

PROJECT PROFILE
ON
ASSEMBLING/MOUNTING OF ELECTRONICS COMPONENTS ON PCB

PRODUCT CODE (NIC)	:	---
QUALITY & STANDARDS	:	As per Customer's Specification
PRODUCTION CAPACITY	:	Qty : 54000 Nos./ Annum
		Value : Rs. 16,74,000/-
YEAR OF PREPARATION	:	2006-07
PREPARED / UPDATED BY	:	MSME - Development Institute
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1. INTRODUCTION:

Printed circuit board (PCB) is base of any electronics/electrical equipment. A PCB provides the connectivity to the electronic component such as resistor, capacitor, coils, pots, diodes, FET, transistor, ICs, transformer etc. to form a complete electronic circuit. In the present scenario, the existence of electronics equipments can not be imagined without a PCB. The PCBs are not only providing the connectivity among the electronic components but also reduces the size and increases the efficiency of the electronic equipment. Broadly the PCBs may be divided in two categories *i.e.* single layer PCBs and multi layer PCBs.

One can easily find the contribution of electronic industries in each and every field of our daily life *i.e.* entertainment, communication, education, R&D, Public Services, Defence, Transport, Agriculture, health care services etc. With the growing demand of electronic equipments/appliances in every sphere of human beings the electronic industry is growing up with a very fast rate. Similarly, the demand of micro servicing industries such as assembling/mounting of electronic component on PCBs to meet the requirement of the small/medium/large scale electronic industries is also increasing. This project profile is prepared for the leaded electronic components to be assembled on PCBs. The PCBs and components are provided by the customer.

2. MARKET POTENTIAL:

PCBs are used in each and every electronic and most of the electrical equipments. The working of any electronic equipments such as home appliances, entertainment equipment, testing, medical equipments or even defence electronic equipment etc. can not be imagined without a PCB. The small, medium and large scale units have Nos. of vendors to carry out the specific job. The mounting of electronic components on PCB is also a one of the ancillary job.

The charges for this type of job depends on the size and level of complexity of the PCB. The test equipments, raw material required to run this type of service unit are indigenously available. With proper marketing, high quality and competitive price this type of units have sufficient scope in the present scenario.

3. 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, Cost of Land and Rents etc. are based on the prevailing rates in 2006-07 in and around Himachal Pradesh. 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 16% 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 Equipment refer to a particular make/model and the prices are approximate prices prevailing in 2006-07.
- vi) The breakeven 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), Electronic Regional Test Laboratories (ERTLs) and Regional Test 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

		Period (in month)	Suggestive
1.	Preparation of Project Report	1	
2.	Registration & other formalities	1	
3.	Sanction of loan by financial Institutions	3	
4.	Plant & 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	

NOTE:

- 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:**1. Assembling/Mounting Procedure**

The incoming electronic components and PCBs are tested for the required specification. In the assembly line electronic components such as resistor, capacitor, coils, diodes, transistors, ICs, SCRs etc. are fitted on the PCB at their appropriate location at different stages. This PCBs then passed over the heat wave soldering bath for soldering of component to the PCB. In the next stage, unwanted leads of the components are removed and proper soldering of the components is checked with the help of magnifying glass fitted with tube light. Then the assembled PCB is tested for its specification with the help of appropriate test jigs before despatch to the customer.

2. QUALITY STANDARDS

As per customer's specification

3. PRODUCTION CAPACITY PER ANNUM :

QUANTITY : 54,000 Nos. / annum

VALUE : Rs. 16,74,000/-

4. MOTIVE POWER: 10 KVA (Approx.)**5. 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.

The following steps may help to control pollution in Electronics Industry wherever applicable:

- i) In Electronics 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 phase out the existing polluting technologies. Numerous new fluxes have been developed containing 2-10% solids as opposed to the traditional 15-35% solids.
- ii) Electronics Industry uses CFCs, 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 CFC-113 and Methyl Chloroform in Electronics cleaning. Other Chlorinated solvents such as Trichloroethylene, per-Chloroethylene and Mythlen Chloride have been used as effective cleaners in Electronics Industry for many years. Other organic solvents such as Ketones and Alcohol's are effective in removing both solder fluxes and many polar contaminants.

