Govt. of India
Ministry of MSME

Project Profile On
LED Based Lighting systems (LED Lamps)

Quality standards : As per IS 16102 (Part I &II) 2012

Production Capacity : 45000 Nos. per annum

Year of Preparation : 2014-2015

Prepared By

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1. ***INTRODUCTION-*** LED is semiconductor Technology that emits light at the junction of oppositely charged materials when voltage forces electron movement. Led based lighting systems are devices consisting of many LEDs chips embedded on the LED fixtures base and fitted with rectifier circuit that provides regulated current output at the low voltage that makes them to be operated on AC Circuit because LEDs requires DC to operate.
   The whole PCB circuit board is fitted inside a plastic enclosure along with the metallic cap and Smokey reflector.

2. ***MARKET POTENTIAL-*** Conventional lighting systems represent mainly incandescent light bulbs and compact fluorescent lights (CFLs).LED lighting system provides advantages over conventional lighting systems in terms of better energy efficiency, better energy costs, longer lifetime, less temp. Sensivity, higher light output. This leads them to be better Lighting substitute and good market prospect. Therefore the market prospect for LED based Lighting system is good and booming.

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 utilisation on single shift basis for 300 days a year. During first year and second year of operations the capacity utilisation is 60% and 80% respectively. The unit is expected to achieve full capacity utilisation from the third year onward.
   (iii) The salaries and wages, cost of raw materials, utilities, rent etc are based on the prevailing rates in and around Patna. These cost factors are likely to vary with time and location.
   (iv) Interest on term loan and working capital loan must be preferably current rate. Otherwise the rate of interest on an average may be taken as 13%. This rate may vary depending upon the policy of the financial institution/agencies from time to time.
   (v) The cost of machinery and equipment refer to a particular make/model and prices are approximate.
   (vi) The breakeven point percentage indicated is of full capacity utilisation.
   (vii) The project preparation cost etc whenever required could be considered under preoperative expenses.
   (viii) The essential production machinery and test equipments required for the projects have been indicated. The unit may utilize common test facilitates available at ETDC and ERTLs and Regional Testing Centre (RTC).

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:

Name of activity	Period in months (suggestive)
1.Preparation of Project Report	1
2.Registration and other formalities	1

3.Sanction of loan by financial institution 3

4. Plant and machinery

(a) Placement of order 1

(b) Procurement 2

(c) Installation /erection of machinery/test equipments 2

5.Procurement of raw material 2

6.Recruitment of technical person etc 2

7. Trial production 11^{th} month

8.commercial production 12^{th} month

Note

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

Technical aspect

Process of Manufacturing; This project profile is made for the assembling of LED based Lighting system cum LED Lamp up to 10 W. The assembling of LED based Lighting system cum LED Lamp consists of the following steps:

1. Procurement/import of LED chips of Mili Watt rating, Procurement of Circuit and other mounting devices.
2. Embedding of LED Chips of miliwatt rating on the PCB board with the rectifier circuit, filter circuit etc.
3. Fitting of PCB Board with the holder cap and plastic modules fitted with the Smokey reflector to form a compact unit.
4. Testing of the assembled LED Lighting systems and packing

Quality controls & Standards

As Per IS 16102 (Part I & II) 2012

Production Capacity (Per annum)

Qty; 45000Nos.

Value: Rs.6750000

4. Motive power

5kw

5. Pollution control

The govt. Accords utmost importance to control environmental pollution. The Small- Scale entrepreneur should have an environmental friendly attitude and adopt pollution control measures by process modification and technology substitutions.

India 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 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 19^{th} 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 environmental and the end products. Alternative technologies may be used to phase-out the existing polluting technologies. Numerous new fluxes have been developed containing 2-10% solids as apposed to the traditional 15-35 % solids.

ii) Electronic industry uses CFCs,carbon tetrachloride and Methyl chloroform for cleaning of printed Circiut 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 convents such as trichloroethylene,per chloroethylene and methylene chloride have been used an effective cleaners in electronic industry for many years. Other organic solvents such as Ketenes and Alcolols are effective in removing both solder fluxes and many polar contaminants.

6.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 Govt. of India since 1980s. The energy Conservation Act 2001 has been enacted on 18th August 2001which provides for efficient use of energy its conservation and capacity building of Bureau of Energy Efficiency created under the act.

The following steps may be help for conservation of Electrical Energy:

i) Adoption of energy conserving technology, 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 desoldering stations.

iv) Periodical maintenance of motors compressors etc

v) Use of power factor correction capacitors, proper selection and layout of lighting systems timely switching on/off of the lights, use of Compact Fluorescent Lamps wherever possible.

