PROJECT REPORT

Of

LED BULB UNIT

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding LED Bulb 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.

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SAMADHAN
Nurturing Dreams - Innovative Solutions

Lucknow Office: Sidhivinayak Building , 27/1/B, Gokhlley Marg, Lucknow-226001

Delhi Office : Multi Disciplinary Training Centre, Gandhi Darshan Rajghat, New Delhi 110002

Email : project@udyami.org.in
Contact : +91 7526000333, 444, 555

LED BULB

Introduction

An **LED lamp or LED light bulb** is an electric light for use in light fixtures that produces light using one or more light-emitting diodes (LEDs). LED lamps have a lifespan many times longer than equivalent incandescent lamps, and are significantly more efficient than most fluorescent lamps, with some LED chips able to emit up to 303 lumens per watt (as claimed by Cree and some other LED manufacturers). However, LED lamps require an electronic LED driver circuit when operated from mains power lines, and losses from this circuit mean the efficiency of the lamp is lower than the efficiency of the LED chips it uses. The most efficient commercially available LED lamps have efficiencies of 200 lumens per watt (Lm/W).

Similar to incandescent lamps (and unlike most fluorescent lamps), LEDs come to full brightness immediately with no warm-up delay. Frequent switching on and off does not reduce life expectancy as with fluorescent lighting. Light output decreases gradually over the lifetime of the LED (see Efficiency droop section).

Some LED lamps are made to be a directly compatible drop-in replacement for incandescent or fluorescent lamps. LED lamp packaging may show the light output in lumens, the power consumption in watts, the colour temperature in Kelvin or a colour description such as "warm white", "cool white" or "daylight", the operating temperature range, and sometimes the equivalent wattage of an incandescent lamp delivering the same output in lumens.

Flow of Current

LEDs run on direct current (DC), whereas mains current is alternating current (AC) and usually at much higher voltage than the LED can accept. LED lamps can contain a circuit for converting the mains AC into DC at the correct voltage. These circuits contain rectifiers, capacitors, and may have other active electronic components, which may also permit the lamp to be dimmed. In an LED filament lamp, the driving circuit is simplified because many LED junctions in series have approximately the same operating voltage as the AC supply.

Application of LED Bulb

LED Bulb are used for both general and special-purpose lighting. Where coloured light is needed, LEDs that inherently emit light of a single colour require no energy-absorbing filters.

White-light LED bulb have longer life expectancy and higher efficiency (more light for the same electricity) than most other lighting when used at the proper temperature. LED sources are compact, which gives flexibility in designing lighting fixtures and good control over the distribution of light with small reflectors or lenses. Because of the small size of LEDs, control of the sp

atial distribution of illumination is extremely flexible, and the light output and spatial distribution of an LED array can be controlled with no efficiency loss.

LEDs using the colour-mixing principle can emit a wide range of colours by changing the proportions of light generated in each primary colour. This allows full colour mixing in lamps with LEDs of differ.

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 equipment's 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 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.

Description of LED Bulb Machine

Machinery for LED Bulb Unit includes the following:

- Tikki Making Machine
- Punching Machine
- Cutter
- Iron
- Solder
- Nuts
- Paste

These machines are used to produce LED Bulb substance from the raw material. With the help of this machine the work of punching, cutting, pasting completes in a very short span.

LED Bulb Market Analysis

The LED lamp market is projected to grow by more than twelve-fold over the next decade, from $2 billion in the beginning of 2014 to $25 billion in 2023, a compound annual growth rate (CAGR) of 25%. As of 2018, many LEDs use only about 10% of the energy an incandescent lamp requires.

LED Bulb Manufacturing Process

- Take Body & diffuser of Bulb separately.
- Adjust in the tikki machine.
- Now soldering the PCB with diffuses wire.
- Cut the extra wire in the PCB unit.
- Put B22 cap on the PCB.
- Now press it with punching machine.
- Packaging
- Transport.

Machinery & Equipment's required

Name	Cost
Machine	10000
GST @ 18%	1800
Total	11800

- Cost of the machine is exclusive of GST & value of the machine varies with the change in batch size.

Land &Building required:

Land required 200-500 Square Feet (approx.)

Approximate construction cost for the same is 5000-10000.

Labour Requirement:

2-3 Manpower is required for the LED Bulb unit.

