PROJECT REPORT

Of

ELECTRICAL MOTOR WINDING

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding **Electrical Motor Winding**

The objective of the pre-feasibility report is primarily to facilitate potential entrepreneurs in project identification for investment and in order to serve his objective; the document covers various aspects of the project concept development, start-up, marketing, finance and management.

[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]

SAMADHAN
Nurturing Dreams - Innovative Solutions

Lucknow Office: Sidhivinayak Building ,
27/1/B, Gokhlley Marg, Lucknow-226001

Delhi Office : Multi Disciplinary Training
Centre, Gandhi Darshan Rajghat,
New Delhi 110002

Email : info@udyami.org.in
Contact : +91 7526000333, 444, 555

ELECTRICAL MOTOR WINDING

INTRODUCTION

Motors are used as a prime mover for driving various machines and pump sets in industry, agriculture and domestic application. Electric motor has over riding advantages of easy starting and control, clean operation, easier maintenance and lesser space, The function of an electric motor is to convert electrical energy in to mechanical energy and consists of a stator housed in the body with a rotor mounted on shaft, which is free to rotate in bearings. When AC electric supply is applied to the starter, it causes the rotor to rotate due to electromagnetic induction. The rotation of the rotor causes the shaft to rotate, which is in turn coupled to, rotate the desired equipment's. In electric motor, the winding is one of the main part of any motor. It gets damaged frequently due to wear and tear and needs rewinding.

MARKET POTENTIAL

Motors are widely used for various industrial agricultural and commercial and domestic appliances with the development of power generators, rural electrification, domestic usage etc. the demand for electric motor is growing rapidly, consequently the demand for motor servicing and repair activity which is one of the major repair activity in any motor repair shop, is in great demand, especially in the semi-urban and rural areas.

1. BASIS AND PRESUMPTIONS

i) Production capacity has been taken on single shift basis on 75% efficiency.

ii) Capacity utilization is 60% during first year, 70% during second year of operation.

iii) The salaries and wages cost of raw material, utilities, rent of the shed etc. are based on the prevailing rates and these cost factors are likely to vary with time and location.

iv) Interest on term loan and capital loan has been taken at the rate of 11.50% on an average. The rate may vary depending upon the policy of the financial institutions and agencies from time to time.

v) The cost of machinery and equipment refers to a particular make/model and the price is approximate.

vi) The project preparation cost etc. whenever required may be considered under the head of preoperative expenses.

vii) The Break-Even Point indicated is of average capacity utilization.

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 8 months

PROCESS OF MANUFACTURING

Winding refers to a system of insulated conductors forming the current carrying element of a machine, designed to produce a magnetic field, which influences a rotary movement. An electric machine operates 'because of the magnetic flux setup in its magnetic circuit by magneto- motive forces arising from currents flowing in groups of winding suitably disposed on the stator and rotor. The flux usually sets up an m.m.fs. in the winding due to the conductors of the winding cutting the flux, or turns of the winding being linked with a varying flux. The interaction of the motor of the m.m.f. stator and rotor windings sets up a torque.

In the motor, a current-carrying conductor in a magnetic field gets acted on by a force proportional to the current and the field strength. Thus the torque developed is proportional to the field winding. These windings are usually arranged in slots, provided in a laminated iron core. There are different types of winding according to winding coils. Mostly in 3 phase motors, the number of coils equal to the slots. The coils are connected such a way that three separate windings are formed which are called phase winding. Each coil in these winding should be same size and shape, coil per phase are 1/3 of the total coils. The windings are connected in star or delta.

METHOD OF REWINDING OF OLD MOTORS:

I) Dismantling of Motor:

(a) First remove the pulley from the shaft with the help of pulley puller after unscrewing the L.N. screw from the pulley. Do not hammer the pulley.

(b) Mark on both the end covers and body of the motor with the help of the center punch. Unscrew the covers and remove these with the help of mallet. Steel hammer, screwdriver or chisel should not be used.

(c) Draw the rotor from the stator carefully. It should not be rubbed with the winding. It is better to lengthen the shaft with the help of suitable pipe. The rotor will come out easily.

