

The Advantages of Flexitank Waste Processing With Close Loop Application System

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Abstrac. Flexitank is a large container-sized package with a capacity of 18-24 thousand liters made of plastic and can only be used once in a single shipment, in other words when it has been disassembled, the flexitank cannot be used anymore because there is a fear of leakage. the problem faced is that most flexitank companies only sell flexitank and don't know where the flexitank waste is discharged by the user and whether it is dangerous or not. Close loop system is a system with direct reciprocal to the entry and exit of goods, the production and reverse logistics of goods will be controlled through a system that has been connected. we will conduct research by trying to mix and match flexitank waste with a close loop system, which means that flexitank producers will control their products by working with recycling companies through an application so that the flexitank waste is melted and becomes a material to make flexitank or at least plastic seeds that can into other plastic products. As a result, Flexitank manufacturers will have a partnership with a recycling company that will facilitate Flexitank users to dispose of Flexitank waste without having to pay a recycling company and be responsible for Flexitank waste.

Keywords: flexitank, closeloop system, reverse logistics

1. Introduction

Indonesia is an archipelagic country, consisting of 17,508 islands, with about two-thirds of the sea-shaped region, and consists of several groups or main island groups.[1]

The area of Indonesia is dominated by islands and is associated with vast waters so that to develop and drive National Development the air transportation sector and sea transportation plays a very important role in bringing a region closer to other regions, an area with the outer islands and border areas in order embodiment of archipelago insight, so that it can direct the growth of trade and general development activities. The transportation system is very important in the development of the region, especially for provinces that consist of many islands, including sea transportation through ports. In the process of regional development, sea transportation is an important element and strategy in facilitating economic activity, because transportation is one of the elements forming a spatial structure to directly support functional relations and distribution service orientation between connectivity nodes in realizing the accessibility of community socio-economic activities in the region or out of territory.[2]

From 2007 to 2013 the number of exports of goods imports, the number of ship visits and the number of ups and downs of passengers experienced instability from year to year. But specifically for ship visit activities always increase every year. Increasing the flow of ships indicates that the size of the ship carrying out the anchorage is also getting bigger.[3] this is compounded by the large capacity of TEUs from 20 top carriers such as the Maerks Line, MSC, CMA-CGM and 17 other carriers which reached a capacity of 11,698,383 TEUs in 2012.[4]

The development of these shipments added with liquid-shaped goods experienced a very significant development in recent years, especially food ingredients in liquid form. Many developing technologies for shipping goods, one of which is Flexitank.



[5]

According to experts, flexitank is a large package made of plastic that is used to load all types of cargo in the form of liquid except dangerous goods and can only be used one time as a substitute for ISO Tank for a more efficient and practical solution.

Prior to flexitank there were a lot of packaging packages for loading fluids such as drums, IBC tanks, and ISO tanks, which were technology containers specifically for loading fluids.[6] but the more technological developments and packaging needs to load fluids, the more packaging has begun to be reduced because of its inefficient use, such as the IBC which is expensive and contains only 1000 liters and ISO tanks that are too large and require washing after use, hence flexitank considered more efficient because there is no need for washing, flexitank can be installed in container 20 feet with special container specifications, namely the container must be in good condition, no damage, has a minimum weight of 2,100kg and has wooden floors. Because it is installed inside the container, when on the highway no one will know if the lift is liquid, then a warning sticker will be affixed to some parts of the container after installation.

Flexitank has a variety of types and sizes that also have their respective functions for various needs, flexitank size consists of 18000 to 24000 liters, the size of the function serves to load fluids by matching the maximum charge with the type of fluid to be transported. Types of flexitank also vary depending on the requirements of standard flexitank usually to load food or other liquids except dangerous goods that are feared to damage the flexitank layer, flexitank high temperature from LAF which is flexitank that can withstand high temperatures up to 90 degrees Celsius, storage flexitank from Trans Ocean is a flexitank that can be used for storing liquid materials that can be used for up to 1 year, the type of flexitank is flexitank which is widely circulating in Indonesia.

According to the source, there are around 5,000 to 7 thousand flexitanks circulating in Indonesia every month, this increase has occurred since 2009. In its history Flexitank entered Indonesia starting in 1994 and is still made of rubber and can be cleaned and then used again for the same liquid with only a few brands playing namely Power Tex and Trans Ocean, the more times and requests, then flexitank is made which is made of plastic which is only used once but more and more new brands are starting to be involved in the world of flexitank such as LAF, Bright, Invinity and Jaguar.

