Ignition of biofuel propellant delivered from hazelnut squander helianthus oil combination in a Petroleum motor

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BONAFIDE CERTIFICATE

This is to certify that the Project work titled **Ignition of biofuel propellant delivered from hazelnut squander helianthus oil combination in a Petroleum motor that is being submitted by VIKAS KUMAR MISHRA and SUDHANSHU CHAUHAN is in partial Fulfillment of the requirements for the award of BACHELOR OF TECHNOLOGY, as prescribed by the Department of Mechanical Engineering of GALGOTIAS UNIVERITY is an authentic record of my own work carried out during a period from July 2020 to June 2021 under the supervision of MR KULDEEP NARWAT.**

Date –

Signature of Guide

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External Examiner

Approval Sheet

This project report entitled **Ignition of biofuel propellant delivered from hazelnut squander helianthus oil combination in a Petroleum motor** by

Vikas Kumar Mishra and Sudhanshu Chauhan is approved for the degree of bachelor of technology in mechanical engineering.

Examiners

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Guide

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VIKAS KUMAR MISHRA

SUDHANSHU CHAUCHAN

STUDENT DECLARALTION

I affirm that this written submission represents my views in my own words, and that I have appropriately credited and acknowledged the original sources when others' thoughts or words have been incorporated. I further certify that I have followed all academic honesty and integrity rules in my work and have not misrepresented, faked, or falsified any concept, data, fact, or source. I understand that any breach of the foregoing will result in disciplinary action by the Institute, as well as legal action from the sources who were not properly referenced or from whose sufficient permission was not obtained when required.

ABSTRACT

Biodiesel is considered as an elective fuel to Diesel fuel No. 2, which can be by and large delivered from various types of vegetable oils. Since the costs of consumable vegetable oils are higher than that of Diesel fuel No. 2, squander vegetable oils and non-palatable unrefined vegetable oils are liked as potential low-valued biodiesel sources. Furthermore, it is feasible to utilize soap stock, a side-effect of palatable oil creation, for modest biodiesel creation. In this investigation, a methyl ester biodiesel was created from a hazelnut soap stock/squander sunflower oil combination utilizing methanol, sulphuric corrosive, and sodium hydroxide in a two-stage measure. The impacts of the methyl ester expansion to Diesel No. 2 on the presentation and emanations of a four-cycle, four-chamber, turbocharged backhanded infusion (IDI) Diesel motor were analyzed at both full and halfway loads. Test results showed that the hazelnut soap stock/squander sunflower oil methyl ester can be halfway fill in for the Diesel fuel all things considered working conditions regarding the exhibition boundaries and emanations with no motor alteration and preheating of the mixes.

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Measurements	Accuracy
Load	∓2 N
Speed	∓2 rpm
Time	∓0.5%
Temperatures	∓1 °C
CO	∓20 ppm
CO_2	∓0.2%
NO_x	∓20 ppm
SO_2	∓20 ppm
Dynamic viscosity	∓1%
Heating value	∓1%
Specific gravity	∓1%
Calculated results	Uncertainty
Kinematic viscosity	∓1.4%
Torque	∓2%
Power	∓2%
bsfc	∓2.3%
Thermal efficiency	∓2.5%

CHAPTER: 1

INTRODUCTION

1.1 MOTIVATION OF THE PROJECT

Biodiesel made from several types of vegetable oils has been investigated as a potential replacement fuel for compression ignition engines. In the literature, there are detailed evaluations of biodiesel manufacturing procedures. Because edible vegetable oils are more expensive than Diesel fuel No. 2, waste vegetable oils and non-edible crude vegetable oils take precedence in biodiesel manufacturing over edible vegetable oils. Furthermore, soap stock, a byproduct of edible oil manufacturing, might be a low-cost source of biodiesel. Apart from Haas and coworkers and Graboski et al., no investigation on soap stock as a biodiesel source has been published to the authors' knowledge. This was the primary reason for the study presented in this study.

1.2- BACKGROUND OF PROJECT

- Biofuel has been developed as an alternative propellant for pressure petroleum motors made from many types of vegetable oils. In writing, point-by-point audits of biofuel generation metrics are available.

- It has been accounted for that fundamental impetus alone can't viably change over oil with high free unsaturated fat substance into biofuel.

- Waste green oils and unrefined green oils must be utilised as a substitute for eatable green oils in biofuel manufacturing since consumable green oils are more costly than Petroleum propellant No. 2. Similarly, soap stock, a byproduct of edible oil manufacturing, may be considered a minor biofuel source.
- In this investigation, biofuel were created from a lingering combination of hazelnut cleanser and helianthus oil glue utilizing ethanol, sulfuric corrosive, and sodium hydroxide in two stages.
- Now, the subtleties of Phenylalanine esters have been worked out. Extension of No. 2 petroleum at the delta and outlet of a four-stroke four-chamber petroleum motor with turbocharger (IDI).
- In request to acquire the best warmth obstruction and proficiency, the 17.5% growth of biofuel has been observed.
- As per the producer's best data, this is the main endeavor to deliver biofuel from a combination of helianthus oil and hazelnut oil and test it with diesel. No motor disappointment happened in each test.

1.3- GERNAL INTRODUCTION

- Biofuel created from various types of edible oils has been concentrated as an elective propellant for pressure petroleum motor. Point-by-point audits about biofuel creation measures are accessible in writing.
- As the price of consumable green oils are more as compared to Petroleum propellant No. 2, squander Green oils and unrefined Green oils are needed as an alternate eatable Green oils in biofuel creation. Likewise, soap stock, a side-effect of eatable oil creation, might be viewed as a modest wellspring of biofuel creation.
- It has been accounted for that fundamental impetus alone can't viably change over oil with high free unsaturated fat substance into biofuel.
- In this investigation, biofuel were created from a lingering combination of hazelnut cleanser and helianthus oil glue utilizing ethanol, sulfuric corrosive, and sodium hydroxide in two stages.
- Now, the subtleties of Phenylalanine esters have been worked out. Extension of No. 2 petroleum at the delta and outlet of a four-stroke four-chamber petroleum motor with turbocharger (IDI).
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- As per the producer's best data, this is the main endeavor to deliver biofuel from a combination of helianthus oil and hazelnut oil and test it with diesel. No motor disappointment happened in each test.

1.4 – Biodiesel Investigation

A two-stage method was used to manufacture biodiesel made from hazelnut soap waste sunflower oil combination utilizing methanol, sulphuric acid, and sodium hydroxide. The methyl ester's details were settled at that moment. At full and incomplete loads, the effects of adding methyl ester to Diesel No. 2 on the presentation and outflows of a four-cycle, four-chamber turbocharged roundabout infusion (IDI) Diesel engine were studied. It was discovered that a biodiesel expansion of 17.5 percent provided the highest force and warmth efficacy. To the best of the designers' knowledge, this is the first attempt at making biodiesel from hazelnut soap stock/squander sunflower oil mixture, as well as putting it through its paces in a diesel engine. The motor was used in all of the experiments with no modifications.

1.5 – KEY WORDS REALTED TO THIS ARTICLE

1- WHAT IS BIOFUEL?

Biofuel is a form of fuel manufactured from biomass that is produced today rather than through the relatively slow geological processes that produce fossil fuels like oil. Some people use the terms biomass and biofuel interchangeably since biomass (for example, wood logs) may be used as a fuel. The phrase biomass, on the other hand, usually describes to the biological raw material utilized to generate the fuel, or a thermally/chemically altered solid end product, such as wood pellets or briquettes.

Plants (i.e. energy crops) or agricultural, commercial, home, and/or industrial wastes can all be used to make biofuel (if the waste has a biological origin). Biofuels often use modern carbon fixation, such as that which occurs in plants and microalgae through the photosynthesis process.

2 – WHAT IS ENERGY CONSERVATION?

The endeavor to minimize energy consumption by utilizing less of an energy service is known as energy conservation. This can be accomplished by either using energy more effectively (using less energy for a consistent service) or lowering the quantity of service provided (for example, by driving less). The notion of Eco-sufficiency includes energy conservation.

Reduced wastes and losses, greater efficiency through technical improvements, and enhanced operation and maintenance are all ways to save energy. On a global scale, the stability of population growth can also help to reduce energy use.

3 -WHAT IS GREEN ENERGY/ RENEWABLE ENERGY?

Green energy refers to any form of energy that is produced from natural resources such as sunshine, wind, or water. It is frequently derived from renewable energy sources, albeit there are important d distinctions between renewable and green energy that we shall discuss further below.

The most important aspect of these energy resources is that they do not affect the environment by emitting greenhouse gases into the atmosphere.

Green energy is frequently derived from renewable energy technologies such as solar, wind, geothermal, biomass, and hydroelectric power as a source of energy. Each of these technologies generates energy in a different way, whether it's through harnessing the sun's energy using solar panels, wind turbines, or the flow of water.

4- WHAT IS HAZELNUT OIL?

Hybrid hazelnut oil is a very appealing raw source for biodiesel manufacturing. The crude oil was refined after hazelnut oil was collected from hybrid hazelnuts. An alkaline catalyst was used to trans esterify refined hazelnut oil with excess methanol to produce hazelnut oil-based biodiesel.

CHAPTER-2

LITERATURE REVIEW

2.1 – BIODIESEL PRODUCTION

The method of manufacturing the biofuel biodiesel through the chemical processes of transesterification and esterification is known as biodiesel manufacturing. Short-chain alcohols are used to react with vegetable or animal fats and oils (typically methanol or ethanol). Alcohols with a low molecular weight should be utilized. Because of its low cost, ethanol is the most commonly utilized; nevertheless, methanol can achieve higher conversions into biodiesel. Although either acids or bases can catalyze the transesterification process, the reaction catalyzed by bases is more prevalent. Compared to acid catalysis, this approach has shorter reaction durations and cheaper catalyst costs. Alkaline catalysis, on the other hand, provides a number of advantages high susceptibility to both water and free fatty acids in the oils is a drawback.

2.2 REACTIONS

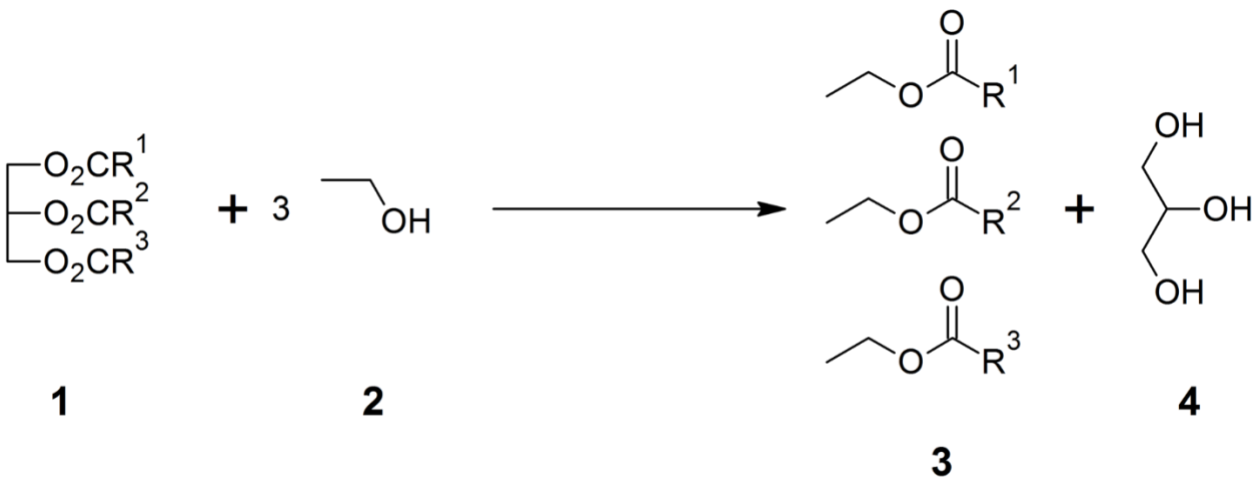
Transesterification

In animal and plant fats and oils, triglycerides are esters formed when three free fatty acids interact with the trihybrid alcohol glycerol. During the transesterification process, the extra alcohol (typically methanol or ethanol) is deprotonated with a base to make it a stronger nucleophile. As can be seen, the reaction has no other inputs except the triglyceride and the alcohol. This reaction

would normally occur very slowly or not at all under normal conditions, thus are heat and catalysts (acid and/or base) needed to speed it up. It is vital to remember that the transesterification reaction does not use the acid or base, hence they are not consumed they are not reactants, but catalysts, because they are consumed by the transesterification process. Sodium hydroxide, potassium hydroxide, and sodium methoxide are common transesterification catalysts.

The base-catalyzed procedure is used to make almost all biodiesel from virgin vegetable oils because it is the most cost-effective method for processing virgin vegetable oils, requiring just modest temperatures and pressures and yielding over 98 percent conversion yield (provided the starting oil is low in moisture and free fatty acids). Biodiesel made from other sources or using other processes, on the other hand, may need acid catalysis, which is significantly slower. Only the base-catalyzed transesterification process will be detailed because it is the most common technique for commercial-scale manufacturing.

Triglycerides (**1**) are reacted with an alcohol such as ethanol (**2**) to give ethyl esters of fatty acids (**3**) and glycerol (**4**):



R^1, R^2, R^3 : Alkyl group

ALKYL GROUP- An alkyl substituent is a one-hydrogen alkane in organic chemistry. The word alkyl is purposefully vague in order to encompass a wide range of potential replacements. The

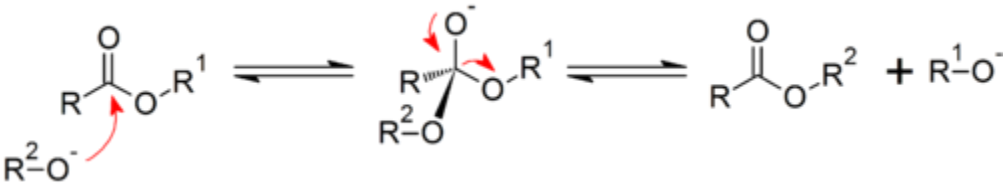
general formula for an acyclic alkyl is CnH2n+1. A cycloalkyl is formed by removing a hydrogen atom from a ring of a cycloalkane, and it has the general formula CnH2n-1. An alkyl is usually found as part of a bigger molecule. The symbol R is used in structural formula to denote a general (unspecified) alkyl group. Methyl, having the formula CH3, is the lowest alkyl group.

The mono-alkyl ester (biodiesel) and crude glycerol are formed when the alcohol combines with the fatty acids. Because the bio lipid (fat or oil) and alcohol interaction is reversible, more alcohol must be supplied to achieve full conversion.

BASE-CATALYZED TRANSESTERIFICATION MECHANISM

The base catalysis the transesterification process. Any strong base capable of deprotonating the alcohol (e.g., NaOH, KOH, sodium methoxide, etc.) will do, though sodium and potassium hydroxides are frequently used due to their low cost. Because water induces unwanted base hydrolysis, the process must be maintained completely dry.

The carbonyl carbon of the beginning ester (RCOOR1) is nucleophilic ally attacked by the entering alkoxide (R2O) in the transesterification mechanism, resulting in a tetrahedral intermediate that either reverts to the starting material or progresses to the trans esterified product (RCOOR2). The numerous species are in equilibrium, and the product distribution is determined by the reactant and product's respective energies.



2.3 - BIOFUEL PREPARATION AND ITS SPECIFICATION

Mixture the hazelnut cleanser glue and utilized helianthus oil in roughly equivalent volumes. The cleanser glue contains about a portion of the 45 free unsaturated fats. By adding spent helianthus oil, the substance of free unsaturated greasy substances in the cleanser slurry is diminished. Be that as it may, the free unsaturated greasy substances in the mixture are more noteworthy than 20%. In the base-catalyzed transesterification response when straightforwardly applied to the mixture, this material with a high substance of free unsaturated fats will bring about an exceptionally flawless game plan, subsequently decreasing the yield of esters. . At that point it is critical to lessen the measure of free unsaturated greasy substances in the mixture by scathing pretreatment at 35°C so the free greasy oil is esterified before the primary oil motivations the greasy oil for transesterification, accordingly finishing the response at 55°C °C harsh. Every liter of the mixture contains 3.5 grams of sodium hydroxide. Simultaneously, it is restricted as follows. There is a combination of memory added to a mixture with 35 ° C and remembered for a couple of moments 5.5% super active (H2SO4). Mix at a steady temp. of 35°C for 1 hour without warming for 60 minutes. Now, the mixture is being determined. At a later point on schedule, every liter of the combination contained 3.5 g NaOH. It is decayed in ethanol (13% of the pool) to frame ethnocide. A large portion of the subsequent ethnocide is loaded up with unheated ethnocide. Mixture for 5 minutes with a combination. It has been added at 55 ° C.

