

Oil Expeller

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Problem addressed:

Conventional oil expellers are driven by 30HP foot mounted electric motor using sheave and belt technology for crushing 6 to 10 MT of oil seeds per day. The average space requirement of these machines is 9.2m X 3.8m and they require two laborers to manage it. Also sheave and belt technology causes transmission losses further adding to operational costs. These machines need mounting on a concrete foundation to absorb the vibrations caused by the belt. In addition, Wear and tear is high because of the vibrations and presence of accessories such as belt and counter shaft. There is no mechanism to adjust thickness of the cake when the machine is in operation and neither to remove debris. It is difficult to maintain the oil percentage in the cake between the optimum values of 6-7%.

Product:

Innovators Oil expeller can crush all kinds of seeds using planetary gear system coupled with screw press. On an average, it saves power by 40 per cent when compared to the conventional oil expellers of the same capacity. It has higher production efficiency, which has been achieved by providing an improved and energy efficient transmission mechanism in a very compact design. Occupying just a third of the space of a conventional expeller, this machine is low on maintenance too. Energy conservation by this invention could lead to substantial reduction in the electricity requirement by the oil mills. As one KW/h saved at the users end could mean a relief of 2 - 4 Kwh of generation capacity. We can imagine that 50 % saving by this technology offers least cost option for bridging the ever-widening gap between demand and supply of energy.



Technical Specifications :

- It has three integrated crushers with a total crushing capacity of 18MT/day of cottonseeds and 28-32MT/day of groundnut and other seeds.
- The 50HP motor that powers the machine is an integral part of the main body of the machine.
- The motor is linked with the three crushers using a planetary gear system.
- A hopper is provided to receive seeds.
- The machine has three parallel chambers for steaming the seeds.
- Pressing machines follow the steam chambers - one pressing machine connected to each steaming chamber.
- Finally, it has a screw press where the seeds are crushed.
- Alloy steel has been used in manufacturing the machine to increase its life span.
- Additional technical specifications and Production Capacity of the machine is as follows;

Type of Seed	Motor HP	Crushing Capacity in Metric Tons per 24 hour	Oil Yield in 24 hours
Cotton Seed & Soybean	50 to 60	18 - 22	14%
Castor	40 to 50	30 - 35	36%
Ground Nuts	40 to 50	30 - 35	42%
Mustard	40 to 50	30 - 35	35%
Rapeseed	40 to 50	30 - 35	37%
Sesame	40 to 50	30 - 35	50%
Copra	40 to 50	30 - 35	62%
Lin Seed	40 to 50	30 - 35	42%
Palm Kernels	50 to 60	28 - 32	36%
Crushing Chamber Size	Each Crushing Chamber is 33 X 6 Inch in size		
Clutch Mechanism	Provided for starting & stopping any number of three crushing chamber as per requirements.		
Cake Thickness Device	Provided for adjusting cake thickness as per requirements, do not require stopping of the machine.		
Weight	Approx 6000 Kg. Including Motor & Cooking Kettle		
Above details are calculated with dry & good quality oil seeds only			
Machine can also run by Diesel Engine with slightly higher power than motor to be used			
Oil Yields are calculated after optimum no of crushing (Pressing) time for each seed			
Above crushing capacity are for single crushing, some seeds require double crushing			



Key Competitive Advantage:	<ul style="list-style-type: none"> • Saves electricity at least by 50% and space by 70% • Processes 18 MT/24 Hours of cotton seeds in a single press • Perfect crushing ensures high quality cake without damaging its nutritive properties. • Heavy thrust bearing and special alloy steel of warm shaft ensure smooth operation. • Thickness of the cake can be adjusted while machine is in the operation. • Requires less number of labor for operating the machine • Reduces the operating cost of the machine by one third • Provides improved maintenance & handling
Time to deliver:	4 Month from the time of ordering
Price :	Rs. 14 Lac (ex-factory price + packaging). The price does not include transportation costs, taxes, etc.
Achievements:	Innovator won a National Award in NIF's First National Competition for Grassroots Innovation and Traditional Knowledge in 2001. He has also been awarded Dr. Vikaram Sarabhai Young Scientist Award by Gujarat Government.
IPR Status:	Indian Patent Granted (No.207350)Applied in US (No.US 10/277859)
BD website link:	http://nif.org.in/innovation/energy_efficient_oil_expeller_machine/94
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