Increasingly liquid cargo shipments, especially foodstuffs, will also increase the need for flexitank, especially those with food grade certification, which can only be used once. This causes more flexitank waste, where producers and users of flexitank are slightly less in handling their flexitank waste and there are no rules who are serious in handling the problem.

Indonesia, with its forests, places this country as a megabiodiverse country and world biodiversity center. As many as 10% of the world's rainforests are located in the territory of Indonesia, this is basically why Indonesia is called the lungs of the world.

However, the biodiversity contained in them is increasingly threatened, due to deforestation and wild destruction of ecosystems. Destruction of forests without mercy in order to gain profits continues to occur.

The processor is PT Prasadha Pamunah Limbah Industri (PPLI), a waste processing company from Japan. This company processes B3 waste up to 160 thousand tons per year. The managed waste comes from around 1,000 companies. "Of that number, the top customers are around 200-300 companies," said Syarief Hidayat, PPLI Operations Director, answering *Tribunnews.com* on Thursday (2/10/2014).

"Essentially PPLI provides a recycling, collection, handling and disposal process that is safe for toxic waste and non-toxic waste," said Arum Tri Pusporini, PPLI Public Relations Manager.[7]

Flexitank users should dispose of flexitank waste to a special disposal such as PPLI but most flexitank users do not want to give their flexitank waste to PPLI because they have to pay, the manufacturer or seller of Flexitank cannot do much they only instruct to release the Flexitank brand label before being disposed or on sale. Flexitank users usually sell to collectors or give them to truck drivers and truck drivers sell them to collectors at a price of 300 thousand to 400 thousand rupiah along with their equipment.

The problem here is how to overcome flexitank users who are not responsible for waste dumped carelessly or only given to truck drivers so they want to dispose of flexitank waste at PPLI so that it can be recycled or melted into plastic seeds.

In the study, the concept was to create a path between flexitank and reverse logistics using a close loop system, using this concept the amount of waste to be processed would be more stable and in accordance with the amount of production imported or issued by each flexitank company.

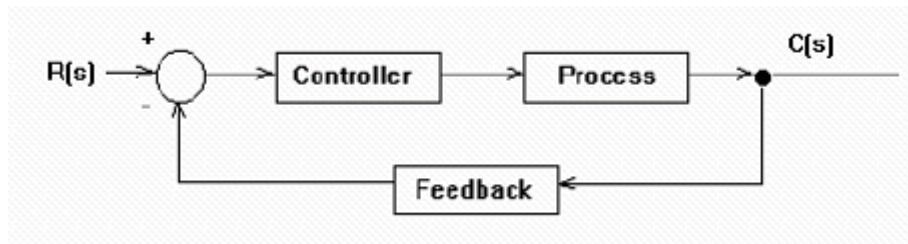
2. Methods

In this study using a qualitative method, qualitative research is objectivist scientific research and focuses on reflexive methods. The objectives of qualitative research are exploration of data, data descriptions, and data explanations. Qualitative research has two main characteristics, namely: First, the data is not in the form of numbers, more in the form of narratives, descriptions, stories, written and unwritten documents. Second, qualitative research does not have absolute formulas or rules for processing and analyzing data. In qualitative research, exploration of problems, identification of factors and compilation of theories are the main characteristics.[8]

The qualitative data that we get comes from experts who have approximately 10 years in the field of flexitank and variable indicators used in this case. This study is an excess of waste treatment (X) Flexitank (X2) close loop system (Y).