The mixtureing proceeds for around an hour and a half. The layer is glycerin, while the upper piece of the body forever. The glycerin were taken out until the finish of Splenii. The ester were warhead a few times with unadulterated water. A restricted measure of phosphorus-containing destructive substances (2.5 ml per liter of oil) is utilized in the principle were. Toward the finish of the cycle, heat the oil to 100°C to eliminate the water in the oil. The determining pH of the last Phenylalanine ester is 6.5. Truth be told, Katz utilizes comparable cooperation [32] to deliver biofuel from Green oil squander .The thickness is in the temp Scope of 15 to 45°C. As can be seen from the figure, the

consistency of biofuel is normally more than the diesel, particularly at low temps. This implies that biofuel can't be utilized straightforwardly, particularly at low temps. Contingent upon the volume, the biofuel is mixtures to differing degrees.

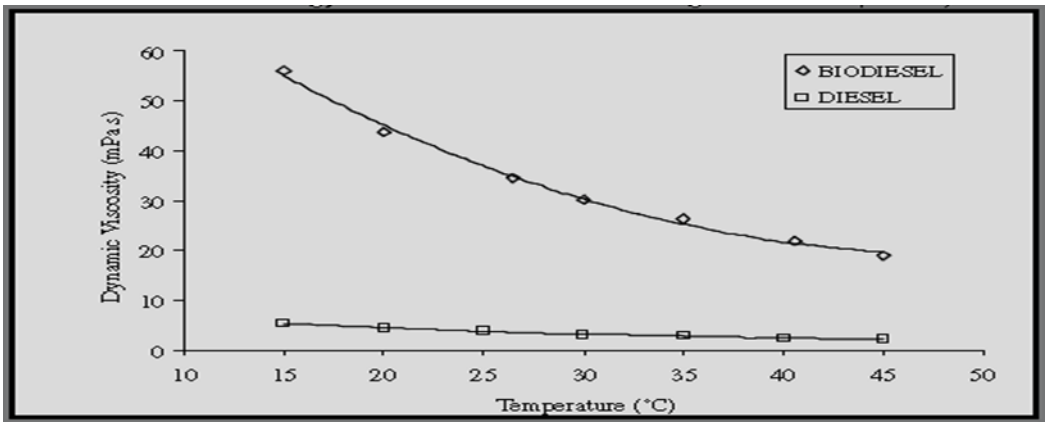


Fig 1. Change in dynamic viscosities as compared to Petroleum No. 2 with temp of biofuel

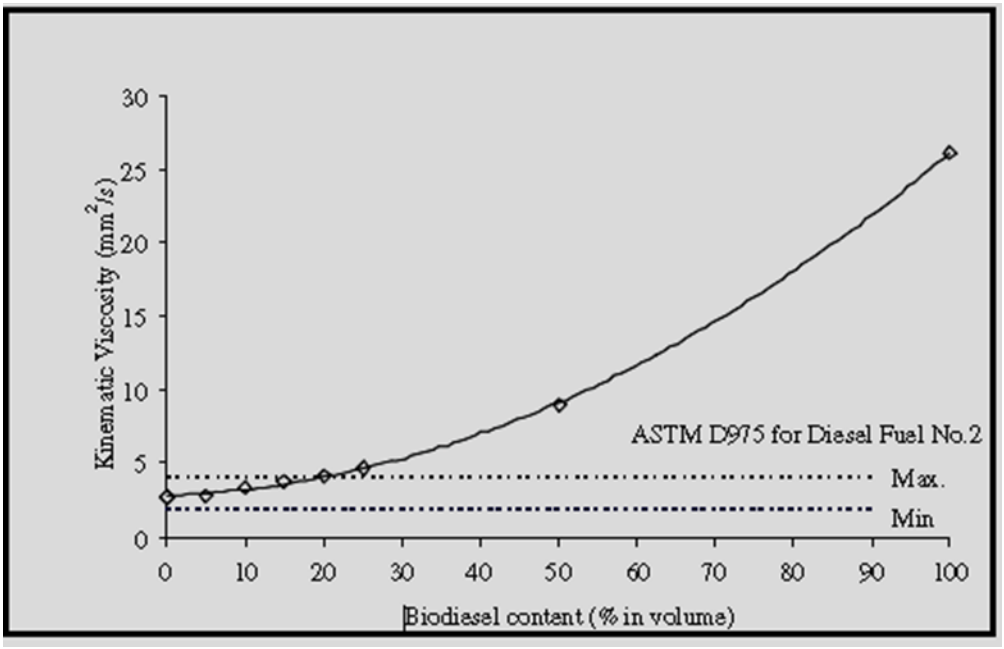


Fig 2. Effect on kinematic viscosities on different mixtures of biofuel at 38°C.

The impact stretches out biofuel to petroleum oil or. 2 With a mixtures development head at 38° C. appeared in fix 4° C. it shows up in the picture. 4 ° C. In Fig. 4 ° C. Appeared in fix 4 ° C. It shows up in fix 4 ° C. Show the reporter. 4 Dial and Dial gauge no variety Noel 2 is assessed with heat calorimeter. The low-warming temp. (LHV) gas is 39492.8 kg/kg, which is 39492.8 kg 39492.8 kg 39492.8 as hefty gas. From that point forward, petroleum items are assessed that they use pictures. It worked out that the thickness of the gas is 915. 3 kg/m3 Case o 9.1% Rose Petroleum NO. 2 a 14°C.

2.4- EXPERIMENTAL STUDIES AND TEST METHODS

A petroleum motor, a motor testbed, a gases analyzing meter, and a noise measuring meter are all part of the experiment set-up. Figure 3 shows a descriptive representation of an exploratory strategy. All of the tests were conducted with a Ford motors 1758 cm3 expulsion, 4-chamber, 4-stroke, water cooling system, 21.5:1 compression ratio, turbocharged, underhanded insertion Petroleum motor. The highest motor power was 155 N-m at 2200 RPM, while the lowest was 59 kW at 4500 RPM. A control ER board, evaluation instruments, and a pressing factor-driven dynamometer, which is water-cooled and rated for 112 kW (150 bhp) power consumption at 9000 RPM are all part of the motor testbed working speed A strain check load sensor was used to assess the load on the dynamometer.

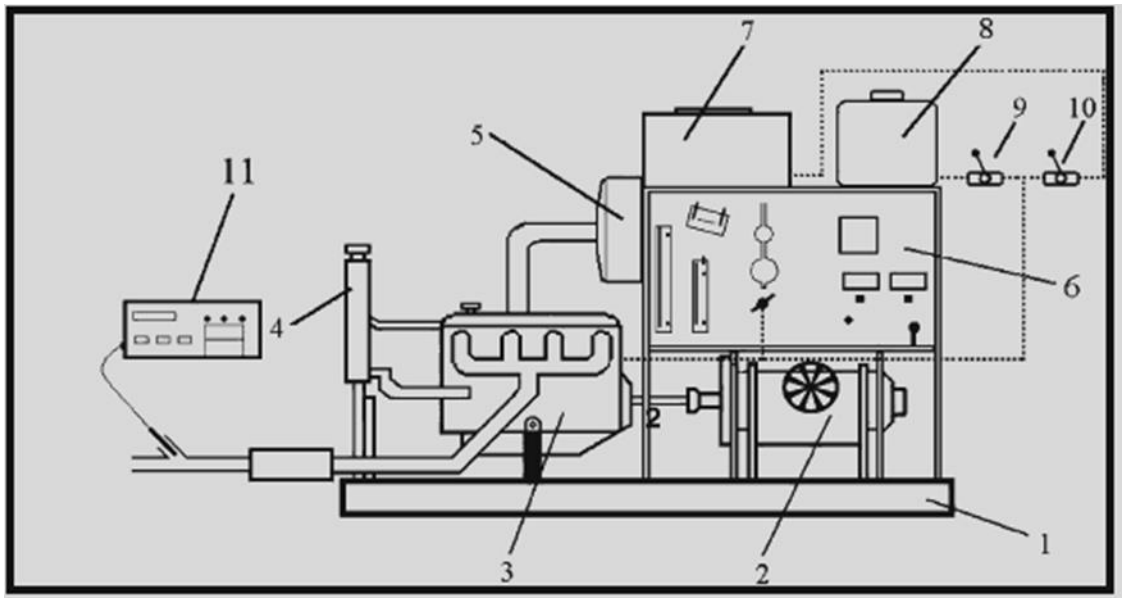


Figure 3. Experiment rig (1.Motor Testbed, 2.Kinetic Dynamometer, 3.Motor body, 4. Chilling System, 5.Air chamber, 6.Controlling system, 7.Propellantchamber, 8.Storage propellant chamber, 9.Regulating valve for biofuel, 10.Regulating valve for petroleum flow, 11.Analyzing System foe exhaust gas).

An inductive speedometer was utilized to determine the speed of the motor. A burette and a timer were used to keep track of the propellant. An actuator (mechanical) solidifying an over-travel mechanism was employed to regulate the stifle position. The exhaust gas, lubing up oil, air-propellant noises, and motor coolant channel outlet temperature were all measured using a k-type thermocouple. An additional propellant chamber was added to the system for the storage of biofuel. A propellant trading course of action was used to manage the flow of biofuel and Petroleum No. 2 during the motor, and we were familiar with the option of switching from the Petroleum propellant to the biofuel combination during the motor continues to run. To determine the concentrations of carbon monoxide, carbon dioxide, nitrous oxides, and Sulphur dioxide, several types of gas analyzers with chemical detecting sensing devices were utilized. The noise level (dB) in the motor room was measured using a noise measuring meter. The system was placed approximately 1.2 meters away from the setup. The accuracy of the assessments, as well as flaws in the final outcomes, are reflected in Table 1 figure.

Measurements	Accuracy
Load	∓2 N
Speed	∓2 rpm
Time	∓0.5%
Temperatures	∓1 °C
CO	∓20 ppm
CO_2	∓0.2%
NO_x	∓20 ppm
SO_2	∓20 ppm
Dynamic viscosity	∓1%
Heating value	∓1%
Specific gravity	∓1%
Calculated results	Uncertainty
Kinematic viscosity	∓1.4%
Torque	∓2%
Power	∓2%
bsfc	∓2.3%
Thermal efficiency	∓2.5%

Table 1 Representation of test results on experimental setup

During the evaluations on the test setup, six fills were attempted: Petroleum No. 2 with biofuel in 6 percent, 11 percent, 16 percent, 18.5 percent, and 26 percent by volume. All of the tests were carried out on various motor loads. The petroleum propellant tests were conducted using the standard testing framework outlined below. The motor speed was increased to 3000 RPM after completing a typical warm-up framework. All of the tests were done at five different motor speeds: 3000, 2500, 2200, 2000, and 1500 RPM. The motor was made due with 5 minutes at each RPM, and the data were taken at the sixth second. The motor was warmed up for the biofuel mixture tests. Petroleum is a type of fuel. By that time, the petroleum propellant valve had been closed and the mixtureing valve had been opened, allowing the biofuel mixes to start the motor.

CHAPTER -3

SEMESTER 7

DRIFT AND FRBRICATION OF MOTO DRIFT TRIKE

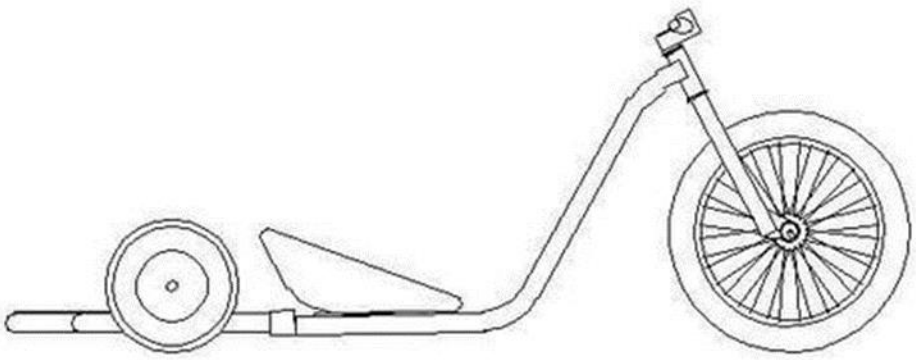
3.1- ABSTRACT

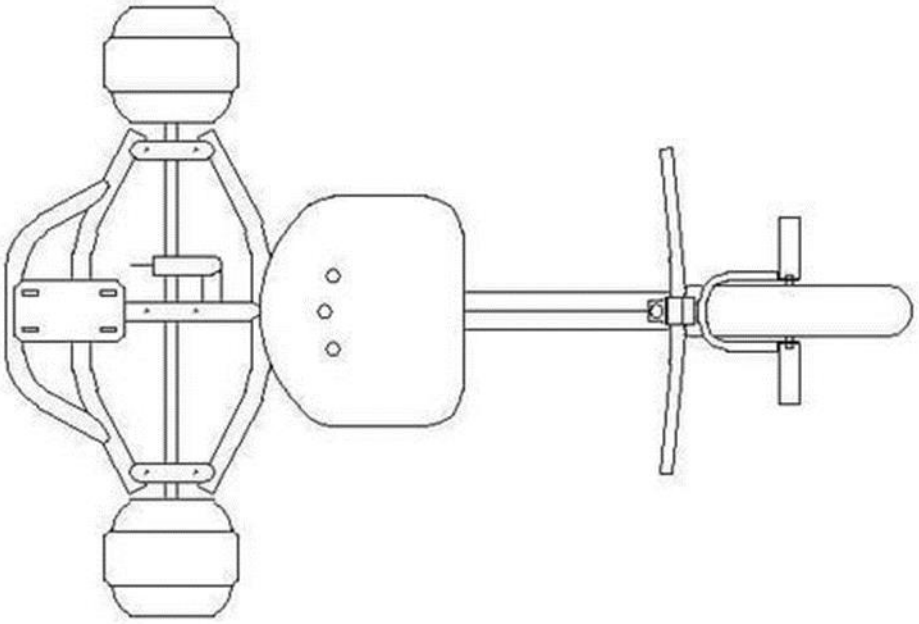
This drift trike is a three-wheeled vehicle whose only purpose, as the name implies, is to be used for extreme motorsports, including drifting. Trike racing and drifting competitions are also held in several nations. It is currently not a factory-produced product, meaning it is only created by a few engineers and others. This methodology report is for building a drift trike from the ground up. We'll use near field technology for igniting, which will be simple yet beautiful. The front chassis of a bicycle is made up of many elements. The suspension system is lacking due to the vehicle's reduced frame and the requirement to keep the vehicle's weight to a bare minimum in order to give it with the necessary power. The goal is to eliminate a physically hefty key. Because the time is of starting the engine with a button or a card, we employed a chips and tags system for this system.

3.2 – INTRODUCTION

The drift trike is a vehicle of three wheels powered by a not so powerful engine, for loosing traction to the rear wheels and steer to counter corners, also known as a trike car or a three wheeler. The drift trikes are usually ridden on cornered paved surfaces and switchbacks. It’s origin is traced

back to New Zealand. The front wheel that is used is more in diameter but the rear wheels are broader than the front wheels to provide more and better control while drifting. The rear tire used are generally that of go-carts. The Drift trike can also perform a 360 degree turn around the supporter to the front wheel. We used a TVS Apache 160cc engine for this purpose. This engine provides the power of 13.5 Bhp at 8000 RPM and also a maximum torque of 13.2 N-m at 5998 RPM. This drift trike's engine uses a NFC enabled self starting feature, which is an update for the earlier used RFID (Radio Field Identification) technique which uses electromagnetic field for automatically tracking tags that are attached to the objects. These tags containing electronically stored information helps us to unlock with any other pre registered objects even when we forgot/ lost the key. This system only works when the range of the tags is less than 4cm.





