



PROJECT PROFILE ON ASSEMBLY OF GENERATING SETS

PRODUCT : **Assembly of ELECTRIC GENERATOR SET**

PRODUCT CODE : 36101003, **HS Code:** 8502

MONTH & YEAR : 2020

Production Capacity : 300 nos. / Year

Cost of Investment : 140 lac

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ELECTRIC GENERATOR SET

INTRODUCTION: An electric generator is a device that converts mechanical energy obtained from an external source into electrical energy as the output.

It is important to understand that a generator does not actually 'create' electrical energy. Instead, it uses the mechanical energy supplied to it to force the movement of electric charges present in the wire of its windings through an external electric circuit. This flow of electric charges constitutes the output electric current supplied by the generator.

Main components of a generator

The main components of an electric generator can be broadly classified as follows:

- **Engine**
- **Alternator**
- **Fuel System**
- **Voltage Regulator**
- **Cooling and Exhaust Systems**
- **Lubrication System**
- **Battery Charger**
- **Control Panel**
- **Main Assembly / Frame**

MARKET POTENTIAL:

The Indian diesel genset market estimated to value USD 1,039.7 million in 2020 is projected to reach USD 1,518.1 million by 2024, demonstrating a CAGR of 6.5 per cent during the forecast period, according to Market Research reports. This growth is expected to be driven by the high demand and adoption of medium and high horsepower diesel gensets across the country. Furthermore, macroeconomic growth coupled with revival in infrastructure, growth in manufacturing, and increase in commercial construction projects, is expected to boost the demand for these gensets for meeting prime and auxiliary power requirements in several facilities and plants in the coming years.

A diesel genset or a diesel generator set is an integrated system comprising a diesel engine and an electric generator that work in conjunction to produce electricity. The electricity produced by the genset is used for meeting power requirements.

On the basis of power rating, the market is classified into 5 kVA–75 kVA, 76 kVA–375 kVA, 376 kVA–750 kVA, and above 750 kVA diesel gensets. In terms of volume, the category of 5 kVA–75 kVA gensets is estimated to hold the largest share in the Indian diesel genset market in 2020. These gensets are employed in high volumes at residential and small commercial installations, construction projects, and telecom towers. Besides, since these generators are manufactured by a large number of market players in both organised and unorganised sectors, they are generally competitively priced.

Besides, factors such as investments in the telecom sector and growing installation of tower towers for connectivity in remote locations, coupled with improvements in current

network capabilities, are expected to support the demand for these gensets in the Indian diesel genset market.

1. Basis & Presumptions

- i) The basis for calculation of production capacity has been taken on single shift basis on 75% efficiency.
- ii) The maximum capacity utilization on single shift basis for 300 days a year. During the first year and second year of operations the capacity utilization 60% and 80% respectively. The unit is expected to achieve full capacity utilization from the third year onward.
- iii) The salary and wages, cost of raw materials, utilization, rent etc are based on prevailing rate in and around Karnal. These cost factors are likely to vary with time and location.
- iv) Interest on term loan and working capital loan must be preferably current rate. Otherwise the rate of interest on an average may be taken as 10.50%. This rate may vary depending upon the policy of financial institutions/agencies from time to time.
- v) The cost of machinery and equipments refer to a particular make model and prices are approximate.
- vi) The breakeven point percentage indicated is of full capacity utilization.
- vii) The project preparation cost etc wherever required could be considered under preoperative expenses.
- viii) The essential production machinery and test equipments required for the project have been indicated. The unit may utilize common test facilities available at electronic test & development center (ETDC) and electronic regional test laboratories and regional testing center (RTC).

IMPLEMENTATION SCHEDULE

The major activities in the implementation of the project have been listed and the average time for implementation of the project is estimated at 06 months:

Sl. No.	Name of Activity	Period In months (Estimated)
1	Preparation of project report	01 Month
2.	Registration and other formalities	01 month
3.	Sanction of loan by financial institutions	2-3 Month
4	Plant and Machinery: ,Placement of orders	One Week

5.	Procurement	01 Month
6.	Power connection/ Electrification	01Month
7.	Installation / Erection of machinery/ Test Equipment	02 week
8	Procurement of raw materials	01 Month
9	Recruitment of Technical Staff	01Month
10	Trial	5th Month
11	Commercial Service	6th Month

Notes-:

1. Many of the above activities shall be initiated concurrently.
2. All the plants and machinery required are available in ready stock.,
3. The implementation period of project may vary.

MANUFACTURE PROCESS:

The Manufacturing process of Diesel Genset is a multi processed manufacturing process. The complete Diesel Gensets consists of several parts. The main components of the complete acoustic Diesel Gensets are Engine, Alternator, Fuel Tank, Base plate, Exhaust Pipe Electrical Control Panel Battery Stand & Canopy.

The raw materials used in manufacturing process are procured from different parts of the country. All the materials procured from the vendors are inspected by the Quality assurance before entry in Store. Materials are issued for production as per requirement of the workshop and place indent to the purchase department as suggested by the predefined reorder level.

After completion of each individual manufacturing process, the items are quality checked as per standard specification with the help of measuring tools such as Digital meter, Micro Meter, Digital Clamp Meter, DFT meter in every process.



