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PROJECT REPORT

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PROJECT:

Electric switch manufacturing Unit

PROJECT REPORT

OF

ELECTRIC SWITCH

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Electric switch 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.]

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**	23.18	Rs. In Lakhs
8	**Means of Finance**		
i)	**Own Contribution**	2.32	Rs. In Lakhs
ii)	**Term Loan**	14.18	Rs. In Lakhs
iii)	**Working Capital**	6.68	Rs. In Lakhs
9	**Debt Service Coverage Ratio**	2.63	
10	**Break Even Point**	0.45	
11	**Power Requiremnet**	15	KW
12	**Employment**	8	Persons
13	**Major Raw Materials**	Plastic, Metal parts etc.	

14 Details of Cost of Project & Means of Finance

Cost of Project **Amount in Lacs**

Particulars	Amount
Building & Civil Work	Owned/Leased
Plant & Machinery	15.00
Other Misc Assets	0.50
Furniture	0.25
Working Capital Requirement	7.43
Total	**23.18**

Means of Finance

Particulars	Amount
Own Contribution	2.32
Term Loan	14.18
Working capital Loan	6.68
Total	**23.18**

1. INTRODUCTION

Electrical switches are household consumables items. A switch is an electrical component that can break an electrical circuit, interrupting the current or diverting it from one conductor to another. When the switch is open, the electrical contacts do not touch and electricity cannot flow. When the switch is closed, however, the electrical contacts touch and electricity flows throughout the circuit. In almost every application, for residential, commercial or industrial use, switches are required to be installed. Electrical switches are used to perform all the electrical functions. From a fan to bulb, every electrical equipment we use in our day to day life is useless without a switch.

Switch is an electrical component which can make or break electrical circuit automatically or manually. Switch is mainly working with ON (open) and OFF (closed) mechanism. Numerous circuits hold switches that control how the circuit works or actuate different characteristics of the circuit. The classification of switches depends on the connection they make. SPST (Single Pole Single throw), SPDT (single pole double throw), DPST (double pole, single throw), DPDT (double pole double throw). There are different types of electrical switches are available for different types of applications. Types of Electric Switches are Toggle Switches, Rocker Switches, Limit Switches, Membrane Switches, Pressure Switches, Rotary switches, Spiral & stick etc.

Toggle switch: A toggle switch has a level that you flip up or down to open or close the contact. Household light switches are toggle switches.

Rotary switch: It has a knob that can turn to open and close the contacts the switch. Table top lamps rotary switch is used.

Slide switch: It has a knob that can slide back and forth to open or close the contacts. Switches Rocker switch: Have to press one side of the switch down to close the contacts, and press the other side down to open the contacts.

2. MARKET POTENTIAL

Electricity is broadly utilized in all fields. Likewise, the interest for power is expanding step by step with the expansion of new structure (Commercial and lodging). Accordingly, the interest for electrical frill like switches, plug and attachment and so on are expanding. Disengage Switch market is relied upon to develop from an expected USD 9.07 Billion of every 2015 to USD 12.66 Billion by 2020, at a CAGR of 6.9% from 2015 to 2020 across the globe.
. Regarding the arrangement section, Traditional Electrical Switches market represented more than 80.37% of the general offer in 2016, and Smart Electrical Switches represented more than 19.63%. It is normal that Smart Electrical Switches will represent more than 22.58% in 2021.According to WMJ the overall market for Electrical Switches is relied upon to develop at a CAGR of generally 1.0% throughout the following five years, will arrive at 3860 million USD in 2024, from 3630 million USD in 2019, as per another investigation. As indicated by an examination, non-melded separate switches to enlist the most noteworthy development in next five years. This high development is significantly determined by Asia-Pacific locale which has quick industrialization in two of the quickest developing economies, China, and India. Owing to the style of particular switches, solid interest is being seen from the private area, as an ever- increasing number of individuals are supplanting their old switches with measured switches that supplement their divider paints and inside planning. The Indian measured switch market is sectioned dependent on deals channel into direct deals, deals through middle people, and on the web and double dissemination. In India, deals through middle people's mode assumes an imperative part in contacting greatest number of clients across different urban communities.