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3.3- **LITERATURE REVIEW**

Lamental studied the importance of aerodynamics for a comfortable ride of the tricycle powered by humans. To find out the important characteristics of this human powered vehicle a wind tunnel testing was reported. The aerodynamic drag was found out to be more than the one simulated. This study denoted comparably better results in reducing the aerodynamic drag. In motorsports vehicles, the position of the seating ot driver is also a considerable factor. Reclining the drivers seat also helps in the reduction of air drag force, also this position is better for driver's security. The uncovered wheels were found out to generate more drag force than compared to the one with covered wheels.

- As of study of Viborg Sharma and his team, the main points of highlight was the comparison between NFC and Bluetooth. NFC came out to be far better than Bluetooth in many aspects, but when it came to large amount of data to be transferred, that was the one place where NFC lagged behind. NFC technology is being adopted by Kenya at a mass level. NFC technology has a large scope in the future due to the ease ability of it's use in making the life more comfortable. The main steps that are being taken now are in order to increase the use of NFC in creating a secured platform for the data to be transferred and also to increase the limit of data to be transferred.

- As of the study of Anusha Rahul, Unni Krishnan and Sethuraman Rao, the main highlight was of the newness of this technology and the range. NFC is a recent technology that is far more efficient than any other technology. This technology works by only pointing the two devices to each other or touching each other, but the disadvantage of this technology is that the range of it is even less than 20 cm.

- As per the study of Nitish Anand, Piyush Arya, Sanjeev Kumar Mishra and Sachendra Singh, the main point s of highlight were of the comparison of the FSB and TIG joints on the material chosen of the chassis of the trike. Gas flow rate is the most dominating factor for tensile strength in TIG whereas for FSB the main dominating factor in tensile strength is tilt angle.

- The is trike is a lowered vehicle, so the front wheel is placed in the middle of the driver's legs. The legs are placed on two pieces of metal striking out of the frame near the front wheel. A outer plastic cover on the rear wheels reduces the traction on the path for providing the drift to the trike. This outer layer was made up of PVC plastic.

- According to a study by Norcliffe, the tricycles are a major platform for millions of small enterprises in many Chinese cities.

- In a study Kaustubh Dilip Patil and his team used a rocker arm design for the leaning mechanism, that was not so realiable, because of the chassis of mild steel black material, they achieved a 36 degree lean.

- M. Ravi Chandra and his team gave the best comparison data for chassis of an automobile, with the help of different bending analysis on I.C. and Box channel section chassis. The materials they considered are steel, carbon epoxy materials, E and S glass materials.

3.4 RESEARCH METHODOLOGY

The market is coming out rapidly for automotive Near Field Communication (NFC) technique that is driven by the combined forces of technology and humans and pairing the vehicles with many new and coming technologies like wifi and combining them with vehicles and modifying the car according to the use of the driver and comfort of passengers. These and many more are the perfect examples of places where NFC can be used. It is also believed that combining automobiles with the all-powerful NFC could be the next big thing.

The applications of the NFC enabled devices are still available as prototypes and tests. This device can connect the vehicles with it's keys and other devices. This technique also helps in opening a door to the room full of possibilities for the broad range of innovation in the field of automotive engineering. Some devices that are likely to take over the market next year are attached in the ref.

The NFC technology has taken quite some time in gaining attention in the main frame, but that all seems to go away with the ongoing need and the want of the customers in the automobile sector for modernizing and increasing their meaning of comfort and easy going objects.

The number of motorsports are on the top of their time and every third or fourth person has in his/her mind of doing something worthwhile and taking a thrilling experience but due to budget, not everyone is able to. So to make some of the motorsports available to weaker sections this trike was attempted to be made, which was success fully achieved by us?

3.6- ADVANTAGES

1. With the help of NFC we can acquire the vehicle's information easily.
2. We can connect hands-free interface of entertainment system with Bluetooth.
3. We can also use it as a basic daily use vehicle.
4. We can participate into drifting and racing competitions of trikes.
5. The engine is highly customizable and can be maintained by us for our use easily.
6. No need to ignite the engine with the use of an elongated key that is needed to be entered in the ignition hole.
7. Create personalized settings like windows and other things for an user friendly environment.

3.7- DISADVANTAGES

1. Low range of connectivity with the vehicle, because of NFC.
2. Limited range in single run, due to the presence of smaller fuel tank.
3. Limited number of uses.
4. Single passenger, so much or less it's daily use is limited.

3.8-APPLICATIONS

1. Used for motorsports.
2. Can be used to enhance the driving and drifting skills.
3. Alert the owner of the pending service requirement.

3.9-**RESULT**

In this research, we were success fully able to complete the formation of a drift trike all the way from scratch while implementing the use of NFC in the same. We found the nooks and corners of what can be done with the help of Near Field Communication (NFC) technology. We also were able to find out the better alternative for the material that was used in the making of the chassis of the trike and a perfect width and diameter for the tires used for making the drift trike according to its varied uses. For example a different sets of tires is needed for racing, for drifting and even for using it as a normal vehicle for travelling. The most that we worked and studied in this report is about the NFC and the materials that are required for making chassis. Some information about the important areas for force application and other places are also found and are there in this report.

3.10- **CONCLUSION**

1. We have successfully designed our cage and the chassis of a three wheeled drift trike.
2. Implementing the NFC technology in already so much complicated vehicle was also a task, but we achieved that in the given time frame.
3. We have checked the range and cost of the vehicle and the power that we gave to the vehicle.

CHAPTER- 4

BIO-FUEL

4.1 – NATIONAL POLICY ON BIOFUELS 2018

4.1.1 – AIM

The strategy aims to achieve a 20 percent mixture of BIOFUELS and fossil-based fuels by 2030, which is an indicative objective. India is currently heavily reliant on imported crude oil to meet domestic consumption needs, in addition to being heavily reliant on non-renewable fuel sources.

To reduce the dependence on the imports of crude oil, India is aggressively promoting renewable energy.

4.1.2- BACKGROUND

In order to promote biofuels in the country, the Ministry of New and Renewable Energy issued a National Policy on Biofuels in 2009. Biofuels have gotten a lot of attention over the last decade, and it's critical to stay up with the latest advances in the sector. Biofuels are strategically important in India because they align with the government's ongoing initiatives such as Make in India, Swatch Bharat Abhiyan, and Skill Development, and they provide a great opportunity to integrate with the ambitious targets of doubling farmers' income, reducing imports, creating jobs, and turning waste into wealth. Because of the drought, India's biofuels program has been severely hampered there is a persistent and quantifiable lack of domestic feedstock for biofuel production that needs to be addressed.

4.1.3- SALIENT FEATURES

The Policy divides biofuels into "Basic Biofuels," such as First Generation (1G) bioethanol and biodiesel, and "Advanced Biofuels," such as Second Generation (2G) ethanol, Municipal Solid Waste (MSW) to drop-in fuels, Third Generation (3G) biofuels, bio-CNG, and others, to allow for the extension of appropriate financial and fiscal incentives under each category.

The Policy expands the range of raw materials available for ethanol production by allowing the use of Sugarcane Juice, Sugar-containing materials like Sugar Beet, Sweet Sorghum, Starch-containing materials like Corn, Cassava, and damaged food grains like wheat, broken rice, and rotten potatoes, all of which are unfit for human consumption.

With a focus on Advanced Biofuels, the Policy proposes a Rs.5000 crore viability gap finance program for 2G ethanol Bio refineries over 6 years, as well as extra tax incentives and a higher purchasing price than 1G biofuels.

The policy fosters the establishment of supply chain mechanisms for the manufacture of biodiesel from non-edible oilseeds, used cooking oil, and short-grow crops.

4.2 – BIODIESEL: THE FUTURE FUEL OF AUTOMOBILE IN INDIA

Consider a gasoline that is both environmentally friendly and safe to use. Yes, biodiesel has the potential to make this a reality. Biodiesel is an advanced kind of biofuel generated from an animal or vegetable fat based renewable fuel, similar to petrol and fossil diesel. Even leftover cooking oil (UCO) might be utilized to make biofuel and would be very useful in diesel cars.

Biodiesel has combustion qualities that are remarkably comparable to petroleum diesel, hence this revolution is assisting various countries in overcoming their diesel reliance.

4.2.1- WHY BIODIESEL IN AUTOMOBILE SECTOR?

Automobile pollutants, which are released as a result of the usage of gasoline or diesel-powered vehicles, are one of the biggest causes of pollution. Why not utilize an alternative fuel that has the least negative impact on the environment? There are various arguments in favor of utilizing biodiesel as a substitute fuel:

1. It is biodegradable, nontoxic, and produces less pollutants when completely burnt. It can be used either on its own (B100) or in combination with petroleum diesel. The most common mixes are B2 (2 percent biodiesel, 98 percent diesel), B5 (5 percent biodiesel, 95 percent petro diesel), and B20 (20 percent biodiesel, 80 percent petro diesel).
2. It produces less pollution and is safer than petroleum diesel fuel.
3. Biodiesel is less hazardous to handle than petroleum diesel, and its quality is governed by ASTM D 6751 standards.
4. One of the most notable benefits of utilizing biodiesel is that it burns cleaner than fossil fuels, resulting in the lack of Sulphur and other dangerous compounds, as well as aromas. And so on.

4.2.2- GOVERNMENT COMMITMENT

Biodiesel has the potential to revolutionise our country's energy security, which is rapidly deteriorating. Yes, the National Policy on Biofuels 2018, announced by our government, urges for the use of biodiesel to assist India attain energy security. The goal of the strategy is to improve the market availability of biofuels and hence their blending percent. Currently, ethanol accounts for around 2.0 percent of gasoline, whereas biodiesel accounts for less than 0.1 percent of diesel.

The government has set a target of a 20 percent ethanol blend in gasoline and a 5 percent biodiesel blend in diesel by 2030. RUCO – Repurpose Spent Cooking Oil, an ecosystem that would enable the collection and conversion of spent cooking oil to biodiesel, was also introduced on World Biofuel Day by the Food Safety and Standards Authority of India (FSSAI).

It is biodiesel that can serve as a viable and beneficial option for the country. This would also assist India in meeting its international climate commitments.

.4.2.3- Diesel consumption pattern in Metros and adjoining areas

The aggregate usage of fuel in Delhi and Gurugram, for example, is 16, 99,000 tons per year. If 5% biodiesel is blended with petroleum diesel, for example, an estimated 84,950 tons of fuel may be saved each year. According to a survey, Delhi and the National Capital Region (NCR) have a population of 4.7 crores. In India, the average yearly use of edible oil is 14.4 kg, whereas the entire use of oil in Delhi – NCR is 6, 76,800 tones, which is a large amount. If we assume that just 10% of this is rubbish, UCO's yearly collecting potential is 67,680 tones.

4.3- HISTORY OF BIOFUELS IN INDIA AND DIFFERENT POLICY

Biofuel development in India is primarily focused on the cultivation and processing of oil-rich Jatropha plant seeds (40 percent). Factors such as history, function, economics, the environment, morality, and politics all play a part. Jatropha oil has been used as a biodiesel in India for decades to address the diesel fuel demands of isolated rural and forest communities; jatropha oil may be used immediately after extraction in diesel generators and motors (i.e. without refining). Jatropha has the potential to provide local economic benefits due to its propensity to grow in arid, non-agricultural areas soils that are properly managed allowing people and farmers to earn money from land that isn't used for farming Increased Jatropha oil production also has macroeconomic or

national benefits for India, as it lowers the country's fossil fuel import bill for diesel production (the country's main transportation fuel), reducing the country's use of foreign-currency reserves for fuel, and allowing India to grow its foreign-currency reserves (which can be better spent on capital expenditures for industrial inputs and production). Because it is carbon-neutral, large-scale production of Jatropha oil would help improve the country's carbon emissions profile.

A -Policy of India (2000-2019)

In India, a bioethanol initiative asks for E5 mixes across the country, with the goal of increasing this to E10 and finally E20. The national government established a 5% blending objective for gasoline in 2003. Andhra Pradesh, Daman, Diu, Goa, Dadra, Nagar Haveli, Gujarat, Chandigarh, Haryana, Puducherry, Karnataka, Maharashtra, Punjab, Tamil Nadu, and Uttar Pradesh have all created and utilized petroleum with an ethanol mixture since then. With 1.6 billion litres of ethanol produced in 2005, the country became the world's fourth largest producer of ethanol while also being the world's largest consumer of sugar.

According to the National Biodiesel Mission (NBM), the government plans to replace 20 percent of its fuel demand with biodiesel by 2012. The NBM has been deployed in two stages and will continue to do so: The first is a demonstration project that ran from 2003 to 2007 and sought to cultivate 400,000 hectares of Jatropha with an annual output of 3.75 tonnes of oilseed per hectare. Other connected activities/projects, such as seed harvesting and oil extraction, have also shown feasibility as a result of the initiative. A transesterification factory will also be built by the government. Second, there is a commercialization era that began in 2007 and will go through 2012 jatropha cultivation will continue. More transesterification units will be installed as part of the plan, allowing India to cover 20 percent of its fuel demands using biodiesel.

To encourage investment, there are additional tax incentives and excise reductions. The Maharashtra government offers exemptions from the 1% anhydrous ethanol turnover tax, the 500 per kiloliter (kl) (US$0.048 per US gallon) permit fee, the 4% sales tax, the 10% surcharge on sales tax, the 1,500/kl (US$ 0.14/US gal) import fee, the 300/kl (US$ 0.029/US gal) service

charges, and the 3% Octroy, a local tax. India is expected to overtake China as the world's third largest economy by 2030, owing to its fast growth. India's GDP was US$ 0.6 trillion in 2005, and it is anticipated to expand to US$ 6 trillion by 2020 and US$ 6.1 trillion by 2030, assuming an annual growth rate of 9%.

There are roughly 125 ethanol producers in the nation, with a combined capacity of 1.25 billion liters. The majority of these ethanol-producing companies are located in sugar-cane-growing states like Maharashtra and Uttar Pradesh, but they also operate in Tamil Nadu, Andhra Pradesh, Karnataka, and Gujarat. India is ranked No. 12 in the Ernst & Young indices for 2008, but it might climb higher if it can coordinate tax incentives across states and state and federal law. Currently, the country has about 11 factories in Uttar Pradesh that are expected to produce about 75 million liters of anhydrous alcohol by the end of September, with seven units in Tamil Nadu (anhydrous alcohol production capacity of 62.5 million liters), eight in Karnataka (anhydrous alcohol production capacity of 66.5 million liters), and four in Andhra Pradesh (capacity of over 40 million liters). Cooperative sector units in Maharashtra, Punjab, and Uttar Pradesh have adopted similar moves.