1. FINANCIAL ASPECTS:

(A) Fixed Capital :

i) Land & Building:

Built up area : 5000 sq. ft. Rented Rs 25000

ii) Plant & Machinery:

Sl.No.	Nomenclature	Qty.	Value (In Rs.)
1.	Drilling machine with 13 mm drilling capacity and 0.5 HP Motor	5 no.	25000.00
2.	Air Compressor,	2 set	1,25000.00
3.	Spray gun with 0.5 pint capacity	5 nos.	10000.00
4.	Electric Portable Drill	5 nos.	10000.00
5.	Arc welding Transformers with cables etc.	2 nos..	50000.00
6.	Electric portable grinder	04 nos.	10000.00
7.	Control Panel with voltmeter, ammeter & wattmeter etc.	03 nos.	50000.00
8	Over head crane 10 Ton	01 nos.	6,75000.00
	Battery Charger	02 nos.	12000.00
		Total:	9,67,000.00
iii)	Electrification & installation charges @15% on the cost of plant and machinery		145050.00
iv)	Cost of tools, dies and fixtures		350000.000
v)	Misc. fixed assets (Furniture, office equipments and safety equipments)		5,00,000.00
	Total		19,62,050.00

Total fixed capital: 1962050.00

(B) Working Capital (Per month):

(1) Salary & Wages:

Sl.No.	Personnel	No.	Total Salary (In Rs.)
i.	Manager cum- Production Engineer	1	50,000 .00
ii.	Technical Supervisor	5	125000.00
iii.	Skilled Workers @ Rs.15000	5	75000.00
iv.	Semi-Skilled Workers @ Rs.10000	5	50000.00
v.	Sales Executive	3	75000.00
vi.	Computer operator	3	36000.00
vii.	Helper	4	36000.00
	Total		447000.00
	Perquisites @ 15% on the total salary		67050
	Grand Total		5,14,050.00

(2) Raw Material (Per month):

Sl.No.	Item	Qty./rate per unit	Value (In Rs.)
1.	5-75 KVA Alternators	25nos.	900000.00
2.	Engine	25 nos.	875000.00
3.	Control Panel	25 nos.	625000.00
4.	MS Channels, angles and plates	3 ton.	108000.00
5.	Fuel.System+Voltage regulator + Nuts & bolts etc.+ Filter	25nos.	50000.00
6.	Battery Charger	25nos.	18750.00
7.	Main Assembly / Frame	25nos.	550000.00
8.	Miscellaneous		100000.00
	Total		3226750.00

(3) Utilities:

i.	Electricity	50000.00
ii.	Water	7500.00
		57500.00

(4) Other Contingent Expenses (Per Month):

i.	Rent	25000.00
ii.	Postage & Stationery	15000.00
iii.	Repair & Maintenance	15000.00
iv.	Transport & Packing	50000.00
v.	Conveyance	25000.00
vi.	Advertisement	20000.00
vii.	Insurance & Taxes	20000.00
viii.	Misc. expenses	25000.00
		220000.00

(5) Total Recurring expenses (per month) :

$$= 1+2+3+4 = \text{Rs. } 4018300.00$$

(6) Total Capital Investment :

i.	Fixed Capital	1962050.00.00
ii.	Total Working Capital (on 3 months basis)	1,20,54,900.00
	Total:	1,40,16,950.00

(7) Cost of Production (annum):

i.	Total recurring cost per annum	4,82,19,600.00
ii.	Depreciation on plant and machinery @ 10% of the cost of plant and machinery	196205.00
iii.	Depreciation of tools, jigs, and fixtures @ 25% of the cost of tools, jigs and fixtures	87500.00
iv.	Depreciation on furniture office equipments etc. @ 20% of the cost of misc. fixed assets	100000.00
v.	Interest on total capital investment @ 10.5% per annum	1471779.00
	Cost of production per Annum	5,00,75,084.00

(8) Turnover (annum):

20 KVA Generating sets	:150 nos. @1.5 Lakhs=22500000.00
50KVA Generating Set	:100 nos. @1.8 Lakhs = 18000000.00
75 KVA Gen Set	:50 nos. @3.5 Lakhs= 17500000.00

Total =5,80,00,000.00

(9) Net Profit (Per Annum) :

(Before Income-tax)=Net Profit = Turnover – Cost of the Production
= Rs. 7924916.00

(10) Net Profit Ratio :

$$= \frac{\text{Net Profit X100}}{\text{Turnover}} = 13.66 \%$$

(11) Rate of Return:

$$= \frac{\text{Net Profit per year X100}}{\text{Total investment}} = 56.5\%$$

A. Break even Point

Fixed cost per annum

Rent per annum	300000.00
Depreciation on machinery and equipment @ 10%	196205.00
Depreciation on tools jigs and fixtures@25%	187500.00
Depreciation on office equipment furniture @ 20%	100000.00
Interest on total capital Investment@10.5%	1471779.00
40% of salary and wages	2467440.00
40% of other contingent & utilities	1056000.00
Total Fixed cost	4535424.00

Break Even Point=

$$\text{fixed Cost} \times 100 / \text{Fixed Cost} + \text{Profit} = 36.4\%$$

Names & Addresses of Machinery & Raw material Suppliers:

1. M/s. Automation Props Test Equipment (Elec.) Pvt. Limited Dr. Annie Besant Road, Worli, Mumbai - 400 018. (For Test Panel)
2. M/s. Mecco Instrument Pvt. Ltd. 301, Bharat Industrial Estate, T.J. Road, Sewree, Mumbai- 400 015 (For Measuring Instruments)
3. M/s. Crompton Greaves Ltd. Marketing Office: 1, Dr. V.B. Gandhi Nagar, Fort, Mumbai - 400 023. (For alternates) 12 Released By: The Development Commissioner (SSI), Ministry of SSI, New Delhi 13
4. M/s. J.P. Engineering Works A-70, G.T. Karnal Road, Industrial Area, Delhi -

110033. (For Alternaters)

5. M/s. Kirloskar Cummus Ltd. Pune (For Diesel Engine)
6. M/s. Mono tex Agency 165, Dr. Nanjappa Road, Coimbatore - 12. (For Diesel Engine)
7. M/s. Asia Electric Company Katara Mansion, Dr. A.B. Road, Worli, Mumbai- 400 018.

