

PATENTS GRANTED :

The Department of Chemistry has successfully designed, developed and completed the pated project titled **“Process and System Efficient Biodiesel Production”** which has been granted Indian **patent no: 372207**. Dt : 31-12-2019 for a period of 20yrs .

In the development of this project recycled or reused waste cooking oils were collected from restaurants and fast food centres for production of biodiesel.

The process by which biodiesel is produced is known as transesterification

In which organically derived oils (triglycerides, fatty acids) are combined with alcohol (ethanol or methanol) in the presence of a catalyst to form ethyl or methyl ester along with a by-product which has glycerol.



**INTELLECTUAL
PROPERTY INDIA**
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS



सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA

पेटेंट कार्यालय
THE PATENT OFFICE

पेटेंट प्रमाणपत्र
PATENT CERTIFICATE
(Rule 74 Of The Patents Rules)

क्रमांक : 044132009
SL No :



पेटेंट सं. / Patent No. : 372207
आवेदन सं. / Application No. : 201941054795
फाइल करने की तारीख / Date of Filing : 31/12/2019
पेटेंटी / Patentee : MUFFAKHAM JAH COLLEGE OF ENGINEERING AND
TECHNOLOGY

प्रमाणित किया जाता है कि पेटेंटी को उपरोक्त आवेदन में यथाप्रकटित PROCESS AND SYSTEM FOR EFFICIENT BIODIESEL PRODUCTION नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख 31st day of December 2019 से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled PROCESS AND SYSTEM FOR EFFICIENT BIODIESEL PRODUCTION as disclosed in the above mentioned application for the term of 20 years from the 31st day of December 2019 in accordance with the provisions of the Patents Act, 1970.



अनुदान की तारीख : 19/07/2021
Date of Grant :

पेटेंट नियंत्रक
Controller of Patent

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, 31st day of December 2021 को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।
Note - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 31st day of December 2021 and on the same day in every year thereafter.

**A Cost
Effective
method**



Technology Transfer of "Process And System Efficient Biodiesel Production" A patented MJ CET Research project.

Muffakham Jah College of Engineering and Technology (MJ CET), Hyderabad, a college with standing of 40 years, has 8 B.E Courses, and 5 M.E courses. In addition to that, MJ CET has Research Centres approved by Osmania University in 5 Engineering Departments to pursue doctoral studies in which 69 scholars are pursuing their PhD. The institute has been consistently ranked by leading national magazines among top 100 Government and Private Engineering colleges across India. MJ CET has 64 faculty members with PhD qualifications and 20 faculty members are Osmania University approved Research Supervisors. The number of campus placements offered for the year 2021-2022 is 540 job offers in 47 MNCs . To promote R&D culture in the college, Janab Zafar Javeed Sahab, Honorary Secretary, SUES has sanctioned substantial R&D funding and has always and encouraged research projects and patenting of the same.



A MULTIFARIOUS OUT COME BASED PROJECT

- Now-a-days the use of alternate fuel is enhanced for the purpose of energy security and environmental concerns. Escalating oil prices and depletion of oil reserves necessitate identifying a better alternative for existing fossil fuels.
- A biodiesel obtained can be mixed with petrodiesel in any percentage from 1 to 99 %.
- A major by-product viz. glycerol obtained during the process can be used in soap-making.
- Non-edible oils can be used in this process which will not only boost the rural economy but will also contribute in creating a non polluting, biodegradable and safe environment.
- Biodiesel obtained was tested in a inline 4 cylinder, direct injection diesel engine to investigate combustion, performance and emission characteristics of the engine at different engine speed and full load condition.
- biodiesel and its blends in specific B40 showed increased peak cylinder pressure, reduced ignition delay with low emissions when compared to petro diesel. the engine also showed compatible thermal efficiency.

PROCEDURAL HIGHLIGHTS OF BIODIESEL EXTRACTION

- This method uses microwave irradiation technique and thus effectively converts waste cooking oil into biodiesel.
- This project introduces a commercially available enzymatic catalyst which is responsible for getting desired yield i.e. upto 95 %.
- A gravity separator is used for separating biodiesel and byproducts
- A microcontroller based automation system aids in continuous collection of biodiesel produced. An indicator panel indicates various stages involved in the biodiesel production.
- In the post transesterification reaction phase, the catalyst and excess alcohol can be retrieved by the process of distillation which can be reused later.



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