4.4- LARGEST PRODUCER IN THE WORLD

The United States is by far the largest producer of **biofuel** in the world, accounting for 38 percent of global **biofuel** production. The **country produced** 1,557 peta joules in this year, and is a major producer of **biodiesel**. # 6 MAY 2021 TILL

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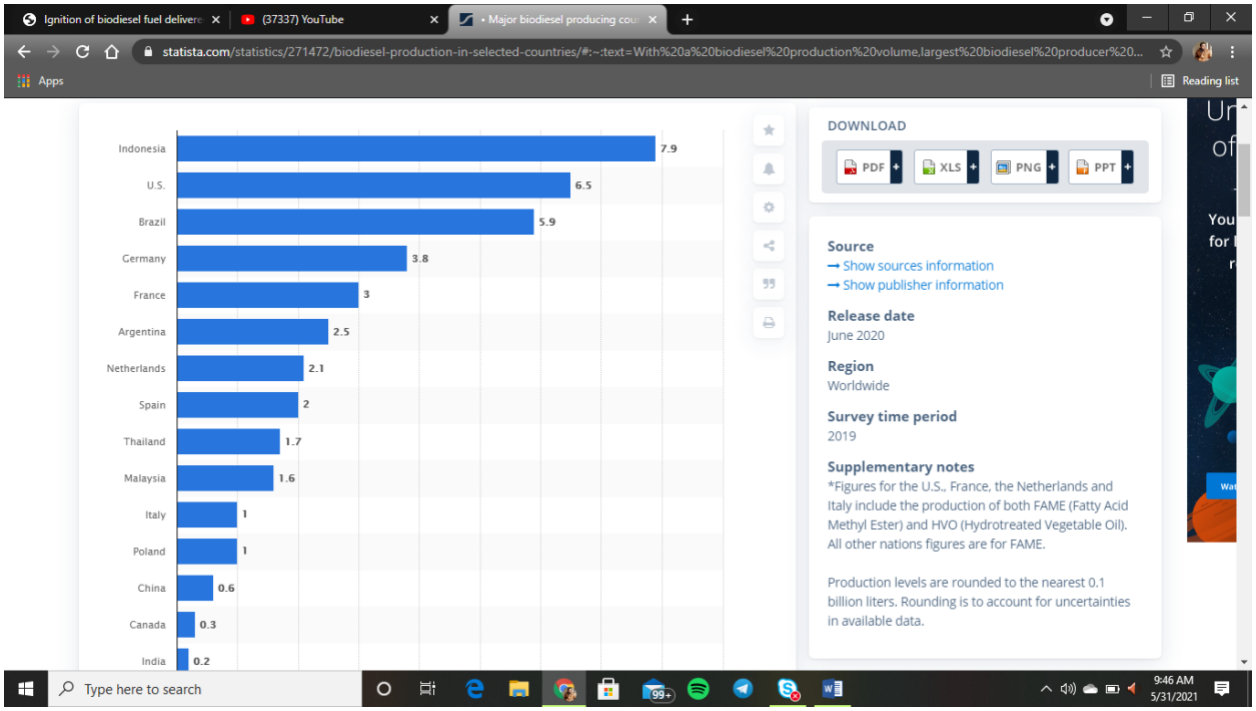
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*Figures for the U.S., France, the Netherlands and Italy include the production of both FAME (Fatty Acid Methyl Ester) and HVO (Hydrotreated Vegetable Oil). All other nations figures are for FAME.
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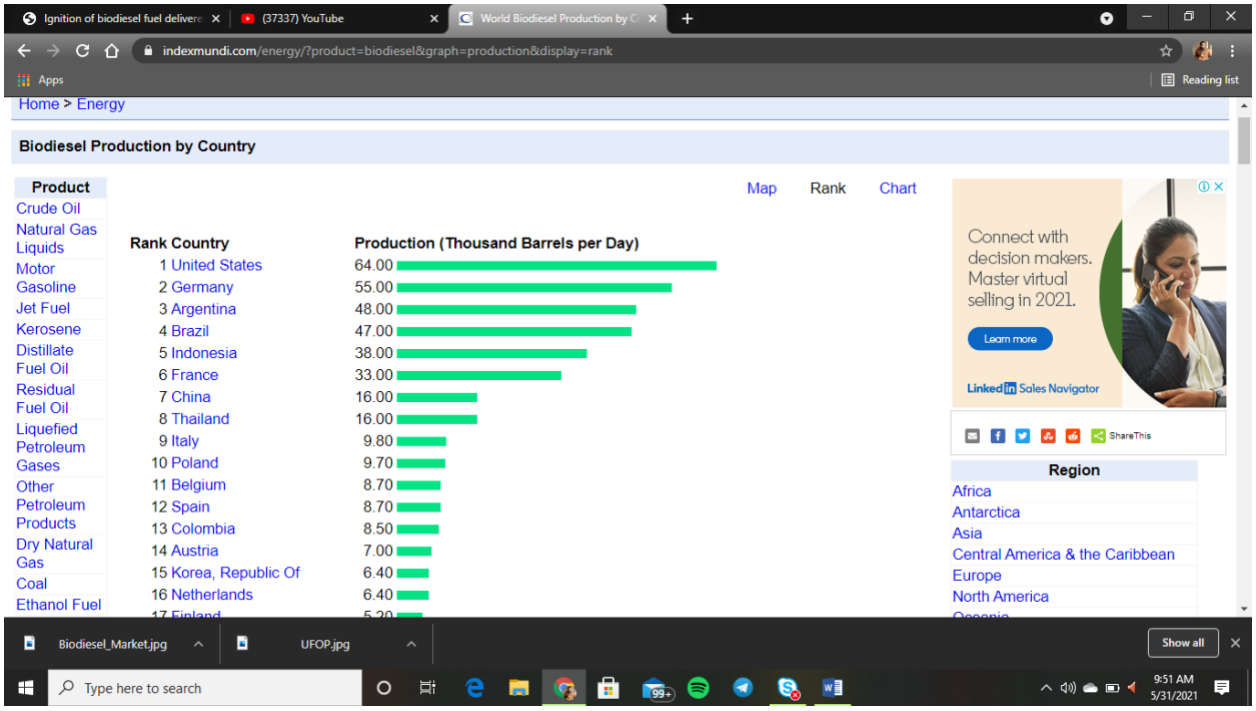
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3 Argentina 48.00
4 Brazil 47.00
5 Indonesia 38.00
6 France 33.00
7 China 16.00
8 Thailand 16.00
9 Italy 9.80
10 Poland 9.70
11 Belgium 8.70
12 Spain 8.70
13 Colombia 8.50
14 Austria 7.00
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16 Netherlands 6.40
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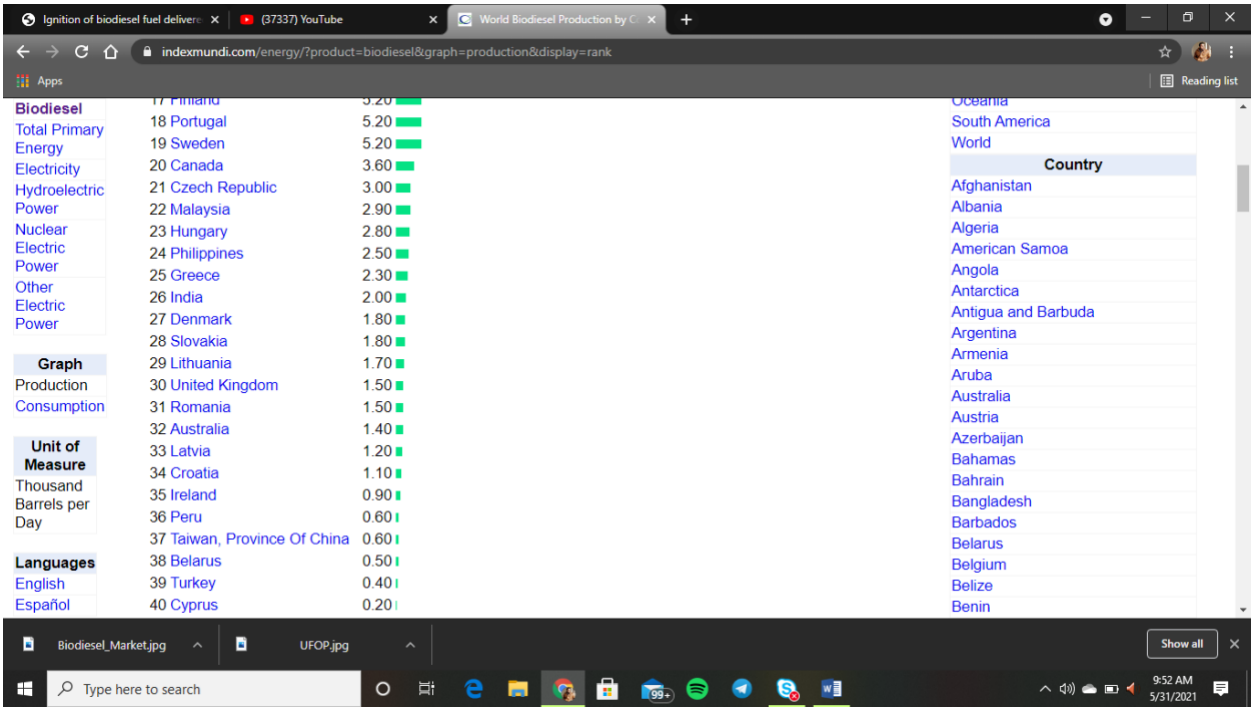

INDIA IS RANKED 26TH OUT OF 48 COUNTRIES PRODUCING BIOFUEL (BIODIESEL).

BIODIESEL MARKET IN THIS EARTH

GLOBAL BIODIESEL MARKET GEOGRAPHICAL SEGMENTATION

Global Biodiesel Market By Geography 2016 (% share)

The biodiesel market in Europe was valued at $13,847 million in 2016.

The biodiesel market in North America is expected to reach $5,606.3 million in 2021.

The biodiesel market in South America is growing at a CAGR of 4.43%.

In the Middle East, the consumption of biodiesel is less, which is mainly produced from algae.

technavio

Biodiesel production in key countries in 2018

Source: FAS, Oil World

4.5 – ADVANTAGES AND DISADVANTAGES OF BIODIESEL(BIOFUEL)

ADVANTAGE

1-EFFICIENT FUEL

In comparison to fossil diesel, biofuel is created from renewable resources and is less combustible. Its lubricating qualities are greatly improved.

When compared to conventional diesel, it emits fewer hazardous carbon emissions. Biofuels may be made from a variety of different resources. Using them has a substantially greater total cost-benefit ratio.

2- COST BENEFIT

Biofuels are currently priced the same as gasoline on the market. However, employing them has a substantially greater total cost-benefit ratio. They're cleaner fuels, which means they emit less pollutants when burned. Because of the rising demand for biofuels, they may become less expensive in the future.

“Ethanol remains the highest-octane, lowest-cost motor fuel on the planet,” according to the RFA (Renewable Fuels Association) February 2019 Ethanol Industry Outlook study. In addition, the US Department of Energy (DOE) has set aside $73 million for 35 bioenergy research and development projects in 2019.

3- DURABILTY OF VEHICLE ENGINE

Biofuels may be easily adapted to contemporary engine designs and function well under most situations. It has superior lubricating characteristics and a higher degree of certainty. When biodiesel is utilised as a combustible fuel, the engine's durability improves.

4- EASY TO SOURCE

Crude oil, which is a non-renewable resource, is processed into gasoline. Despite the fact that present gas reserves will last for many years, they will eventually run dry.

Biofuels may be created from a variety of sources, including manure, agricultural waste, other wastes, algae, and plants cultivated particularly for the purpose.

5- REDUCE DEPENDENCE ON FOREIGN OIL

While locally grown crops have decreased the country's reliance on fossil fuels, many experts feel that solving our energy demands will take a long time. With crude oil prices reaching all-time highs, we need more alternative energy alternatives to minimize our reliance on fossil fuels..

6- REDUCE GREENHOUSE GASES

According to studies, biofuels can cut greenhouse gas emissions by up to 65 percent. When fossil fuels are burned, enormous volumes of greenhouse gases, such as carbon dioxide, are released into the atmosphere. These greenhouse gases trap sunlight, causing global warming.

7- LOWER LEVALS OFPOLLUTION

Biofuels are less polluting to the environment since they are generated from renewable resources. However, this isn't the only reason that biofuels are being promoted.

When compared to normal diesel, they emit less carbon dioxide and other pollutants when burned. Its usage also has a substantial impact on PM emissions.

DISADVANTAGE

1- HIGH COST OF PRODUCTION

Despite all of the advantages associated with biofuels, they are currently relatively costly to manufacture. Biofuel production now has a low level of interest and capital investment, but it can meet demand.

If demand rises, expanding supply will be a long-term effort that will be highly costly. Such a disadvantage is currently impeding the widespread adoption of biofuels.

2- MONOCULTURE

Monoculture is defined as the practice of growing the same crops year after year rather than rotating crops through a farmer's land. While this may be financially appealing to farmers, cultivating the same crop year after year may deplete the soil of nutrients that would otherwise be returned to it through crop rotation.

3- SHORTAGE OF FOOD

Biofuels are made from plants and crops that contain a large amount of sugar. The majority of these crops, however, are also employed as food crops. Despite the fact that plant waste may be

utilised as a raw material, there will still be a need for such food crops. It will take up agricultural territory that could be used for other crops, posing a variety of issues.

Using existing land for biofuels may not result in a severe food crisis, but it will certainly put a strain on present crop growth. People are concerned that the increased usage of biofuels would lead to an increase in food costs as well.

4- INDUSTRIAL POLLUTION

When burned, biofuels have a lower carbon impact than conventional fuels. However, the method through which they are made compensates for this. A lot of water and oil are required for production.

Substantial-scale biofuel manufacturing plants are known to produce large amounts of pollutants and cause small-scale water contamination.

Unless more efficient production methods are used, overall carbon emissions will not be significantly reduced. It also increases NOx levels.

5- FUTURE RISE IN PRICE

The technology now used to produce biofuels is not as efficient as it should be. Scientists are working on improving the methods for extracting this fuel. However, due to the high expense of research and future installation, the price of biofuels will skyrocket.

CHAPTER – 5

TESTING AND EXPRIMENTAL STUDIES

5.1-TESTING OF BIODIESEL

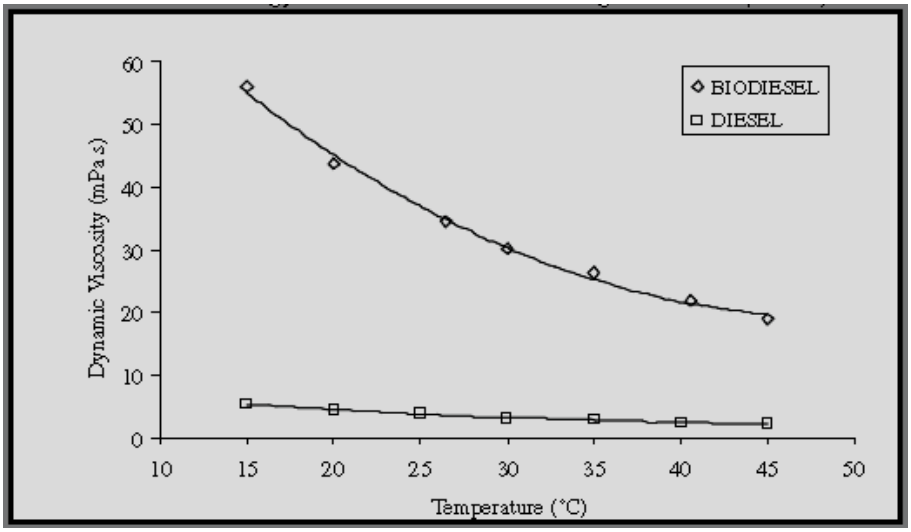

Fig 4. Change in dynamic viscosities as compared to Petroleum No. 2 with temp. of biofuel.

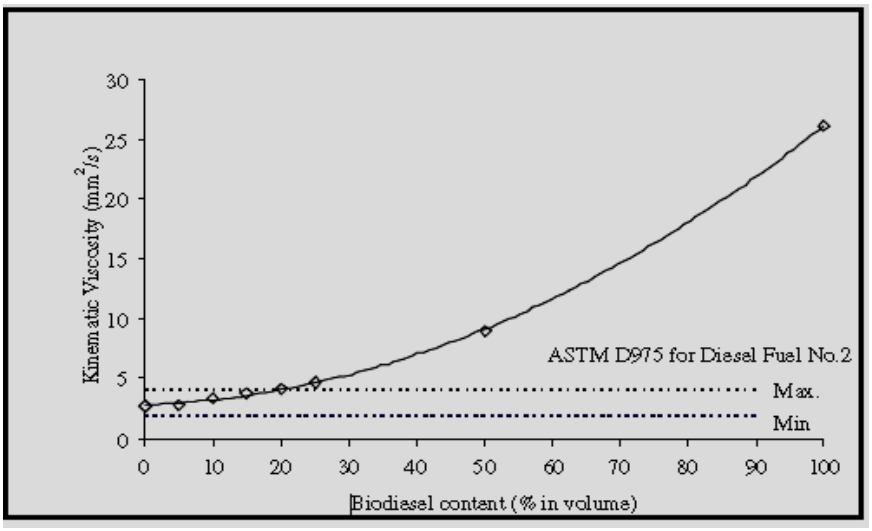

Fig 5. Effect on kinematic viscosities on different mixtures of biofuel at 38°C

5.2- EXPRIMENTAL STUDIES

- The experiment set-up contains a Petroleum motor, a motor testbed, Gasses analyzing meter, and also a noise measuring meter. The descriptive diagram on exploratory plan has described in Fig. 3.
- All the test were done with a 1758 cm^3 expulsion, 4-chamber, 4-stroke, water cooling system, 21.5:1 pressing factor extent, turbocharged, underhanded implantation Petroleum motor, From ford motors.
- The best powers were 155 N-m at 2200 RPM, and the most limited motor power were 59 kW at 4500 RPM. Motor testbed involves a control ER board, assessment instruments, and a pressing factor-driven dynamometer, which is water-cooled and assessed for 112 kW (150 bhp) power ingestion at 9000 RPM most prominent working rate.
- The load on the dynamometer were assessed using a strain check load sensor.