(d) Check the bearing for chick and play. Replace if faulty, do grease, if dry.

ii) Taking data of the Motor: Fill up first the above portion of the data sheet after clearing the dirt of the winding. This data will be available on the nameplate. Cut the winding from one end and pull from the other side. Keep the uncut coil in the end to take the size for the coil. Fill up the second portion of the data sheet before and after striping the coils.

If the winding in the motor is very tight and hard then beat it up by passing heavy current in the winding or blowlamp. (The core of the motor should not burn.)

iii) Rewinding of motor: Insert the coils in the slots according to the data noted in the above sheet. Give proper insulation in slots. Afterwards connect and tape the winding nicely. Preheat impregnate, tape the winding.

iv) Baking and Varnishing. : When all the connections between poles of the winding have been completed and tested and the flexible leads to power line attached and tied, the stator should be placed in a baking oven at a temperature of approximately 250°F and preheated for a short period of time, approximately 1 hour. This removes moisture from the windings and increases the perpetration of the varnish. The stator is then dipped in to a container of insulation varnish compatible with the type of magnet wire used. It is important to remember that the varnish must be thin enough to penetrate the winding and thick enough to leave an adequate film when baked. The varnish may become thickened due to evaporation of the thinning fluid. If this happens, use a thinner recommended by the manufacturer.

After the winding the winding has soaked in the varnish for approximately one-half hour or until all bubbling has ceased, it is removed from the container and allowed to drip. After it has stopped dripping it is again placed into the baking oven and baked for several hours. In using any type of varnish, make certain the manufacturer's recommendations and directions are followed. When the stator is removed from the oven, the inner surface of the core should be scrapped to remove the adhering varnish, so that there will be sufficient space for the rotor to turn freely.

Dipping and baking bonds the entire winding in to a solid mass, which is, not subjects to movement. It seals the winding against moisture and foreign material and increases the mechanical and dielectric. strength of magnet wires.

There are other types of varnish that do not require baking and are called air-drying varnishes. Many shops use this varnish for fractional horsepower stators. Here again the manufacturer's recommendation should be followed.

Many shops use a solvent less polyester varnish that can be applied to windings in less than 20 minutes. These varnishes are completely solvent less and give the same protection that ordinary varnishes provide. The winding is heated first by applying approximately half voltage. The resin is then poured through the heated windings while the stator is kept in a horizontal position the resin is

permitted to trickle through the slots. After the pouring has been completed, the winding is kept heated by sending current through the coils for about five minutes. This permits the resin to cure and get quickly, the entire process should take less than one-half hour. The varnish is applied to three phase motor. The same method is used for single phase motors.

Thus, based on the above method the winding shop can undertake (a) Motor winding of electric fan, (b) Motor winding of mixture grinder, (c) Motor winding of AC motor (5 HP to 100 HP Motors), Different kinds and capacity of DC motors etc. After winding the following Test to be carried out to ascertain the serviceability the Motor:

a) Earth Test
b) Open Circuit:
c) And Short Circuit test, etc.

QUALITY STANDARDS

As per customer's specification

PRODUCTION CAPACITY PER ANNUM:

QUANTITY :3,000 Nos.Motors windings New/Servicing

POWER: **5 KVA.**

POLLUTION CONTROL:

The Govt. accords utmost importance to control environmental pollution. The small-scale entrepreneurs should have an environmentally friendly attitude and adopt pollution control measures by process modification and technology substitution.

Iridia having acceded to the Montreal Protocol in Sept., 1992, the production and use of Ozone Depleting Substances (ODS) like Chlorofluore Carbon (CFCs), Carbon Tetrachloride, Halons and methyle Chloroform, etc. need to be phased out immediately with alternative chemicals/solvents. A notification for detailed Rules to regulate ODS phase out under the Environment Protection Act, 1986 have been put in place with effect from 19th July, 2000.

The following steps are suggested which may help to control pollution in electronics Industry wherever applicable:

i) In electronic industry fumes and gases are released during hand soldering/wave soldering/ Dip soldering, which are harmful to people as well as environment and the end products.