Includes:

1 skilled Labour

2 Unskilled Labour

Raw Material Requirement of Chalk

- Housing (body, Diffuser, tikky)
- DOB (PCB)
- B22 cap with wire

Raw material	Cost per Bulb
Housing	10
PCB	9
B22 with Cap	1.2
Packing	2
Total cost per Bulb	**22.20**

LED Bulb License &registration

For Proprietor:

- Obtain the GST registration.
- Fire/ Pollution Registration as required.
- Choice of a Brand Name of the product and secure the name with Trademark if required.

Implementation Schedule

S.N.	Activity	Time Required (in Months)
1	Acquisition Of premises	1
2	Construction (if Applicable)	1- 2 Months
3	Procurement & installation of Plant & Machinery	1
4	Arrangement of Finance	1
5	Requirement of required Manpower	1
	Total time Required (some activities shall run concurrently)	2-3 Months

Conclusion:

After completion of manufacturing process, product is ready to sell in the market. This machine can be installed with low investment & one can earn a good Margin of profit by doing this business.

PROJECT AT A GLANCE

1	Name of the Entreprenuer	**xx**		
2	Constitution (legal Status) :	xx		
3	Father's/Spouce's Name	**xx**		
4	Unit Address			
		Taluk/Block:	**xx**	
		District :	**xx**	
		Pin:		
		E-Mail:	**xx**	
		Mobile	**xx**	
5	Product and By Product	chalk		
6	Name of the project / business activity proposed :			
7	Cost of Project		**Rs.** 1.12	
8	**Means of Finance**			
	Term Loan		**Rs.** -	Lacs
	KVIC Margin Money		**Rs.**	**-**
	Own Capital		**Rs.** 1.42	Lacs
9	Debt Service Coverage Ratio			
10	Pay Back Period			
11	Project Implementation Period			
12	Employment			
13	Power Requirement		1 KW connection	
14	Major Raw materials		Housing, PCB, B22	
15	Estimated Annual Sales Turnover		5.75 Lacs (at 70% capacity)	
16	Detailed Cost of Project & Means of Finance			

COST OF PROJECT

(Rs. In Lacs)

Particulars	Amount
Land	
Building & Civil Work	
Plant & Machinery	0.12
Furniture &	

Fixtures	1.00
Pre-operative Expenses	
Contingencies	
Working Capital Requirement	3.00
Total	4.12

MEANS OF FINANCE

Particulars	Amount
Own Contribution	1.42
Bank Finance	-
working capital from bank	2.70
Total	4.12

FINANCIAL ASSISTANCE REQUIRED

Working Capital limit of Rs. Lacs

COST OF PROJECT	**PARTICULARS**	**AMOUNT**
	Building Civil Work	-
	Plant & Machinery	0.12
	Furniture & Fixtures and Other Assets	1.00
	Working capital	3.00
	Total	**4.12**

MEANS OF FINANCE	**PARTICULARS**	**AMOUNT**
	Own Contribution	1.42
	Working capital Limit	2.70
	Total	**4.12**

COMPUTATION OF PRODUCTION OF LED BULB

Items to be Manufactured

LED Bulb

machine capacity	300Bulb per Day
machine capacity per annum	90000Piece

Production of LED Bulb

Production	Capacity	BULB
1st year	70%	63,000
2nd year	75%	67,500
3rd year	80%	72,000
4th year	85%	76,500
5th year	90%	81,000

Raw Material

year	Capacity Utilisation	Rate per bulb	Amount (Rs. in lacs)
1st year	70%	20.20	12.73
2nd year	75%	20.30	13.70
3rd year	80%	20.40	14.69
4th year	85%	20.50	15.68
5th year	90%	20.60	16.69

Packaging Cost			
year	**LED Bulb**	**packing cost**	**Amount (Rs. in lacs)**
1st year	63,000	2.00	1.26
2nd year	67,500	2.10	1.42
3rd year	72,000	2.20	1.58
4th year	76,500	2.30	1.76
5th year	81,000	2.40	1.94

COMPUTATION OF SALE

Particulars	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Op Stock	-	5,250	5,625	6,000	6,375
Production	63,000	67,500	72,000	76,500	81,000
Less : Closing Stock	5,250	5,625	6,000	6,375	6,750
Net Sale	**57,750**	**67,125**	**71,625**	**76,125**	**80,625**
sale price per KG	35.00	36.00	37.00	38.00	39.00
Sales (in Lacs)	20.21	24.17	26.50	28.93	31.44

