI, Indonesia, 2019

Keywords:

Portable Air Inflated, Portable Freezer, Solar Cell, Kementerian RISTEK DIKTI

1 INTRODUCTION

The Sidoarjo Regency fishery sector relies on shrimp and milkfish as superior commodities which are used as the mascot of Sidoarjo Regency. Of the total aquaculture production in Sidoarjo Regency, the production of these two commodities reaches more than 85% and around 70% is milkfish production. The number of Sidoarjo pond farmers reached 3,227 people with a total area of 15,530 hectares. Most areas have milkfish ponds, one of which is in Banjar Kemuning Village, Sedati District, Sidoarjo Regency (wpi.kkp.go.id). The total milkfish production in Sidoarjo in 2009 reached 16.03 thousand tons, up 1.13% compared to the previous year. In 2010, production of tiger shrimp and milkfish cultivation in Sidoarjo increased despite weather anomalies. The production of milkfish in Sidoarjo in 2010 increased to 19,839 tons, while shrimp production in 2010 jumped to 3,725 tons from 3,465 tons (wpi.kkp.go.id).

Milkfish is one type of fish that has been cultivated in ponds. This animal was originally a side job for fishermen who cannot go to sea. Milkfish is a fish that can live in fresh water, salt water and brackish water (Sulardiono et al., 2013). Milkfish (*Chanos chanos* sp) or milkfish is one type of brackish water fish that has a specific taste, and has been known in Indonesia and even abroad. According to the Research and Development Center for Fisheries Quality Research (1996), the milkfish omega-3 content was 14.2%, exceeding the omega-3 content in salmon (2.6%), tuna (0.2%) and sardines / mackerel (3.9%). The complete nutritional content of milkfish can be seen in the chemical composition found in milkfish, with high protein content (20.38%), milkfish is one of the nutritious food sources (wpi.kkp.go.id). Milkfish Sidoarjo is known for its distinctive odor of mud and savory taste. As one of the milkfish production centers in East Java, the milkfish processing industry is developing in this region. Soka crab cultivation Banjar Kemuning Village Sedati District Sidoarjo Regency began in 2009, starting with the mangrove reforestation program by the Japanese NGO OISCA. At that time the Japanese visited Banjar Kemuning Village to review the mangrove reforestation activities while also inviting farmers in Banjar Kemuning to produce crabs soka, because he saw that many pond farmers in the village of Banjar Kemuning cultivated crabs. The cultivation of soft-shelled crabs in Banjar Kemuning is the second cultivation place after the first in Sulawesi, which has now become a major commodity. The structure of the shell is soft and can be eaten, soft-shelled crabs are now increasingly in demand by consumers, these crabs are starting to be cultivated. The main customer is the restaurant. With a selling price of Rp 55,000 - Rp 75,000 per kilogram, the turnover of soft-shelled crabs can reach Rp 2.6 million per day. This crab is increasingly popular because it is able to present a new way to eat crabs, soft shells, we no longer need to work hard to break the shell and dig up the meat in the shell. The business prospect of soft-shelled crabs now is more lucrative, demand for crabs continues to increase. Apart from households, the main consumers of these crabs are hotels and restaurants. Within a month fishermen can sell more than 300 kilograms (kg) of soft-shelled crabs, with a turnover of around Rp. 17 million to Rp. 20 million, with a net profit of more than 10% of turnover. Customers other than Sidoarjo come from Jakarta, Malang, Bali, and even Batam.

