

The Patent (CONVERSION OF VEGETABLE OILS TO BIO-DIESEL):-

PATENT APPLICATION NUMBER : 2114/DEL/2006

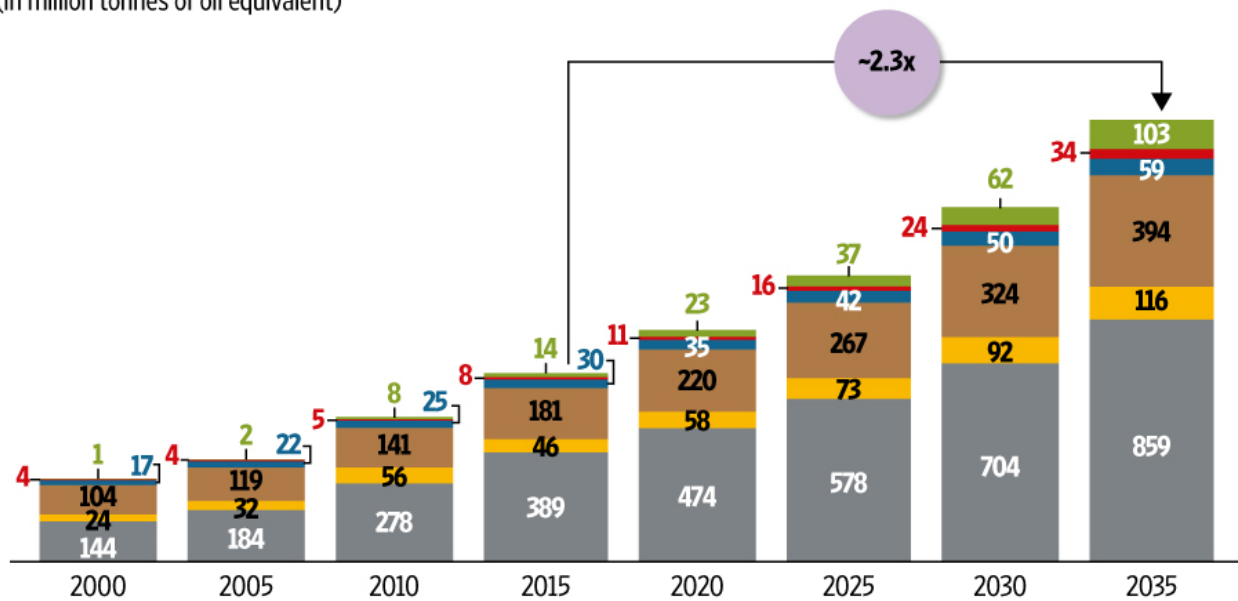
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1. ABSTRACT : The invention relates to the conversion of vegetable oils/ animal fats to biodiesel.
2. BACKGROUND OF INVENTION : Vegetable oils cannot be used directly in plants as they lead to various engine problems including injector coking, ring sticking, thickening of the engine lubricating oil etc because of high viscosity and non-volatility of vegetable oils. Larger size fuel droplets are injected from the fuel injector nozzle instead of a spray of micron size droplets, leading to inadequate air-fuel mixing this contributes to incomplete combustion of the fuel.
3. ADVANTAGES : 1).It is biodegradable and non-toxic
2).It does not contain sulphur or aromatic compounds thus it contributes to the reduction of exhaust emissions.
3).It is produced from renewable sources.
4).It can be produced domestically reducing country's dependence on foreign fuel.
4. DESCRIPTION OF INVENTION : Transesterification process has been found to be the most feasible for biodiesel production wherein vegetable oils are reacted with primary alcohols in presence of catalysts (Acidic/ basic/ enzymatic), and the bonds to the triglycerides present in vegetable oils are broken, thus the bulkier molecule of triglyceride is broken in to several smaller hydrocarbon molecules. The conventional biodiesel plants have a number disadvantages including very high cost, very large size, complicated production process, large manpower required. In order to obviate the above drawbacks, the instant invention discloses a biodiesel plant or plant, which results in conversion of vegetable oil to biodiesel. Still the instant biodiesel plant or plant is very economic and smaller in terms of size.
5. MARTKET SIZING AND SEGMENTATION :
GROWTH RATE : From the report of REUTERS, Singapore, India's average monthly diesel consumption was about 6.6 million tonnes, or about 1.6 million barrels per day (bpd), in 2017. That was up about 3.1 percent from 2016, when average monthly consumption was 6.4 million tonnes.

RISING NEED

Primary energy demand is expected to increase by 2.3 times over the next 20 years.

