PROJECT REPORT

Of

ELECTRIC HORNS

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Electric horns Manufacturing unit.

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.]

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PROJECT AT GLANCE

1	**Name of Proprietor/Director**	XXXXXXXX	
2	**Firm Name**	XXXXXXXX	
3	**Registered Address**	XXXXXXXX	
4	**Nature of Activity**	XXXXXXXX	
5	**Category of Applicant**	XXXXXXXX	
6	**Location of Unit**	XXXXXXXX	
7	**Cost of Project**	23.24	Rs. In Lakhs
8	**Means of Finance**		
i)	**Own Contribution**	2.32	Rs. In Lakhs
ii)	**Term Loan**	17.10	Rs. In Lakhs
iii)	**Working Capital**	3.82	Rs. In Lakhs
9	**Debt Service Coverage Ratio**	2.86	
10	**Break Even Point**	36%	
11	**Power Requiremnet**	30	KW
12	**Employment**	10	Persons
13	**Major Raw Materials**	Die cast horn body,diaphragm steel sheet,enameled copper wire and contact points	

14 Details of Cost of Project & Means of Finance

Cost of Project **Amount in Lacs**

Particulars	**Amount**
Land and building	Owned/Leased
Plant & Machinery	18.00
Furniture & Fixture	-
Other Misc Assets	1.00
Working Capital Requirement	4.24
Total	**23.24**

Means of Finance

Particulars	**Amount**
Own Contribution	2.32
Term Loan	17.10
Working capital Loan	3.82
Total	**23.24**

1. INTRODUCTION

A electric horn is a sound-making device that can be equipped to motor vehicles, buses, bicycles, trains, trams (otherwise known as streetcars in North America), and other types of vehicles. The sound made usually resembles a "honk" (older vehicles) or a "beep" (modern vehicles). The driver uses the horn to warn others of the vehicle's approach or presence, or to call attention to some hazard. Motor vehicles, ships and trains are required by law in some countries to have horns. Like trams, trolley cars and streetcars, bicycles are also legally required to have an audible warning device in many areas, but not universally, and not always a horn. Oliver Lucas of Birmingham, England, developed a standard electric horn in 1910. Car horns are usually electric, driven by a flat circular steel diaphragm that has an electromagnet acting on it in one direction and a spring pulling in the opposite direction. The diaphragm is attached to contact points that repeatedly interrupt the current to that electromagnet causing the diaphragm to spring back the other way, which completes the circuit again. This arrangement opens and closes the circuit hundreds of times per second, which creates a loud noise like a buzzer or electric bell, which sound enters a horn to be amplified. There is usually a screw to adjust the distance/tension of the electrical contacts for best operation. A spiral exponential horn shape (sometimes called the "snail") is cast into the body of the horn, to better match the acoustical impedance of the diaphragm with open air, and thus more effectively transfer the sound energy. Sound levels of typical car horns are approximately 107–109 decibels, and they typically draw 5-6 amperes of current.

2. PRODUCT DESCRIPTION

2.1 PRODUCT USES

Electronic horns are used on vehicles to give out warning signals generated by an electronic circuit. A solenoid is magnetized and demagnetized to produce the fundamental frequency and cause the diaphragm to vibrate. This generates high pressure that passes through the trumpet horn to generate a sound.

2.2 MANUFACTURING PROCESS

A typical electric horn consists of a flexible metal diaphragm (usually made of spring steel), a coil of wire that forms an electromagnet, a switch and a housing that functions somewhat like a megaphone. The entire apparatus functions according to Hooke's Law, which states, "The extension of a spring is directly proportional to the load applied, provided the limit of proportionality is not exceeded."

This manufacturing process can be broken down into the following steps

- **Press Shop**

  The raw material as sheet metal strips is loaded into the press machines. In the press shop, components like housing, diaphragm, tone disc and bracket are manufactured in different press machines. The entire operation is made in a single press and comes ready for painting. Diaphragm and tone disc should be manufactured at high levels of accuracy; Roots Industries does this – manufacturing with high precision.

- **Painting**

  Once the components are manufactured in the press shop, they are sent to the paint shop, where they go through several stages before painting. The company uses powder coating to avoid rust and other external damage; therefore, it is treated in a sequence of operations to remove rust, oil and water. The paint shop is a single line process, where the components are fed in at one end and painted at the end of the line. In this line, the components first enter the degreasing line, where the oil present in them is removed, and then washed with water. They then enter

the zinc phosphating chamber where a thin layer of zinc is formed that acts as a bonding and additive material.