BREAK UP OF LABOUR CHARGES

Particulars	Wages Per Month	No of Employees	Total Salary
Skilled Labour	12000	1	12000
Unskilled	7000	1	7000
Total Salary Per Month			19000
Total Annual Labour Charges	**(in Lacs)**		**2.28**

Utility Charges at 100% capacity (per month)

Particulars	value	Description
Power connection required	1	KWH
consumption per day	8	units
Consumption per month	200	units
Rate per Unit	7	Rs.
power Bill per month	1400	Rs.

PROJECTED PROFITABILITY STATEMENT

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Capacity Utilisation %	**70%**	**75%**	**80%**	**85%**	**90%**
SALES					
Gross Sale					
LED Bulb	20.21	24.17	26.50	28.93	31.44
Total	**20.21**	**24.17**	**26.50**	**28.93**	**31.44**
COST OF SALES					
Raw Mateiral Consumed	12.73	13.70	14.69	15.68	16.69
Elecricity Expenses	0.17	0.18	0.20	0.22	0.25
Depriciation	0.12	0.11	0.09	0.08	0.07
Consumables	0.81	0.97	1.06	1.16	1.26
Labour	2.28	2.51	2.76	3.03	3.34
packing cost	1.26	1.42	1.58	1.76	1.94
Cost of Production	17.36	18.88	20.39	21.94	23.55
Add: Opening Stock /WIP	-	1.45	1.57	1.70	1.83
Less: Closing Stock /WIP	1.45	1.57	1.70	1.83	1.96
Cost of Sales	15.91	18.76	20.26	21.81	23.41
GROSS PROFIT	**4.30**	**5.41**	**6.24**	**7.12**	**8.03**
Gross Profit %	**21%**	**22%**	**24%**	**25%**	**26%**
Rent	1.20	1.32	1.45	1.60	1.76
Interest on working Capital	0.30	0.30	0.30	0.30	0.30
Selling & Adm exp	0.40	0.72	0.80	0.87	0.94
TOTAL	**1.90**	**2.34**	**2.54**	**2.76**	**3.00**
NET PROFIT	2.40	3.07	3.69	4.35	5.03
Taxation					0.01
PROFIT (After Tax)	2.40	3.07	3.69	4.35	5.03

PROJECTED BALANCE SHEET

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
Liabilities					
Capital					
opening balance		2.82	4.13	4.83	5.68
Add:- Own Capital	1.42				
Add:- Retained Profit	2.40	3.07	3.69	4.35	5.03
Less:- Drawings	1.00	1.75	3.00	3.50	4.20
Closing Blance	2.82	4.13	4.83	5.68	6.51
Working Capital Limit	2.70	2.70	2.70	2.70	2.70
Sundry Creditors	0.64	0.69	0.73	0.78	0.83
Provisions & Other Liab	0.30	0.40	0.55	0.66	0.83
TOTAL :	**6.45**	**7.92**	**8.81**	**9.82**	**10.87**
Assets					
Fixed Assets (Gross)	1.12	1.12	1.12	1.12	1.12
Gross Dep.	0.12	0.22	0.32	0.40	0.48
Net Fixed Assets	**1.00**	**0.90**	**0.80**	**0.72**	**0.64**
Current Assets					
Sundry Debtors	1.35	2.42	3.09	3.86	4.72
Stock in Hand	2.51	2.94	3.17	3.40	3.63
Cash and Bank	1.60	1.66	1.75	1.85	1.88
TOTAL :	**6.45**	**7.92**	**8.81**	**9.82**	**10.87**