6. Energy Conservation:

With the growing energy demand 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 :

- i) Adoption of energy conserving technologies, production aids and testing facilities.
- ii) Efficient management of process/manufacturing machinery 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 desoldering stations.
- iv) Periodical maintenance of motors, compressors etc. use of power factor correction capacitors.
- v) Proper selection and layout of lighting system.
- vi) Timely switching. On-Off of the lights;
- vii) Use of compact fluorescent lamps wherever possible etc.

FINANCIAL ASPECTS

(i) Land & Building

Built up area	150 Sq. Mtr.
Office, Stores	50 Sq. Mtrs.
Assembly & Testing	100 Sq. Mtrs.
Rent Payable per annum	70,000/

(ii) Machinery and Equipments

Sl.No	Description	Ind./Imp.	Qty.	Value(Rs.)
1.	Heat wave soldering machine	Ind.	1	2,10,000
2.	Oscilloscope (50 - MHz)	Ind.	1	15,300
3.	LCR-Q Meter	Ind.	1	15,300
4.	Function Generator	Ind.	1	5,300
5.	Power Supplies (O - 30V, 3 Amp)	Ind.	2	9,000
6.	4½ Digit Digital Multimeter	Ind.	8	12,000
7.	Analog Multimeter	Ind.	2	4,000
8.	Magnifying glass fitted with tube light	Ind.	2	10,000
9.	Temperature control soldering station	Ind.	4	12,000
10.	Soldering Iron 25 W	Ind.	6	900
11.	Soldering Iron 65 W	Ind.	1	200
12.	Variac	Ind.	1	4,500
13.	Rheostat	Ind.	1	1,500
		Total		3,00,000
	Other fixed Assets			
	Electrification charges @ 10% cost of			
	Machinery & equipments	-		30,000
	Office equipments, Furniture & Working tables etc.	LS		80,000
	Tools, Jigs and Fixures etc.	LS		20,000
	Pre-operative expenses			20,000
		Total		1,50,000
	Total fixed Capital			4,50,000

Working Capital Per Month :**(i) Staff & Labour**

Sl. No.	Designation	Nos.	Salary/month (Rs.)	Total Salary/ month (Rs.)
1.	Servicing Engineer Cum Manager	1	6,000/-	6,000
2.	Accountant/cum computer operator	1	4,000/-	4,000
3.	Skilled Workers	6	3,000/-	18,000
4.	Semi-Skilled Workers	4	2,500/-	10,000
5.	Peon / Watchman	1	2,000/-	2,000
	+ Pre Perquisites @ 15% of Salary			6,000
			Total	46,000

(ii) Raw Material Requirement Per Month - (for 4500 units)

Sl.No	Description	Ind./Imp.	Qty.	Value(Rs.)
1.	Consumables (Solder, Flux, Chemicals,	Ind.	4500	22,500
	Adhesive, Wires & PCB etc.)		Units	
			Total	22,500

Note:- The Quantity and value of Raw Materials requirement vary with Design and features of the PCB.

(iii) Utilities Per Month

Power	2,000
Water	500
Total	2,500

(iv) Other contingent Expenses per month

1.	Rent	6,000
2.	Postage and Stationery	500
3.	Telephone/Telex/Fax charges	1,000
4.	Repair and Maintenance	1,000
5.	Transport & conveyance Charges	1,500
6.	Advertisement & Publicity	500
7.	Insurance and Taxes	1,000
8.	Miscellaneous expenses	1,000
	Total	12,500

Total Recurring Expenditure Per month
(i + ii + iii + iv)

= Rs. 83,500/-
Say = Rs. 84,000/-

Total Capital Investment (Rs.)

