

Automatic Switches For Electrical Gadgets

PRODUCT CODE (ASICC) : 77311

QUALITY AND STANDARDS : IS 13947 (Part 2):1993

PRODUCTION CAPACITY : Quantity : 1800 Nos.
(per annum)

Value : Rs. 171,00,000

MONTH AND YEAR : 2002-2003

OF PREPARATION

PREPARED BY : Small Industries Service Institute

Gangtok

and

Office of the Development Commissioner Small

Scale Industries

Electrical and Electronics Division,

7th Floor, Nirman Bhavan, New Delhi-110011

Introduction

This project profile envisages the production of Automatic Switches for Electrical Gadgets Starter by setting up of a unit in a small scale sector. The Automatic Switches for Electrical Gadgets are used for switching on automatically the lights, fans, AC fittings in a conference hall for a specified duration. It is often observed that the lights, fans etc. in a conference/seminar hall remains on even when they are not required. Switches are provided for their operation but not many bother to switch them off after use. This leads to wastage of electrical energy. A control circuit for Automatic Switching of the electrical gadgets for the period of their requirements seems to be ideal solution to this problem.

Market Potential

With rapid industrialization in urban and semi urban areas and rapid increase in the conference seminar halls in the Government, private sectors and in the offices, the demand of the Automatic Switches for Electrical Gadgets is enormous.

Basis and 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 first year and second year of operations the capacity utilization is 60% and 80% respectively. The unit is expected to achieve full capacity utilization from the third year onwards.
- iii) The salaries and wages, cost of raw materials, utilities, rents, etc. are based on the prevailing rates in and around Gangtok. These cost factors are likely to vary with time and location.
- iv) Interest on term loan and working capital loan has been taken at the rate of 18% on an average. This rate may vary depending upon the policy of the 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 break-even point percentage indicated is of full capacity utilization.
- vii) The project preparation cost etc. whenever required could be considered under pre-operative expenses.
- viii) The essential production machinery and test equipment required for the project have been indicated. The unit may also utilize common test facilities available at Electronics Test and Development Centres (ETDCs) and Electronic Regional Test Laboratories (ERTLs) and Regional Testing Centres (RTCs).

Implementation Schedule

The major activities in the implementation of the project has been listed and the average time for implementation of the project is estimated at 12 months:

<i>Sl. No.</i>	<i>Activity</i>	<i>Period (In Months)</i>
1.	Preparation of project report	1

2.	Registration and other formalities	1
3.	Sanction of loan by financial institutions	3
4.	Plant and Machinery:	
	a) Placement of orders	1
	b) Procurement	2
	c) Power connection/ Electrification	2
	d) Installation/Erection of machinery/ Test Equipment	2
5.	Procurement of raw materials	2
6.	Recruitment of Technical Personnel etc.	2
7.	Trial production	11
8.	Commercial production	12

Notes

1. Many of the above activities shall be initiated concurrently.
2. Procurement of raw materials commences from the 8th month onwards.
3. When imported plant and machinery are required, the implementation period of project may vary from 12 months to 15 months.

Technical Aspects

Process of Manufacture

The process consists of cutting of CRCA sheets into proper and required

size on shearing machine. The cutted sheet is then pressed into deep drawing press for making of top and bottom covers. The covers are cleaned, drilled for holes, painted and welding done as required. The bought out components like contactor, timers, connectors, MCB's etc are fitted in the bottom cover as per line and circuit diagram. Beading rubber gaskets are provided between top and bottom cover in order to make it weather proof. Neutral link is provided in the bottom cover.

Selector switch is provided on the top cover. The Automatic switcher is inspected and tested for proper operation as per IS 13947(Part 2) :1993 Rubber knockouts are fitted. The circuit line diagram is pasted inside the top cover. Nameplate is riveted on the outside of the top cover. The instruction and maintenance manual is packed along with the starter.

Quality Control and Standards

IS 13947(Part 2):1993

Production Capacity (per annum)

Quantity : 1800 Nos.

Value : Rs. 1,71,000,00

Motive Power

25 HP.

Pollution Control

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

India having acceded to the Montreal

Protocol in September 1992, the production and use of Ozone Depleting Substances (ODS) like Chlorofluore Carbon (CFCs), Carbon Tetrachloride, Halons and methyl 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.

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 Government 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 of Energy Efficiency created under the Act.

The following steps may help for conservation of electrical energy:

- i) Adoption of energy conserving technologies, production aids and testing facilities.
- ii) Efficient management of process/manufacturing machineries and systems, QC and testing equipments for yielding maximum Energy Conservation.
- iii) Optimum use of electrical energy for heating during soldering process can be obtained by using efficient temperature controlled soldering and de-soldering stations.
- iv) Periodical maintenance of motor, compressors etc.
- v) 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.