Alternate technologies may be used to phaseout the existing polluting technologies. Numerous new fluxes have been developed containing 2-10% solids as opposed to the traditional 15.35% solids.

ii) Electronic industry uses CPCs, carbon Tetrachloride and Methyl Chloroform for cleaning of printed circuit boards after assembly to remove flux residues left after soldering, and various kinds of foams for packaging.

Many alternative solvents could replace CPC-113 and Methyl Chloroform in electronics cleaning. Other Chlorinated solvents such as trichloroethylene, per chloroethylene and methylene chloride have been used an effective cleaner in electronics industry for many years. Other organic solvents such as ketones and Alcohols are effective in removing both solder fluxes and many polar contaminants.

ENERGY CONSERVATION:

With the growing energy needs and shortage coupled with rising energy cost, a greater thrust in energy efficiency in industrial sector has been given by the Govt. of India since 1980s. The energy conservation Act, 2001 has been enacted on 18th August, 2001, which provides for efficient use of energy, its conservation and capacity building of bureau energy efficiency created under the Act.

The following steps may help for conservation of electrical energy :

iii) Adoption of energy conserving technologies, production aids and testing facilities.

iv) Efficient management of process/manufacturing machineries and systems, QC and testing equipments for yielding maximum energy conservation.

v) Optimum use of electrical energy for heating during soldering process can be obtained by using efficient temperature controlled soldering and de-soldering stations.

vi) Periodical maintenance of motors, compressors etc.

vii) Use of power factor correction capacitors. Proper selection and layout of lighting system, timely switching On-Off of the lights; use of compact fluorescent lamps wherever possible etc.

PROJECT AT A GLANCE

1	Name of the Entreprenuer		XXXXXXX		
2	Constitution (legal Status)		XXXXXXX		
3	Father's/Spouce's Name		XXXXXXXX		
4	Unit Address		XXXXXXXX		
			Taluk/Block:		
			District :	XXXXX	
			Pin:	XXXXX	State:
			E-Mail :	XXXXX	
			Mobile	XXXXX	
5	Product and By Product	:	**Motor Winding**		
6	Name of the project / business activity propos		**Motor Winding**		
7	Cost of Project	:	Rs8.52lac		
8	Means of Finance				
	Term Loan		Rs.5.23 Lacs		
	KVIC Margin Money	-	As per Project Eligibility		
	Own Capital		Rs.0.85 Lacs		
	Working Capital		Rs.2.44 Lacs		
9	Debt Service Coverage Ratio	:	3.74		
10	Pay Back Period	:	5	Years	
11	Project Implementation Period	:	6	Months	
12	Break Even Point	:	27%		
13	Employment	:	5	Persons	
14	Power Requirement	:	5.00	HP	
15	Major Raw materials	:	**Copper wire**		
16	Estimated Annual Sales Turnover	:	20.01	Lacs	
16	Detailed Cost of Project & Means of Finance				

COST OF PROJECT

(Rs. In Lacs)

Particulars	Amount
Land	Rented/Owned
Building & Civil Work (2000 Sq Ft)	3.00
Plant & Machinery	1.70
Office Equipments, Furniture & Working tables etc	0.61
Pre-operative Expenses	0.50
Working Capital Requirement	2.71
Total	**8.52**

MEANS OF FINANCE

Particulars	Amount
Own Contribution @10%	0.85
Term Loan	5.23
Workign Capital Finance	2.44
Total	**8.52**

	General	**Special**
Beneficiary's Margin Money (% of Project Cost)	10%	5%

	PLANT & MACHINERY				
	PARTICULARS	QTY.	RATE	AMOUNT IN RS.	
	Motorized winding machine	1	45,000	45,000	
	Manual winding machine	1	10,000	10,000	
	Table winding Machine	1	10,000	10,000	
	Oven	1	28,000	28,000	
	½ Inch Bench Drilling machine	1	6,000	6,000	
	Portable drilling machine	1	5,000	5,000	
	Bench Grinder 200 mm	1	6,000	6,000	
	Soldering Machine	2	2000	4000	
	2.5 KV Testlna Machine	1	9,000	9,000	
	Panel board for testing	1	7,000	7,000	
	3 ½ digit clamp meter	1	3,500	3,500	
	Megger 500 volts DC	1	3,500	3,500	
	Multimeter	2	1,000	2,000	
	Leakage current Earth Leakage Teste	1	5,000	5,000	
	Auto Transformer 10 Amp	1	6,000	6,000	
	Ither misc. Instruments and meter	LS	10,000	10,000	
	Mould, die, tools, jigs and fixtures etc		10,000	10,000	
	Total			170,000	