3. INDUSTRIAL SCENARIO

The factors influencing the growth of electrical switch market include rising consumer demand for energy saving lighting systems, acceptance of standard protocols for lighting control and favorable government initiatives for saving electricity. Simple accessibility of these particular switches at moderate costs in the Indian market has expanded their reception

in different applications across verticals, for example, business and private structures, IT and telecom area, accommodation, medical care, retail, and others. The central members in the market are centered on growing in fact progressed measured switches at reasonable costs. The quick blast in the development area in India has made enormous development openings for market players. Key players of switch markets are Legrand, Siemens, ABB, Panasonic, Havells, Alps, Selzer Electronics, Longsheng, etc. Moreover, supportive government initiatives, rising per capita income and declining prices of modular switches are some of the other factors that are expected to positively influence the electrical switches market in India during forecast period. In the recent past, penetration of Internet in India and purchase of products through e-commerce portals have increased rapidly. Modular switch marketing through company websites, social networking sites, and e-commerce portals, such as IndiaMART and Urjamart have enabled key players to increase their presence among online customers. In addition, major players have focused on expanding their online distribution network to improve their customer services and sustain the market competition. Legrand, Siemens, Simon and ABB captured the top four revenue share spots in the electrical switches market in 2016. Legrand dominated with 24.34 percent revenue share, followed by Simon with 9.02 percent revenue share and Siemens with 8.60 percent revenue share.

4. PRODUCT DESCRIPTION

4.1 PRODUCT USES

Some typical places to find switches include:

- Access/Exit Control
- Aircraft
- Ammeters
- Appliances
- Brake Systems
- Conveyors
- Cranes
- Doors
- Electro pneumatics
- Emergency Stop
- Escalators
- HVAC
- Hydraulics
- Ignition/Started

Electrical switches are used in aerospace, chemical, marine, medical, communication, military, automotive, petrochemical, and transportation—as well as in the commercial and residential sectors. Switches are used in electrical and mechanical product.

Generally, the specific application will help determine what kind of switch is best for the job. As the switch's form factor is so critical, a selection cannot be made until the purpose is determined.

4.2 RAW MATERIAL REQUIREMENT

- **Plastic:** Plastic granules are used for injection molding process. (Polycarbonate granules or Bakelite powder) - This is bad conductors of electricity. It's corrosion resistant and Heat resistant.

- Metal parts: These are made of using brass, copper, steel etc. material. Copper/ brass contact plate, spring, connector, terminals, screws and nuts etc. are included in metal parts.

4.3 MANUFACTURING PROCESS

Most of the manufacturing process consist essentially of three parts:

- Raw material procurement
- Assembly
- Testing

4.3.1 Raw material procurement

After purchasing required raw material, it will go for quality checking, sorting, the quantity of raw materials being handled and it will store it in store department or in raw material inventory. Quality control of raw material is the maintaining of all the procedures that are needed to be taken to produce a quality full product. In sorting procedure, the different types of

materials or parts will be sorted out like metal parts and plastic parts etc. will separated and material will be stored and maintain till further use.

4.3.2 Plastic molding (Injection molding):

Plastic molding is done by using injection molding machine. Where switch body housing can be made from plastic granules. Firstly, Polycarbonate granules are fed via hopper into a heated barrel. Where the plastic will be melted at set temperature. The melted plastic is then injected through a nozzle into a mold cavity where it cools and hardens to the configuration of the cavity. The switch mold tool is mounted on a movable platen, when the part has solidified, the platen opens and the formed plastic switch housing is ejected out.

4.3.3 Assembly

After switch housing production the switch housing body and metal parts will be dispatched to assembly line where brass terminals, contact plates, spring, screws are is fitted in switch body using general hand tools. On bottom part of switch housing brass contact terminal will be fitted and upon that contact plate will be mounted so when these two contact parts is touching the current can pass between them. Later spring is mounted on contact or it will be attached to top part of housing. Connectivity will be tested here and with nuts and screws the top and bottom parts of switch will be assembled together. The assembled switch then polished with buffing machine and packed.

4.3.4 Testing

Switch testing machine-

This machine is used for testing switch lifecycle, connectivity, durability, mechanical failures, short circuit, endurance testing etc. this machine will provide fast and accurate testing of switches.

4.4 YIELD OF PRODUCT/PRODUCTION RATIO

The basis for calculation of production capacity is on single shift basis with 85% efficiency. Using an Injection moulding machine production of final product will be faster. If 5-8 skilled labours will be working for a single shift basis then the total production capacity will be approx. 1500 pieces per day.

5. INDIAN STANDARD

- BIS Certification: The specifications of the electrical switches under IS: 3854:1988 – switches for Domestic & other purposes.
- In addition, can also apply for ISO certification.

