PROJECT PROFILE ON MODERN SOLAR LANTERN

PRODUCT CODE	: 79104 (ASICC); 29307 (NIC)
QUALITY AND STANDARDS	: As per customer requirement
PRODUCTION CAPACITY	: 12,000 Nos. (Per annum)
Value	: Rs. 2,64,00,000/-
YEAR OF PREPARATION	: 2020-2021
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1. INTRODUCTION

Solar Lantern is a portable light source which gives an omni directional pure white light. Solar lantern, designed in the form of a traditional lantern uses CFL as the light source. The solar photovoltaic module provided with the lantern charges the sealed maintenance - free battery inside the lantern when exposed to sunlight. The battery supply power to the Compact Fluorescent Lamp whenever required. Solar Photovoltaic module, battery, Compact Fluorescent Lamp, Charge Controller and Inverter are the main parts in a solar lantern. The lantern can be used for 3-4 hours after a sunny day's charging.

2. MARKET POTENTIAL

There is a wide gap between power supply and demand in India. Heavy and incessant consumption of traditional source of energy has resulted in their gradual depletion over a period of time accompanied by environmental damages. Situation has reached to such an alarming position; nations worldwide have been forced to consider the non-conventional energy as a solution for the present energy crisis. Solar energy is one very important source of non-conventional energy.

Earth receives an incredible supply of solar energy. The sun provides enough energy in one minute to cater to the global energy needs for one year. Enhanced direct and indirect utilization of this abundant energy source will play a key role in solving the energy and environmental problems faced by the world.

India receives 5000 trillion KWH per year of solar energy which is far more than the total energy consumption of the country. For years, solar technology has been considered as an expensive alternative but however due to the technological advancement, solar energy based system is now economically feasible.

Considering the potential for further growth in this sector and new developments in the technological scenario, there is scope for setting up of more number of units manufacturing solar energy based systems.

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 race material, utilities, rents, etc. are based on the prevailing rates in and around Delhi. These cost factors are likely to vary with time and location.

iv. Interest on term loan and working capital has been taken A 13% on an average. This rate may vary depending upon the policy of 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 fu11 capacity utilisation.

vii. The project preparation cost etc. whenever required could be considered under are-operative expense.

viii. The essential machinery and equipments required for the project have been indicated. The unit may also utilize common facilities available at Electronics test & Development Centres (ETDC) and Electronic Regional Test Laboratories ERTLs) set up by state Governments and STQC Directorate of Department of information Technology, Ministry of Communication and Information Technology to manufacture products conforming to Bureau of Indian Standards.

4. IMPLEMENTATION SCHEDULE

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

Sl. No.	Activity	Period (in months) (Suggestive)
1.	Preparation of Project Report	1
2.	Registration and other formalities	1
3.	Sanction of loan by financial institutions	3
4.	Plant & Machinery i. Placement of orders ii. Procurement iii. Power connection/Electrification iv. Installation/Erection of machinery/ Test Equipment	 1 2 2 2
5.	Procurement of raw material	2
6.	Recruitment of Technical Personnel etc.	2
7.	Trial production	11th month
8.	Commercial production	12th month

Note:

1. Many o1 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.

5. TECHNICAL ASPECTS

5.1. Process of Manufacturing

The incoming raw material and components are tested for required quantit}' and specifications. The components are shaped, formed and soldered on pre- designed printed circuit boards. The assembled printed circuit boards are tested for desired performance. The PCBs, transformer, sub-assemblies, battery, CFL and electro-mechanical parts are connected inside the enclosure and the electrical wiring is made. The switches, knobs, Solar Photo voltaic Panel and other parts are connected and the final system is thoroughly tested as per the required specification.

5.2. Production Capacity Quantity

Quantity : 12,000 Nos.

Value : Rs. 2,64,00,000/-

5.4. Motive Power 10 kVA

5.4. 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 Chloro fluoro Carbon (CFCs), Carbon Tetrachloride, Halogens 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 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 l5 - 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 methylene 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.

5.5. 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 the efficient use of energy, its conservation and capacity building of bureau of energy efficiency created under the Act.

The following steps may help in conservation of electrical energy:

i. Adoption of energy conserving technologies, production aids and testing facilities.

ii. Efficient management o1 process/manufacturing machinery and systems, QC and testing equipment 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 system; timely switching on-off o1 the lights; use of compact fluorescent lamps wherever possible etc.

