

ALTERNATOR

1. INTRODUCTION

Our nation is growing in terms of industrial activities very rapidly. Electric Power is playing major role in this growth process. Thus all the industries are looking for better electricity generator system which is fast, technically sound and economically affordable to everyone. Alternator is a generator which converts mechanical energy to electrical energy in the form of alternating current, which is widely used by all the industrial sectors.

2. PRODUCT & ITS APPLICATION

Alternator works as generator, it has certain classification on the basis of output power, working principle, speed of rotation and cooling. We can consider Single phase, Two phase and three phase alternators (On the basis of output power); Revolving armature type and revolving field type (On the basis of working principle); Turbo alternator and low speed alternator (On the basis of speed of rotation); Air cooling and Hydrogen cooling (On the basis of cooling).

At present Industries are looking for instrument like alternator to improve their production. This is the basic requirement of any business segment. Apart from this alternators are used in modern automobiles to charge the battery and power the electrical system when its engine is running.

3. DESIRED QUALIFICATIONS FOR PROMOTER

Promoter for this service may have graduate in Electrical Engineering as well as some industrial training in the similar working field plus background of operation management can be a value added plus point so that it brings down the cost of building project and also make the implementation smoother and it will require less time to build with greater quality.

4. INDUSTRY LOOK OUT AND TRENDS

Modern day automobiles widely use starters and alternators. These are generally used in diesel and gasoline engines. The rising investments on R&D by key players in the market coupled with acquisitions and mergers are expected to make the global automotive starter and alternator market flourish in near future. The manufacturers of automotive starters and alternators are expanding their businesses to emerging economies like China, India, Russia, etc. as these countries are focused on development of automotive sectors in order to serve the rising demand across the globe.

5. MARKET POTENTIAL AND MARKETING ISSUES. IF ANY

Electric starters are expected to dominate the segment during the forecast period. The different types of electric starters used in automotive sector are gear reduction, inertia starter, folo-thru drive and moveable pole shoe. Based on alternator type, the claw pole alternators are projected to witness significant growth in near future.

6. RAWMATERIAL REQUIREMENT

- Couplings – initially 20 number of couplings
- Control Panel – minimum 20 panels to control the system flow.
- Fuel Tank – Fuel storage is required up to 50 liter capacity.
- M.S Channels, Angels and Plates – required 2000kg for initial start-up.

7. MANUFACTURING PROCESS

A method for manufacturing an alternator includes preparing a wire-strand group formed by bending strands of wire so as to have straight portions which fit into slots, forming a base core by laminating plate-shaped magnetic members formed with the slots, stacking the wire-strand group on the base core and pressing the wire-strand group such that the straight portions enter the slots, and forming the stator core by bending the base core into a cylindrical shape and abutting end surfaces of the base core.

8. MANPOWER REQUIREMENT

1. Labor/Workers -To handle the plant minimum 2 machine operator and 2 helpers.
2. Production Supervisor - Person having knowledge of production and technicalities of plan can be assigned the post of production supervisor.
3. Accounts/Stores Assistant - To manage the accounts and stock.
4. Office Boy - To manage overall plant and office work.

9. IMPLEMENTATION SCHEDULE

Sr. No.	Activity	Time Required
1	Acquisition of premises	1.00
2	Construction (if applicable)	none
3	Procurement & installation of Plant & Machinery	2.00
4	Arrangement of Finance	
5	Recruitment of required manpower	1.00
	Total time required (<i>some activities shall run concurrently</i>)	4.00

10. COST OF PROJECT

[Total Cost of Project = Fixed investment Capital + Working capital of 1 month]

Sr. No.	Particulars	Amount in ₹
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1	Fixed Investment Capital	33,000
2	Working Capital	2,81,500
Total		3,14,500

11. MEANS OF FINANCE

Sr. No	Description		Total
1	Promoter's Contribution	25%	78,625
2	Term Loan/Bank Finance	75%	2,35,875
Total			3,14,500

Cost of Production

Sr No	Description		Amount (Rs)
1	Total Working Capital		33,78,000
2	Depreciation	15%	47,175
3	Interest	12%	28,305
Total			34,53,480

Turnover

Sr No	Description	Cost/Unit	Quantity /Month	Sales/month	Revenue/year
1	20 KVA Alternator	50,000/-	10	5,00,000/-	60,00,000/-

12. WORKING CAPITAL REQUIREMENTS

Sr. No.	Description	Total Amount
1	Total Salary Expense/month	76,500
2	Raw material/month	1,58,000
3	Utilities	5000
4	Other Contingent Expenses	42,000
Total		2,81,500