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2 METHODOLOGY

Methods and stages in the application of technology to the community, ranging from identification of community needs, design, manufacture, operational testing, operational assistance, and dissemination of these technologies to the community / partners, as well as work procedures to support the realization of the PTDM portable technology center for fisheries marketing supported by renewable air energy inflated freezer solarcell, Banjar Kemuning village, Sedati subdistrict, Sidoarjo regency, as follows: The LPPM Implementation Team of Narotama University, Surabaya, and supported by the Student Team, carried out: equipment design; tool making; make guidelines for the use of tools; socialization and workshop on the use of tools; evaluation of the use of tools by fishing partners; improved use of tools based on field conditions; Fishermen partners, namely KUB Sari Laut and KUB Maju Sejahtera, Banjar Kemuning village, Sedati subdistrict, Sidoarjo district, actively participated in the socialization of the use of tools, actively participated in training in the use of tools, used tools according to the evaluation and training, provided input to the implementation team regarding the improvement of the tools used , safeguarding and securing technological devices so they are not lost and can be used in accordance with technical instructions; Banjar Kemuning village government, Sedati sub-district, Sidoarjo district, Sedati sub-district government, Sidoarjo district, Sidoarjo district government, especially related agencies, were involved in workshops and outreach as one of the sources of PTDM activities in portable technology, marketing centers for fisheries marketing, supported by renewable energy, inflated freezer solar cells, Banjar village Kemuning Sedati sub-district, Sidoarjo regency; Mass Media, namely TV SURABAYA <http://surabayatv.tv/>, is directly involved in the coverage of PTDM activities in portable technology marketing centers for fisheries supported by renewable energy inflated solar cell air renewers, Banjar Kemuning village, Sedati subdistrict, Sidoarjo regency. Description of technology products to be disseminated to the public accompanied by supporting data (overview of technology, design, etc.), PTDM portable technology marketing center for fisheries supported by renewable energy inflated air freezer solarcell, Banjar Kemuning village, Sedati district, Sidoarjo district, as follows:

PORTABLE TECHNOLOGY SPECIFICATIONS SOLARCELL FREEZER

- 1 Dimensions of the tool P X L X T 93 X 80 X 103 cm
- 2 Engine capacity of 100 liters
- 3 Engine drive of the compressor motor
- 4 125 watt power capacity
- 5 Main Energy 220v Electric solar panels
- 6 Energy sources Solar panels

- 7 The capacity of the solar panel is 400 watts
- 8 The capacity of the inverter is 1,000 watts of pure sine
- 9 Frame material Elbow iron and hollow
- 10 Steel materials
- 11 Battery capacity of 120 AH
- 12 Functions of Sea Fish Freezer Tool

PORTABLE AIR INFLATED STRUCTURE TECHNOLOGY SPECIFICATIONS

- 1 Dimensions of the tool P X L X T 400 X 400 X 400 cm
- 2 Material Air Inflated Beam / Coloum / Polivynyl Cover

3 ANALYSIS AND DISCUSSION

The problem related to the use of milkfish as the main commodity in Sidoarjo is that until now processed products made from milkfish that already exist tend to be still limited to consumers who really like the taste of milkfish (wpi.kkp.go.id) but the obstacle has already tried overcome by adding variations in various milkfish products marketed. One of the factors limiting the increase in consumption of milk fish is the structure of the body with many fine thorns that interfere with consumer preferences, especially for young people, children and seniors. Milkfish has no less than 164 thorns or 82 pairs of thorns with spread on the back there are 42 pairs of branched thorns that stick inside the flesh near the surface of the outer skin, in the middle there are 12 pairs of short spines, in the abdominal cavity there are 16 short spines and the abdomen close tails there are 12 pairs of thorns. Efforts to increase the consumption preferences of milk fish are carried out through various processing, especially with the aim of removing these fine thorns. Various processed milk products then develop such as presto milkfish, smoked milkfish, milkfish brains and others. Another problem is that the results of fish and shrimp production have not been able to meet the consumption needs of the people of Sidoarjo, and to date most of the milkfish cultivation is still managed with relatively simple technology with a relatively low level of productivity. The attention of the Sidoarjo regency government in increasing development in the fisheries sub-sector, including the distribution of marketing of fish products, as well as the marketing system services required complete facilities in the form of TPI and adequate loading and unloading places. Sidoarjo Regency is known as one of the potential fish-producing cities, with fishery business activities including fishing in the sea, public waters, brackish-water aquaculture ponds, freshwater aquaculture and ponds. Apart from being a producer of fish to meet the needs in their own region, Sidoarjo fishermen also market fish production to the surrounding cities. Therefore, to support the marketing / distribution of fish products evenly at a reasonable price, the existence of the Fish Auction Place (fish market) along with other supporting facilities (loading and unloading places, dumps, depots, supplies, etc.) is very necessary. The existence of TPI / Fish Market in Sidoarjo is currently experiencing a shift in land use for trade / shopping and settlement functions, its location and facilities are inadequate, especially loading and unloading places so that circulation between trade and transportation activities related to loading and unloading of goods often occurs irregularities. The lack of a fresh fish market place in Sidoarjo, has an impact on the impeded smoothness and security of the fish marketing service system.