6. FINANCIAL ASPECT

6.1. Fixed Capital

Land & Building: Built up area of 300 sq. yards

Built up Area	300 sq. mtr,
Office, stores	150 sq. mtr.
Assembly and Testing	350 sq. mtr,
Rent payable per month	Rs. 30,000/-

6.1.1. Machinery and Equipments

Sl. No.	Description	Indi/ Imp	Qty. Nos.	Value (Rs.)
1.	Drilling Machine	Ind	I	13,000/-
2.	Grinder (portable)	Ind	1	10,000/-
3.	Power Supply (0-30V, 3Amps)	Ind	2	80,000/-
4.	High Voltage Break Down Tester	Ind	1	40,000/-
5.	Auto Transformer	Ind	1	10,000/-
6.	Insulation Tester	Ind	1	10,000/-
7.	Testing Setup(consistingVoltmeter, Ammeter, Wattmeter, etc.)	Ind	1	63,000/-

8.	Digital Multimeter	Ind	2	16,500/-
9.	Analogue Multimeter	Ind	3	5,500/-
10.	Servo Voltage Stabilizer	Ind	1	30,000/-
11.	Personal Computer with UPS and Printer	Ind	2	1,02,000/
12.			**Total**	3,50,000/-
13.	Electrification and Installation charges A 10% of the total above			35,000/-
14.	Temperature Controlled soldering stations, Tools, Jigs, Fixtures, Electronic Srew Drivers etc			40,000/-
15.	Office equipments and Furniture			80,000/-
16.	Pre-Operative Expenses			25,000/-
			Total Fixed Capital	**5,30,000/**

6.2. Working Capital (per month)

6.2.1. Personnel

Sl. No.	Designation	No. of persons	Salary/ month (Rs.)	Total (Rs.)
1.	Manager	1	40,000	40,000
2.	Supervisor	1	22,000	22,000
3.	Office Assistant	1	20,000	20,000
4.	Peon/ Watchman	1	19,000	19,000
5.	Skilled workers	2	21,000	42,000
6.	Semi-Skilled workers	1	19,000	19,000
			Total	**1,62,000**
			Perquisite @ 15% of salary	**24,300**
			Total	**1,86,300**

6.2.2.. Raw Materials

Sl. No.	Particulars	No.	Rate/ Unit (Rs.)	Total (Rs.)
1)	Solar PV Module l2V/ 10 wp	**1**	**430/-**	**430/-**
2)	Battery 12V/7 Ah	**1**	**460/-**	**460/-**
3)	High Quality LEDs	**5**	**15/-**	**75/-**
4)	On/ Off Switch	**1**	**25/-**	**25/-**
5)	Modern Plastic Cabinet	**1**	**150/-**	**150/-**
6)	Input Connector	**1**	**20/-**	**20/-**
7)	Fuse & Fuse Holder	**1**	**25/-**	**25/-**
8)	Connecting Cables	**1**	**25/-**	**25/-**
9)	PCB, Semi- Conductors, resistors, capacitors, transistors and other Electro- Mechanical Components		**140/-**	**140/-**
			Total	**1,350/-**
			Total For 1,000 Nos. @ Rs. 1,350/- per unit	**13,50,000/-**

6.2.3. Utilities

Sl. No.	Description	Value (Rs.)
1)	Electricity	10,000
2)	Water	1,500
	Total	11,500

6.2.4. Other Contingent Expenses (Rs.)

1.	Rent	30,000
2.	Posta e & Stationer	3,000
3.	Repair & Maintenance	3,000
4.	Transport and conveyance charges	10,000
5.	Advertisement	20,000
6.	Insurance, Taxes	4,000
7.	Other Office Expenses, telephone, internet, etc.	5,000
8.	Other Misc. Expenses	5,000
	Total	**80,000**

Total Recurring Expenditure (per month) **Rs. 14,71,500/-**

Total working capital (3 months basis) **Rs. 44,14,500/-**

6.3. Total Capital Investment

Total Fixed Capital	Rs. 5,30,000/-
Total Working Capital (for 3 months)	Rs. 44,14,500/-
Total	**Rs. 49,44,500/-**