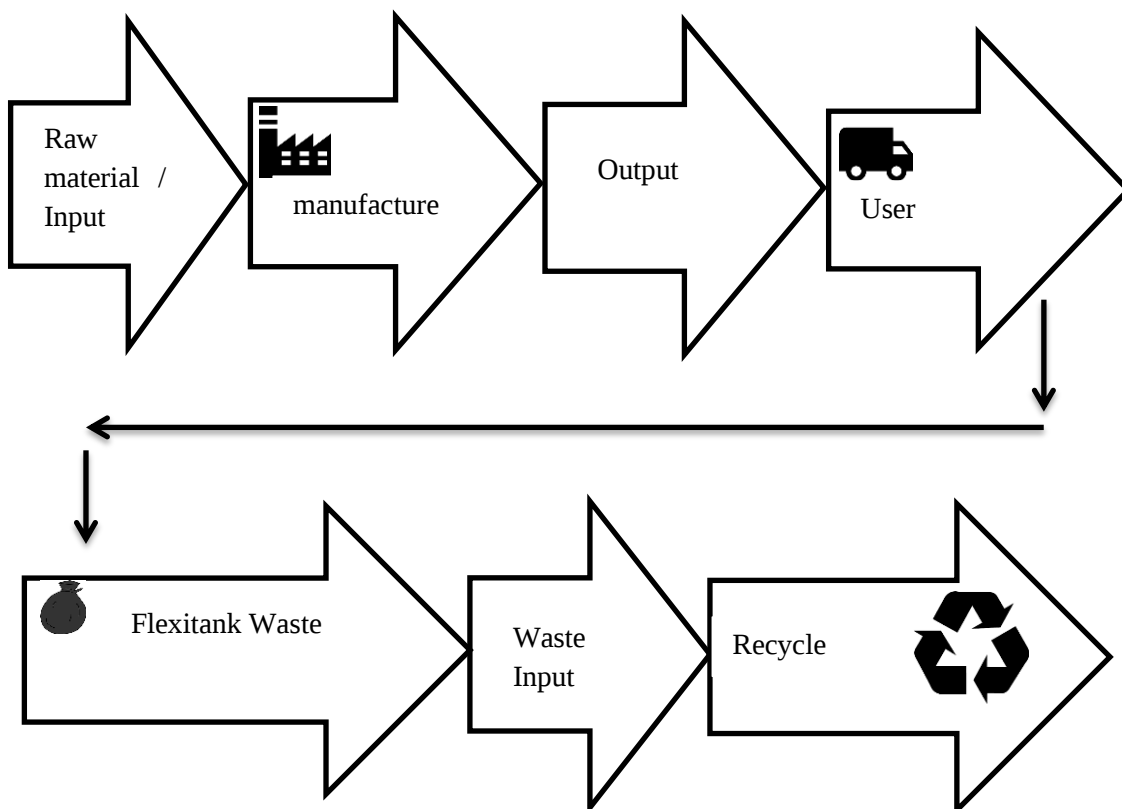
Reverse Logistics Reverse logistics is one of the most overlooked elements in a complete operating cycle.[9] But in reality, RL has become a hot topic lately. The current rise in environmental issues has caused many governments in the world to require companies to deal with their own waste problems, especially for electronic companies whose products have a short life span and this makes customers throw them at a rapid rate to get the latest version. RL is the most appropriate solution for this problem. Because besides being able to solve the above problem, it turns out that with the processing of this RL, the company can obtain a level of profit by utilizing the value of its products that have not been used by consumers.[10]

Close loop system is one of the systems in reverse logistics, which is a control system whose output signal has a direct influence on the control actions taken.[11]



[12]

In theory it will show the process as above because of differences in concepts and also devices used, usually close loop systems are in household appliances, electronics and industrial devices that require sensors, in applications that become concepts in this journal researchers create different paths than those in theory.



The concept above has two inputs because in closeloop this concept prioritizes reverse logistics, green logistics and cost economy, and the first input, output and second input before the recycling plant must be the same so that there is continuity.

Data is collected by using interview methods with Flexitank experts such as head of warehouse Flexitank Trans Ocean, director of the Asia Pacific Trans Ocean Section, director of LAF Indonesia, flexitank user community and flexitank users but we do not get data from recycler sites due to time and availability issues which will be interviewed, but the data collected from experts is enough to give an explanation of where waste flexitank should be disposed of.

3. Discussion and Result

The close loop system in this journal shows two inputs, the first input is raw material as the basic material for making flexitank after being directly distributed and used by the User, after using the flexitank waste will immediately be brought to the recycler and it will be noted that the item it's been destroyed.

In matching and mixing Flexitank Waste with a close loop, all distribution channels must be systemized into one application that can manage all distribution channels from purchase to deletion, in other words it must be made like an E-commerce application specifically for Flexitank.

Electronic commerce (electronic commerce, abbreviated as EC, or e-commerce) covers the process of buying, selling, transferring, or exchanging computerized products, services or information, including the internet. Some people see the term commerce (e-commerce) only to explain transactions that can be done between business partners. If this definition is used, some people realize that the term e-commerce is very narrow. So, many use the term e-bussines as a substitute term. Electronic business (electronic business or e-business) leads to a broader EC definition, the absence of buying and selling goods. But also customer service, consolidation with business partners. Others view e-business as "activities other than buying and selling" on the internet, such as consolidation and intra-business activities.[13]

Types of E-Commerce

E-commerce can be done by various parties, the general types of e-commerce transactions are explained below.

