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Role of Mobile Biodiesel Production Plants as Platforms for Technology Transfer and Innovation

Ms. Diya Gamare,Ms.Kiran Daphale ,Mrs.Vedika Gosavi
[1]Student In Department of Chemical Engineering,Government Polytechnic Thane , Maharashtra,India
[2]Student In Department of Chemical Engineering, Government Polytechnic Thane, Maharashtra India
[3]lecturer in Department of Chemical Engineering, Government Polytechnic Thane, Maharashtra, India

Abstract
Biodiesel is a clean burning renewable fuel made Using natural vegetables oils and Fats. Add that biodiesel is intended to be used as a replacement for petroleum Diesel fuel. It's a first to Handle compared to petroleum diesel fuel.The Brazilian national programme for production and user biodiesel watch launch In 2004 by the Brazilian government policy that established 2% biodiesel in fossil Fuels since 2008.Biodiesel has been commercially produced on a large scale but it application is still limited due to its production cost which is relatively more expensive than that of fossil fuels.those great emphasis was put on small scale production of vegetable oils with attractive economic incentives for underdeveloped region of Brazil.The produce biodiesel is often intended for use By the concerned local community which greatly reduced logistic and Transportation cost. You have a mobile biological unit currency stop a biologic Product production facility place inside a standard cargo container and mounted On a tow truck so that can be transported region near location.
Keywords: *Sustainable development, renewable energy, ruler area local resources environment benefits small scale production*

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I. INTRODUCTION

Biology production and commercial use in Brazil hasgreatly expanded in the last couple of years due to Brazilian governmentpolicy that established a mandatory use of two percent biodiesel in for salediesel fuse throughout has the country seems 2008. The production ofbiodiesel has become increasing important in research here due to need toreduce reliance on fossil fuels and decrease greenhouse gas emission. Inresponse to this need the design and operation of mobile vertical productionunit has been developed, which provided a flexible and efficient method of providing cooking oil.[1] using redable fuse to feed combustion ingenableconsiderable reduction of pollution labels of these kind are moreenvironmentally friendly due to their lower emission level and higher biodegradability is compared to conventional fuels [2]. Biodiesel can also beproduced on a small scale (<15 kilo tone/ year).Which require less complicatedand expensive processing technologies and can be applied in ruler areas.[3]Mobile biodiesel product plant is a self continued that can be transported to different locations to produce biodiesel from various few stocks such asvegetable oil s and animal fats. DC units are designed to be compact andefficient making them ideal for using remote locations or areas without access to traditional biodiesel production facilities.[4] they also providedtraining and support for their customers emerging that their units are operated efficiently and safety.[5] Biology production and commercial use in Brazil hasgreatly expanded in the last couple of years due to Brazilian governmentpolicy that established a mandatory use of two percent biodiesel in for salediesel fuse throughout has the country seems 2008. The production ofbiodiesel has become increasing important in research here due to need toreduce reliance on fossil fuels and decrease greenhouse gas emission. Inresponse to this need the design and operation of mobile vertical productionunit has been developed, which provided a flexible and efficient method of providing cooking oil.[1] using redable fuse to feed combustion ingenableconsiderable reduction of pollution labels of these kind are moreenvironmentally friendly due to their lower emission level and higher biodegradability is compared to conventional fuels [2]. Biodiesel can also beproduced on a small scale (<15 kilo tone/ year).Which require less complicatedand expensive processing technologies and can be applied in ruler areas.[3]Mobile biodiesel product plant is a self continued that can be transported to different locations to produce biodiesel from various few stocks such asvegetable oil s and animal fats. DC units are designed to be compact andefficient making them ideal for using remote locations or areas without access to traditional biodiesel production facilities.[4] they also providedtraining and support for their customers emerging that their units are operated efficiently and safety.[5] Aim of this project to reduce greenhouse gas emission and other harmful polluted associated with traditional facilities. Shadow biodiesel is a

cleaner burning fuel that petroleum biodiesel and its production procedures fever emission of harmful pollutant. He is too provide sustainable cost effective and flexible solution for producing high-quality biodiesel fuel that is both environmentally friendly and equal normally viable.