Portable air inflated freezer solarcells technology for the marketing center of fisheries fishermen in banjar kemuning sedati sub-district of sidoarjo regency, is the development of disaster response tent technology in the form of air inflated structures with air inflated structure (polyvinyl chloride), as registered with patent P00201507708 Date Nov 26 2015, inventors Dr. Muhammad Ikhsan Setiawan and Ronny Durrotun Nasihien. Portable air inflated freezer solarcells technology for fisheries marketing center in Banjar Kemuning village, Sedati sub-district, Sidoarjo regency, is also the development of portable greenhouse urban farming technology in the form of transparent polyvinyl chloride pvc structure portable greenhouse tents as well as bamboo structure structures for urban farming portable plants with blower and lighting equipment in the greenhouse tent, as registered with patent S10201900913, dated January 30, 2019, inventors Ronny Durrotun Nasihien and Dr. Muhammad Ikhsan Setiawan. Portable air inflated technology products in the form of air inflated structures with Terpaulin PVC (Polyvinyl chloride) material produced from compositions and manufacturing methods according to the invention have a tensile strength of more than 100 kg and heat strength of more than 50 ° C, product assembly time of 5 minutes, product disassembly time of 5 minutes and product packaging time of 2 minutes, as well as thermal comfort temperature according to room temperature during the day (25 ° C) with the tent door open position, and room temperature during the day (40 ° C) with the door tent position closed. The freezer as a cooling machine functions so that the fish catch by the fishermen of the village of Banjar Kemuning Sedati sub-district of Sidoarjo regency does not rot quickly compared to only using ice cubes, this anticipates the fishery fish harvest which has decreased, because it is influenced by the weather causing the catch of the fishermen to be quiet, entering rainy season and many fishermen do not go to sea, because of bad weather, one of

the factors causing the decline in catches of fishermen. Solarcells portable freezer technology product is a means of processing and or preserving fisheries production, especially in the freezing process, can increase economic added value that can be enjoyed by fisheries businesses in the region, in the form of fisheries commodity price stabilizers and contributors in reducing unemployment through labor absorption work. The existence and operation of Freezers is believed to be able to create various job opportunities such as traders, laborers and employees. Freezer is one of the supporting tools that serves as a storage area for fishermen's catches in order to maintain the quality of the catch. Freezer viewed from the function and use has an important role to maintain the quality of the catch of fishermen before finally being distributed to consumers, so the role of Cold Storage can also keep the selling price of fishermen's catches do not decrease when the catch is declining.

Portable technology marketing center of fishermen's air inflated structure freezer solarcells as a fresh fish market place for fishermen in Banjar Kemuning village, Sedati sub-district, Sidoarjo regency, solutions to solve problems faced by fishermen in order to reduce the impact of the smooth and safety impeded to the fish marketing service system. Solarcells air inflated structure freezer technology, in order to increase the promotion and marketing of fishermen products in the village of Banjar Kemuning, Sedati subdistrict, Sidoarjo regency, can meet the requirements of strength, comfort in space and speed in the construction of the inflated structure. Portable inflated structure membrane materials can withstand the weather for more than 10 years, depending on the type of coating material (Setiawan, M. Ikhsan & Nasihien, Ronny D, 2014). Besides that, portable inflated structure membrane material is proven to be reliable based on testing at Narotama University Lab and Field Test, giving satisfying results (Setiawan, M. Ikhsan, Nasihien, Ronny D, et.al, 2015 (a)). Portable inflated structure can be used in limited areas, lightweight structural material, easily moved, folded or transported to other locations only by truck / pickup (Setiawan, M. Ikhsan, Nasihien, Ronny D, et.al, 2015 (b))