CHAPTER – 6

RESULT AND CONCLUSION

6.1 – RESULT

In the first place, it proved three in the range of 6%, and 26% of gas in the range of 6% and 26%. In this test, DXX / BYEY shows the XX% Diesel, but 100% 100% gas diesel. For example, D82.5 / B17.5 shows that there is a petroleum of 82.5%. Associated with 17.5% gas. The most popular value falls by increasing gas content. Already mentioned. Despite the fact that informed petroleum complies with the requirements, power is available for inquiries.

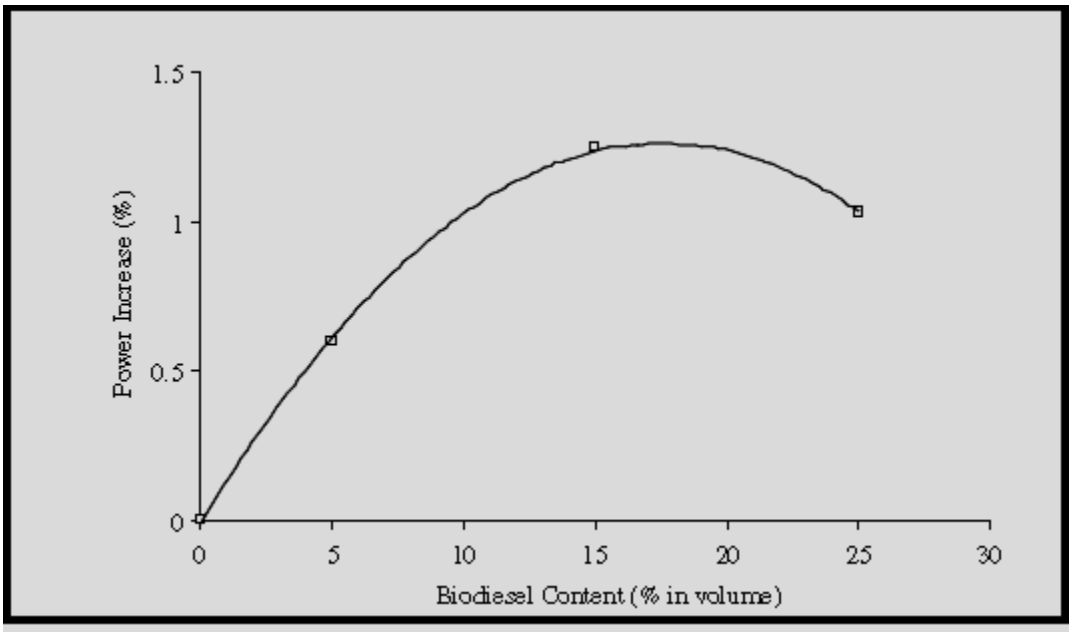

Fig. 6. Biofuel effect on motor when it is running at full load-2500 RPM

There are various factors behind this biofuel contains 10% (by weight) oxygen that can be useful in the starting of motor due to this factor motor starts more easily. Then, the Petroleum propellant is guided to the Petroleum motor chamber for a volumetric reason and the thickness of the biofuel mixture was more than the Petroleum fuel. Hence, a greater mass stream rate for a comparable propellant volume is directed to the motor, happening in an extension in power and power. At that point, the more gooey mixture suggests less inside spillage in the propellant siphon .

Though the power of the D74/B26 mixture were more as compared to Petroleum fuel, when the biofuel keeps increasing in the mixture, the power starts decreasing underneath that of the Petroleum propellant(Fig. 4) in view of the less warming worth and the more thickness, which achieves fairly more disastrous atomization and less lucky start. This result is in concurrence with the ones presented in . A tantamount example were moreover gotten for warm capability. Consequently, the biofuel content were not extended further. The arithmetical condition created for the example showed up in Fig. 4 showed that the most limiting power can be obtained with around 18.5% biofuel development. The effects of biofuel on the motor power at 1500 and 3000 RPM motor paces were represented by Figs. 5 and 6 at both full and partial weights, independently.

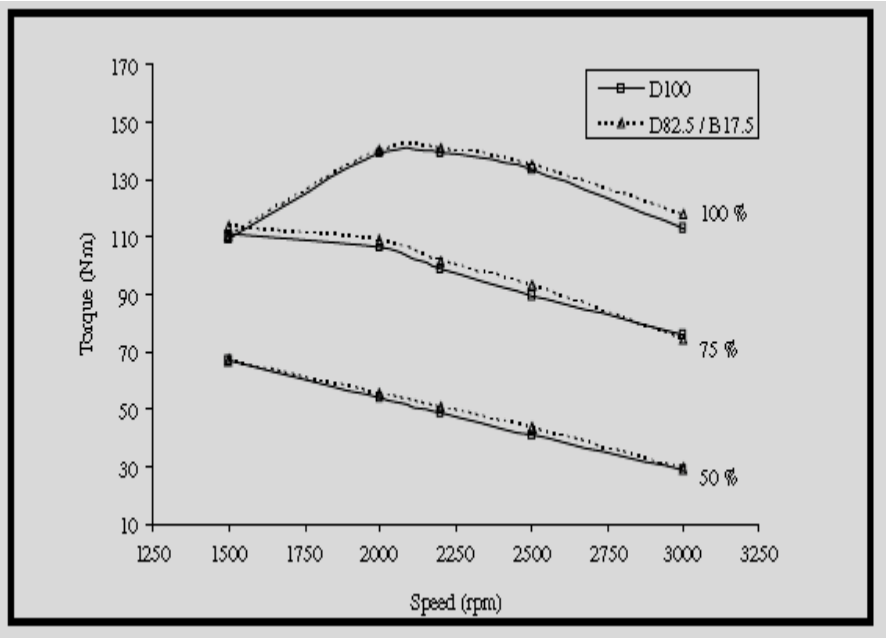

Fig 7- biofuel effect on motor torque

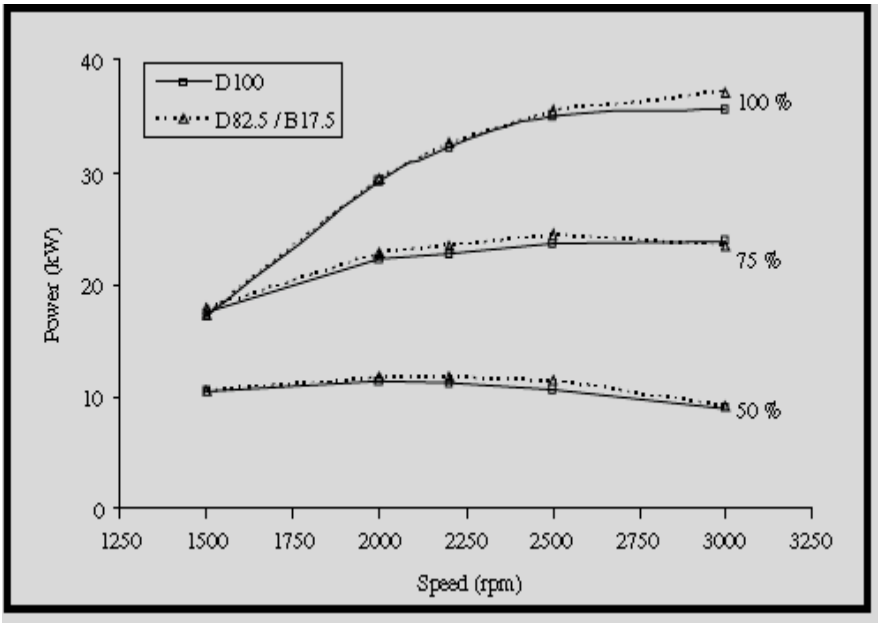

Fig. 8. Biofuel effect on motor power

As a rule, the mixing power were somewhat more as compared to the Petroleum power at all heaps in the test speed range because of a few reasons referenced previously. Despite the fact that the helpful impact of the biofuel as an oxygen rich propellant on the burning diminished because of the less fatty generally combination at fractional burdens, a somewhat more force were found with the mix, like the expansion at full burden. Figure 7 describes break specific fuel consumption variety of the Petroleum propellant and the mix as for motor speed at various burdens. When all is said in done, the break specific fuel consumption estimations of the mix were marginally more as of the Petroleum propellant at both full and incomplete burdens as in. The brake-explicit propellant utilization of a Petroleum motor relies upon the relationship among volumetric propellant in fusion framework, propellant explicit gravity, thickness, and warming worth.

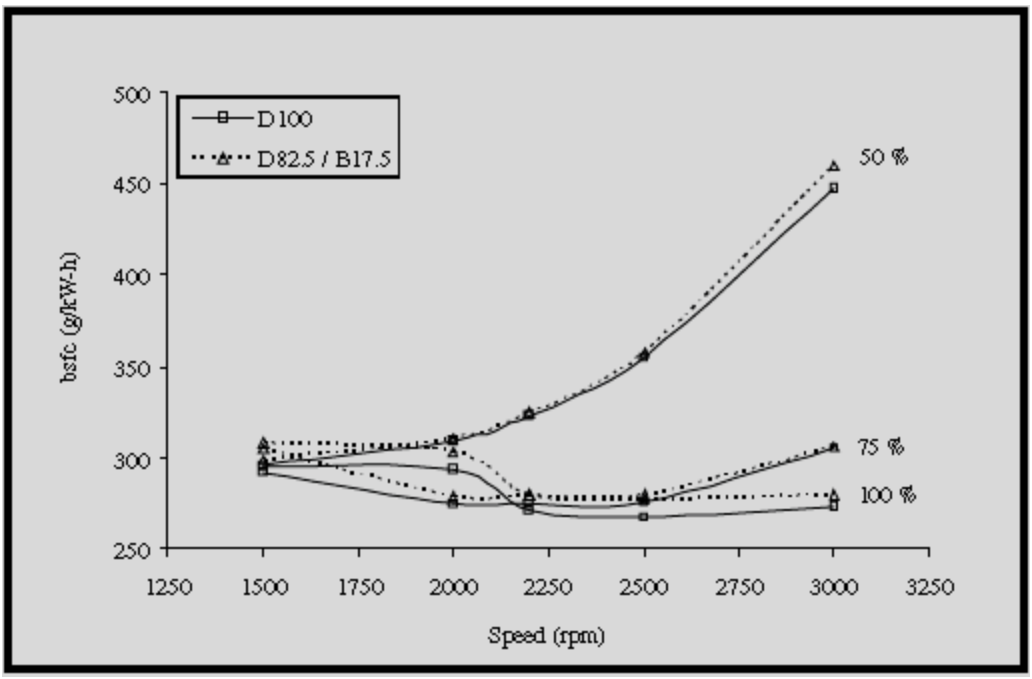

Fig. 9. Biofuel effect on break specific fuel consumption values

More mixture is relied upon to make a comparable proportion of energy in light of its more unequivocal gravity and less warming an impetus interestingly with Petroleum fuel. In same manner, it is seen that the extension in break specific fuel consumption outcomes at complete weight is more as of those at midway loads. It is represented by the more preeminent proportion of biofuel at complete weight. The incomparable proportion of biofuel were lessened concerning that at full load, and the break specific fuel consumption assessments of the mixture nearly close to those of the petroleum fuel, specifically at half weight someplace in the scope of 2000 and 2500 RPM. The warm capability scattering shows up in Fig. 8 for the two stimulates. The warm capability of a Petroleum motor is conflictingly comparative with its break specific fuel consumption and the warming assessment of the fuel. As the break specific fuel consumption assessments of the mixture were insignificantly more than those with Petroleum fuel, the less warm profitability with the mixture were a typical result, which were viewed as a full weight. But the break specific fuel consumption assessments of the mixture at deficient weights were barely more than that with the Petroleum fuel, the warm efficiencies were fairly more than those with the petroleum propellant in light of the less warming assessment of the mixture. In any case, the qualifications were astoundingly little for the two fills at all piles. The Nitrous oxides collection of the mix concerning motor speed showed for all intents and purposes indistinguishable models

as of the Petroleum fuel. The increased temp. Of start and the presence of biofuel oxygen with the mix duplicating leads more Nitrous oxides discharges, particularly at full weight [4, 5, and 38]. Increased smoke temp. With the mix at full weight kept up the expansion in Nitrous oxides floods. The outcome shows that the expansion were around 4–7% at full weight. In any case, this advancement were not surveyed at halfway loads. What is significant is unessential, particularly at the half weight. There are essentially 3 parts affecting the Nitrous oxides transmission, oxygen fixation, start temp., and time. However, the oxygen community were increased at divided loads, the beginning temp., and time decline, inciting low Nitrous oxides. This is reliable with the fume's temp. Spread. In addition, it is perceived that the outer oxygen outfitted with the air is less persuading than the fuel-borne oxygen in the creation of Nitrous oxides.

6.2 – CONCLUSION

In this article, a system for biofuel creation from the mixture of hazelnut oil soap stock/squander helianthus oil were introduced. Furthermore, the impacts of the biofuel improvement to the petroleum propellant on the introduction and floods of a turbocharged Petroleum motor were researched.

Furthermore, it is feasible to utilize soap stock, a side-effect of palatable oil creation, for modest biofuel creation. During this investigation, a Phenylalanine ester biofuel were created using a hazelnut oil/squander helianthus-seed oil combination utilizing ethanol, sulfuric corrosive, and caustic soda during a 2-stage measure. The impacts of the Phenylalanine ester expansion to Petroleum No. 2 on the presentation and emanations of a 4-cycle, 4-chamber, turbocharged backhanded infusion (IDI) petroleum were analyzed at both complete and halfway loads. All the test results reflected that the hazelnut oil/squander helianthus-seed oil Phenylalanine ester are often halfway fill certain the petroleum oil all things considered working conditions regarding the exhibition boundaries and emanations with no motor alteration and preheating of the mixes.

The test results are portrayed as follows:

1. A biofuel were passed on from hazelnut oil soap stock/squander helianthus oil mixture that wires high unsaturated fat substance through ruinous (H2SO4) and base (NaOH) catalyzers in two stages. However the correspondence gave some decrease in thickness of the mixture, the consistency of the biofuel were, overall, more than that of Petroleum fuel, particularly at less temps. Thusly, unadulterated biofuel couldn't be utilized in the Petroleum motor.
2. However the warming appraisal of the biofuel is less than the Petroleum fuel, biofuel mixes (6%, 11%, 16%, 18.5%, and 26% biofuel improvement) passed on a genuinely more force and force at both full weight and fragmentary loads. It were tracked down that 18.5% biofuel expansion gave the best force and warm capacity.
3. 3. The fume temps of the mix at full weight were more than those of Diesel, while the separations were infinitesimal at deficient loads. The utilization of the biofuel mix didn't affect essentially the oil temp.
4. 4. At Full weight, the carbon monoxide spreads of the mix were more at low speed and less at high rates than those of Petroleum fuel, while the mix accomplished more carbon dioxide discharges in the test speed range. At halfway loads, it were tracked down that the mix didn't cause immense changes in the CO and CO2 transmissions. This might be an immediate consequence of the general all the more slim mixture. There were a fundamental SO2 decrease with the mixes considering the less sulfur substance of the biofuel. Nitrous oxides outpourings genuinely stretched out taking into account the more conspicuous burning through temp. And the presence of propellant oxygen with the mix at full weight. Regardless, the expanding extent of Nitrous oxides radiation dropped down with diminishing weight.
5. The aggravation evaluations were taken out 1.2 m from the motor in the motor room by utilizing a sound level meter. The biofuel expansion somewhat diminished the clamor. The reducing all out were under 1 dB in the degree of motor speeds endeavored. In these transient tests, no certain wear or impact on the Petroleum motor parts has been observed. In any case, the impacts of biofuel on motor segments and oil are the subject of a propelling undertaking in the school.