When the components are dried, they enter the powder coating facility. Here the components are powder coated with the help of electrostatic charge coating and finally sent to the oven for curing, where the paint is dried at 220 ºC. After curing the components are tested and sent to the assembly line.

- **Coil Winding & Horn Assembly**

Coil winding is said to be the critical aspect of horn manufacturing, for which the company has created a dedicated coil winding line where all the different kinds of coils are manufactured very precisely. Once the coil winding is done and the other components are painted, they travel to the assembly line, where these components are assembled according to the assembly sequence. In order to avoid mistakes, Roots Industries has made several poke yokes (mistake proofing) so that the operator is guided through sensors about which component has to go in next. If the operator misses to assemble a component, the machine stops and indicates that there is a mistake in the assembly process. To curtail rejections, the sensors even check critical components before they are assembled. If the machine senses any mistake in the component, it is placed in the non-confirmation box where it will be verified by the quality department.

3. PROJECT COMPONENTS

3.1 Land & Building

The land required for this manufacturing unit will be approx. around 2000 square feet. Land Purchase and Building Civil Work Cost have not been considered as part of the cost of project. It is expected that the premises will be on rental and approximate rentals assumed of the same will be Rs.20,000 per month.

- Workshop Area- This area includes the setup and foundation space for all equipment's, work floor area, etc. Total workshop area is approx.1000 Sqft.
- Inventory Area- This area includes the storage space for all the raw materials and finished goods. Total inventory area is approx. 500 Sqft.
- Office Area – This space includes staff working region, their accommodation space. Total workshop area is approx. 300 Sqft. This may be considered above the ground floor.

- Parking Space, Electric Mounting Space, and Others. This could be approx. 200 Sqft.

Land and building requirement may vary depending on the size of project.

3.2 Plant & Machinery

- **Hydraulic press:** This machine is used to form the electric horn body and other desired part of the electric horn.

- **NC milling machine:** This machine is used to furnish the difficult edges of horn body and operated with numeric control technique.

- **Drill Machine:** This machine is used to drill the desired hole in the horn.

- **Spot welding transformer machine:** This machine is used to do desired weld in the electric horn.

- **Riveting machine:** This machine is used to rivet the horn body in to single piece.

- **Cold winding machine:** This machine is use to wind the coil of electric horn.

- **Universal Grinding Machine:** This machine is used to grind on desired part of the electric horn.

- **Arc welding machine:** This machine is use to form continues weld on the electric horn.

- **Paint gun:** The paint shop is use to paint the electric horn body as per the requirement.

Machine	Quantity	Price
Hydraulic press	1	2,00,000
NC milling machine	1	4,00,000
Drill machine	1	1,50,000
Spot welding transformer	1	2,00,000
Riveting machine	1	1,00,000
Cold winding machine	1	2,00,000
Universal grinding machine	1	1,50,000
Arc welding machine	1	2,00,000
Paint gun	1	70,000
TOTAL		**16,70,000**

Note: Total Machinery cost shall be Rs 16.70 lakhs (Approx.) excluding GST and Transportation Cost.

4 LICENSE & APPROVALS

Basic registration required in this project:

- MSME Udyam registration
- GST registration
- NOC for fire safety board and from Pollution Control Board
- Trade License
- Food and Drug Administration approval
- BIS certification
- Choice of a Brand Name of the product and secure the name with Trademark if required.

Projected Profitability

PROJECTED PROFITABILITY STATEMENT					(in Lacs)
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Capacity Utilisation %	**30%**	**35%**	**40%**	**45%**	**50%**
SALES					
Gross Sale					
Electric Horn	69.60	87.78	105.16	123.74	145.02
Total	**69.60**	**87.78**	**105.16**	**123.74**	**145.02**
COST OF SALES					
Raw Material Consumed	45.00	55.65	67.20	79.65	93.00
Electricity Expenses	1.73	2.02	2.30	2.59	2.88
Depreciation	2.85	2.42	2.06	1.75	1.49
Wages & labour	7.32	9.37	11.06	12.60	14.87
Repair & maintenance	0.77	0.97	1.05	1.24	1.45
Packaging	0.14	0.18	0.21	0.25	0.29
Cost of Production	57.80	70.60	83.88	98.08	113.98
Add: Opening Stock	-	1.93	2.35	2.80	3.27
Less: Closing Stock	1.93	2.35	2.80	3.27	3.80
Cost of Sales	55.88	70.17	83.44	97.61	113.45
GROSS PROFIT	**13.72**	**17.61**	**21.72**	**26.13**	**31.56**
	19.72%	**20.06%**	**20.66%**	**21.12%**	**21.77%**
Salary to Staff	3.48	4.25	5.52	7.06	8.34
Interest on Term Loan	1.68	1.48	1.06	0.64	0.23
Interest on working Capital	0.42	0.42	0.42	0.42	0.42
Rent	2.40	2.76	3.17	3.65	4.20
Selling & Administrative Exp.	0.70	0.88	1.05	1.24	1.45
TOTAL	**8.68**	**9.78**	**11.23**	**13.02**	**14.63**
NET PROFIT	5.05	7.82	10.49	13.12	16.93
	7.25%	**8.91%**	**9.98%**	**10.60%**	**11.68%**
Taxation	0.01	0.59	1.15	1.28	2.48
PROFIT (After Tax)	5.04	7.24	9.34	11.83	14.46