The output that will be generated from the solution, measured and quantitative, is the availability of PTDM portable technology marketing center for fisheries supported by renewable energy solar cell inflated air freezer, Banjar Kemuning village Sedati subdistrict, Sidoarjo regency, covering 1 unit of portable air inflated technology along with 2 units of portable freezer solarcells technology, which can be directly utilized by the fishing partners of the village of Banjar Kemuning Sedati sub-district of Sidoarjo regency, in order to increase marketing of fisheries supported by renewable energy that is cheap, efficient and effective. Achievement plans and performance indicators for the application of technology to the community, PTDM portable technology fishery marketing center supported by solarcell renewable air renewable energy, Banjar Kemuning village Sedati subdistrict, Sidoarjo district, including the Implementation of PTDM Dissemination of portable technology marketing center for fisheries supported by renewable energy solar cell inflated freezer, renewable energy Banjar Kemuning village Sedati subdistrict Sidoarjo regency, in the form of workshops, socialization and the provision of technology equipment 1 unit of portable air inflated technology along with 2 units of portable freezer solar technology, which can be directly utilized by fishing partners Banjar Kemuning village of Sedati district of Sedati district of Sidoarjo, in order to increase fisheries marketing supported cheap, efficient and effective renewable energy; COPYRIGHT RIGHTS / PATENT PTDM portable technology marketing center for fisheries supported by renewable energy air inflated freezer solarcell, Banjar Kemuning village, Sedati sub-district, Sidoarjo regency; Video Profile of PTDM portable technology fishery marketing center supported by renewable energy inflated air freezer solarcell, Banjar Kemuning village, Sedati sub-district, Sidoarjo regency; International Proceeding publication and mass media, PTDM portable technology marketing center for fisheries supported by renewable energy inflated air freezer solarcell, Banjar Kemuning village, Sedati sub-district, Sidoarjo regency. The parties involved in the technology dissemination activities, PTDM portable technology fishery marketing center supported by renewable energy inflated air freezer solarcell, Banjar Kemuning village Sedati subdistrict Sidoarjo regency, including the LPPM implementation team Narotama University, Surabaya; Fishermen Partners, namely KUB Sari Laut and KUB Maju Sejahtera, Banjar Kemuning village, Sedati sub-district, Sidoarjo regency; Banjar Kemuning village government Sedati district Sidoarjo regency, and Sedati subdistrict Sidoarjo regency; Sidoarjo regency government, especially related agencies; Mass Media, namely TV SURABAYA <http://surabayatv.tv/>

4 CONCLUSION

Partner participation in program implementation, PTDM portable technology marketing center for fisheries supported by renewable energy air inflated freezer solarcell, Banjar Kemuning village Sedati sub-district, Sidoarjo regency, Fisherman Partners, namely KUB Sari Laut and KUB Maju Sejahtera, Banjar Kemuning village Sedati sub-district Sidoarjo regency, actively participated socializing the use of tools, actively participating in training in the use of tools, using tools in accordance with the evaluation and training, providing input to the implementation team regarding the