Financial Aspects

A. Fixed Capital

(i) Land and Building (per month)	(Rs.)
Rented cover shed of floor area of	14,000

(ii) Plant and Machinery

Sl. No.	Name of the Machine and Specification	Ind/ Imp	Qty Nos.	Price (Rs.)	Total (Rs.)
1.	1618 SWG × 1200 mm heavy duty type Treadle operated Guillotine Shearing machine manually operated with HCHC blades	Ind.	1	22,000	22,000
2.	Deep Drawing press fitted 20 Ton fitted with 2 HP 440 volts. Motor with all standard accessories	-do-	1	75,000	75,000
3.	3 kva Spot welding machine	-do-	1	30,000	30,000
4.	1/2 Inch Bench Drilling Machine fitted with 1/2 HP 440volts motor with drill chuck and arbor	-do-	1	5,000	5,000
5.	Bench Grinder 200 mm. Wheel double ended fitted with 1 HP. 440 volts Motor, with one line	-do-	1	4,000	4,000

and other course grinding wheel

6. Pneumatic Riveting with 2.0 HP/440/50 Cy AC	-do-	1	21,000	21,000
Electrical with compressor				
7. Hand Shearing Machine 12 Inch Blade capacity. Heavy Duty Geared Type, HCHC Blade. 4 Edge hand lever	-do-	1	5,000	5,000
8. 500 x 500 x 500 mm pickling plant	-do-	1	7,000	7,000
9. 100 lbs. working pressure Air Compressor fitted with 1 HP. 440 volts Motor. Single stage, single cylinder with spray painting unit	-do-	1	14,000	14,000
10. 3.0 W heating chamber	-do-	1	52,000	52,000
Total			2,35,000	

Testing Equipments

Sl. No.	Name of the Equipment and Specification	Ind/ Imp	Qty Nos.	Price (Rs.)	Total (Rs.)
1.	Megger 500 volts DC. Hand operated with testing leads and carrying case	Ind	1	3,100	3,100
2.	Multimeter	-do-	2	500	1,000
3.	Watt meter 3 Phase 4 Wire	-do-	1	3,200	3,200
4.	Auto Transformer 0.5 kva	-do-	2	1,700	3,400
5.	3 1/2 Digit Digital Clamp Meter Range 0 Testing 200 Amps.	-do-	1	3,300	3,300
6.	Leakage current Earth Leakage Tester.	-do-	1	4,000	4,000
7.	2.5 kV High Voltage Tester	-do-	1	7,000	7,000

8.	Test Bench with fittings	Ind	2	5,000	10,000
9.	Other misc. instruments and meters	-	-	-	5,000
				Total	40,000
(a)	Total Cost of Plant and Machinery and Testing Equipment				2,75,000
(b)	Electrification and Installation at 10% of cost of above				27,500
(c)	Office Equipments and furnitures	-do-	-	LS	25,000
(d)	Cost of Tools, Dies and fixtures	-do-	-	LS	30,000
(iii)	Pre-operative Expenses	-	-	LS	15,000
				Total	3,72,500

Total Fixed Capital Requirement 3,72,500

B. Working Capital (per month)

(i) Staff and Labour (per month)

Sl. No.	Description	Number	Salary (Rs.)	Total (Rs.)
1.	Plant Engineer	1	7,000	7,000
2.	Supervisor (Technical)	1	4,000	4,000
3.	Skilled workers	3	3,000	9,000
4.	Semi-skilled workers	2	2,000	4,000
5.	Un-skilled workers	2	1,500	3,000
6.	Electrician	3	3,000	9,000
7.	Accountant	1	3,500	3,500
8.	Store Keeper	1	3,000	3,000
9.	Office Assistants	2	2,500	5,000

10.	Peon	1	2,000	2,000
11.	Watchman	2	2,000	4,000
12.	Sales Officer	1	5,000	5,000
			Total	58,500

Add 15% perquisites of above 8,775

Total 67,275

ii) Raw Materials (per month)

Sl. No	Name of the Equipment and Specification	Ind/ Imp	Qty Nos.	Price (Rs.)	Total (Rs.)
1.	CRCA Sheet 18/20 SWG	Ind.	500 Kgs.	21	10,500
2.	Contactora	-do-	450 Nos.	800	3,60,000
3.	Timer 24 Hours	-do-	150 Nos.	2900	4,35,000
4.	Indicating Lamps	-do-	300 Nos.	20	6,000
5.	Two point selector	-do-	150 Nos.	150	22,500
6.	Terminal Block	- do-	150 Nos.	150	22,500
7.	Push button and element pair	-do-	300 Nos.	180	54,000
8.	MCB 32 Amps	-do-	150 Nos.	600	90,000
9.	MCB 16 Amps	-do-	150 Nos.	600	90,000
10.	Rubber, bead, Knockout, hardware, silver rivets, paints, Earth Terminal, acids, packaging material and other misc.	-do-	LS	-	25,000
			Total		11,15,500

(iii) Utilities (per month) (Rs.)