PROJECTED CASH FLOW STATEMENT

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
SOURCES OF FUND					
Share Capital	0.85	-			
Reserve & Surplus	4.36	5.87	7.17	8.57	9.91
Depriciation & Exp. W/off	0.59	0.54	0.48	0.42	0.37
Increase in Cash Credit	2.44	-	-	-	-
Increase In Term Loan	5.23	-	-	-	-
Increase in Creditors	0.23	0.04	0.04	0.04	0.04
Increase in Provisions	0.36	0.04	0.04	0.04	0.05
TOTAL :	**14.05**	**6.49**	**7.73**	**9.07**	**10.36**
APPLICATION OF FUND					
Increase in Fixed Assets	5.31	-	-	-	-
Increase in Stock	2.27 -	0.66	0.23	0.23	0.23
Increase in Debtors	0.67	0.23	0.09	0.12	0.12
Increase in Deposits & Adv	2.50	0.25	0.28	0.30	0.33
Repayment of Term Loan	-	1.31	1.31	1.31	1.75
Taxation	-	0.59	1.43	1.71	1.98
TOTAL :	**10.75**	**1.71**	**3.33**	**3.68**	**4.42**
Opening Cash & Bank Balance	-	3.30	8.08	12.48	17.87
Add : Surplus	3.30	4.78	4.39	5.40	5.94
Closing Cash & Bank Balance	**3.30**	**8.08**	**12.48**	**17.87**	**23.82**

PROJECTED BALANCE SHEET

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
SOURCES OF FUND					
Capital Account	0.85	0.85	0.85	0.85	0.85
Retained Profit	4.36	9.65	15.38	22.24	30.16
Term Loan	5.23	3.92	2.61	1.31	- 0.45
Cash Credit	2.44	2.44	2.44	2.44	2.44
Sundry Creditors	0.23	0.27	0.31	0.35	0.39
Provisions & Other Liab	0.36	0.40	0.44	0.48	0.53
TOTAL :	**13.47**	**17.52**	**22.03**	**27.66**	**33.92**
APPLICATION OF FUND					
Fixed Assets (Gross)	5.31	5.31	5.31	5.31	5.31
Gross Dep.	0.59	1.13	1.61	2.03	2.40
Net Fixed Assets	4.72	4.18	3.70	3.28	2.91
Current Assets					
Sundry Debtors	0.67	0.90	0.98	1.11	1.23
Stock in Hand	2.27	1.61	1.85	2.08	2.31
Cash and Bank	3.30	8.08	12.48	17.87	23.82
Deposits & Advances	2.50	2.75	3.03	3.33	3.66
TOTAL :	**13.47**	**17.52**	**22.03**	**27.66**	**33.92**
	-	-	-	-	-

PROJECTED PROFITABILITY STATEMENT

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
A) SALES					
Gross Sale	20.01	26.86	29.45	33.16	36.86
Total (A)	**20.01**	**26.86**	**29.45**	**33.16**	**36.86**
B) COST OF SALES					
Raw Mateiral Consumed	9.90	11.55	13.20	14.85	16.50
Elecricity Expenses	0.43	0.50	0.57	0.64	0.72
Repair & Maintenance	-	0.27	0.29	0.33	0.37
Labour & Wages	3.43	3.78	4.15	4.57	5.02
Depriciation	0.59	0.54	0.48	0.42	0.37
Consumables and Other Expense	0.40	0.54	0.59	0.66	0.74
Cost of Production	14.75	17.18	19.29	21.48	23.72
Add: Opening Stock /WIP	-	1.78	1.04	1.19	1.33
Less: Closing Stock /WIP	1.78	1.04	1.19	1.33	1.48
Cost of Sales (B)	12.97	17.92	19.14	21.33	23.57
C) GROSS PROFIT (A-B)	7.04	8.94	10.31	11.83	13.29
	35%	**33%**	**35%**	**36%**	**36%**
D) Bank Interest (Term Loan)	0.45	0.54	0.39	0.24	0.09
Bank Interest (C.C. Limit)	0.24	0.24	0.24	0.24	0.24
E) Salary to Staff	1.58	1.74	1.92	2.11	2.32
F) Selling & Adm Expenses Exp.	0.40	0.54	0.59	0.66	0.74
TOTAL (D+E)	**2.68**	**3.07**	**3.14**	**3.26**	**3.39**
H) NET PROFIT	4.36	5.87	7.17	8.57	9.91
I) Taxation	-	0.59	1.43	1.71	1.98
J) PROFIT (After Tax)	4.36	5.29	5.74	6.86	7.92

