

## **1 VEGETABLE OIL REFINERY**

### **1.1 Introduction**

Vegetable oil and fat resources are indispensable to mankind as a source of nutrient and industrial raw materials. Crude vegetable oil obtained from various oil milling units is further refined before use for edible purposes. Refined edible oil is a process where free fatty acids are volatilized, condensed and recovered simultaneously with vacuum de-colouring operation. Sometimes, refining process is limited to simple physical treatment such as heating and filtering in regard to refining of superior quality of crude oil. Generally the cake in the oil is separated by centrifuge, decolouring by active clay and steam deodorization at high temperature in vacuum up to 5 mm. Hg.

### **1.2 Objective**

The primary objective of the model report is to facilitate the entrepreneurs in understanding the importance of setting up unit of vegetable oil refinery, technology and financial parameters of various components for preparation and submission of project proposal to bank for sanction of long term loan. This model report will serve as guidance to the entrepreneurs on starting up such a new project and basic technical knowledge for setting up such a facility

### **1.3 Raw Material Availability**

The major raw materials required are crude groundnut oil, crude sesame oil and crude mustard oil. The state of MP has abundant production of crude as well as refined vegetable oils round the year. Thus procuring adequate quantity of crude oil will not be a bottleneck. Other materials like phosphoric acid, citric acid, bleaching powder etc would be available from the nearby trading centres.

### **1.4 Market Opportunities**

The importance of edible refined vegetable oils has been appreciated and ambitious plan has been chalked out to increase production of edible refined vegetable oils, including soya bean oil, by the Government of India in the previous Five Year Plans. The demand for refined edible vegetable oils has increased in the consumer market. With growing population, increase in the disposable income and overall trend of consumerism, demand for edible oils is shooting up year after year. The country still imports large quantities of crude edible oil. The domestic production has gone up during last few years but there still exists a gap between demand and supply which results in large imports. Thus a new vegetable oil refinery has got good potential.

## 1.5 Manufacturing process

Special pre-treatment steps which are essentially a combination of de-gumming and blending under special operating conditions, eliminate all impurities and render oil fit to be processed at elevated temperature under vacuum. Various steps involved in refining are:

- Super cleaning
- Contobleaching and
- De-acidification

All these processes are very well standardized and practiced in the country since long. The average recovery is 90%.

## 1.6 Products

It is possible to refine edible oils from crude groundnut oil, sesame oil, mustard oil etc. In this project, these three crude edible vegetable oils have been considered for refining purposes.

## 1.7 Availability of know how and compliances

CFTRI, Mysore has successfully developed the technical know-how. Apart from compliances under PFA Act, registration under AGMARK is advisable.

## 1.8 Capacity of Plant

The installed production capacity of the proposed unit would be 1200 MTA.

## 1.9 Project component and cost

Major components of the projects and their costs are described in the table hereunder:

Particulars	Unit	Qty	Cost/unit	Total
<b>LAND &amp; BUILDING</b>				<b>44.50</b>
Land	SqM	800	625.00	5.00
<b>Land Development</b>				
Land Area		800	1,500.00	12.00
<b>Building</b>				
<b>Production Block</b>				
Processing Centre	SqM	350	5,000.00	17.50
Packaging Unit	SqM	75	5,000.00	3.75
Storing Unit	SqM	75	5,000.00	3.75
Contingencies		10%		2.50
<b>PLANT &amp; MACHINERY</b>				<b>90.00</b>
Plant & Machinery	LS	1	7,500,000	75.00
Contingencies		20%		15.00
<b>MISCELLANEOUS FIXED ASSETS</b>				<b>12.00</b>
Total Miscellaneous Asset	LS	1	1,000,000	10.00
Contingencies		20%		2.00
<b>PRE-OPERATIVE EXPENSES</b>				<b>23.04</b>
Establishment		1	1,444,000	14.44
Professional Charges		1	500,000	5.00
Security Deposits		1	360,000	3.60
<b>TOTAL</b>				<b>169.54</b>

The cost of the various components will depend on the location of the project. Item wise assumptions are as under:

### 1.10 Plant and Machinery

The major machineries required for the vegetable unit are super cleaning section, contobleach section, deacidification section, steel structure, water cooling system, Oil storage tanks, boiler, water softening unit, storage tanks, pipes, accessories etc. The total cost of plant and machinery is Rs. 90 lakhs.

### 1.11 Building

The main production block will cost around Rs. 27.50 lakhs. The building will be divided into processing centre, packaging unit and storing unit. .

### 1.12 Miscellaneous Assets

A provision of Rs. 12 lakhs would take care of all the requirements.

### 1.13 Preliminary & Pre-operative Expenses

A provision of Rs. 23.04 lakhs would take care of pre-production expenses like establishment, professional charges, security deposits etc.