Fixed Capital	4,50,000
Working Capital on 3 months basis	2,52,000
Total	7,02,000

Financial analysis:

Cost of Production (Per annum)

Total Recurring Expenditure	10,08,000
Depreciation on Plant & Machinery @ 10%	30,000
Depreciation on Tools, Jigs, fixtures etc. @ 25%	5,000
Depreciation on office equipment, furniture @ 20%	16,000
Interest on total capital investment @ 16%	1,12,320
Total	11,71,320
or Total	11,71,000

Sales Turnover Per Annum

<u>Item</u>	<u>Qty. (Nos.)</u>	<u>Rate/Unit (Rs.)</u>	<u>Total Sales (Rs.)</u>
Job work of PCB (Component mounting)	54,000	31	16,74,000

Profit (Per Annum) Before tax	=	Sales turnover-cost of production (per Annum)
	=	Rs. 5,03,000/-
Net Profit Ratio	=	(Profit x 100) Sales turnover
	=	30 %
Rate of Return	=	(Profit x 100) / Total capital Investment
	=	71.6 %

Fixed Cost (FC) per annum

Rent	72,000
Depreciation on machinery & equipment @ 10%	30,000
Depreciation on tools, jigs and fixtures @ 25%	5,000
Depreciation on office equipment, furniture @ 20 %	16,000
Interest on total capital investment @ 16%	1,12,320
Insurance	12,000
40% of Salary and Wages	2,20,800
40% of Other Contingencies (Excluding rent & insurance)	26,400
Total	4,94,520
Say	4,94,500

$$\begin{aligned}
 \text{Break even point (BEP)} &= [\text{FC} / (\text{FC} + \text{Profit})] \times 100 \\
 &= \frac{4,94,500}{4,94,500 + 5,03,000} \times 100 = 49.5\%
 \end{aligned}$$

Additional Information

- 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.
- The Electronics 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.
- 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 adopt ISO 9000 standards for global competition.
- 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.

NAME AND ADDRESSES OF MACHINERY, EQUIPMENTS SUPPLIER

1.	M/s. Vaiseshaka Instruments	Testing & measuring
	2, Post Box Stall, 38 Industrial Area	
	Ambala Cantt, Haryana	
2.	M/s. Aplab	Testing & measuring
	6, Vasundhare, 6th Floor, 2.7 Sarat Bose Road,	
	Kolkata - 700020	
3.	M/s. International Electronics	Testing & measuring
	202 Champakalal Industrial Estate, 105 Sion East	
	Mumbai - 400022	
4.	M/s. Sumitron Exports Pvt. Ltd.,	Testing & measuring
	27, Community Centre, Naraina Phase - I, P.O. Box - 10227	
	New Delhi - 110028	
5.	M/s. Advance Tech Services,	Soldering Equipments & Circuit Aids
	56, 2nd Floor, Rani Jhansi Road	
	New Delhi - 110055	
6.	M/s. Inde Enterprises,	Soldering Equipments & Circuit Aids
	745, Sector- 8B, Chandigarh	
7.	M/s. Bergen Associate Pvt. Ltd.,	Soldering Equipments & Circuit Aids
	1082, Sector 27 - B, Chandigarh- 19	
8.	M/s. India Associates	Soldering Equipments & Circuit Aids
	16, Rest House, Crescent Off.	
	Church St., Bangalore -1	
9.	M/s. Navanidhi Electronics Pvt. Ltd.,	Soldering Equipments & Circuit Aids
	1-60/1, Shehapuri, Nacharam,	
	Hyderabad- 7	
10.	M/s. Control Signals	Soldering Equipments &
	C-62, Hari Nagar, Ashram, New Delhi - 110014	Circuit Aids
	E-mail tech@controlsignals.ner,	
	www.indiamart.com	

Name and Address of Raw Material Suppliers :

The consumables such as solder, flux, chemical, adhesive, PCB may be procured from the local market.