improvement of the tools used, maintaining and securing technological tools so that they are not lost and can be used in accordance with technical instructions. Evaluation of program implementation and program sustainability after completion of the Dissemination of Technology Products to the Community in the field, PTDM portable technology marketing center for fisheries supported by renewable energy inflated solar cell energy, Banjar Kemuning village, Sedati subdistrict, Sidoarjo district, including: evaluation of tool design; evaluation of tool manufacturing; evaluation of tool use guidelines; evaluation of socialization and workshop on the use of tools; evaluation of the use of tools by fishing partners; improved use of equipment based on field conditions and continuous improvement carried out jointly, between the LPPM Implementing Team of Narotama University, Surabaya and the Fishermen Partners of Banjar Kemuning village Sedati district of Sidoarjo district, as well as stakeholders namely the Banjar Kemuning village government of Sedati district of Sidoarjo district, Sedati district government Sidoarjo regency, Sidoarjo regency government, especially related agencies. Outputs achieved (output), PTDM activities portable technology marketing center for fisheries supported by renewable energy air inflated freezer solarcell, Banjar Kemuning village, Sedati sub-district, Sidoarjo regency. Solarcell portable air inflated freezer technology product solutions for fishermen at an economical cost but able to increase fish feed production, so it automatically facilitates fishermen in the availability of fish feed in the surrounding environment. Solarcell portable air inflated freezer technology meets the requirements of ease, comfort and speed in the production of fish feed in fisheries ponds. Solarcell portable air inflated freezer technology can be used in limited areas, easily moved or transported to other locations only by truck / pickup. Functions and benefits of technology products, PTDM activities portable fisheries marketing center technology supported by renewable energy inflated air freezer solarcell, Banjar Kemuning village, Sedati sub-district, Sidoarjo regency. Solarcell portable air inflated freezer technology for fishermen functions not only in economic costs but is able to increase fishermen's products, meets the requirements of strength, comfort and speed in production as well as product mobility Solarcell portable air inflated freezer technology in fishing shelters, can be used in limited areas, easily moved and transported to other locations only by truck / pickup. Solarcell portable air inflated freezer technology is beneficial for fishermen no longer need PLN electricity costs for fishing fish feed production, which can reduce the selling price. Economic and social impacts, PTDM activities portable fisheries marketing center technology supported by renewable energy inflated air freezer solarcell, Banjar Kemuning village, Sedati sub-district, Sidoarjo regency. Means of processing and or preserving fisheries production, especially in the freezing process, can increase economic added value that can be enjoyed by fisheries businesses in the region, in the form of fishery commodity price stabilizers and contributors in reducing unemployment through labor absorption. The existence and operation of solarcell portable air inflated freezer technology is believed to be able to create various job opportunities such as traders, laborers and employees. Contribution to other sectors, PTDM activities portable fisheries marketing center technology supported by renewable energy inflated air freezer solarcell, Banjar Kemuning village, Sedati sub-district, Sidoarjo regency. Solarcell portable air inflated freezer technology for fishermen as the main supporter of fishermen products, which meet the requirements of strength, comfort and speed of feed production and placement Solarcell portable air inflated freezer technology in fishing shelters, can be used in restricted areas, easily moved or transported to other locations only by truck / pickup, so that it can be placed in the pond and river banks. Solarcell's portable air inflated freezer technology not only supports fishermen's economy but can also be a major supporting facility for on-site feed production. The fisheries sub-sector in Sidoarjo Regency contributed 49.7% to the GRDP of the agricultural sector. This subsector consists of marine fisheries, pond fisheries, public waters and fish in ponds with various types of different fish commodities.

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BIOGRAPHIES

Ronny Durrotun Nasihien

Head and Lecturer of Department Civil Engineering, Narotama University, Indonesia

ronny.durrotun@narotama.ac.id

Agus Sukoco

Treasury, Lecturer and Head of Department Management, Narotama University, Indonesia

agus.sukoco@narotama.ac.id

Muhammad Ikhsan Setiawan

Vice Rector, PhD and Lecturer of Department Civil Engineering, Narotama University, Indonesia
ronny.durrotun@narotama.ac.id , ikhсан.setiawan@narotama.ac.id

Abdul Talib Bin Bon

Professor and Lecturer of UTHM Parit Raja Johor, Malaysia

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