### 1.14 Working Capital Requirement

ITEMS	Year 1	Year 3	Year 5
RAW MATERIAL & PACKAGING	89.79	138.14	138.14
SUNDRY DEBTORS	166.14	255.60	255.60
<b>TOTAL</b>	<b>255.93</b>	<b>393.74</b>	<b>393.74</b>
<b>MARGIN</b>	63.98	98.44	98.44
<b>MPBF</b>	191.95	295.31	295.31
<b>INTEREST ON WC</b>	21.11	32.48	32.48

### 1.15 Means of Finance

<b>EQUITY CAPITAL</b>			38.59%	<b>90.11</b>
<b>MOFPI SUBSIDY</b>	25%	50.00	21.41%	<b>50.00</b>
<b>TERM LOAN</b>				
FINANANCIAL INSTITUTIONS		10.00%	40.00%	<b>93.41</b>
<i>-Payable half yearly Installments</i>	14	6.70		
<b>TOTAL</b>			100%	<b>233.52</b>

### 1.16 Cash flow statement

PARTICULARS	Year 1	Year 3	Year 5	Year 7
<b>SOURCES OF FUNDS</b>				
EQUITY CAPITAL	-	-	-	-
SUBSIDY				
NET PROFIT	30.22	71.52	67.82	64.86
(INTEREST ADDED BACK)				
DEPRECIATION	11.35	11.35	11.35	11.35
PRELIMINARY EXP.W/O	3.29	3.29	3.29	3.29
INCREASE IN TERM LOAN	-	-	-	-
INCREASE IN BANK BORROWINGS-WC	191.95	29.53	-	-
<b>TOTAL</b>	<b>236.81</b>	<b>115.69</b>	<b>82.46</b>	<b>79.50</b>

### 1.17 Projected balance sheet

PARTICULARS	Year 1	Year 3	Year 5	Year 7
<b>LIABILITIES</b>				
EQUITY CAPITAL	90.11	90.11	90.11	90.11
RESERVES & SURPLUS	49.76	103.24	165.33	226.99
TERM LOAN	86.71	59.91	33.11	6.31
BANK BORROWINGS-WC	<b>191.95</b>	<b>295.31</b>	<b>295.31</b>	295.31
<b>TOTAL</b>	<b>418.53</b>	<b>548.57</b>	<b>583.86</b>	<b>618.72</b>

### 1.18 Profitability statement

Particulars	Year 1	Year 3	Year 5	Year 7
<b>INCOME</b>	1,107.60	1,704.00	1,704.00	1,704.00
<b>EXPENDITURE</b>	1,062.74	1,617.84	1,621.54	1,624.50
<b>VARIABLE</b>	935.83	1,434.40	1,434.40	1,434.40
<b>FIXED</b>	126.91	183.44	187.14	190.10
<b>GROSS PROFIT</b>	44.86	86.16	82.46	79.50
<b>PROFIT BEFORE TAX</b>	(0.24)	32.04	31.02	30.74
<b>RETAINED PROFIT</b>	(0.24)	32.04	31.02	30.74

### 1.19 Key Indicators

NET PRESENT VALUE at current Inflation (Rs. in lakhs)	<b>368.57</b>
INTERNAL RATE OF RETURN %	<b>35.02</b>
AVERAGE DSCR	<b>1.56</b>
BREAK EVEN POINT %	<b>88.60</b>
PAY BACK PERIOD ( YEARS)	<b>4.89</b>

### 1.20 Man power Requirement

PARTICULARS	NOs.
<b>ADMINISTRATIVE STAFF</b>	
Administrative Officer	1
Accountant	1
Marketing Officer	2
<b>SUPERVISORY STAFF</b>	
Supervisors	3
<b>WORKERS</b>	
Machine Operator	3
Semi Skilled Labours	8
Helpers	12

## 1.21 Assumptions

<b>Project &amp; Financing</b>			
Contingencies on Building			10%
Contingencies on Equipment			20%
Term Loan			40%
Rate of Interest on Term Loan			10%
Subsidy Considered	Subject to ceiling		25%
Expected time of Installation		Months	10
Moratorium		Months	6
<b>CAPACITY</b>			
Rated Capacity Per Annum	80% of Installed capacity	TPA	1200
Number of Operational Days	DAYS		300
Working Hours Per day	Hrs		20
<b>CAPACITY UTILIZATION</b>			
Year I			65%
Year II			90%
Year III			100%
<b>SALES PRICE</b>			
Ground Nut Oil			70,000
Mustard Oil			72,000
<b>OTHER EXPENSE</b>			
Commission			6.0%
Marketing Expenses			2.5%
<b>POWER</b>			
Connected Load	HP		90
<b>DEPRICIATION AS PER COMPANY'S ACT</b>			
BUILDING			3.34%
PLANT & MACHINERY			10.34%
MISC. FIXED ASSETS			7.07%
LAND & SITE DEVELOPMENT			1.63%
<b>MAINTENANCE</b>			
BUILDING			2.50%
PLANT & MACHINERY			4.00%
MISC. FIXED ASSETS			3.00%
LAND & SITE DEVELOPMENT			2.00%

## 1.22 Sources of technology / Machinery

Technology of the project related material handling equipment is available with indigenous companies and could be set up at competitive prices. Major suppliers are understated -

- Sifter International, Plot No. 83, Sector 6, Faridabad-121006  
Tel. No. 2231154-4540, Fax: 2230039
- Osaw Agro Industries Pvt. Ltd., Osaw Complex,  
Jagadhri Road, Ambala Cant.- 133001, Tel. No. 2699167-354-547, Fax: 2699018
- Forsberge Agritech (I) Ltd, GIDC Estate, Makarpura, Vadodara
- Chempro, Engg. and Consultants, 43, Sukhshine Complex,  
Sunrise Park, Nr. Drive In, Ahmedabad-380054. Tel No. 26851135/9010.
- Container Industries, C-299, Ghatkopar Industrial Estate,  
72 LBS Marg, Mumbai- 400080

The actual cost of projects may deviate on change of any of the assumptions.