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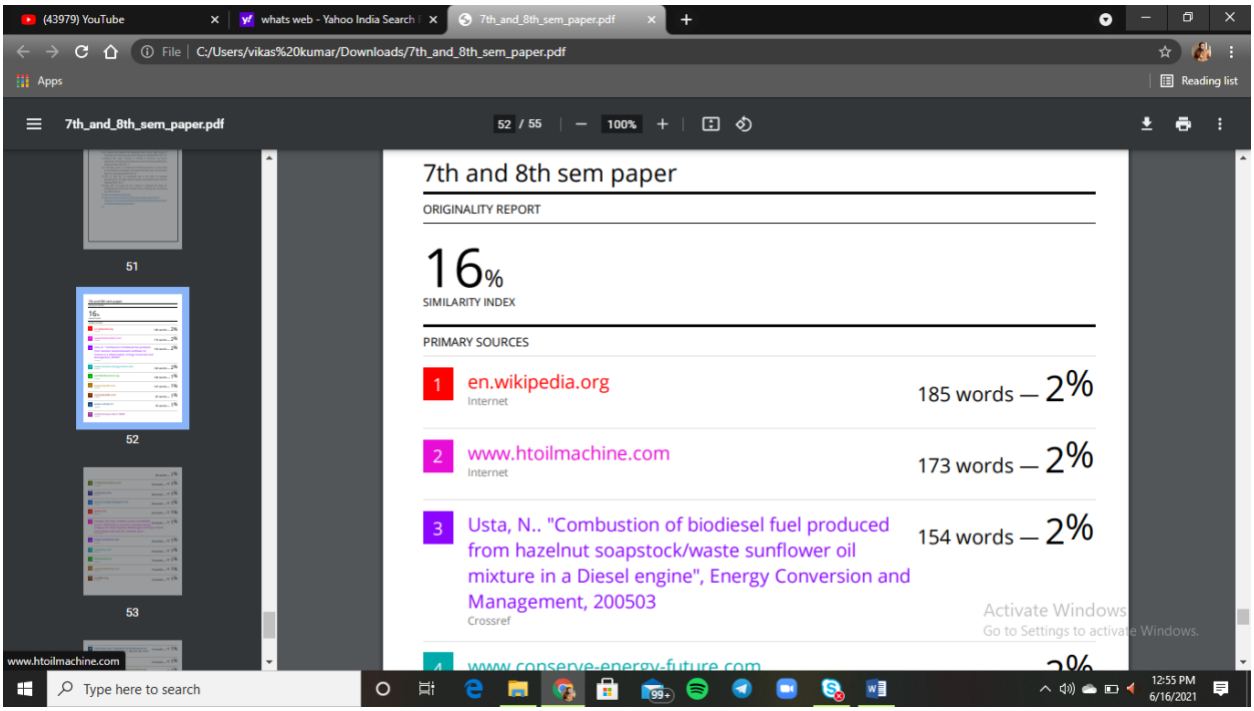
APPENDIX –A

PLAGIARISM REPORT OF THE PROJECT REPORT



APPENDIX- B

THE PAPPERS OF SEMESTER 8

Ignition of biofuel propellant delivered from hazelnut squander helianthus oil combination in a Petroleum motor

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[1,2,3]Department of Mechanical Motorering, Galgotias University, Greater Noida, India

Abstract

Biofuel has taken into account as an elective propellant to petroleum oil No. 2, which may be by and enormous delivered from various sorts of Edible Green oils. Cost of consumable Green oils more than the petroleum oil, squander Green oils and non-

palatable unrefined Green oils are liked as potential low-valued bio-petroleum sources. Furthermore, it is feasible to utilize soapstock, a side-effect of palatable oil creation, for modest biofuel creation. During this investigation, a Phenylalanine ester biofuel were created using a hazelnutoil/squander helianthus-seed oil combination utilizing ethanol, sulfuric corrosive, and caustic soda during a 2-stage measure. The impacts of the Phenylalanine ester expansion to Petroleum No. 2 on the presentation and emanations of a 4-cycle, 4-chamber, turbocharged backhanded infusion (IDI) petroleum were analyzed at both complete and halfway loads. All the test results reflected that the hazelnutoil/squander helianthus-seed oil Phenylalanine ester are often halfway fill certain the petroleum oil all things considered working conditions regarding the exhibition boundaries and emanations with no motor alteration and preheating of the mixes.

KEY WORDS – BIOFUEL, ENERGY CONSERVATION, GREEN ENERGY, HAZELNUT OIL.

Introduction

Biofuel created from various types of edible oils has been concentrated as an elective propellant for pressure petroleum motor. Point-by-point audits about biofuel creation measures are accessible in writing [1,2]. As the price of consumable green oils are more as compared to Petroleum propellant No. 2, squander Green oils [3,8] and unrefined Green oils [10,12] are needed as an alternate eatable Green oils in biofuel creation. Likewise, soapstock, a side-effect of eatable oil creation, might be viewed as a modest wellspring of biofuel creation. To the creators' best information, aside from Haas and collaborators [9,15] and Graboski et al. [16], no examination were accounted for on soapstock as a bio- petroleum source in the writing. These are the essential inspiration driving examination of this article.

The cleanser slurry includes a ton of unsaturated fats (45-half). It has been accounted for that fundamental impetus alone can't viably change over oil with high free unsaturated fat substance into biofuel [4,13]. Kanakchi and Van Gerpen [18,21] depict that it is important to utilize corrosive catalyzed pretreatment to get free unsaturated fats from the feed, to esterify these free acids, and afterward Trans esterify fatty substances with an essential impetus to finish the reaction. [20] Prepare unsaturated fat Phenylalanine esters (FAME) from soybean cleanser glue through a two-venture measure, including soluble base hydrolysis of all lipid-bound ester obligations of unsaturated fats, and corrosive catalysis from the sodium salt of unsaturated fats acquired The esterification response. . Current biofuel details. Furthermore, Haas et al. [14,11] Biofuel produced using soybean cleanser glue were tried in petroleum motors. Decrease absolute hydrocarbons, micro particles, and carbon monitrous oxideside that gives up. [24,28] Notice for some 15: 1 proportion.

Graboskiet et al. [17,19] Tested the Phenylalanine ester biofuel petroleum motor of Haas et al. produced using soybeans. [5,6] They found that adding 20% (v/v) of biofuel can diminish particulate discharges by about 30% and somewhat increment the Nitrous oxides content (2.8%). Utilizing 100% biofuel can lessen PM by 59%Nitrous oxides expanded (10.6%). Biofuel with an oxygen substance of 10-12% outcomes in a diminishing in motor force and motor yield because of its less energy content [25,22]. Notwithstanding, a few examinations report that biofuel can deliver more motor force than customary diesel. This is on the grounds that the propellant is totally combusted with oxygen in the high propellant supply fire zone [23,27]. Complete the harder and diminishes the exit of the language as HC, Sanaki, Co. [26,29]. The most elevated consuming temp. utilizes 1, 5, 5 thousand, a more temp. than the gas motor. A few analysts announced the impression of Nitrous oxides [30, 33,37] in gas oil. Oxygen content focuses and lessens the measure of deferral and pre-wellness. [31]

In this investigation, biofuel were created from a lingering combination of hazelnut cleanser and helianthus oil glue utilizing ethanol, sulfuric corrosive, and sodium hydroxide in two stages. Now, the subtleties of Phenylalanine esters have been worked out. Extension of No. 2 petroleum at the delta and outlet of a four-stroke four-chamber petroleum motor with turbocharger (IDI).In request to acquire the best warmth obstruction and proficiency, the 17.5% growth of biofuel has been observed. As per the producer's best data, this is the main endeavor to deliver biofuel from a combination of helianthus oil and hazelnut oil and test it with diesel. No motor disappointment happened in each test. [34,35]

Biofuel Preparation and its specifications

Mixture the hazelnut cleanser glue and utilized helianthus oil in roughly equivalent volumes. The cleanser glue contains about a portion of the 45 free unsaturated fats. By adding spent helianthus oil, the substance of free

unsaturated greasy substances in the cleanser slurry is diminished.[38] Be that as it may, the free unsaturated greasy substances in the mixture are more noteworthy than 20%. In the base-catalyzed transesterification response when straightforwardly applied to the mixture, this material with a high substance of free unsaturated fats will bring about an exceptionally flawless game plan, subsequently decreasing the yield of esters [7]. At that point it is critical to lessen the measure of free unsaturated greasy substances in the mixture by scathing pretreatment at 35°C so the free greasy oil is esterified before the primary oil motivations the greasy oil for transesterification, accordingly finishing the response at 55°C °C harsh. Every liter of the mixture contains 3.5 grams of sodium hydroxide. Simultaneously, it is restricted as follows. There is a combination of memory added to a mixture with 35 ° C and remembered for a couple of moments 5.5% super active (H_2SO_4). Mix at a steady temp. of 35°C for 1 hour without warming for 60 minutes. Now, the mixture is being determined. At a later point on schedule, every liter of the combination contained 3.5 g NaOH. It is decayed in ethanol (13% of the pool) to frame ethnocide. A large portion of the subsequent ethnocide is loaded up with unheated ethnocide. Mixture for 5 minutes with a combination. [36,39] It has been added at 55 ° C.

With Vitrified the versatile added to the warm combination. The mixtureing proceeds for around an hour and a half. The layer is glycerin, while the upper piece of the body forever. The glycerin were taken out until the finish of Splenii. The ester were warhead a few times with unadulterated water. A restricted measure of phosphorus-containing destructive substances (2.5 ml per liter of oil) is utilized in the principle were. Toward the finish of the cycle, heat the oil to 100°C to eliminate the water in the oil. The determining pH of the last Phenylalanine ester is 6.5. Truth be told, Katz utilizes comparable cooperation [32] to deliver biofuel from Green oil squander. The Brookfield RVDVII + rotational viscometer were utilized to figure the extraordinary consistency evaluations of methyl ether and petroleum utilized in the examination at various temp.s. The thickness is in the temp. scope of 15 to 45°C. As can be seen from the Figure No.1, the consistency of biofuel is normally more than the diesel, particularly at low temp.s. This implies that biofuel can't be utilized straightforwardly, particularly at low temp.s. Contingent upon the volume, the biofuel is mixtureed to differing degrees. [40]

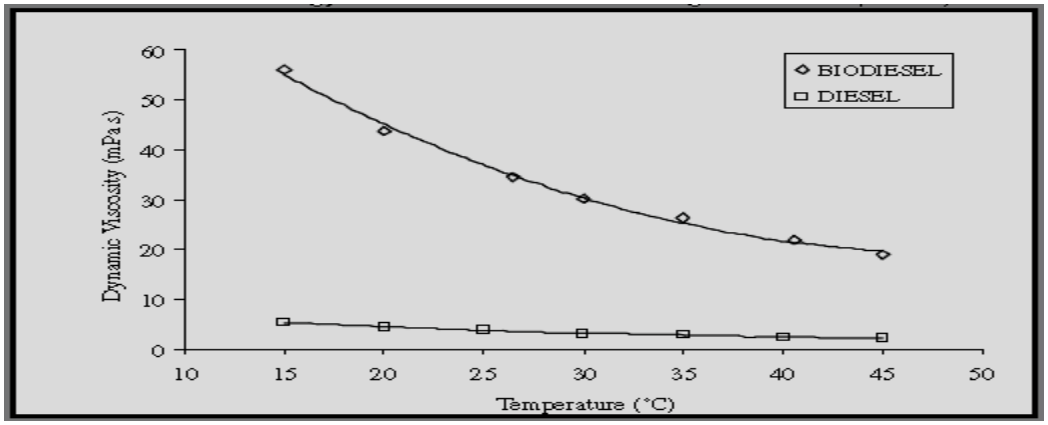


Figure No.1. Change in dynamic viscosities as compared to Petroleum No. 2 with temp. of biofuel

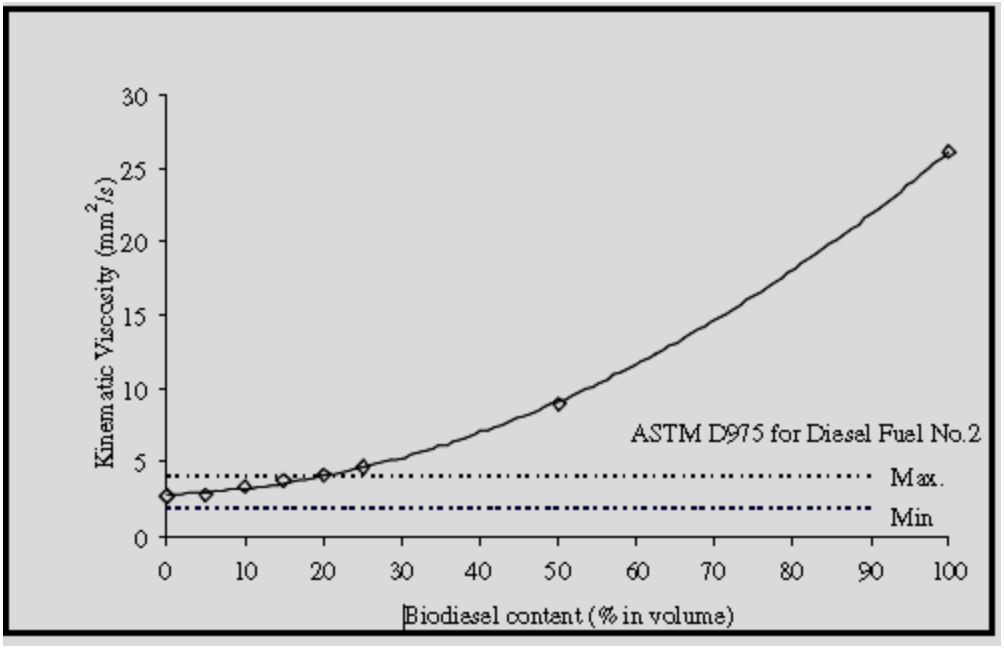


Figure No.2. Effect on kinematic viscosities on different mixtures of biofuel at 38°C.

The impact stretches out biofuel to petroleum oil or. 2 With a mixtureed development head at 38° C. appeared in fix 4° C. it shows up in the picture. 4 ° C. In Fig. 4 ° C. Appeared in fix 4 ° C. It shows up in fix 4 ° C. Show the reporter. 4 Dial and Dial gauge no variety Noel 2 is assessed with heat calorimeter. The low-warming temp. (LHV) gas is 39492.8 kg/kg, which is 39492.8 kg 39492.8 kg 39492.8 as hefty gas. From that point forward, petroleum items are assessed that they use pictures. It worked out that the thickness of the gas is 915. 3 kg/m3 Case o 9.1% Rose Petroleum NO. 2 a 14°C.(Figure No. 2)

Experimental Studies and test methods

The experiment set-up contains a Petroleum motor, a motor testbed, Gasses analyzing meter, and also a noise measuring meter. The descriptive diagram on exploratory plan has described in Figure No. 3. All the test were done with a 1758 cm^3 expulsion, 4-chamber, 4-stroke, water cooling system, 21.5:1 pressing factor extent, turbocharged, underhanded implantation Petroleum motor, From ford motors. The best powers were 155 N-m at 2200 RPM, and the most limited motor power were 59 kW at 4500 RPM. Motor testbed involves a control ER board, assessment instruments, and a pressing factor-driven dynamometer, which is water-cooled and assessed for 112 kW (150 bhp) power ingestion at 9000 RPM most prominent working rate. The load on the dynamometer were assessed using a strain check load sensor.