13. LIST OF MACHINERY REQUIRED

Sr. No.	Description	Quantity	Amount/ Unit	Total Amount
1	Drilling machine with 13 mm drilling capacity and 0.5 HP Motor	1	4000	4000
2	Air Compressor, single stage, mounted on Air Receiver tank pressure gauge, Safety valve, Air & Drain cocks etc. complete with 1 HP motor and starter	1 set	8000	8000
3	Spray gun with 0.5 pint capacity	1	1000	1000
4	Electric Portable Drill	1	2000	2000
5	Arc welding Transformers with Cables etc.	1	8000	8000
6	Electric portable grinder	1	2000	2000
7	Control Panel with voltmeter, Ammeter & wattmeter etc.	1 set	8000	8000
Total				33,000

All the machines and equipment are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

1. Kitra Industries - Copper Rotor Manufacturer
7/1522, Dr AMBEDKAR ROAD, VARIAVI BAZAR,
SURAT, Gujarat - INDIA
2. ABB Moter Barings
Maneja Village,
Bank Of Baroda Road, JD Nagar,
Maneja, Vadodara, Gujarat 390013
3. Electrons cooling systems Pvt. Ltd.
S-27, SIDCO Industrial Estate
Kakkalur Industrial Estate
Tiruvallur - 602003, Tamil Nadu, India

4. Springboard Enterprises India Ltd.
1st, 2nd & 3rd Floor, Plot No. 7, 8 & 9,
Garg Shopping Mall, Service Centre, Rohini Sector 2
New Delhi - 110085, Delhi, India

14. PROFITABILITY CALCULATION

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	120.00	140.00	160.00	180.00	200.00
3	Raw Materials & Other direct inputs	₹. In Lacs	100.32	117.04	133.76	150.48	167.20
4	Gross Margin	₹. In Lacs	19.68	22.96	26.24	29.52	32.80
5	Overheads except interest	₹. In Lacs	6.72	7.14	7.98	8.23	8.40
6	Interest	₹. In Lacs	8.45	8.45	5.63	4.22	3.38
7	Depreciation	₹. In Lacs	23.10	16.50	11.55	8.25	7.43
8	Net Profit before tax	₹. In Lacs	-18.59	-9.13	1.08	8.81	13.60

The basis of profitability calculation:

The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study; it can be increased according to the selling strategy.)

Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per liter. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAKEVEN ANALYSIS

Sr No	Description	Figures
1	Total Annual Expenses(1+2+3)	34,53,480
2	Revenue	60,00,000
3	Break Even Point sales	
	20 KVA Alternator	120

16. STATUTORY / GOVERNMENT APPROVALS

As per the allocation of business rules under the Constitution, labour is in the concurrent list of subjects. It is dealt with by the MOLE at the Central and Departments of Labour under State Governments in respective States / UTs. The MOLE has enacted workplace safety and health statutes concerning workers in the manufacturing sector, mines, ports and docks and in construction sectors.

Further, other Ministries of the Government of India have also enacted certain statutes relating to safety aspects of substances, equipment, operations etc. Some of the statutes applicable in the manufacturing sector are discussed below:

The Manufacture, Storage and Import of Hazardous Electronic Rules (MSIHC), 1989

These MSIHC Rules are notified under the Environment (Protection) Act, 1986. These rules are aimed at regulating and handling of certain specified hazardous chemicals. The rules stipulate requirements regarding notification of site, identification of major hazards, taking necessary steps to control major accident, notification of major accident, preparation of safety report and on-site emergency plan; prevention and control of major accident, dissemination of information etc. These rules are notified by the Ministry of Environment and Forests (MOEF) but enforced by the Inspectorates of Factories of respective States / UTs in the manufacturing sector. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATIONS

Both forward and backward integration for any Electrical Industry are strategies to gain better control over the supply chain, reduce dependency on the suppliers and increase their competitiveness. The two strategies can help companies reduce their dependency on suppliers and increase their influence over the customers. The benefits of these strategies can be big. Both impact the bottom line directly. Integration happens if a company moves upward or downward in its supply chain. Starting from the suppliers from whom the raw materials are obtained, the chain moves downstream towards the distributors and the retailers. If the suppliers' power is very high, it can create financial burdens for the company. Suppose the number of suppliers of a company is low, then the control in their hands would be low. The burden in that case will fall upon company's shoulders. Its expenditure on raw materials will be high.

18. TRAINING CENTERS AND COURSES

There is no such training required to start this business but, basic Electrical or IC bachelor's degree is plus point for enterpriser. Promoter may train their employees in such specialized institutions to grow up the business. There are few specialised Institutes provide degree certification in Technology, few most famous and authenticate Institutions are as follows:

1. Department of Electrical LD College of engineering
No.120, Circular Road, University Area, Navrangpura,
Opposite Gujarat University, Ahmedabad, Gujarat 380015
2. MIT College of Engineering, Pune
Gate.No.140, Raj Baugh Educational Complex,
Pune Solapur Highway,
LoniKalbhor, Pune - 412201
Maharashtra, India

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.

Source:- Udyami Mitra/Sidbi