COMPUTATION OF MANUFACTURING OF Motor Winding

Items to be Manufactured **Motor Winding**

Manufacturing Capacity per day	-	10.00	Motors
	-		
No. of Working Hour		8	
No of Working Days per month		25	
No. of Working Day per annum		300	
Total Production per Annum		3,000.00	Motors
Year		Capacity	Motors
		Utilisation	
IST YEAR		60%	1,800
IIND YEAR		70%	2,100
IIIRD YEAR		80%	2,400
IVTH YEAR		90%	2,700
VTH YEAR		100%	3,000

COMPUTATION OF RAW MATERIAL

Item Name		Quantity of Raw Material Motors	Recovery	Unit Rate of /	Total Cost Per Annum (100%)
Raw Material Average rates	100%	3,000.00	100%	550.00	16.50
Super Enameled Cooper of different gauges	200 kqs.				
Insulation paper	40 kqs.				
Cotton tape	15 kqs.				
Insulation varnish	1 00 litre				
Glass wire, Consumables stores, Cables,	LS				
			Total (Rounded off in lacs)		16.50

Annual Consumption cost (In Lacs) 16.50

Raw Material Consumed	Capacity Utilisation	Amount (Rs.)
IST YEAR	60%	9.90
IIND YEAR	70%	11.55
IIIRD YEAR	80%	13.20
IVTH YEAR	90%	14.85
VTH YEAR	100%	16.50

COMPUTATION OF CLOSING STOCK & WORKING CAPITAL

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
Finished Goods					
(15 Days requirement)	1.78	1.04	1.19	1.33	1.48
Raw Material					
(15 Days requirement)	0.50	0.58	0.66	0.74	0.83
Closing Stock	**2.27**	**1.61**	**1.85**	**2.08**	**2.31**

COMPUTATION OF WORKING CAPITAL REQUIREMENT

Particulars			Total
			Amount
Stock in Hand			2.27
Sundry Debtors			0.67
		Total	2.94
Sundry Creditors			0.23
Working Capital Requirement			**2.71**
Margin			0.27
Working Capital Finance			**2.44**

BREAK UP OF LABOUR

Particulars		Wages Per Month	No of Employees	Total Salary
Skilled Worker electrician		8,000.00	2	16,000.00
Unskilled Worker		5,000.00	2	10,000.00
				26,000.00
Add: 10% Fringe Benefit				2,600.00
Total Labour Cost Per Month				28,600.00
Total Labour Cost for the year (In Rs. Lakhs)			4	3.43

BREAK UP OF SALARY

Particulars		Salary Per Month	No of Employees	Total Salary
Service Engineer		12,000.00	1	12,000.00
-		-	-	-
Total Salary Per Month				12,000.00
Add: 10% Fringe Benefit				1,200.00
Total Salary for the month				13,200.00
Total Salary for the year (In Rs. Lakhs)			1	1.58

