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The Production of Biodiesel Is Sustainable and Profitable Energy Source for Pakistan

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Abstract

The requirement of energy play vital role of life activities now a days. Pakistan energy requirement will increased three times in 2050. Environmental issues, rising fuel prices and energy sustainability are the major problems of 21st century. To increase the population, urbanization and industrialization the energy demand and consumption are increasing day to day. Major sources are fossil fuel like that coal, crude oil and natural gas are not meeting the energy requirement so that to found new alternative renewable energy sources for world energy demand. Biodiesel and green diesel are the alternative biomass fuel in these days. The production of power, heat and transport biomass materials play vital role. Biodiesel is the type of biofuel which is renewable, nontoxic and environmental friendly alternative source of energy.

Researchers are working to find the economically low rate production of biodiesel. Through feedstock, processing equipments, alcohol ratio, reaction time and catalysts are the important parameter to determination of fuel cost. Animal fats, cooking oil waste, edible and non edible feed stocks are the major raw materials of biodiesel production. Cooking oil waste and non edible oils are suitable due to low rate and accessibility.

There are many methods which are used in biodiesel production but transesterification method is proper for maximum production and cost effective. Some time blended form biodiesel is also used to reduce cost and environmental issue to emissions clean gases.
Key words: Biodisel; Profitable; Sustainable; Environmental issue; Transesterification; Blended etc.

Introduction

Environmental issues, rising fuel prices and energy sustainability are the major problems of 21st century. To increase the population, urbanization and industrialization the energy demand and consumption are increasing day by day. Researchers are trying to find new sources to produce energy and protect the environment from harmful gases which effect the ozone layer. The toxic gases like CO_2, CO, SO_2, oxide of nitrogen, hydrocarbon components and particulate matter are emission from transports and factories to effect the environment. Major source of energy are fossil fuel that is non-renewable like that coal, crude oil and natural gas are not meet the energy requirement so that to found new alternative renewable energy sources for world energy demand. Biodiesel and green diesel are the alternative biomass fuel in these days. The production of power, heat and transport biomass materials play vital role. Biodiesel is the type of biofuel which is renewable, nontoxic and environmental friendly alternative source of energy. Biodiesel is produce may be any fatty acid sources. The fatty acids from Mono-alkyl esters are drive from animal fats or vegetable oil is called biodiesel. There are many raw materials like as biomass, algae, edible, non-edible, animal fats and cooking oil waste are used for biodiesel production. Currently 90 to 95% edible oil feed stock (sunflower oil, niger oil, soya bean oil, rapeseed oil, palm oil, linseed oil etc) are use in biodiesel production but their requirement and cost are increasing in food product which are use in our daily life so, cooking oil waste, and non-edible oil are the low cost feedstocks for biodiesel production in the worlds. Non-edible crops, mostly, castor oil, linseed oil and Jatropha oil have a good likelihood of being used as a feedstock due to their low prices. In a small quantity water is use for these crops and also cultivate on barren land using waste water. Availability and low cost raw material

Algae is a economical choice for the production of biodiesel. The blended biodiesel are use to reduce the the cost of diesel. Pakistan introduces 5% blended biodiesel in 2015 and gradually increases up to 10% in 2025.

Methods used for biodiesel production

There are many processes which used for the production of biodiesel like as direct use in diesel fuel, Micro emulsion in diesel fuel, Esterification and trans-estrification. Researchers are working to produce biodiesel at low cost to use low cost raw material, favorable catalyst ,reaction time, alcohol ratio and effective method. The Trans-esterification method is normally cost effective method use for biodiesel production. Different kind of catalyst are use in trans-estrification method to produce biodiesel like as Hetrogeneous, Homogeneous and Enzyme. Trans-estesification is a reaction of a lipid with alcohol to form esters and by product.

Production of biodiesel is sustainable and profitable

Biodiesel is a environmental sustainable product which is a renewable source of energy. The most important advantage of biodiesel is low emission of aromatic and sulfur components.

According to Pakistan Economic Survey the typical demand of electrical will be enhance average annual growth rate 11% till 2030. will be growing at an average annual growth rate of 11% till 2030. To increase the population, urbanization and industrialization the energy demand and consumption are increasing day by day. Pakistan energy requirement will increase three times in 2050. for their life actives. The population of Pakistan is increased very firstly last two decades and also energy needs are increased. Researchers are working to find the economically cost effective method for the biodiesel production. The selection of feedstock, processes equipments and catalysts used for biodiesel production plays an important role in the determination of fuel cost. There are many raw materials like as biomass, algae, edible, non-edible, animal fats and waste cooking oils are used for the production of biodiesel. Non-edible oil and waste cooking oils are the low cost feedstocks for biodiesel production in the worlds. Non-edible crops, particularly linseed oil, castor oil, and Jatropha oil, have a good likelihood of being used as a feedstock due to their low prices. Availability and low cost raw material

Algae is a economical choice for the production of biodiesel. Some non edible seed price after cultivation is 6 to 10 rupees and biodiesel price 29 to 35 rupees in Pakistan. More work for research will be needed to find out good and effective method for renewable source to meet the demand of energy.

Conclusion

Energy consumptions are increase due to increase population and their actives. Pakistan population increase and the demand of will increase upto three time in 2050. Fossil fuels are the major portion for energy production which are non renewable sources to meet global energy requirement to search alternative renewable energy sources. Biodiesel is the type of biofuel which is renewable, nontoxic and environmental friendly alternative source of energy. Non edible oils and waste cooking oils are suitable due to low cost and availability. There are many methods which are used for biodiesel production but transesterification method is suitable for maximum production and cost effective. Some time blended form biodiesel is also used to reduce cost and environmental issue to emissions clean gases. The selection of feedstock, processes equipments, alcohol ratio, reaction time and catalysts are the important parameter to determination of fuel cost. Some non edible seed price after cultivation is 6 to 10 rupees and biodiesel price 29 to 35 rupees in Pakistan. More work for research will be needed to find out good and effective method for renewable source to meet the demand of energy.

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