■ Renewables ■ Nuclear ■ Hydro ■ Oil ■ Gas ■ Coal
(in million tonnes of oil equivalent)



GRAPHIC BY VIPUL SHARMA/MINT

Source: BP Energy Outlook to 2035

S. No.	Market Sizing - Manufacturing in-house	UNITS	
1	Total Population of India	In Crores	130
2	Target Market (Rural +some urban areas)	In Crores	90
3	Average Household family Size		5
	Dividing target market by family size	In Crores	18
4	Potential market (assumption)		0.05%
5	Market demand	Thousands	90
6	No of probable Competitors in water purifiers		9
7	Actual Market of our product	Thousand	10
8	Life of the product		8
9	Yearly Market Demand of our product	Thousand	1.25

6. Revenue Generation:

- 1). Selling the technology to a company/government.
- 2). Licensing and authorising the use of invention to a licensee in lieu of payment of fees/royalty sparing the claim of infringement by the licensor.
- 3). In house Production :

COST OF COMPONENTS			
S. NO.	COMPONENTS	PRICE	SPECIFICATIONS
1	NON IBR BOILER	15000	INDIA MART
2	TEMPERATURE & PID CONTROLLER	1000	AMAZON
3	VACUUM PUMP	2500	INDIA MART
4	MOTOR STIRRER (7)	1500	INDIA MART
5	MIXER (3)	6000	LABORATORY DEALS
6	EXTRA (VALVES AND PIPES)	5000	ASSUMPTION
	TOTAL	31000	

Manufacturing In-house Cost Benefit Analysis :

S. No.	REVENUE		
1	No.of units sold		1250
2	Price		38000
	SALES FIGURE	Crore	4.75
	EXPENSES		
A	CAPITAL EXPENDITURE		
1	Machines and equipments	Lakhs	30
2	Property	Lakhs	20
	TOTAL	Lakhs	50
B	COST OF GOODS		
1	Manufacturing Quantity		1250
2	Cost of each		31000
	TOTAL	Crores	3.875
C	WAGES		
1	Operators		10
2	Average salary per month		15000
3	Yearly bonus		5000
	TOTAL	Lakh	24

D	SELLING AND ADMINISTRATION COST	Lakh	2
E	TOTAL EXPENSES	Crores	4.635
	PROFIT	Lakh	11.5

7. Methods of evaluation :

DCF method :- It is a valuation method used to estimate the value of an investment based on its future cash flows. DCF analysis finds the present value of expected future cash flows using a discount rate. A present value estimate is then used to evaluate a potential investment. If the value calculated through DCF is higher than the current cost of the investment, the opportunity should be considered. Free cash flows are forecasted and discounted at company's market based rate of return, assuming that the company's business risk is equivalent to the invention under consideration. Each year cash flows are hiked by 12% considering the rise in quantity supplied and inflation.

Present cash flow = **4.75 crores**

With DCF valuation of Manufacturing In-house, Value of the invention = **5.115 crores.**

Patenting process in India :-

1). Check the Patentability of the invention by performing a search for similar technologies.

It provides a good idea of the merit of the invention and helps in deciding if there are good chances of ultimately getting a patent granted. Secondly, you have the option of fine-tuning your patent application to ensure that you don't end up filing a patent for something which already existed.

2). Drafting a patent application (Provisional or Complete).

The next step is to prepare an Indian patent application. Each patent application has to be accompanied by a patent specification. Based on the state of the invention, you can either file a **provisional patent application** or a complete patent application.

If the invention is still in the development mode and tests are underway, it is a good idea to **quickly file a provisional application** to block the all-important filing date. Filing of the provisional application gives you 12 months of time to test and finalise your invention and file the complete application.

3). Filing the patent application.