Projected Balance Sheet

PROJECTED BALANCE SHEET					**(in Lacs)**
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Liabilities					
Capital					
Opening balance		3.66	6.45	9.59	13.02
Add:- Own Capital	2.32				
Add:- Retained Profit	5.04	7.24	9.34	11.83	14.46
Less:- Drawings	3.70	4.45	6.20	8.40	11.00
Closing Balance	**3.66**	**6.45**	**9.59**	**13.02**	**16.48**
Term Loan	15.20	11.40	7.60	3.80	-
Working Capital Limit	3.82	3.82	3.82	3.82	3.82
Sundry Creditors	1.05	1.30	1.57	1.86	2.17
Provisions & Other Liability	0.40	0.48	0.58	0.80	0.96
TOTAL :	**24.13**	**23.45**	**23.15**	**23.30**	**23.43**
Assets					
Fixed Assets (Gross)	19.00	19.00	19.00	19.00	19.00
Gross Dep.	2.85	5.27	7.33	9.08	10.57
Net Fixed Assets	**16.15**	**13.73**	**11.67**	**9.92**	**8.43**
Current Assets					
Sundry Debtors	2.32	2.93	3.51	4.12	4.83
Stock in Hand	2.98	3.65	4.36	5.13	5.97
Cash and Bank	0.19	0.14	0.12	0.13	0.10
Loans & Advances /Other Current Assets	2.50	3.00	3.50	4.00	4.10
TOTAL :	**24.13**	**23.45**	**23.15**	**23.30**	**23.43**

Projected Cash Flow Statement

PROJECTED CASH FLOW STATEMENT					**(in Lacs)**
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
SOURCES OF FUND					
Own Margin	2.32				
Net Profit	5.05	7.82	10.49	13.12	16.93
Depreciation & Exp. W/off	2.85	2.42	2.06	1.75	1.49
Increase in Cash Credit	3.82	-	-	-	-
Increase In Term Loan	17.10	-	-	-	-
Increase in Creditors	1.05	0.25	0.27	0.29	0.31
Increase in Provisions & Oth labilities	0.40	0.08	0.10	0.22	0.16
	-				
TOTAL :	**32.59**	**10.57**	**12.92**	**15.38**	**18.89**
APPLICATION OF FUND					
Increase in Fixed Assets	19.00				
Increase in Stock	2.98	0.68	0.71	0.76	0.84
Increase in Debtors	2.32	0.61	0.58	0.62	0.71
Repayment of Term Loan	1.90	3.80	3.80	3.80	3.80
Loans & Advances /Other Current Assets	2.50	0.50	0.50	0.50	0.10
Drawings	3.70	4.45	6.20	8.40	11.00
Taxation	0.01	0.59	1.15	1.28	2.48
TOTAL :	**32.41**	**10.62**	**12.95**	**15.37**	**18.93**
Opening Cash & Bank Balance	-	0.19	0.14	0.12	0.13
Add : Surplus	0.19	(0.04)	(0.03)	0.01	(0.03)
Closing Cash & Bank Balance	**0.19**	**0.14**	**0.12**	**0.13**	**0.10**

DSCR

CALCULATION OF D.S.C.R					
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
CASH ACCRUALS	7.89	9.66	11.40	13.58	15.95
Interest on Term Loan	1.68	1.48	1.06	0.64	0.23
Total	9.57	11.14	12.46	14.23	16.17
REPAYMENT					
Instalment of Term Loan	1.90	3.80	3.80	3.80	3.80
Interest on Term Loan	1.68	1.48	1.06	0.64	0.23
Total	3.58	5.28	4.86	4.44	4.03
DEBT SERVICE COVERAGE RATIO	**2.67**	**2.11**	**2.56**	**3.20**	**4.02**
AVERAGE D.S.C.R.					**2.86**

