

**M/S GADGIL AND COMPANY
KAMLASHANKAR INDUSTRIAL COMPLEX
SHED NO A-6, PIRANGUT, TAL.MULSHI,
DIST.PUNE, MAHARASHTRA,INDIA
PH: 9922752760**

**PROJECT
REPORT FOR
1000 MTPA
WASTE OIL
RECYCLING
PLANT**

October 7

2014

ENCLOSED HEREWITH IS A ILLUSTRATION OF PROBABLE COSTS INVOLVED IN SETUP AND RUNNING OIL RECYCLING UNIT.THE COST WILL VARY WITH LOCATION TO LOCATION,OIL QUALITY AND THE ELECTRICITY CHARGES INCURRED FOR PROCESSING.

**WASTE OIL
RECYCLING 120
LPH MACHINE**

Products to be manufactured:

Following products shall be manufactured from waste oil

- 1) Fuel oil

Market Potential:

The potential buyers shall be as under:

- Establishment with furnaces

D) Licenses for manufacture, storage and sale:

License required for manufacture of base oil.

- Noc from local authority
- Fire department NOC
- SSI registration with DIC
- Pollution control board consent needs to be obtained to certify that all parameters of operation are in specified limit.

E) Production Capacity:

Daily 1200 liter waste oil shall be processed per day in 1 shifts of 10 hours. On and average, 900 liters of fuel oil is obtained, taking max 25 % as acceptable water content.

F) Raw Materials:

The raw materials include following:

- 1) Waste oil

G) The Oil Standards:

The fuel oils manufactured by processing of waste oil will comply with any statutory requirements or standards anywhere in the world. The key indicators include flash point, viscosity, density etc. are within specified standards for base oil. The requisite standards applicable are attached for reference.

	FURNACE OIL
VISCOSITY	100
FLASH POINT	>110
WATER CONTENT	0.1

Normally the specifications followed are that there should be no water content and filtration should be to less then 25 microns.

Total coolant qty treated	Plant run in hours	Electricity consumed	Electricity charges at 10 rs/unit	Electricity consumed per hour	Per hour coolant treated	Water removed	Oil percentage	Processing cost rs per liter input
35468	776.25	26117	2661170	33.64	45.69	33354 (94%)	2114 (5.96%)	7.36
Waste oil qty treated	Plant run in hours	Electricity consumed	Electricity charges at 10 rs/unit	Electricity consumed per hour	Per hour Waste oil treated	Water removed	Oil removed	Processing cost rs/liter input
760	10	280.69	2807	28	76	178	582	3.69
780	10	481.5	4815	48	78	179	607	6.29
690	10	324.15	3241	32	69	139	557	4.69
720	10	361	3610	36	72	179	547	5.01
250		111	1110			71	179	4.44
770	10	389	3890	38	77	162	608	5.05
790	10	296	2960	29	79	114	676	3.74
780	10	346	3460	34	78	134	646	4.43
692						144 (21%)	548 (79%)	4.66

As you see the processing cost ranges from 4.66 to 7.36 rs/ liter depending on the percentage of water from 94 % to 21 %.

Average processing cost assuming 21 % water content taken as 4.66/liter

Technology and manufacturing process:

Manufacturing of fuel oil from waste oil is a tertiary or feedstock recycling method

Process involves:

- Dehydration: In this process the input oil is heated to remove any water content and light ends from oil by distillation and then further filter it to less than 25 microns.

All costs given below are illustrations for a 120 LPH plant

K) Building (Shed):

1000 Sq.ft.

Cost of shed = 1000 X Rs. 2200 = Rs.22,00,000/-

Qty	Description and Specifications
1	WASTE OIL PLANT SKID MOUNTED
Cost of machinery Rs. 6,50,000/-	

Note: Taxes as applicable extra

M) R. & D. AND Quality Control Laboratory Equipments:

1. Flash point apparatus
2. Filtration kit Arp-598

N) Production cost for base oil

Production cost per liter of base oil:

Raw material:31200 ltr. Waste oil @ Rs. 15 per ltr.	4,68,000
Chemicals /catalyst cost	1,000
Processing cost (electrical) (31200 x4.66 rs/liter input)	1,45,392
Total Production cost for Input oil 31200 liters	19.7
Administrative cost + salaries	38,000
Total administrative cost for 31200 liters	1.21
Production cost per liter of input oil	20.9
Interest on capital investment / liter at 15 % (49,00,000x 15 %)=7,35,000/yr =61,250/month=2355/day=1.43rs/litre	1.43
Production cost per liter of fuel	22.3

O) Project

Products to be manufactured

1) fuel oil 31200 liters per month or 3,74,400 liters per year

Sr. No.	PARTICULARS	Rs.	Rs.	Rs.
A	FIXED ASSETS			
1	Machinery + Pipe fittings + Installation etc.(As per list enclosed in K above)		6,50,000	
2	Land (10000 sq.ft.)		NIL	
3	Factory shed (1000 sq.FTs @ Rs. 2200/- per sq FT)		22,00,000	
4	Lab. Equipments, Furniture & Fixtures		25,000	
	Total Fixed assets:			28,75,000
B.	One month's production expenses			
1	Raw Materials			
	Waste/used oil 31200 x 15	4,68,000		
	Water and chemicals disposal to hazardous waste	30,000	4,98,000	
2	Electrical expenses (16016x10)	1,45,392	1,45,392	
3	Packing cost	NIL		NIL
4	Salaries		30500	
a)	Production Supervisor 1x Rs. 12500 pm	12500		
b)	Helpers 2 x Rs.9,000/- p.m.	18,000		
5	Administrative Cost: Office expenses, transportation telephone etc.	15000	15000	
	Total one month's recurring expenses			6,88,892
	Two month's working capital	13,77,784		

	Fixed assets	28,75,000		
	Total Capital Investment			49,41,676
	Total Project Cost (In lacs) (round up)			49
6	Cost of production per month (Rs. 22.3 x 31200 Liters)			6,95,760
7	Monthly receipts: Fuel oil =24648 x 35			8,62,680
8	Gross Profit per month			1,66,920
9	Gross profit per year			20,03,040

P) Profitability analysis:

$$1) \text{ Rate of return} = (\text{Profit per annum} / \text{Total capital investment}) \times 100$$

$$= (20,03,040 / 49,00,000) \times 100$$

$$= 40.87 \%$$

FIXED EXPENSES IRRESPECTIVE OF OUTPUT	At 79.1% output 24,648 liters working only 10 hr	At 5.96 % output 1859 liters working only 10 hr
Salaries	30500	30500
Bank emi on fixed assets on 49,00,000 for 25 years at 15 % interest	61250	61250
Administrative expenses	15000	15000
Total fixed expenses	1,06,750/31200= 3.42 rs/liter	1,06,750/31200= 3.42 s/liter
Add processing cost rs 4.66/liter	4.66	7.36 rs/liter
Total breakeven cost not considering input oil cost	8.08 rs/liter	11.27 rs/liter
Profit taken at rs 12.7/liter	20.8 rs/liter (5,12,678 rs)	24 rs/liter (44616 rs)
Labour charges/liter		468062/31200=15 rs/liter

Comparison of our technology with other contemporaries:

- Occupies very less space as compared to others, mounted on castor wheels.
- Less installation time can be installed in few hours if electrical supply and water supply are available.
- Uses evaporation so pure evaporated water which can easily be used for gardening and no emissions.
- Technology upgraded every two years with latest instrumentation to minimize human interface and to keep customer update with latest trends and help him to process the new oils.
- The capital investment is less.
- Can handle small to large quantity of oil. Refiner can choose different oil to process.
- Government has provided 80 % depreciation for pollution control equipment which makes it almost tax free rate of return on investment.

For seeing live demonstration of plant working at refiner site please visit YouTube link

<http://youtu.be/IS2VeFM8VRs>

Factors affecting profitability:

- Oil being a commodity is subject to cyclic fluctuations, role of our plant is limited to processing costs and capital investments, the customer has to take care that he doesn't indulge in high value purchase of raw material over and above market rate to maintain profitability.