

PRODUCTION OF ALTERNATIVE DIESEL FUEL FROM COOKING OIL

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ABSTRACT

Increasing Of energy demand and due to the high cost of crude oil the world is facing a big problem bill, for crude oil and the consumed of large quantity of crude oil every day. Around the world is big problem facing the people, the depletion of crude oil Resource have led the researchers to find alternatives fuels for combustion engines. In this paper, the waste oil of cooking can be useful by creating some chemical reactions with some catalysts, and converted to diesel fuel. The properties of oil derived from waste oils, analyzed and compared with petroleum and found that. It has properties similar to the diesel product crude oil; this paper will show a brief review about using cooking oils as fuel for diesel engines. The process of cooking oils to be converted is presented and the result obtained from The experiment students and comparison of waste purifying oil properties with fresh diesel

Keyword : - Oil, Waste, Diesel, Product.

1. INTRODUCTION

Diesel is one of the crude oil product, which is necessary used in all kinds of compression ignition engine as a fuel. As we know that diesel is product from crude oil, it is produced by many refining processes, which come out from oil wells. The demand of petroleum product is growing day by day.

The process of conversion of waste oil to diesel fuel is not costly as the process of petroleum refining due to the demand rate, the diesel fuel has to produce more and more to satisfy the demand over the world, and Middle East countries sell large quantity of crude oil due to the refining process cost.

The Components of Crude Oil

Unrefined petroleum is basically a blend of a wide range of hydrocarbons, all of shifting lengths and complexities. So as to isolate the individual segments that make up the crude regular asset, the raw petroleum must be partially refined with the goal that concoction segments can be evacuated each one in turn as indicated by their breaking points.

a) Light Distillates:

i) Naphtha - Made into gasoline/petrochemicals

ii) Methane Pentane

b) Middle distillates

i) Light gas oil - made into jet/diesel furnace fuels

ii) Heavy gas oil

c) Residue

Overwhelming unrefined petroleum (or additional substantial raw petroleum) is exceptionally gooey oil that can only with significant effort stream to generation wells under ordinary store conditions.[1]

It is alluded to as "overwhelming" on the grounds that its thickness or explicit gravity is higher than that of light raw petroleum. Substantial raw petroleum has been characterized as any fluid oil with an API gravity under 20°.[2]

Physical properties that vary between overwhelming rough oils and lighter evaluations incorporate higher thickness and explicit gravity, just as heavier atomic piece. In 2010, the World Energy Council characterized additional substantial oil as unrefined petroleum having a gravity of under 10° and a store thickness of close to 10,000 centipoises.[3] When repository consistency estimations are not accessible, additional overwhelming oil is considered by the WEC to have a lower breaking point of 4° °API.[4] at the end of the day, oil with a thickness

more prominent than 1000 kg/m³ or, identically, and a particular gravity more noteworthy than 1 and a supply consistency of close to 10,000 centipoises.[3][5] Heavy oils and black-top are thick nonaqueous stage fluids (DNAPLs). They have a low dissolvability and a consistency lower than, and thickness higher than, water.[6] Large spills of DNAPL will rapidly infiltrate the full profundity of the aquifer and amass on its bottom.[7]

2. PRODUCTION PROCESS

The production process is broadly deuced in to two steps:-

1. Filtration and purifying.
2. Pre-treatment of used biodiesel
 - i. (Addition some chemical substance).
 - ii. Heating and cooling the product.

Bio fuels is very important alternation fuel sources proved to the best substation for existing fuels.

After gotten the cooking oil, it has to be filtrated from some substances undesirable and problem to complete the process, so it has to be pure of any other substances then heat is supplied to the oil to derive off any water while the oil is cooling we mix up some methoxide such as potassium hydroxide (KOH) in some meth oxide when the oil has cooked to 550, add the methoxide and agitate gently. Allow time for the process of frons transesterification to complete. We wrapped the mixture in insulation to keep the temperature up and left it for 8 hours. After the transesterification process is completed we drain off the sediments wash the diesel and add hot water to drain and agitate it gently them drain off the water , heating the diesel to dry it we need to stir it continuously during the process then we took the diesel up at 130^{Co}.

3. PRODUCTION STEPS

1. 0.00 to 1.35 filter used vegetable oil.
2. 1.35 to 2.22 heat .1 liter of oil to above 100° to derive off any water.
3. 1.35 to 3.30 white the oil is cooking. Mix up some methoxide such as potassium hydroxide (Kho).
4. 03.30 to 05.35 when the oil has cooled to 55^C, add the methoxide, and agitate gently. Allow time for the process of transfexion to complete, we wapped the weather in insulation to keep the temperature up for as possible, but left alone for 48hours.
5. 05:35 to 06:35 once the transesterification process is complete, drain off the sediments.
6. 06:45 to 10:00 wash the diesel by adding hot water to the diesel and agitate it gently then drain off the water.
7. 10:05 to 11:25 heat the diesel to dry it, we used to stir it continuously during the process, they we took the diesel up at 130^C.
8. Burn your diesel using the method of your choosing.

Be aware this can be dangerous and it is up to you to make yourself aware of the dangers.

4. RESULT

Result of produced diesel from waste oils (cooking oils) Production of diesel from cooking oils are found by chemical process with some catalyst.

Properties compare with fresh diesel properties which shown in the table-1. After the comparison with fresh diesel its clear and suitable fuel foe diesel engine and less pollutant to theenvironment.

properties	Diesel from Cooking oil	Diesel from Crude oils
C%	83.60	87
H%	10.11	13
O%	4.16	NA
N%	0.8	NA
S%	0.02	NA
Flash point	69	62
viscosity	2.68	1.7
API gravity	33.06	30.06
Fire point	66	77

The cost of produced this diesel is less than the refinery process for crude oil to get fresh diesel and more safety.

5. CONCLUSIONS

The paper given a brief review on the production process of the cooking oil available in their days. From this paper we summarize the product diesel from cooking oil and its economically and technically suitable its rare pollute to the environment.

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