6. PROJECT COMPONENTS

6.1 Land /Civil Work

The land require for this manufacturing unit will be approx. around 2500-3000 square feet.

We have not considered the cost of Land purchase & Building Civil work in the project. It is assumed that land & building will be on rent & approx. rental of the same will be Rs20000-25000

6.2 Plant & Machinery

This manufacturing unit will be semi-automatic type. And the plant capacity is 1500switches per day. The major requirement of machine for this plant is Injection molding machine and other hand tools like molds, buffing machine etc. will be used.

- **Injection molding machine:**

By using injection molding machine as per required design switch body can be made. Injection molding machines are classified primarily by the type of driving systems they use: hydraulic, mechanical, electrical, or hybrid. Injection molding machine is oriented in either horizontal or vertical position, based on their type. The majority of machines are horizontally oriented.

- **Polishing or buffing machine:**

It's used to polish switch. Polishing will remove scratches, pits and scale and it softens the switch.

Molds:

It's a die which is used to shape plastic in different designed part (switch case). An Injection mold is a metal block mold cavity, which is usually machined from steel block.

- **Testing equipment and miscellaneous tools:**

Tools like electronic instruments, pliers, screwdrivers, crimping tools, test apparatuses and measuring instruments for power utility, will be required.

Multimeter

It is an electronic measuring instrument that combines several measurement functions in one unit. A multimeter can check connectivity and also measure voltage, current, and resistance.

S.N.	Description	Amount
1	Injection Molding Machine	1380000
2	Polishing or buffing machine	50,000
3	Moulds	50,000
4	Testing equipment's and other tools	20,000
	Sub Total	**15,00,000**

❖ **Note: Cost of the machine is depending on size of business.**

6.3. Power Requirement

This manufacturing facility can work with a three-phase AC power supply. For machinery and other electrical utilities up to 15 kW power will be required for the above-mentioned capacity plant.

6.4. Manpower Requirement

Manpower required for this manufacturing unit depends on the land, type of manufacturing unit. For small scale unit around 5-8 people will be required.

6.5. Other Utilities

Heating and cooling facilities, Water, telephone etc.

7. LICENSE & APPROVALS

- GST
- NOC from Fire Department.
- NOC From Pollution Department (if applicable)
- Udyam Registration is required.
- BIS certification
- Trademark (optional)

8. SWOT ANALYSIS

Strengths - It can be used with low physical effort. It's convenient to access because different design features. Close supervision, Nature of demand and the management will be easy and economical.

Weakness- For Small scale-semi automatic plant, the size of production is small so there will be lack of division of labour. Poor capacity utilization, Problem of working capital, Raw material shortages problems can be aced in small scale industries. The raw materials are purchased in small quantities which are available to small producers at higher prices.

Opportunities- Can design different types and various designs of switches in same plant. Export enhancement will be an opportunity. Small scale industry helps to develop the rural and less developed regions of the economy and can create more employment opportunities.

Threats- The main threat is current player already available in market. New technologies like voice command or gesture motion can become threat for switches in future. Competitors, prices of raw materials, and customer shopping trends are some threats for small scale industries.

PROJECTED PROFITABILITY STATEMENT **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation %	**60%**	**65%**	**70%**	**75%**	**80%**
SALES					
ELECTRICAL SWITCH	69.26	81.59	91.02	100.91	111.25
Total	**69.26**	**81.59**	**91.02**	**100.91**	**111.25**
COST OF SALES					
Raw material cost	40.50	45.34	50.40	55.69	61.20
Electricity Expenses	2.52	2.77	3.05	3.35	3.69
Depreciation	2.35	2.00	1.70	1.45	1.23
Wages & labour	7.20	7.92	8.71	9.58	10.54
Repair & maintenance	1.39	1.63	1.82	2.02	2.23
Consumables	2.42	2.86	3.19	3.53	3.89
Packaging cost	2.08	2.45	2.73	3.03	3.34
Cost of Production	58.46	64.96	71.60	78.65	86.12
Add: Opening Stock	-	3.46	4.08	4.55	5.05
Less: Closing Stock	3.46	4.08	4.55	5.05	5.56
Cost of Sales	54.99	64.35	71.13	78.15	85.60
GROSS PROFIT	**14.26**	**17.24**	**19.90**	**22.76**	**25.65**
GROSS PROFIT RATIO	20.59%	21.13%	21.86%	22.55%	23.06%
Salary to Staff	2.82	3.24	3.79	4.36	5.02
Interest on Term Loan	1.39	2.12	0.88	0.53	0.19
Interest on working Capital	0.74	0.74	0.74	0.74	0.74
Rent	3.00	3.30	3.80	4.17	4.59
Selling & Administration Expenses	2.42	2.45	2.73	3.03	3.34
TOTAL	**10.37**	**11.85**	**11.94**	**12.83**	**13.87**
NET PROFIT	3.89	5.39	7.96	9.92	11.78
Taxation	0.07	0.20	0.72	1.10	1.66
PROFIT (After Tax)	3.82	5.19	7.24	8.82	10.12
NET PROFIT RATIO	5.51%	6.36%	7.96%	8.74%	9.10%