1.1 **Advantages**

Mobile biodiesel production plants offer several advantages over traditional , stationary biodiesel production facilities . These advantages include :

1. Portability : Mobile biodiesel production plants are designed to becompact , self - contained units that can be easily transported to different locations as needed . This makes them ideal for use in remote or rural areas where traditional infrastructure may not be available
2. Flexibility : Mobile biodiesel production plants can process a wide range of feedstock , including vegetable oil , animal fats , and used cooking oil . This makes them highly versatile and adaptable to different local conditions and available resources
3. Lower costs : Because they can be located closer to the source of the feedstock , mobile biodiesel production plants can help reduce transportation costs and logistics expenses . This can make biodiesel production more cost-effective and accessible , especially for smaller operations .
4. Reduced environmental impact : Biodiesel produced from sustainable feedstocks like used cooking oil or waste animal fats has a lower carbon footprint than traditional diesel fuel . By using locally available feedstock's , mobile biodiesel production plants can further reduce the environmental impact of transportation
5. Job creation : Mobile biodiesel production plants can create local jobs in rural communities by providing opportunities for farmers ,ranchers , and other local entrepreneurs to participate in the production and distribution of biodiesel . Overall , mobile biodiesel production plants offer an attractive solution for sustainable and decentralized biodiesel production .While there are still some challenges to be addressed , including the need for skilled operators and efficient use of resources , the potential benefits of mobile biodiesel production plants are significant

1.2 **Disadvantages**

Plantshave several disadvantages,including:

1.Limited production capacity: Mobile biodiesel production plants are generally smaller in size and have a limited production capacity compared to stationary biodiesel production plants. This limits their ability to produce large quantities of biodiesel in a short amount of time.

2.Higher cost: The cost of setting up and maintaining a mobile biodiesel production plant is typically higher than that of a stationary plant due to the need for specialized equipment and transportation costs.

3.Higher emissions: Mobile biodiesel production plants require transportation to and from thelocation where they are used, resulting in higher emissions of greenhouse gases and air pollutants. Increased safety risks: Transporting hazardous chemicals such as methanol and sodium hydroxide used in the biodieselproduction process can increase the risk of accidents and spills, posing apotential threat to the environment and public safety.

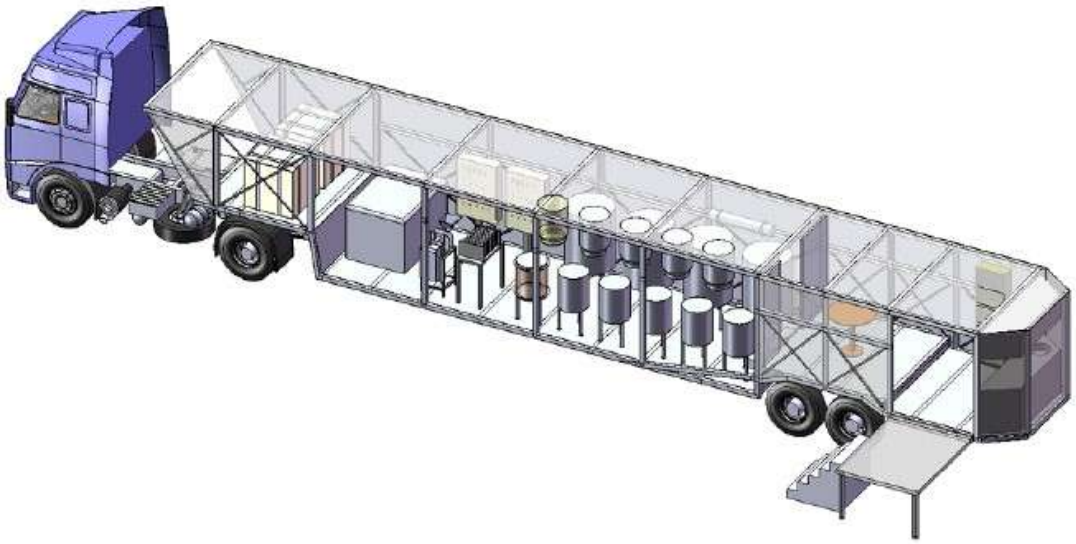
4. Limited availability: Mobile biodiesel production plants are not readily available in all regions, and their availability may be limited to certain periods of time, such as duringharvest season. This can make it challenging to produce biodiesel ondemand, particularly in remote areas.

5 .Higher operating costs: Mobilebiodiesel production plants require additional costs for transportation and fuel to power the plant, which can increase the overall operating costs.