PROJECTED CASH FLOW STATEMENT

PARTICULARS	1st year	2nd year	3rd year	4th year	5th year
SOURCES OF FUND					
Own Margin	1.42				
Net Profit	2.40	3.07	3.69	4.35	5.03
Depriciation & Exp. W/off	0.12	0.11	0.09	0.08	0.07
Increase in Cash Credit	2.70	-	-	-	-
Increase in Creditors	0.64	0.05	0.05	0.05	0.05
Increase in Provisions & Oth lib	0.30	0.10	0.15	0.11	0.17
TOTAL :	**7.57**	**3.32**	**3.99**	**4.60**	**5.32**
APPLICATION OF FUND					
Increase in Fixed Assets	1.12				
Increase in Stock	2.51	0.44	0.22	0.23	0.23
Increase in Debtors	1.35	1.07	0.68	0.77	0.86
Drawings	1.00	1.75	3.00	3.50	4.20
Taxation	-	-	-	-	0.01
TOTAL :	**5.97**	**3.26**	**3.90**	**4.49**	**5.30**
Opening Cash & Bank Balance	-	1.60	1.66	1.75	1.85
Add : Surplus	1.60	0.06	0.09	0.10	0.02
Closing Cash & Bank Balance	**1.60**	**1.66**	**1.75**	**1.85**	**1.88**

COMPUTATION OF CLOSING STOCK & WORKING CAPITAL					
PARTICULARS	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**
Finished Goods					
	1.45	1.57	1.70	1.83	1.96
Raw Material					
	1.06	1.37	1.47	1.57	1.67
Closing Stock	**2.51**	**2.94**	**3.17**	**3.40**	**3.63**

COMPUTATION OF WORKING CAPITAL REQUIREMENT					
TRADITIONAL METHOD					
Particulars	**Amount**	**Own Margin**		**Bank Finance**	
Finished Goods & Raw Material	2.51				
Less : Creditors	0.64				
Paid stock	**1.87**	**10%**	**0.19**	**90%**	**1.68**
Sundry Debtors	**1.35**	**10%**	**0.13**	**90%**	**1.21**
	3.22		**0.32**		**2.90**
WORKING CAPITAL LIMIT DEMAND (from Bank)				**2.70**	

2nd Method		
PARTICULARS	**1st year**	**2nd year**
Total Current Assets	5.45	7.02
Other Current Liabilities	0.94	1.09
Working Capital Gap	4.52	5.94
Min Working Capital		
25% of WCG	1.13	1.48
Actual NWC	**1.82**	**3.24**
item III - IV	**3.39**	**4.45**
item III - V	**2.70**	**2.70**
MPBF (Lower of VI & VII)	**2.70**	**2.70**

3rd Method		
PARTICULARS	**1st year**	**2nd year**
Total Current Assets	5.45	7.02
Other Current Liabilities	0.94	1.09
Working Capital Gap	4.52	5.94
Min Working Capital		
25% of Current Assets	**1.36**	**1.76**
Actual NWC	**1.82**	**3.24**
item III - IV	**3.15**	**4.18**
item III - V	**2.70**	**2.70**
MPBF (Lower of VI & VII)	**2.70**	**2.70**

COMPUTATION OF DEPRECIATION

Description	Plant & Machinery	Furniture	TOTAL
Rate of Depreciation	**15.00%**	**10.00%**	
Opening Balance	-	-	-
Addition	0.12	1.00	1.12
Total	0.12	1.00	1.12
Less : Depreciation	0.02	0.10	0.12
WDV at end of Year	**0.10**	**0.90**	**1.00**
Additions During The Year	-	-	-
Total	0.10	0.90	1.00
Less : Depreciation	0.02	0.09	0.11
WDV at end of Year	**0.09**	**0.81**	**0.90**
Additions During The Year	-	-	-
Total	0.09	0.81	0.90
Less : Depreciation	0.01	0.08	0.09
WDV at end of Year	**0.07**	**0.73**	**0.80**
Additions During The Year	-	-	-
Total	0.07	0.73	0.80
Less : Depreciation	0.01	0.07	0.08
WDV at end of Year	**0.06**	**0.66**	**0.72**
Additions During The Year	-	-	-
Total	0.06	0.66	0.72
Less : Depreciation	0.01	0.07	0.07
WDV at end of Year	**0.05**	**0.59**	**0.64**
Additions During The Year	-	-	-
Total	0.05	0.59	0.64

Less : Depreciation	0.01	0.06	0.07
WDV at end of Year	**0.04**	**0.53**	**0.58**
Less : Depreciation	0.01	0.05	0.06
WDV at end of Year	**0.04**	**0.48**	**0.52**
Less : Depreciation	0.01	0.05	0.05
WDV at end of Year	**0.03**	**0.43**	**0.46**

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