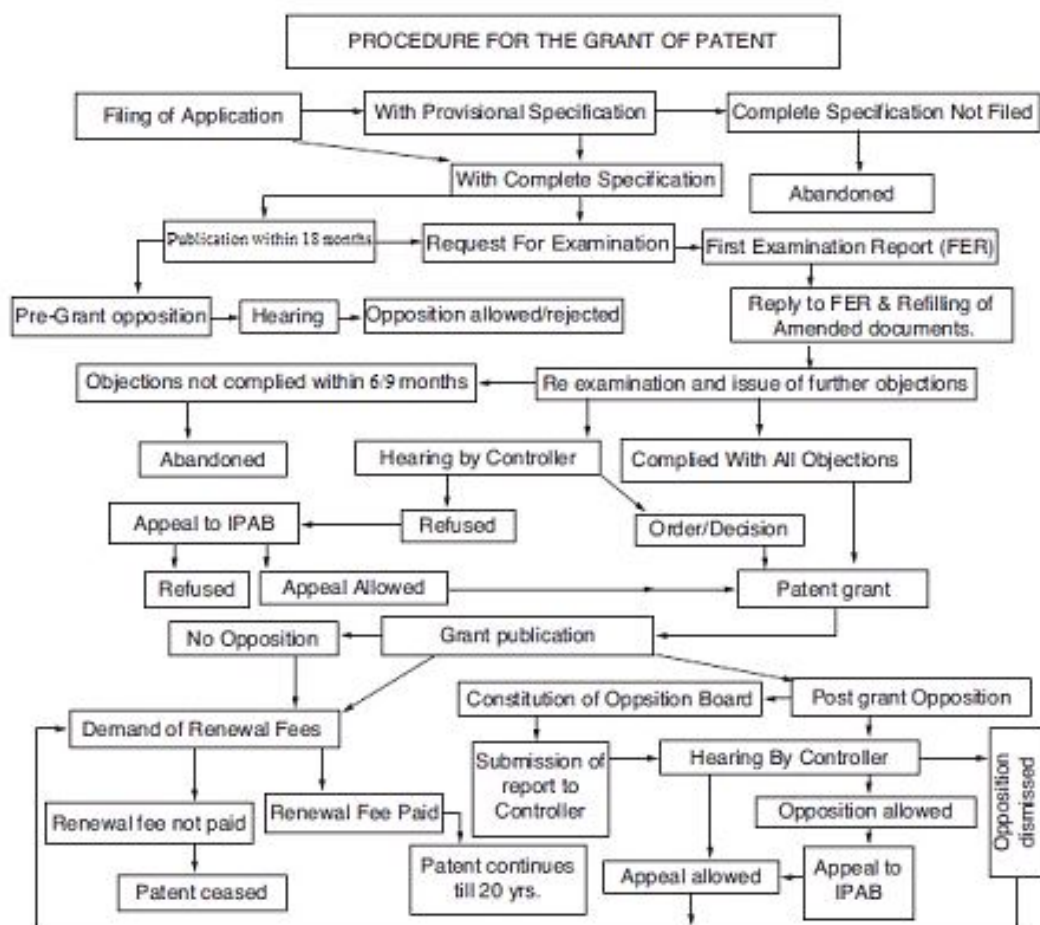
- First filing in India – The next step is to file the patent application in India and secure the filing date.
- Foreign filing decision – If you are interested in protecting your invention in foreign jurisdictions, the maximum time allowed is 12 months from your first filing date. You can opt for filing a **convention application in Paris convention members** individually in each of the countries you are interested in protecting your invention. Alternatively, you can use the **Patent Cooperation Treaty (PCT) system** to reserve your right in 140 odd member countries.
- Foreign applications entering India – In another scenario where the patent application was first filed in a foreign jurisdiction and the patent applicant is interested in filing a patent application in India under the Paris Convention route or the PCT route, the time limit to enter India is 12 months and 31 months respectively.

Each application for a patent which is filed with the Indian patent office needs to be accompanied by the forms provided below:

- Form 1 – Application for grant of a patent
- Form 2 – Provisional/Complete specification
- Form 3 – Statement and undertaking regarding foreign application under section 8 (only required if a corresponding patent application is filed in another country)
- Form 5 – Declaration as to inventor-ship (only to be filed along with the complete application)
- Form 18 – Request for examining
- Form 26 – Form for authorisation of a patent agent (only required if you are using a patent agent to help you file the application)
- Form 28 – To be submitted by startup or small entity (only required if you are claiming startup or small entity status)

4). Publication of patent application.

- A. *When is it published* – Every patent application which is filed with the Indian patent office is kept as a secret until the time it is published in the official patent journal. Indian patent office will publish patent applications after 18 months.
- B. *When not published* – there are a few scenarios under which a patent is kept a secret:



- Secrecy directions have been imposed under the patent act. Secrecy directions are imposed if the invention falls in a category publication of which could be against the interest of the nation.
- A complete application was not filed within 12 months from the date of filing of the provisional application
- A request for withdrawal was made. Such a request has to be made at least 3 months prior to publication.

5). Examination of the patent application.