PROJECTED BALANCE SHEET **(in Lacs)**

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Liabilities					
Capital					
Opening Balance		3.14	4.82	6.57	9.09
Add:- Own Capital	2.32				
Add:- Retained Profit	3.82	5.19	7.24	8.82	10.12
Less:- Drawings	3.00	3.50	5.50	6.30	6.80
Closing Balance	3.14	4.82	6.57	9.09	12.41
Term Loan	12.60	9.45	6.30	3.15	-
Working Capital Limit	6.68	6.68	6.68	6.68	6.68
Sundry Creditors	1.76	2.27	2.52	2.97	3.26
Provisions & Other Liabilities	0.50	0.75	0.90	1.08	1.30
TOTAL :	**24.68**	**23.97**	**22.97**	**22.97**	**23.65**
Assets					
Fixed Assets (Gross)	15.75	15.75	15.75	15.75	15.75
Gross Depriciation	2.35	4.35	6.05	7.49	8.72
Net Fixed Assets	**13.40**	**11.40**	**9.70**	**8.26**	**7.03**
Current Assets					
Sundry Debtors	3.69	3.81	3.94	4.04	4.45
Stock in Hand	5.49	6.35	7.07	7.83	8.62
Cash and Bank	1.34	1.42	1.75	1.85	2.06
Loans and advances/other current assets	0.75	1.00	0.50	1.00	1.50
TOTAL :	**24.68**	**23.97**	**22.97**	**22.97**	**23.65**

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	3.89	5.39	7.96	9.92	11.78
Depriciation & Exp. W/off	2.35	2.00	1.70	1.45	1.23
Increase in Cash Credit	6.68	-	-	-	-
Increase In Term Loan	14.18	-	-	-	-
Increase in Creditors	1.76	0.51	0.25	0.45	0.29
Increase in Provisions & Other liabilities	0.50	0.25	0.15	0.18	0.22
TOTAL :	**31.67**	**8.15**	**10.06**	**12.00**	**13.52**
APPLICATION OF FUND					
Increase in Fixed Assets	15.75				
Increase in Stock	5.49	0.86	0.73	0.76	0.79
Increase in Debtors	3.69	0.11	0.14	0.09	0.41
Increase in loans and advances	0.75	0.25 -	0.50	0.50	0.50
Repayment of Term Loan	1.58	3.15	3.15	3.15	3.15
Drawings	3.00	3.50	5.50	6.30	6.80
Taxation	0.07	0.20	0.72	1.10	1.66
TOTAL :	**30.33**	**8.07**	**9.73**	**11.90**	**13.32**
Opening Cash & Bank Balance	-	1.34	1.42	1.75	1.85
Add : Surplus	1.34	0.07	0.34	0.10	0.21
Closing Cash & Bank Balance	**1.34**	**1.42**	**1.75**	**1.85**	**2.06**

CALCULATION OF D.S.C.R

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
CASH ACCRUALS	6.17	7.18	8.94	10.27	11.35
Interest on Term Loan	1.39	2.12	0.88	0.53	0.19
Total	7.56	9.31	9.82	10.80	11.54
REPAYMENT					
Instalment of Term Loan	1.58	3.15	3.15	3.15	3.15
Interest on Term Loan	1.39	2.12	0.88	0.53	0.19
Total	2.97	5.27	4.03	3.68	3.34
DEBT SERVICE COVERAGE RATIO	**2.55**	**1.77**	**2.44**	**2.93**	**3.46**
AVERAGE D.S.C.R.					**2.63**