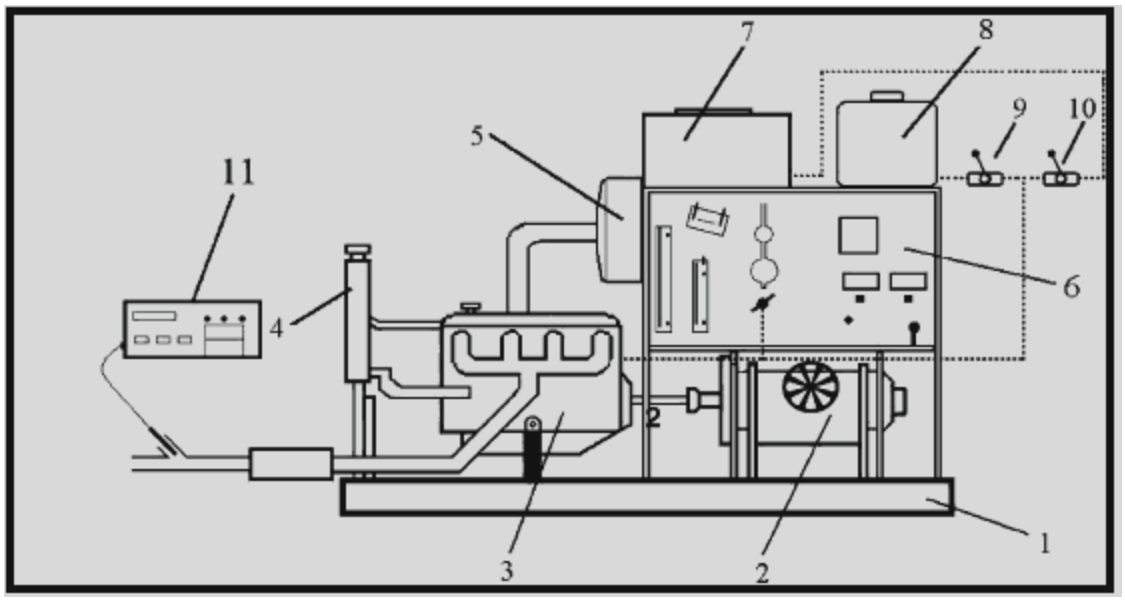


Figure No.3. Experiment rig (1.Motor Testbed, 2.Kinetic Dynamometer, 3.Motor body, 4. Chilling System, 5.Air chamber, 6.Controlling system, 7.Propellantchamber, 8.Storage propellant chamber, 9.Regulating valve for biofuel, 10.Regulating valve for petroleum flow, 11.Analyzing System foe exhaust gas).

For the measurement of the speed of the motor an inductive speedometer were used. The propellant were monitored using burette and a stopwatch. To control the stifle position an actuator (mechanical) solidifying an over-travel device were used. The thermocouple which is k-type were used to assess the exhaust gas, lubing up oil, air-propellant sounds, and motor coolant channel outlet temp.. For the storage of biofuel an extra propellant chamber were installed on the setup. To control the flow of biofuel as well as Petroleum No. 2 a propellant trading course of action were acquainted with have the alternative to switch over from the Petroleum propellant to the biofuel mixture during the motor keeps working. A various types of gasses analyzer having chemical detecting sensing devices were used to find the carbon monitrous oxideside, carbon dioxide, nitrous oxides, and Sulphur dioxide concentration. A Noise measuring meter was used to identify noise level (dB) in the motor room. The system was put about 1.2 m away from the setup. The accuracy of the assessments or weaknesses in the decided results shown up in Table No. 1.

Measurements	Accuracy
Load	∓2 N
Speed	∓2 rpm
Time	∓0.5%
Temperatures	∓1 °C
CO	∓20 ppm
CO_2	∓0.2%
NO_x	∓20 ppm
SO_2	∓20 ppm
Dynamic viscosity	∓1%
Heating value	∓1%
Specific gravity	∓1%
Calculated results	Uncertainty
Kinematic viscosity	∓1.4%
Torque	∓2%
Power	∓2%
bsfc	∓2.3%
Thermal efficiency	∓2.5%

Table No.1 Representation of test results on experimental setup

There were six fills attempted while the assessments on the test setup and these were Petroleum No.2 along with biofuel in 6%, 11%, 16%, 18.5%, and 26% by volume. All the examinations had done on the different motor loads. The normal testing framework for the Petroleum propellant tests were according to the accompanying. In the wake of completing a standard warm-up framework, the motor speed was extended to 3000 RPM. All the tests was carried out at five particular motor paces, explicitly 3000, 2500, 2200, 2000, and 1500 RPM. At each RPM, the motor were made due with 5 min, and thereafter, the readings were noted at the sixth second. For the biofuel mixture tests, the motor

were warmed up with Petroleum fuel. By then, the Petroleum propellant valve were closed and the mixtureing valve were opened to start the motor with the biofuel mixtures.

RESULTS and DISCUSSION

In t**he** first **place**, **it proved** three in the **range** o**f 6%, and 26% of ga**s **in** t**he range** o**f 6% and 26%**. In this t**est**, **DXX / BYEY shows** the **XX%** Di**esel, but** 100% **100**% **ga**s diesel. For **exa**m**ple**, D82.5 / B17.5 shows that **there is a** petroleum **o**f **82.5%. Associat**ed with 17.5% **ga**s. The most **po**p**ul**ar **valu**e **fall**s **by** incre**as**i**ng ga**s content. **Al**re**ady m**en**t**i**oned. D**es**pi**te the **fact that inform**e**d petroleum com**p**lies with** the **r**e**q**ui**r**e**men**ts, **pow**er **is available** for in**qu**i**r**ies.

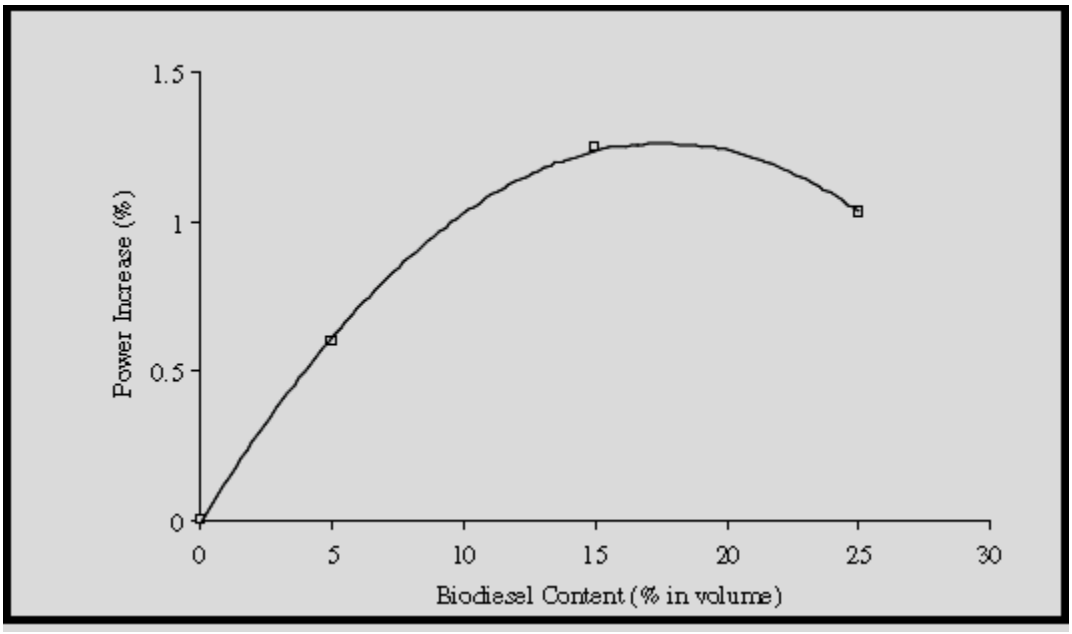


Figure No. 4. Biofuel effect on motor when it is running at full load-2500 RPM

There are various factors behind this biofuel contains 10% (by weight) oxygen that can be useful in the starting of motor due to this factor motor starts more easily. Then, the Petroleum propellant is guided to the Petroleum motor chamber for a volumetric reason and the thickness of the biofuel mixture was more than the Petroleum fuel. Hence, a greater mass stream rate for a comparable propellant volume is directed to the motor, happening in an extension in power and power. At that point, the more gooey mixture suggests less inside spillage in the propellant siphon [31,33].

Though the power of the D74/B26 mixture were more as compared to Petroleum fuel, when the biofuel keeps increasing in the mixture, the power starts decreasing underneath that of the Petroleum propellant(Figure No. 4) in view of the less warming worth and the more thickness, which achieves fairly more disastrous atomization and less lucky start. This result is in concurrence with the ones presented in [23]. A tantamount example were moreover gotten for warm capability. Consequently, the biofuel content were not extended further. The arithmetical condition created for the example showed up in Figure No. 4 showed that the most limiting power can be obtained with around 18.5% biofuel development. The effects of biofuel on the motor power at 1500 and 3000 RPM motor paces were represented by Figure No. 5 and Figure No. 6 at both full and partial weights, independently.

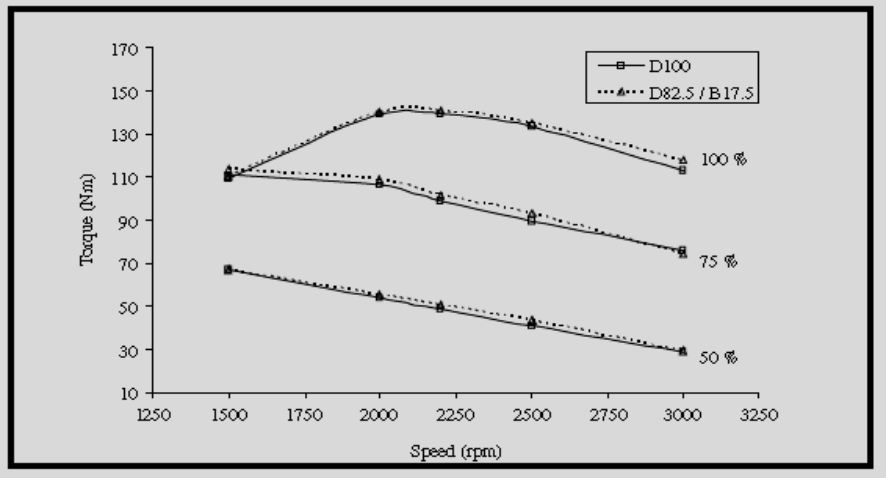


Figure No.5 biofuel effect on motor torque

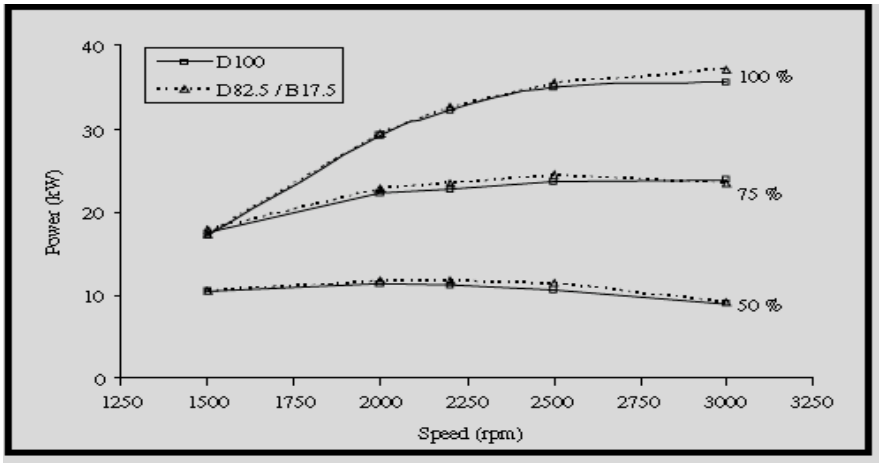


Figure No.6. Biofuel effect on motor power

As a rule, the mixing power were somewhat more as compared to the Petroleum power at all heaps in the test speed range because of a few reasons referenced previously. Despite the fact that the helpful impact of the biofuel as an oxygen rich propellant on the burning diminished because of the less fatty generally combination at fractional burdens, a somewhat more force were found with the mix, like the expansion at full burden.

Figure No.7 describes break specific fuel consumption variety of the Petroleum propellant and the mix as for motor speed at various burdens. When all is said in done, the break specific fuel consumption estimations of the mix were marginally more as of the Petroleum propellant at both full and incomplete burdens as in [31,37]. The brake-explicit propellant utilization of a Petroleum motor relies upon the relationship among volumetric propellant in fusion framework, propellant explicit gravity, thickness, and warming worth [23].

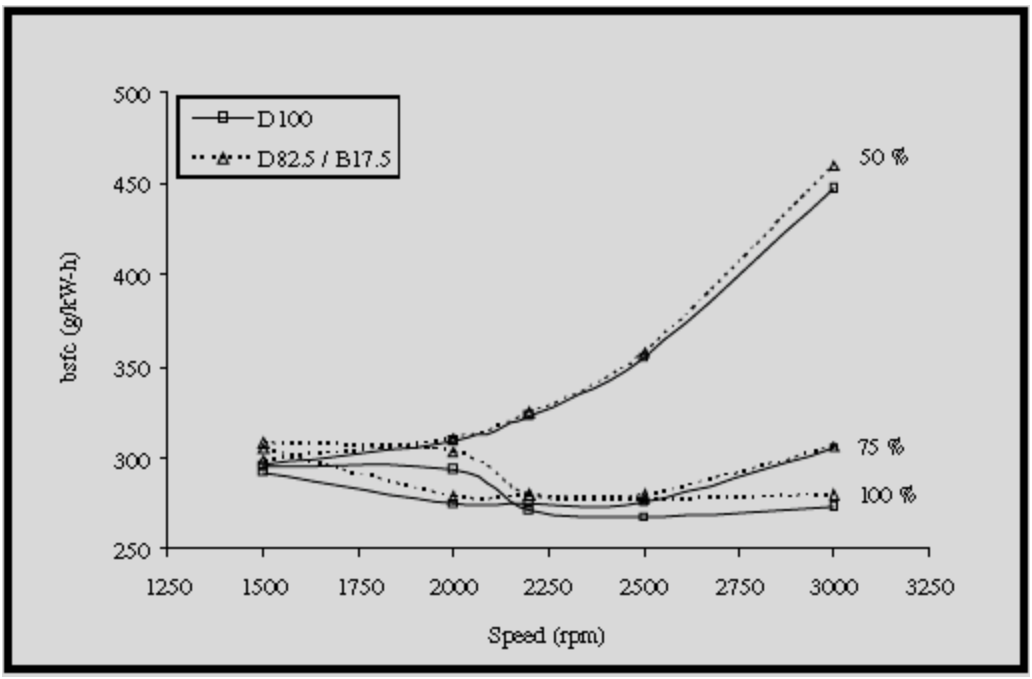


Figure No.7. Biofuel effect on break specific fuel consumption values

More mixture is relied upon to make a comparable proportion of energy in light of its more unequivocal gravity and less warming an impetus interestingly with Petroleum fuel. In same manner, it is seen that the extension in break specific fuel consumption outcomes at complete weight is more as of those at midway loads. It is represented by the more preeminent proportion of biofuel at complete weight. The incomparable proportion of biofuel were lessened concerning that at full load, and the break specific fuel consumption assessments of the mixture nearly close to those of the petroleum fuel, specifically at half weight someplace in the scope of 2000 and 2500 RPM. The warm capability scattering shows up in Fig. 8 for the two stimulates. The warm capability of a Petroleum motor is conflictingly comparative with its break specific fuel consumption and the warming assessment of the fuel. As the break specific fuel consumption assessments of the mixture were insignificantly more than those with Petroleum fuel, the less warm profitability with the mixture were a typical result, which were viewed as a full weight. But the break specific fuel consumption assessments of the mixture at deficient weights were barely more than that with the Petroleum fuel, the warm efficiencies were fairly more than those with the petroleum propellant in light of the less warming assessment of the mixture. In any case, the qualifications were astoundingly little for the two fills at all piles.

The Nitrous oxides collection of the mix concerning motor speed showed for all intents and purposes indistinguishable models as of the Petroleum fuel. The increased temp. of start and the presence of biofuel oxygen with the mix duplicating leads more Nitrous oxides discharges, particularly at full weight [4, 5, and 38]. Increased smoke temp. with the mix at full weight kept up the expansion in Nitrous oxides floods [10]. The outcome shows that the expansion were around 4–7% at full weight. In any case, this advancement were not surveyed at halfway loads. What is significant is unessential, particularly at the half weight. There are essentially 3 parts affecting the Nitrous oxides transmission, oxygen fixation, start temp., and time. However, the oxygen community were increased at divided loads, the beginning temp., and time decline, inciting low Nitrous oxides. This is reliable with the fume's temp. spread. In addition, it is perceived that the outer oxygen outfitted with the air is less persuading than the fuel-borne oxygen in the creation of Nitrous oxides.