1. Business to business (B2B business-to-business)
In B2B transactions, both the seller and the buyer are business organizations. Most of the EC is this type.
2. Collaborative - c-commerce trading
In c-commerce business partners collaborate (instead of buying or selling) electronically. This kind of collaboration often occurs between and within business partners along the supply chain.
3. Business to consumers (business-to-consumer B2C)
In B2C, sellers are companies and buyers are individuals. B2C is also called e-tailing.
4. Consumer-to-consumer (consumer-to-consumer C2C)
In C2C, a person sells a product to someone else. (You too) can see C2C being used as a "customer-to-customer" (customer to customer). Both of these terms can be considered the same, and both will be used to describe people who sell products and services to each other.
5. Consumer-to-business (consumer-to-business C2B)
In C2B, consumers notify the need for a particular product or service, and suppliers compete to provide the product or service to consumers, for example on Priceline.com, where the customer mentions the desired product and price, and Priceline tries to find a supplier that meets the needs that is.
6. Intrarnisational (intra-organizational) trade
In this situation the company uses the EC internally to improve its operations. Special conditions in this case are also called EC B2E (business-to-its-employees).
7. Government-to-citizen (G2C government-to-citizen)
In this condition an entity (unit) of the government provides services to its citizens through EC technology. Government units can do business with various other government units as well as various companies (G2B).
8. Mobile trading (mobile commerce)
When e-commerce is done in a wireless environment, such as using cell phones to access the internet and shopping, this is called m-commerce.

The researcher along with the team that has worked together in building and designing e-commerce applications of the B2B or Business to Business type specifically for Flexitank. The application directs flexitank needs from flexitank selection, purchase to flexitank waste elimination with the application will make it easier for all company performance that requires flexitank and does not require further processing in implementing Green logistics, because the application has implemented Green logistics in accordance with the rules.

The way the application works is by connecting between flexitank sellers and flexitank buyers such as ordinary e-commerce but by providing a way for flexitank users to return or dispose of flexitank waste to the right place so that the flexitank waste is not misused or disposed of carelessly so there is no buildup plastic waste.

That way this application will meet the ISO 14001 standard which is a set of international standards in the field of environmental management which is intended to assist organizations throughout the world in increasing the effectiveness of their environmental management activities. The formulation of ISO 14000 series standards was initiated by the business world as a contribution to the achievement of Sustainable Development agreed at the 1992 Earth Summit in Rio de Janeiro. Representatives of government, business, experts, practitioners and other interested parties were involved in the formulation of the standard. ISO 14000 series includes several groups of environmental management devices, Environmental Management Systems, Environmental Audits, Environmental Performance Evaluations, Ecolabeling, and Product Life Cycle Studies. The application of these standards is voluntary. The most popular standard is ISO 14001 Environmental Management System which is the basis of ISO 14001 certification.[14]

4. Conclusion

Flexitank is a large package made of plastic which is used to load all types of cargo in the form of liquid except dangerous goods and can only be used one time as a substitute for ISO Tank for a more efficient and practical solution.

The problem in Flexitank is that Flexitank can only be used once, then the rest of Flexitank will become a fairly difficult waste in handling if it is not handled properly, the problem faced is not just waste but the users who only want to make a profit and find convenience with how to throw carelessly or even give it to the truck driver, which should be handled as a waste of flexitank waste other plastic waste that is recycled by a trusted recycling company such as PPLI.

There are around 5,000 to 7 thousand flexitanks circulating in Indonesia every month, this increase has occurred since 2009, with a substantial increase that will add plastic waste that has been circulating now.

In the application concept created is e-commerce that is specifically for Flexitank, which in e-commerce not only has a purchase feature but also has a feature of ex-flexitank waste disposal, to where it should or has been determined, this is an answer from problem problems from flexitank users who do not want to be responsible for waste that is not used.

The advantages of this application are that it makes it easier for people who will order, installations either at the user's place such as a liquid factory or port or in a flexitank distributor warehouse, insurance claims, payment and disposal of flexitank in the place that is supposed to be a recycling place like PPLI.

The researcher advises each company to produce flexitank to enter into the application in addition to facilitating reverse logistics this application will be a competitive arena for all companies in a healthy and orderly manner with this application as a referee between all competent companies in marketing.

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