Process

The first step in the biodiesel production process is the preparation of Feedstock, which can include vegetable oils, animal fats, or used cooking oil. The Feedstock is typically filtered and heated to remove impurities and moisture, and then Stored in designated tanks.The Transferification chemical reaction that converts the Feedstock into biodiesel. In a mobile biodiesel production plant, this reaction typically Takes place in a batch or continuous process. In a batch process, a predetermined Amount of feedstock is mixed with an alcohol (such as methanol) and a catalyst (such As sodium or potassium hydroxide) in a reactor vessel. The mixture is agitated for a Specified period of time to allow the transesterification reaction to occur, and then the Resulting biodiesel and glycerol (a byproduct) are separated. After the transesterification Reaction, the biodiesel and glycerol are typically separated using settling or Centrifugation. The glycerol, which is heavier, settles to the bottom of the reactor or is Separated by centrifugal force, and can be removed from the bottom of the reactor or From a separate collection vessel. The biodiesel, which is lighter, is typically collected From the top of the reactor. Once separated from the glycerol, the biodiesel is typically Washed with water to remove any residual impurities or catalysts. The washed biodiesel Is then dried to remove excess water, typically using heat or a drying agent. The final Step in the process is to test the biodiesel for quality and compliance with relevant

Standards, such as ASTM D6751 for biodiesel fuel. Quality control measures may Include testing for properties such as flash point, viscosity, acid value, and moisture Content, among others. Once the biodiesel has been produced and meets the required Quality standards, it can be stored in designated tanks within the mobile plant, or Transported to a separate storage facility for distribution and sale. The biodiesel can be Used as a standalone fuel or blended with petroleum diesel for use in diesel engines in A wide range of applications, such as transportation, agriculture, and industry.



Part of Mobile Biodiesel product shops as Platforms for Technology Transfer and Invention can lead to new perceptivity, practices, and approaches in biodiesel Sedulity, and further exploration of their eventuality for technology transfer and Biodiesel product shops can contribute to the advancement of the biodiesel Severity. Continued disquisition, development, and deployment of mobile Resources, promote sustainability and decentralization, and foster creativity and They can grease knowledge sharing, collaboration, and trial, give access to Platforms for technology transfer and invention in the biodiesel product sedulityChains.

Overall, mobile biodiesel product shops can play a significant part as Product styles, operation of original resources, and development of original value Scale directors to partake in biodiesel product, leading to implicit invention in Decentralized product can empower original communities, farmers, and small- Products, lower transportation costs, and drop hothouse gas emigrations. Also, Reduce the reliance on reactionary powers for transportation of feedstocks and Invention and creativity. By producing biodiesel on- point, these mobile units can Contribute to sustainable and decentralized biodiesel product, which can goad Sustainable and Decentralized product Mobile biodiesel product shops can Easier to adapt to changing product conditions and optimize product effectiveness Can enable directors to ever control and monitor product processes, making it Remote operation, allowing for strictness in plant operation and monitoring.

This Access.

- Remote operation Some mobile biodiesel product shops are designed for Varying regulations related to biodiesel product, icing compliance and request Country-specific conditions. This can be especially important in regions with original regulations and morals, allowing for severity to indigenous or Regulatory compliance Mobile biodiesel product shops can be designed to act up As feedstock characteristics, product capacity, and cost considerations.

•Directors to choose the most suitable technology predicated on factors analogous Continuous processes, enabling strictness in the product process. This allows Designed with various biodiesel product technologies, analogous as batch or Vacuity and prices.

- Technology severity Mobile biodiesel product shops can be Vacuity and cost of different feedstocks, optimizing product predicated on original Offering strictness in sourcing feedstock. This allows directors to adapt to the Feedstocks, including vegetable oils, beast fats, and used cookery oil painting oil,Feedstock strictness Mobile biodiesel product shops can exercise a variety of Product for localized requests, which may not bear large product volumes.

•It easier to respond to changing request conditions. Also, it enables small- scale Allows directors to adjust product capacity predicated on request demand, making Be gauged up or down depending on the demand for biodiesel. This strictness Minimizing transportation costs

- Scalability Mobile biodiesel product shops can Allows for on- point product, reducing the need for transporting feedstock and Remote areas where access to biodiesel product installations may be limited. It also

Most optimal point for product. This mobility can be especially profitable in Easily transported to different locales, which allows for strictness in choosing the Of a mobile biodiesel product plant is its mobility.

II. CONCLUSION

In conclusion, mobile biodiesel production plants can serve as effective platforms for technology transfer and innovation in the field of biofuels. These plants can be easily transported to different locations and communities, allowing for the transfer of knowledge and technology to various areas. Additionally, mobile biodiesel production plants can serve as a test bed for new innovations and technologies, allowing for experimentation and refinement in real-world settings

REFERENCES

[1]. https://www.researchgate.net/publication/264876272_Design_and_Operation_of_a_Mobile_Biodiesel_Production_Unit
[2]. https://www.researchgate.net/publication/272067478_Possibility_of_Automation_of_a_Mobile
[3]. Biodiesel_Production_Plant
[4]. https://www.researchgate.net/publication/349728376_A_review_on_community_scale_stationary_and_mobile_production_of_biodiesel
[5]. https://www.bdi-bioenergy.com/en/products/mobile5.https://www.greenhouse.co.uk/products/biodiesel-prodict