Repayment schedule

REPAYMENT SCHEDULE OF TERM LOAN							
					Interest		11.00%
Year	**Particulars**	**Amount**	**Addition**	**Total**	**Interest**	**Repayment**	**Closing Balance**
1st	Opening Balance						
	1st month	-	17.10	17.10	-	-	17.10
	2nd month	17.10	-	17.10	0.16	-	17.10
	3rd month	17.10	-	17.10	0.16	-	17.10
	4th month	17.10	-	17.10	0.16		17.10
	5th month	17.10	-	17.10	0.16		17.10
	6th month	17.10	-	17.10	0.16		17.10
	7th month	17.10	-	17.10	0.16	0.32	16.78
	8th month	16.78	-	16.78	0.15	0.32	16.47
	9th month	16.47	-	16.47	0.15	0.32	16.15
	10th month	16.15	-	16.15	0.15	0.32	15.83
	11th month	15.83	-	15.83	0.15	0.32	15.52
	12th month	15.52	-	15.52	0.14	0.32	15.20
					1.68	**1.90**	
2nd	Opening Balance						
	1st month	15.20	-	15.20	0.14	0.32	14.88
	2nd month	14.88	-	14.88	0.14	0.32	14.57
	3rd month	14.57	-	14.57	0.13	0.32	14.25
	4th month	14.25	-	14.25	0.13	0.32	13.93
	5th month	13.93	-	13.93	0.13	0.32	13.62
	6th month	13.62	-	13.62	0.12	0.32	13.30

	7th month	13.30	-	13.30	0.12	0.32	12.98
	8th month	12.98	-	12.98	0.12	0.32	12.67
	9th month	12.67	-	12.67	0.12	0.32	12.35
	10th month	12.35	-	12.35	0.11	0.32	12.03
	11th month	12.03	-	12.03	0.11	0.32	11.72
	12th month	11.72	-	11.72	0.11	0.32	11.40
					1.48	**3.80**	
3rd	Opening Balance						
	1st month	11.40	-	11.40	0.10	0.32	11.08
	2nd month	11.08	-	11.08	0.10	0.32	10.77
	3rd month	10.77	-	10.77	0.10	0.32	10.45
	4th month	10.45	-	10.45	0.10	0.32	10.13
	5th month	10.13	-	10.13	0.09	0.32	9.82
	6th month	9.82	-	9.82	0.09	0.32	9.50
	7th month	9.50	-	9.50	0.09	0.32	9.18
	8th month	9.18	-	9.18	0.08	0.32	8.87
	9th month	8.87	-	8.87	0.08	0.32	8.55
	10th month	8.55	-	8.55	0.08	0.32	8.23
	11th month	8.23	-	8.23	0.08	0.32	7.92
	12th month	7.92	-	7.92	0.07	0.32	7.60
					1.06	**3.80**	
4th	Opening Balance						
	1st month	7.60	-	7.60	0.07	0.32	7.28
	2nd month	7.28	-	7.28	0.07	0.32	6.97
	3rd month	6.97	-	6.97	0.06	0.32	6.65

	4th month	6.65	-	6.65	0.06	0.32	6.33
	5th month	6.33	-	6.33	0.06	0.32	6.02
	6th month	6.02	-	6.02	0.06	0.32	5.70
	7th month	5.70	-	5.70	0.05	0.32	5.38
	8th month	5.38	-	5.38	0.05	0.32	5.07
	9th month	5.07	-	5.07	0.05	0.32	4.75
	10th month	4.75	-	4.75	0.04	0.32	4.43
	11th month	4.43	-	4.43	0.04	0.32	4.12
	12th month	4.12	-	4.12	0.04	0.32	3.80
					0.64	**3.80**	
5th	Opening Balance						
	1st month	3.80	-	3.80	0.03	0.32	3.48
	2nd month	3.48	-	3.48	0.03	0.32	3.17
	3rd month	3.17	-	3.17	0.03	0.32	2.85
	4th month	2.85	-	2.85	0.03	0.32	2.53
	5th month	2.53	-	2.53	0.02	0.32	2.22
	6th month	2.22	-	2.22	0.02	0.32	1.90
	7th month	1.90	-	1.90	0.02	0.32	1.58
	8th month	1.58	-	1.58	0.01	0.32	1.27
	9th month	1.27	-	1.27	0.01	0.32	0.95
	10th month	0.95	-	0.95	0.01	0.32	0.63
	11th month	0.63	-	0.63	0.01	0.32	0.32
	12th month	0.32	-	0.32	0.00	0.32	-
					0.23	**3.80**	
	DOOR TO DOOR	60	MONTHS				
	MORATORIUM PERIOD	6	MONTHS				
	REPAYMENT PERIOD	54	MONTHS				

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