DESIGN AND DEVELOPMENT AND FABRICATION OF OIL EXPELLER FOR NEEM SEEDS

PROJECT REFERENCE NUMBER: 42S_B_BE_080

COLLEGE: SECAB INSTITUTE OF ENGINEERING & TECHNOLOGY, VIJAYAPUR

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Keywords: Oil expeller, Neem seeds, Fabrication.

Introduction:

Oil expeller

The Oil Expeller is a screw type machine, which presses oil seeds through a caged barrel-like cavity. Raw materials enter one side of the press and waste products exit the other side. The machine uses friction and continuous pressure from the screw drives to move and compress the seed material. The oil seeps through small openings that do not allow seed fiber solids to pass through. Afterward, the pressed seeds are formed into a hardened cake, which is removed from the machine. Expeller pressing (also called oil pressing) is a mechanical method for extracting oil from raw materials. The raw materials are squeezed under high pressure in a single step. When used for the extraction of food oils, typical raw materials are nuts, seeds and algae, which are supplied to the press in a continuous feed. If we scale down the Industrial Oil Expeller we can see that the main workings of the expeller is the helical thread in the barrel that creates a large amount of force pressing the raw material in the process of expelling the oil.

Neem

NEEM oil has become more attractive in the recent past owing to its environmental benefits and the facts that it is made from renewable resources. Neem oil is a renewable and potentially inexhaustible source of energy with an energetic content close to diesel fuel. Oils derived from fossils may in course of time become obsolete but not bio oils.

According to a rough estimate made in a quick survey conducted, India has around 140 lakhs neem trees and only 20% of seed crop is harvested due to scattered growth. The neem grows on almost all types of soils including clayey, saline and alkaline conditions. The neem tree starts yielding after 5 years.

Neem oil is generally light to dark brown, bitter and has a rather strong odour. It comprises mainly of triglycerides and large amounts of tri terpenoid compounds which are responsible for the bitter taste. It is hydrophobic in nature. The neem oil is antiseptic, antifungal, antipyretic and antihistamine. Neem oil also contains several sterols, including campesterol, beta sitosterol and stigmasterol. Apart from being used for the production of bio fuel, the neem oil is also used in production of medicines, bio-pesticides, oil cake, manure and other agricultural products.
Summary of survey:
- Needs oil expeller which is suitable for small-medium businesses where the total cost of setting up and running the machine is low. (Because, the profitability of oil processing depends on reducing the capital and operating costs as much as possible).
- Less number of low cost machine is available but yet it must be very efficient in expelling oil.

Objectives:
The objectives of the present study are as given below:
1. To design the low cost neem expeller
2. To fabricate neem expeller
3. To check the performance of developed expeller.

Methodology:
The methodology adopted for this project as follows:
1. Design of frame & other parts.
2. Fabrication of frame & other parts.
3. Selection of rotor for the equipment.
4. Selection of capacity of battery required.
5. Assembly and testing of working model.

Detailed drawing of oil expeller

Fig.1.3 Diagram of the oil expeller
5. Fabrication:

Expected outcomes:
The work will be focused to achieve the following deliverables:

- Design and Fabrication of Neem Oil expeller.
- The working model enables to reduce the heating of the expeller.
- The project emphasis on fabricating a cost effective, which can be affordable to poor farmers.
Budget Details

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(Rupees twelve thousand only)

References