COMPUTATION OF DEPRECIATION

Description	Land	Building/shed	Plant & Machinery	Furniture	**TOTAL**
Rate of Depreciation		**10.00%**	**15.00%**	**10.00%**	
Opening Balance	Leased	-	-	-	-
Addition	-	3.00	1.70	0.61	5.31
	-	3.00	1.70	0.61	5.31
Less : Depreciation	-	0.30	0.26	0.03	0.59
WDV at end of Ist year	-	2.70	1.45	0.58	4.72
Additions During The Year	-	-	-	-	-
	-	2.70	1.45	0.58	4.72
Less : Depreciation	-	0.27	0.22	0.06	0.54
WDV at end of IInd Year	-	2.43	1.23	0.52	4.18
Additions During The Year	-	-	-	-	-
	-	2.43	1.23	0.52	4.18
Less : Depreciation	-	0.24	0.18	0.05	0.48
WDV at end of IIIrd year	-	2.19	1.04	0.47	3.70
Additions During The Year	-	-	-	-	-
	-	2.19	1.04	0.47	3.70
Less : Depreciation	-	0.22	0.16	0.05	0.42
WDV at end of IV year	-	1.97	0.89	0.42	3.28
Additions During The Year	-	-	-	-	-
	-	1.97	0.89	0.42	3.28
Less : Depreciation	-	0.20	0.13	0.04	0.37
WDV at end of Vth year	-	1.77	0.75	0.38	2.91

REPAYMENT SCHEDULE OF TERM LOAN 11.5%

Year	Particulars	Amount	Addition	Total	Interest	Repayment	Cl Balance
IST YEAR	Opening Balance						
	Ist Quarter	-	5.23	5.23	-	-	5.23
	Iind Quarter	5.23	-	5.23	0.15	-	5.23
	IIIrd Quarter	5.23	-	5.23	0.15	-	5.23
	Ivth Quarter	5.23	-	5.23	0.15	-	5.23
					0.45	-	
IIND YEAR	Opening Balance						
	Ist Quarter	5.23	-	5.23	0.15	0.33	4.90
	Iind Quarter	4.90	-	4.90	0.14	0.33	4.58
	IIIrd Quarter	4.58	-	4.58	0.13	0.33	4.25
	Ivth Quarter	4.25		4.25	0.12	0.33	3.92
					0.54	1.31	
IIIRD YEAR	Opening Balance						
	Ist Quarter	3.92	-	3.92	0.11	0.33	3.59
	Iind Quarter	3.59	-	3.59	0.10	0.33	3.27
	IIIrd Quarter	3.27	-	3.27	0.09	0.33	2.94
	Ivth Quarter	2.94		2.94	0.08	0.33	2.61
					0.39	1.31	
IVTH YEAR	Opening Balance						
	Ist Quarter	2.61	-	2.61	0.08	0.33	2.29
	Iind Quarter	2.29	-	2.29	0.07	0.33	1.96
	IIIrd Quarter	1.96	-	1.96	0.06	0.33	1.63
	Ivth Quarter	1.63		1.63	0.05	0.33	1.31
					0.24	1.31	
VTH YEAR	Opening Balance						
	Ist Quarter	1.31	-	1.31	0.04	0.33	0.98
	Iind Quarter	0.98	-	0.98	0.03	0.33	0.65
	IIIrd Quarter	0.65	-	0.65	0.02	0.55	0.10
	Ivth Quarter	0.10		0.10	0.00	0.55	- 0.45
					0.09	1.75	

CALCULATION OF D.S.C.R

PARTICULARS	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
CASH ACCRUALS	4.94	5.83	6.22	7.28	8.30
Interest on Term Loan	0.45	0.54	0.39	0.24	0.09
Total	5.40	6.38	6.61	7.52	8.38
REPAYMENT					
Instalment of Term Loan	1.31	1.31	1.31	1.75	1.75
Interest on Term Loan	0.45	0.54	0.39	0.24	0.09
Total	1.76	1.85	1.70	2.00	1.84
DEBT SERVICE COVERAGE R	**3.07**	**3.44**	**3.88**	**3.76**	**4.55**
AVERAGE D.S.C.R.			**3.74**		

COMPUTATION OF SALE

Particulars	IST YEAR	IIND YEAR	IIIRD YEAR	IVTH YEAR	VTH YEAR
Op Stock	-	180	105	120	135
Production	1,800	2,100	2,400	2,700	3,000
	1,800	2,280	2,505	2,820	3,135
Less : Closing Stock	180	105	120	135	150
Net Sale	1,620	2,175	2,385	2,685	2,985
Sale Price per MT	1,235.00	1,235.00	1,235.00	1,235.00	1,235.00
Sale (in Lacs)	**20.01**	**26.86**	**29.45**	**33.16**	**36.86**