FINANCIAL ASPECT

(I) Land and building

Built up Area	3000 SqFt
Office, Store	1000 Sq Ft
Assembly and Testing	2000 Sq Ft
Rent payable Per Annum	6000

(ii) Machinery and equipment

Sn	Description	Ind/imp	Qty	Value (RS.)
1	Component forming	Indian	02	1,00000

	machine			
2	Soldering Machine	Indian	10	5,000
3	Digital Multimeter	Indian	02	8,000
4	Continuity Tester	Indian	10	1000
5	Sealing Machine	Indian	01	10,000
6	Packaging Machine	Indian	01	15,000
7	LCR Meter	Indian	02	20,000
8	Small Drilling M/C Set	Indian	01	10,000
9	Lux Meter	Indian	01	40,000
10	Oscilloscope	Indian	01	60,000
11	Personnel Computer with UPS and Printer	Indian	01	80,000
7	Miscellaneous items			10,000

Total = 359000

Other Fixed Assets in (RS.)

Electrification charges@10%of cost of machinery and equipment	35900
Office equipment, furniture and working table etc	20,000
Tools, jigs and fixtures	20,000
Pre operative expenses	5,000
Misc.	5,000
Total	85900

Total Fixed Capital = 444900

Working Capital Per Month

i) Staff & Labour

SN	Description	No of Persons	Salary/month (RS.)	Total Salary per month (RS.)
1	Supervisor Cum Manager	01	8,000	8,000
2	Skilled Worker	05	4,000	20,000

3	Accountant	01	6,000	6,000

Total = 34,000

ii) Raw Material Requirement Per Month

SN	Description	Qty	Rate	Value (Rs.)
1	LED Chips	45000	4	180000
2	Rectifier Circuit with filter	3750	20	75000
3	Heat Sink Devices	3750	5	18750
4	Metallic Cap Holder	3750	10	37500
5	Plastic Body	3750	10	37500
7	Reflector Plastic Glass	3750	10	37500
8	Connecting wire	Lumsum		5,000
9	Soldering Flux	Lumsum		5,000
10	Miscellaneous			10,000
11	Packaging Material			10,000

Total= 416250

iii) Utilities Per Month

Value in (RS.)

Power	3,000
Water	500

Total=3500

Other Contingent Expenditure Per Month

SN	Item	Amount (RS.)
1	Rent	6000
2	Postage and stationary	500
3	Telephone/fax	2000
4	Repair & Maintenance	1000
5	Transport and Conveyance charges	1500
6	Adv. And publicity	1000
7	Insurance and Taxes	1000
8	Miscellaneous expenditure	1000

Total= 14000

Total Reoccurring Expenditure Per Month (I+ii+iii+iv)= 467750

Total Capital Investment (In RS.)

Fixed capital	**444900**
Working capital for three month	**1403250**

Total= 1848150

Financial analysis

Cost of production per annum

Total reoccurring expenditure	**5613000**
Depreciation on machinery and equipment@10%	**35900**
Depreciation on tools, jigs and fixtures @25%	**5000**
Depreciation on office equipments, furniture @ 20%	**4000**
Interest on total Capital investment @ 13%	**240259**

Total= 5898159

Turn over per annum

Item	Qty (Nos)	Rate/unit	Total value (Rs.)
LED Lamp	**45000**	**150**	**6750000**

Profit per annum (before Taxes)= Turn over per annum- Cost of Production per annum = 851841
Net profit ratio= profit/annum*100/sales/annum = 13%

Rate of Return = Profit/annum*100/ Total Capital Investment = 46%

Break-even Point

Fixed cost per annum

Rent	**72000**
Depreciation on machinery and equipment @ 10%	**35900**

Depreciation on tools, jigs and fixtures @ 25%	**5000**
Depreciation on office equipment, furniture @ 20%	**4000**
Interest on total capital investment@13%	**240259**
Insurance	**1000**
40% of salaries and wages	**163200**
40% of other contingents & utilities (excluding rent & insurance)	**33600**
Total fixed cost	**554959**

Break even point = fixed cost *100/ fixed cost +Profit

= 554959X100/1406800=39%

Additional information

- **The Project Profile may be modified/tailored to suit the individual entrepreneurship qualities/capacity, production programme and also suit the location characteristics, wherever applicable.**

- **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 & address of Machinery and equipment supplier

1. Kamal Electronics, 14, Lakshmi Building, J.C.Road,Bangalore-560002
2. Static systems Pvt. Ltd.,925,II Floor,3rd Main,3rd Cross,D block,2nd Stage,Rajajinagar,Bangalore-560010
3. Buljin ELMEC Pvt. Ltd.,2/10,Plot No. 65 &78,Krishna Industrial estate,Mettukuppam,Vanagaram,Chennai-600095

Name & address of raw Material Suppliers

1. M/S Micrologix,473/D,13th Cross,4th Phase,Peenya industrial Area, Bangalore 560058

2.B.M.V. Circuit Systems,C/321, sector 10,Noida-201301

3.M/S Signal Circuits,7,Navjeevan,Rajguru Nagar,Pune-410505