REPAYMENT SCHEDULE OF TERM LOAN							
					Interest		11.00%
Year	Particulars	Amount	Addition	Total	Interest	Repayment	Closing Balance
ist	Opening Balance	-					
	Jan-00		14.18	14.18	-	-	14.18
	2nd month	14.18	-	14.18	0.13	-	14.18
	3rd month	14.18	-	14.18	0.13	-	14.18
	#VALUE!	14.18	-	14.18	0.13	-	14.18
	5th month	14.18	-	14.18	0.13	-	14.18
	6th month	14.18	-	14.18	0.13	-	14.18
	7th month	14.18	-	14.18	0.13	0.26	13.91
	8th month	13.91	-	13.91	0.13	0.26	13.65
	9th month	13.65	-	13.65	0.13	0.26	13.39
	#VALUE!	13.39	-	13.39	0.12	0.26	13.13
	#VALUE!	13.13	-	13.13	0.12	0.26	12.86
	12th month	12.86	-	12.86	0.12	0.26	12.60
					1.39	**1.58**	
2nd	Opening Balance						
	1st month	12.60	-	12.60	0.12	0.26	12.34
	2nd month	12.34	-	12.34	0.11	0.26	12.08
	3rd month	12.08	-	12.08	0.11	0.26	11.81
	4th month	11.81	-	11.81	0.11	0.26	11.55
	5th month	11.55	-	11.55	0.11	0.26	11.29
	6th month	11.29	-	11.29	1.00	0.26	11.03
	7th month	11.03	-	11.03	0.10	0.26	10.76
	8th month	10.76	-	10.76	0.10	0.26	10.50
	9th month	10.50	-	10.50	0.10	0.26	10.24
	10th month	10.24	-	10.24	0.09	0.26	9.98
	11th month	9.98	-	9.98	0.09	0.26	9.71
	12th month	9.71	-	9.71	0.09	0.26	9.45
					2.12	**3.15**	
3rd	Opening Balance						
	1st month	9.45	-	9.45	0.09	0.26	9.19
	2nd month	9.19	-	9.19	0.08	0.26	8.93
	3rd month	8.93	-	8.93	0.08	0.26	8.66
	4th month	8.66	-	8.66	0.08	0.26	8.40
	5th month	8.40	-	8.40	0.08	0.26	8.14
	6th month	8.14	-	8.14	0.07	0.26	7.88
	7th month	7.88	-	7.88	0.07	0.26	7.61
	8th month	7.61	-	7.61	0.07	0.26	7.35
	9th month	7.35	-	7.35	0.07	0.26	7.09
	10th month	7.09	-	7.09	0.06	0.26	6.83
	11th month	6.83	-	6.83	0.06	0.26	6.56
	12th month	6.56	-	6.56	0.06	0.26	6.30
					0.88	**3.15**	

4th	Opening Balance						
	1st month	6.30	-	6.30	0.06	0.26	6.04
	2nd month	6.04	-	6.04	0.06	0.26	5.78
	3rd month	5.78	-	5.78	0.05	0.26	5.51
	4th month	5.51	-	5.51	0.05	0.26	5.25
	5th month	5.25	-	5.25	0.05	0.26	4.99
	6th month	4.99	-	4.99	0.05	0.26	4.73
	7th month	4.73	-	4.73	0.04	0.26	4.46
	8th month	4.46	-	4.46	0.04	0.26	4.20
	9th month	4.20	-	4.20	0.04	0.26	3.94
	10th month	3.94	-	3.94	0.04	0.26	3.68
	11th month	3.68	-	3.68	0.03	0.26	3.41
	12th month	3.41	-	3.41	0.03	0.26	3.15
					0.53	**3.15**	
5th	Opening Balance						
	1st month	3.15	-	3.15	0.03	0.26	2.89
	2nd month	2.89	-	2.89	0.03	0.26	2.63
	3rd month	2.63	-	2.63	0.02	0.26	2.36
	4th month	2.36	-	2.36	0.02	0.26	2.10
	5th month	2.10	-	2.10	0.02	0.26	1.84
	6th month	1.84	-	1.84	0.02	0.26	1.58
	7th month	1.58	-	1.58	0.01	0.26	1.31
	8th month	1.31	-	1.31	0.01	0.26	1.05
	9th month	1.05	-	1.05	0.01	0.26	0.79
	10th month	0.79	-	0.79	0.01	0.26	0.53
	11th month	0.53	-	0.53	0.00	0.26	0.26
	12th month	0.26	-	0.26	0.00	0.26	-
					0.19	**3.15**	

DOOR TO DOOR	60	MONTHS
MORATORIUM PERIOD	6	MONTHS
REPAYMENT PERIOD	54	MONTHS

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