CONCLUSON

In this article, a system for biofuel creation from the mixture of hazelnut oil soapstock/squander helianthus oil were introduced. Furthermore, the impacts of the biofuel improvement to the petroleum propellant on the introduction and floods of a turbocharged Petroleum motor were researched.

Furthermore, it is feasible to utilize soapstock, a side-effect of palatable oil creation, for modest biofuel creation. During this investigation, a Phenylalanine ester biofuel were created using a hazelnutoil/squander helianthus-seed oil combination utilizing ethanol, sulfuric corrosive, and caustic soda during a 2-stage measure. The impacts of the Phenylalanine ester expansion to Petroleum No. 2 on the presentation and emanations of a 4-cycle, 4-chamber, turbocharged backhanded infusion (IDI) petroleum were analyzed at both complete and halfway loads. All the test results reflected that the hazelnutoil/squander helianthus-seed oil Phenylalanine ester are often halfway fill certain the petroleum oil all things considered working conditions regarding the exhibition boundaries and emanations with no motor alteration and preheating of the mixes.

The test results are portrayed as follows:

1. A biofuel were passed on from hazelnut oil soapstock/squander helianthus oil mixture that wires high unsaturated fat substance through ruinous (H_2SO_4) and base (NaOH) catalyzers in two stages. However the correspondence gave some decrease in thickness of the mixture, the consistency of the biofuel were, overall, more than that of Petroleum fuel, particularly at less temp.s. Thusly, unadulterated biofuel couldn't be utilized in the Petroleum motor.

2. However the warming appraisal of the biofuel is less than the Petroleum fuel, biofuel mixes (6%, 11%, 16%, 18.5%, and 26% biofuel improvement) passed on a genuinely more force and force at both full weight and fragmentary loads. It were tracked down that 18.5% biofuel expansion gave the best force and warm capacity.

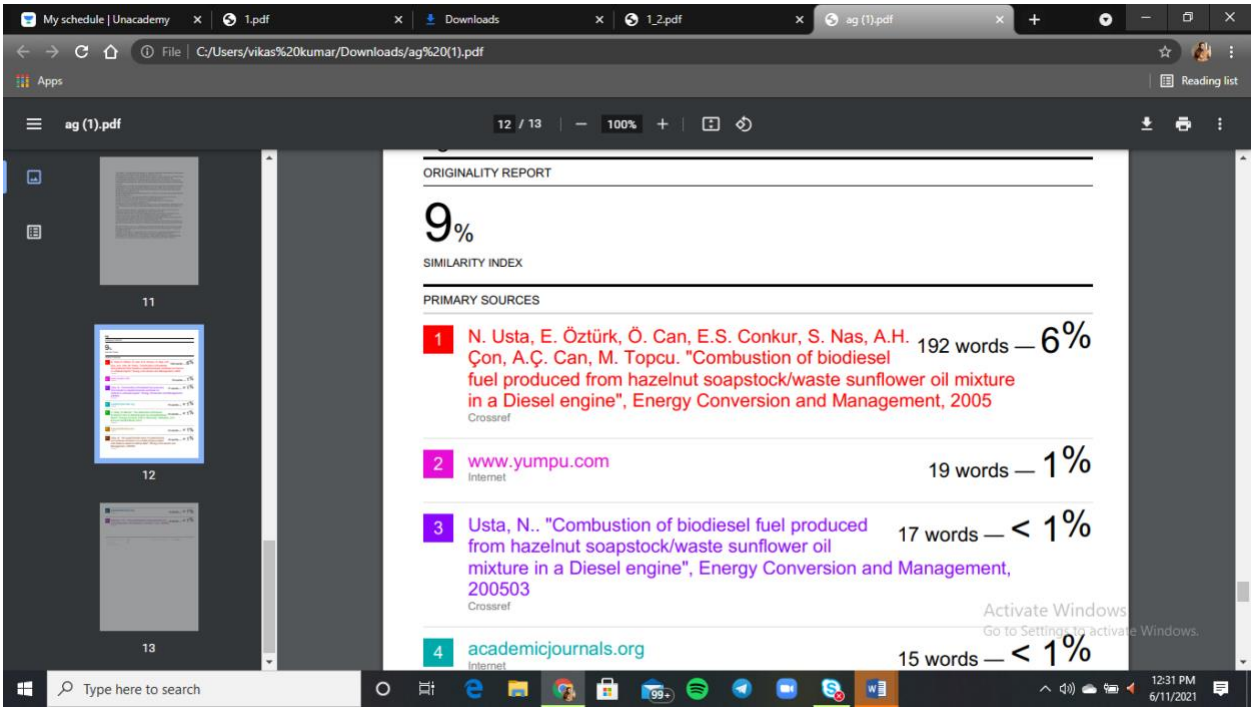
3. The fume temp.s of the mix at full weight were more than those of Diesel, while the separations were infinitesimal at deficient loads. The utilization of the biofuel mix didn't affect essentially the oil temp..

4. At Full weight, the carbon monoxide spreads of the mix were more at low speed and less at high rates than those of Petroleum fuel, while the mix accomplished more carbon dioxide discharges in the test speed range. At halfway loads, it were tracked down that the mix didn't cause immense changes in the CO and CO_2 transmissions. This might be an immediate consequence of the general all the more slim mixture. There were a fundamental SO2 decrease with the mixes considering the less sulfur substance of the biofuel. Nitrous oxides outpourings genuinely stretched out taking into account the more conspicuous burning-through temp. and the presence of propellant oxygen with the mix at full weight. Regardless, the expanding extent of Nitrous oxides radiation dropped down with diminishing weight.

5. The aggravation evaluations were taken out 1.2 m from the motor in the motor room by utilizing a sound level meter. The biofuel expansion somewhat diminished the clamor. The reducing all out were under 1 dB in the degree of motor speeds endeavored. In these transient tests, no certain wear or impact on the Petroleum motor parts has been observed. In any case, the impacts of biofuel on motor segments and oil are the subject of a propelling undertaking in the school.

APPENDIX- C

PLAGIARISM REPORT OF THE RESEARCH PAPER



APPENDIX –D

THE PAPER OF SEMESTER 7

DESIGN AND FABRICATION OF MOTO DRIFT TRIKE

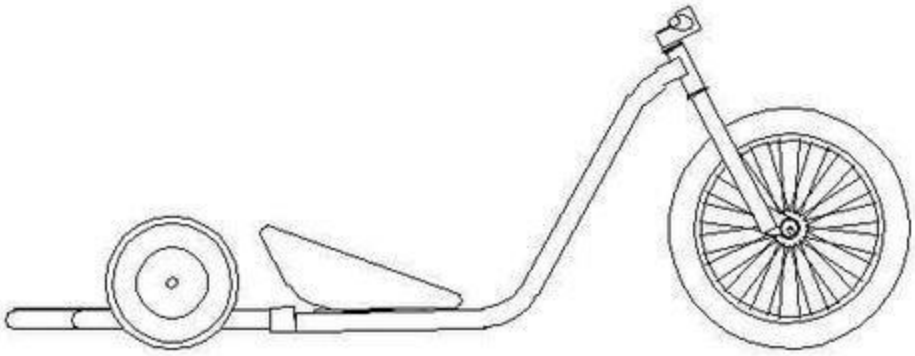
Abstract

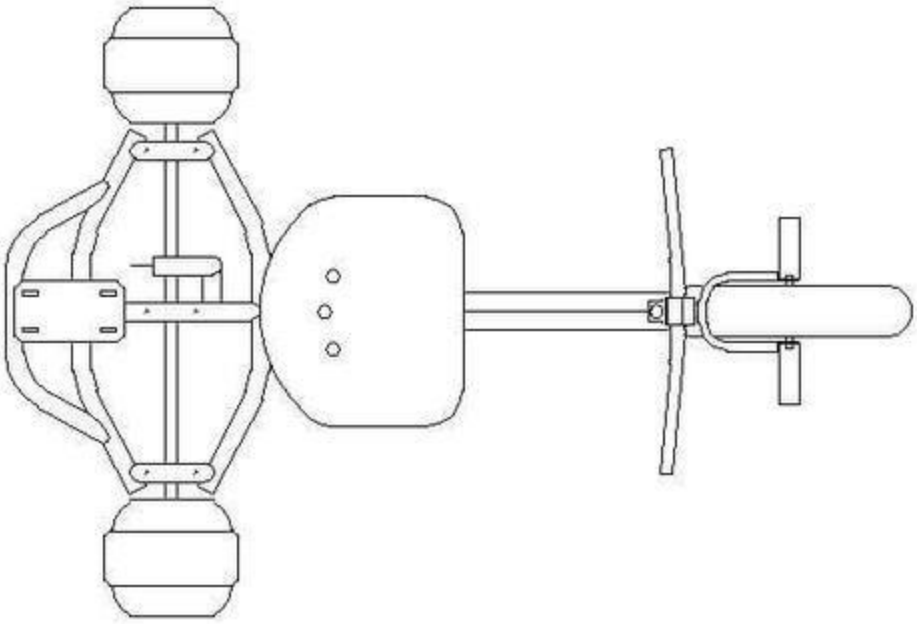
This drift trike is a vehicle of three wheels and as the name itself suggests, it's sole purpose is to use this for extreme motorsports, and in that also for the drifting purpose. Many countries also hold trike racing and drifting championships. Current it is not a factory made product, i.e. it is only manufactured by some engineers and others. This report of methodology is for manufacturing a drift trike from scratch. Easy but stunning enough, we will be using near field technology for ignition. Some parts of bicycle are used for the purpose of front chassis. The suspension technique is absent because of the lowered frame of the vehicle and also to keep the weight of the vehicle to a bare minimum to provide it with the

power needed. The motive is to get rid of a physical heavy key. The time is of starting the engine with button or a card, so for this system we used chips and tags system.

INTRODUCTION

The drift trike is a vehicle of three wheels powered by a not so powerful engine, for loosing traction to the rear wheels and steer to counter corners, also known as a trike car or a three wheeler. The drift trikes are usually ridden on cornered paved surfaces and switchbacks. It's origin is traced back to New Zealand. The front wheel that is used is more in diameter but the rear wheels are broader than the front wheels to provide more and better control while drifting. The rear tire used are generally that of go-carts. The Drift trike can also perform a 360 degree turn around the supporter to the front wheel. We used a TVS Apache 160cc engine for this purpose. This engine provides the power of 13.5 Bhp at 8000 RPM and also a maximum torque of 13.2 N-m at 5998 RPM. This drift trike's engine uses a NFC enabled self starting feature, which is an update for the earlier used RFID (Radio Field Identification) technique which uses electromagnetic field for automatically tracking tags that are attached to the objects. These tags containing electronically stored information helps us to unlock with any other pre registered objects even when we forgot/ lost the key. This system only works when the range of the tags is less than 4cm.





LITERATURE REVIEW

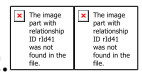
Lamental studied the importance of aerodynamics for a comfortable ride of the tricycle powered by humans. To find out the important characteristics of this human powered vehicle a wind tunnel testing was reported. The aerodynamic drag was found out to be more than the one simulated. This study denoted comparably better results in reducing the aerodynamic drag. In motorsports vehicles, the position of the seating ot driver is also a considerable factor. Reclining the drivers seat also helps in the reduction of air drag force, also this position is better for driver's security.

The uncovered wheels were found out to generate more drag force than compared to the one with covered wheels.

- As of study of Vibhor Sharma and his team, the main points of highlight was the comaprison between NFC and bluetoooth. NFC came out to be far better than Bluetooth in many aspects, but when it came to large amount of data to be transferred, that was the one place where NFC lagged behind. NFC technology is being adopted by Kenya at a mass level. NFC technology has a large scope in the future due to the easeability of it's use in making the life more comfortable. The main steps that are being taken now are in order to increase the use of NFC in creating a secured platform for the data to be transferred and also to increase the limit of data to be transferred.

- As of the study of Anusha Rahul, Unni Krishnan and Sethuraman Rao, the main highlight was of the newness of this technology and the range. NFC is a recent technology that is far more efficient than any other technology. This technology works by only pointing the two devices to each other or touching each other, but the disadvantage of this technology is that the range of it is even less than 20 cm.

- As per the study of Nitish Anand, Piyush Arya, Sanjeev Kumar Mishra and Sachendra singh, the main point s of highlight were of the comparison of the FSB and TIG joints on the material chosen of the chassis of the trike. Gas flow rate is the most dominating factor for tensile strength in TIG whereas for FSB the main dominating factor in tensile strength is tilt angle.

- Th E is trike is a lowered vehicle, so the front wheel is placed in the middle of the driver's legs. The legs are placed on two pieces of metal striking out of the frame near the front wheel. A outer plastic cover on the rear wheels reduces the traction on the path for providing the drift to the trike. This outer layer was made up of PVC plastic. 

- According to a study by Norcliffe, the tricycles are a major platform for millions of small enterprises in many Chinese cities.
- In a study Kaustubh Dilip Patil and his team used a rocker arm design for the leaning mechanism, that was not so realiable, because of the chassis of mild steel black material, they achieved a 36 degree lean.
- M. Ravi Chandra and his team gave the best comparison data for chassis of an automobile, with the help of different bending analysis on I.C. and Box channel section chassis. The materials they considered are steel, carbon epoxy materials, E and S glass materials.

RESEARCH METHODOLOGY

The market is coming out rapidly for automotive Near Field Communication (NFC) technique, that is driven by the combined forces of technology and humans and pairing the vehicles with many new and coming technologies like wifi and combinig them with vehicles and modifying the car according to the use of the driver and comfort of passengers. These and many more are the perfect examples of places where NFC can be used. It is also believed that combining automobiles with the all powerful NFC could be the next big thing.

The applications of the NFC enabled devices are still available as prototypes and tests. This device can connect the vehicles with it's keys and other devices. This technique also helps in opening a door to the room full of possibilities for the broad range of innovation in the field of automotive engineering. Some devices that are likely to take over the market next year are attached in the ref.

The NFC technology has taken quite some time in gaining attention in the main frame, but that all seems to go away with the ongoing need and the want of the customers in the automobile sector for modernizing and increasing their meaning of comfort and easy going objects.

The number of motorsports are on the top of their time and every third or fourth person has in his/her mind of doing something worthwhile and taking a thrilling experience but due to budget, not every one is able to. So to make some of the motorsports available to weaker sections this trike was attempted to be made, which was success fully achieved by us.

ADVANTAGES

8. With the help of NFC we can acquire the vehicle's information easily.
9. We can connect hands-free interface of entertainment system with Bluetooth.
10. We can also use it as a basic daily use vehicle.
11. We can participate into drifting and racing competitions of trikes.
12. The engine is highly customisable and can be maintained by us for our use easily.
13. No need to ignite the engine with the use of an elongated key that is needed to be entered in the ignition hole.
14. Create personalised settings like windows and other things for an user friendly environment.

DISADVANTAGES

5. Low range of connectivity with the vehicle, because of NFC.
6. Limited range in single run, due to the presence of smaller fuel tank.
7. Limited number of uses.
8. Single passenger, so much or less it's daily use is limited.

APPLICATIONS

4. Used for motorsports.
5. Can be used to enhance the driving and drifting skills.
6. Alert the owner of the pending service requirement.

RESULT

In this research, we were success fully able to complete the formation of a drift trike all the way from scratch while implementing the use of NFC in the same. We found the nooks and corners of what can be done with the help of Near Field Communication (NFC) technology. We also were able to find out the better alternative for the material that was used in the making of the chassis of the trike and a perfect width and diameter for the tires used for making the drift trike according to it's varied uses. For example a different sets of tires is needed for racing, for drifting and even for using it as a normal vehicle for travelling. The most that we worked and studied in this report is about the NFC and the materials that are required for making chassis. Some information about the important areas for force application and other places are also found and are there in this report.

CONCLUSION

1. We have successfully designed our cage and the chassis of a three wheeled drift trike.
2. Implementing the NFC technology in already so much complicated vehicle was also a task, but we achieved that in the given time frame.
3. We have checked the range and cost of the vehicle and the power that we gave to the vehicle.

APPENDIX- E

PLAGIRISM REPORT OF SEMESTER 7 PAPER