Electricity bill per month 8,750

@ Rs. 3.50 for 2500 Units

Total 8,750

(iv) Other Contingent Expenses (per month)	(Rs.)
i. Rent	11,000
ii. Postage and stationery	2,000
iii. Insurance and Taxes	1,500
iv. Telephone	1,000
v. Repair and Maintenance	1,800
vi. Publicity and Advertisement	2,500
vii. Travelling and Transport	5,500
viii. Renewal and Replacement	1,500
ix. Other Misc. Expenses	3,000
Total	32,800

(v) Total Recurring Expenses (per month)

Rs. 12,24,300

(vi) Working Capital (per month)	Rs.
a) Staff and labour	67,275
b) Raw material	11,15,500
c) Utilities	8,750
d) Other Contingent expenses	32,800
Total	12,24,300

(vi) Total Working Capital Requirement

(for 3 Months)

Rs. 12,24,300 x 3 = **36,72,900**

Say 36,73,000

C. Total Capital Investment

- i. Fixed capital 3,72,500
- ii. Working capital (for 3 Months) 36,73,000

Total 40,45,400

Financial Analysis

(1) Cost of Production (per annum) (Rs.)

i. Recurring Expenses	1,46,91,600
ii. Depreciation on Machinery @ 10%	27,500
iii. Depreciation on Tools and Equipments @ 20%	6,000
iv. Depreciation on Furniture and Fixture @ 20%	5,000
v. Interest on Total capital investment @ 18%	7,28,172
Total	1,54,58,272

(2) Sales (per annum) (Rs.)

1,800 nos. of Automatic
Switches for electrical gadgets

(3) Profit (per annum) Rs. 16,41,728

Sales - Cost of Production

(4) Profit on Sales

= Profit (per annum) x 100

Sales (per annum)

= **9.6%**

(5) Rate of Return

= $\frac{\text{Profit (per annum)} \times 100}{\text{Total Capital Investment}}$

Total Capital Investment

= **40.5%**

(6) Break-even Point

Fixed Cost (per annum)	(Rs.)
i. Rent	1,68,000
ii. Depreciation on Machinery @ 10%	27,500
iv. Depreciation on Tools and Equipment @ 20%	6,000
v. Depreciation on Furniture and Fixture @ 20%	5,000
vi. Interest	7,28,172
vi. 40% of salary and wages	3,22,920
vii. 40% of utilities and other contingent expenses (Excluding rent)	1,32,240
Total	13,89,832

B.E.P.

= $\frac{\text{Fixed cost} \times 100}{\text{Sales}}$

13,89,832 x 100

$$\begin{aligned} &= \frac{\text{Fixed cost} \times 100}{\text{Fixed cost} + \text{Profit}} \\ &= \frac{13,89,832 \times 100}{13,89,832 + 16,41,728} \\ &= 45.8\% \end{aligned}$$

Additional Information

- a. The Project Profile may be modified/tailored to suit the individual entrepreneurship qualities/capacity, production Programme and also to suit the locational characteristics, wherever applicable.
- b. The Electrical Technology is undergoing rapid strides of change and there is need for regular monitoring of the national and international technology scenario. The unit may, therefore, keep abreast with the new technologies in order to keep them in pace with the developments for global competition.
- c. Quality today is not only confined to the product or service alone. It also extends to the process and environment in which they are generated. The ISO 9000 defines standards for Quality Management Systems and ISO 14001 defines standards for Environmental Management System for acceptability at international level. The unit may therefore adopt these standards for global competition.
- d. The margin money recommended is 25% of the working capital requirement at an average. However, the percentage of margin money may vary as per bank's discretion.

Addresses of Machinery and Testing Equipment Manufacturers

1. M/s I. P. Singh Machinery (Pvt.) Ltd.
75, Ganesh Chandra Avenue, Kolkata - 700 013
2. M/s. Nandy and Co. 125 Belilious Road, Howrah - 711 101
3. M/s. Turnwell Machine Tools 16, Ganesh Chandra Avenue, Kolkata - 700 013
4. M/s. Turner and Tools 15. Ganesh Chandra Avenue, 2nd Floor, Kolkata - 700 013
5. M/s. Pathak Machine Tools Pvt. Ltd. 116, G.T. Road. Salkia, Howrah - 711 106
6. M/s. Goliya Electricals Pvt. Ltd. Plot no. 64. G.I.D.C Estate, Phase I. OPP. Sunita Textiles, Vapi 396195, Distt. Bulsar, Gujarat.

7. M/s. Goliya Instrument Pvt. Ltd. 311. Bharat Industrial Estate, T. J. Road. Sewree, Mumbai - 400 015

8. M/s. Bengal Trading Co. Sevoke Road, P.O. Siliguri, District Darjeeling - (W.B.).

9. Any dealer of L and T. 10. M/s. Cherry Pvt. Ltd. Gangtok. Sikkim

Addresses of Raw Material Suppliers

1. M/s. H.K. Agarwal and Co. Sevoke Road. Siliguri - 734 401

2. M/s. Beekay Hardware Tadong Gangtok, Sikkim-737 102.

3. M/s. Cherry Pvt. Ltd. 31-A National Highway, Gangtok, Sikkim_737 101

4. M/s. Vinod Enterprise Near Convey Ground, Tadong, Gangtok. Sikkim- 737 101