- Request for Examination* —The applicant has to specifically make a request for examining their patent application. Only when a Request for Examination (RFE) is received, will the application be queued for examination.
- Examination process (Objections by examiner & responding them)* — During the examination process, the examiner will scrutinise the application to ensure that the application is in accordance with the patent act and rules. The examiner also performs a search to understand similar technologies to ascertain if the invention would satisfy the patentability criteria. Based on the review of the application, the examiner will issue an Examination Report to the applicant, stating the grounds for objections. The first such examination report is called the First Examination Report (FER). Once, the FER is issued, the patent applicant needs to successfully overcome the objections to receive a patent grant. The whole

process may involve responding to examination reports, appearing for hearing, etc. The total time needed to put an application in order for the grant is 6 months from the date on which the FER is issued to the applicant.

7). Renewal.

The patent has to be renewed every year by paying the renewal fee. A patent in India can be renewed for a maximum period of 20 years from the patent filing date.

Earning revenue of a patent :-

- 1). Turning Invention Into Products.** The commercial value of a patent can only be obtained once a product is created for selling in the market.
- 2). Patent Licensing.** One can become a licensor to license the patent to a licensee, who gains rights over that patent for a certain period as per the pre-decided terms and conditions. He does not need to bear the development expenses and risks and he can gain entry into a new market or business easily with patent licensing and gain financial benefits.
- 3). Patent Pooling.** Two or more patent holders come together through an agreement to use their patents together and license the patents collectively to any third party. This ensures wider coverage of their patents and of course, more commercial gains with expanded ambit.
- 4). Selling a patent.** One can easily earn quick bucks by selling his patent for the mirroring device. This would help him in realising the profits without any burdensome procedure and move forward with the desired R&D for new patents.

Rights of a patent holder :-

Part 1: International Patent System

Concept of Priority

Priority means that who has right to secure patent to the exclusion to the other applicants in any country. There are two concepts of priority. The first is the first to file concept and the other is first to invent concept. This concept is

followed by most of the countries including India. The first to invent concept says that the inventor who invented first has the right to file and secure the patent. This concept is followed by the US.

Patentable Inventions

There are three conditions, novelty, non-obviousness and industrial use, for an invention to qualify as a patentable invention irrespective of any domestic patent law. Novelty means that the invention should be not be known in the industry anywhere before. An invention first practiced as a trade secret and later applied for patent does not qualify under this condition. Non-obviousness means that the invention should be such that it add-value to the existing knowledge domain. The teaching of the invention must not be obvious to anyone having knowledge in that particular domain of technology. The third condition makes it clear that patent is granted only for the applied science which has some industrial use. The invention should be either in the form of a product or a process which can be commercially exploited.

The Patent System

Patent rights are territorial in nature and governed by the domestic patent laws. It means that a patent right holder in the India has rights only in the Indian territories. For securing the same rights, one needs to redo the patent rights securing process in each country of the business interest from the prospective of commercialisation of the invention.

The international understanding on industrial property, which is another term used for the intellectual property minus copyright, is known as Paris Convention for the protection of Industrial Property. Since it was a convention, it lacked binding force. But it helped in designing the international patent law which came under the banner of the TRIPS Agreement, which has binding force. The binding force means that how what is agreed upon at an international level is translated into the domestic laws of the signatory countries.

Each inventor, either a part of the Paris Convention Union for protection of industrial property or the WTO Contracting country, has twelve months time from the date of the first/basic application to decide and file an application for securing the patent rights in the other member countries. This additional right is known as priority right.

There is time buying system which helps in deferring the patent application filing in the other countries to the maximum of thirty months from the date of the filing the basic application. This system is known as Patent Cooperation

Treaty (PCT) and administer by the World Intellectual Property Rights Organisation (WIPO). The TRIPS Agreement has borrowed the National Treatment concept from the Paris Convention. The national treatment means that the foreigners would be given the same treatment as the nationals of a country. TRIPS further added Most Favoured Nation (MFN) concept in it; which means that any especial favour given by a country to a country will be applicable to rest of the member countries.

Hence, there are two options for an applicant to file a patent application in a foreign country. The first one is Paris Convention and the second is exploiting the PCT route. The first route is advisable when an applicant wants to file the application without losing time. The other route is advisable when the applicants wish to buy some time for any reason to exploit the patent rights later without losing the priority. Both the options are open for India.

Part 2: Securing Patent Rights in India

The above have been explained in detail under the heading *Patenting process in India.*

Patent Infringement in India :-

Patent infringement proceedings can only be initiated after grant of patent in India but may include a claim retrospectively from the date of publication of the application for grant of the patent. Infringement of a patent consists of the unauthorised making, importing, using, offering for sale or selling any patented invention within the India. Under the (Indian) Patents Act, 1970 only a civil action can be initiated in a Court of Law. Further, a suit for infringement can be defended on various grounds including the grounds on which a patent cannot be granted in India and based on such defence, revocation of Patent can also be claimed.