Item	Qty. (Nos.)	Rate/Unit (Rs.)	Total Sales (Rs.)	
Motor winding charges for electric fan	1400	1000	1,400,000	
Motor winding charges of electric mixture	800	600	480,000	
Motor winding charges:				
a. 0.5 HP to 2 HP	400	1,500	600,000	
a. 2.5 HP to 5 HP	250	2,500	625,000	
a. 5.5 HP to 10 HP	150	4,000	600,000	
Total	**3000**	**9600**	**3,705,000**	
Weighted avareage rates per winding		**1235**		*for ease of calculation*

COMPUTATION OF ELECTRICITY

(A) POWER CONNECTION				
Total Working Hour per day		Hours	8	
Electric Load Required		HP	5	
Load Factor			0.7460	
Electricity Charges		per unit	8.00	
Total Working Days			300	
Electricity Charges (8 Hrs Per day)				71,616.00
Add : Minimim Charges (@ 10%)				
(B) D.G. SET				
No. of Working Days			300	days
No of Working Hours			1	Hour per day
Total no of Hour			300	
Diesel Consumption per Hour			-	
Total Consumption of Diesel			-	
Cost of Diesel			65.00	Rs. /Ltr
Total cost of Diesel			-	
Add : Lube Cost @15%			-	
Total			**-**	
Total cost of Power & Fuel at 100%				0.72
Year		**Capacity**		**Amount**
				(in Lacs)
IST YEAR		60%		0.43
IIND YEAR		70%		0.50
IIIRD YEAR		80%		0.57
IVTH YEAR		90%		0.64
VTH YEAR		100%		0.72

BREAK EVEN POINT ANALYSIS

Year	I	II	III	IV	V
Net Sales & Other Income	20.01	26.86	29.45	33.16	36.86
Less : Op. WIP Goods	-	1.78	1.04	1.19	1.33
Add : Cl. WIP Goods	1.78	1.04	1.19	1.33	1.48
Total Sales	**21.79**	**26.12**	**29.60**	**33.31**	**37.01**
Variable & Semi Variable Exp.					
Raw Material & Tax	9.90	11.55	13.20	14.85	16.50
Electricity Exp/Coal Consumption at 85%	0.37	0.43	0.49	0.55	0.61
Manufacturing Expenses 80%	0.32	0.64	0.71	0.80	0.88
Wages & Salary at 60%	3.01	3.31	3.64	4.01	4.41
Selling & adminstrative Expenses 80%	0.32	0.43	0.47	0.53	0.59
Intt. On Working Capital Loan	0.24	0.24	0.24	0.24	0.24
Total Variable & Semi Variable Exp	**14.16**	**16.60**	**18.75**	**20.97**	**23.23**
Contribution	**7.63**	**9.52**	**10.85**	**12.33**	**13.78**
Fixed & Semi Fixed Expenses					
Manufacturing Expenses 20%	0.08	0.16	0.18	0.20	0.22
Electricity Exp/Coal Consumption at 15%	0.06	0.08	0.09	0.10	0.11
Wages & Salary at 40%	2.01	2.21	2.43	2.67	2.94
Interest on Term Loan	0.45	0.54	0.39	0.24	0.09
Depreciation	0.59	0.54	0.48	0.42	0.37
Selling & adminstrative Expenses 20%	0.08	0.11	0.12	0.13	0.15
Total Fixed Expenses	**3.27**	**3.64**	**3.68**	**3.77**	**3.87**
Capacity Utilization	**60%**	**70%**	**80%**	**90%**	**100%**
OPERATING PROFIT	**4.36**	**5.87**	**7.17**	**8.57**	**9.91**
BREAK EVEN POINT	**26%**	**27%**	**27%**	**27%**	**28%**
BREAK EVEN SALES	**9.33**	**9.99**	**10.04**	**10.17**	**10.40**