7. FINANCIAL ANALYSIS

7.1.. Cost of Production (per annum)

Total recurring cost per year	Rs. 1,76,58,000
Depreciation on plant and machinery @ 10%	Rs. 35,000
Depreciation on jigs, fixtures, tooling etc. @ 25%	Rs. 10,000
Depreciation on office equipment @ 20%	Rs. 16,000
Interest on total capital investment @ 13%	Rs. 6,42,780
Total	**Rs. 1,83,61,780/-**

7.2.. Turnover (per annum)

Item	Qty.(Nos.)	Rate (Rs.)	Total sales (Rs.)
Modern Solar Lantern	*12,000*	1,700	2,040,0000
		Total Turn Over	**2,040,0000**

7.3. Net Profit (per annum)

= Turnover - cost of production = Rs. 20,38,220/-

7.4. Net Profit Ratio

$$\frac{\text{Net profit per year}}{\text{Turnover per year}} \times 100 = 10\%$$

7.5. Rate of Return

$$\frac{\text{Net profit per year}}{\text{Total Capital Investment}} \times 100 = 41.22\%$$

7.6. Break-even Point

Fixed Cost per annum (Rs.):

Total Depreciation	61,000
Interest on total capital investment A12.5 %	8,93,620
40 % of salary & wages	7,17,600
40% of Other Contingent (Excluding Rent + Insurance)	2,44,800
Rent + Insurance	4,68,000
Total fixed Cost	**23,85,020**

B.E.P

$$\frac{\text{Fixed Cost}}{\text{Fixed Cost + Net Profit}} \times 100 = 54.\%$$

Additional Information:

The technology in this sector is undergoing rapid strides of charge and there is a need for regular monitoring of the national and international technology scenario. The unit, may therefore, keep abreast with 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 system and ISO 14001 defines standards for environmental.

NAME AND ADDRESSES OF SUPPLIERS

1. M/s International Machine/ Tools Corporation, 5, Banks Street, Behind Bank, Fort, Mumbai-400023 — **Machinery & Tools**
2. M /s Quality Machine Tools 34, J. C. Road, VLSL Building Banglore-560002 — **Machinery & Tools**
3. M/s Electronic Trade and Technology Corporation Ltd,15/48, Malcha Marg, NewDelhi-110021. — **Machinery, Testing Dev Equipment & Components**
4. M/s Central Electronics Ltd, 4, Industrial Area, Sahibadabad-201010 Tel: 0120-2895153/ 2895154/ 57 — **Solar Photovoltaic Cell**
5. M/s Amini Solar systems Pvt. Ltd, Plot No 33-37, KINFRA Small Indi. Park, St Xavier's College (P.O) Kazhakkuttom, Thiruvananthapuram-695582 Tel: 0471- 2705588 E-mail: so1arAammini.com — **Solar Photovoltaic Cell**
6. M/s Bharat Heavy Electricals Ltd, P.B No 2606, Mysore Road, Bangalore-560026 Tel: 080-26747396 — **Solar Photovoltaic Cell**
7. M/S TATA BP Solar India Ltd, Plot No 78, Electronic City, Hosur Road, Bangalore-560048 Tel: 080-28520972 E-mail: tatabp@tatabp.com Web: tatabpso1ar.com — **Solar Photovoltaic Cell**
8. M/s Lintek Energy Systems, B-167, Freedom Fighteis Enclave, Neb Sarai, New Delhi-110068 Tel: 011-26854946, 26854872 E-mail: 1intek@vsn1.com , Web: www.lintekgroup.com — **SMF battery**
9. M/s Aplab Linaited,XL I/ 583, II nd floor, Krishna Niva Adv. Eashwara lyer Road, Kochi-682035 Tel: 0484—2361623 E-mail: ap1abkochiAvsn1.net — **Test & measuring equipments**
10. M/s. Meco Instruments Private Limited P.O. Box 6388, 301, Bharat Industrial Estate T.J. Road, Sewree (W), Mumbai-400015 Tel.022-24137253/24137423 Email: sales@mecoinst.com Web: www.mecoinst.com — **Testing Equipments**
11. M/s. Max technology (India) New Gull Mobile Super bazaar GCDA Complex, Kochi Ph. 0484-3414393 Email: rajput.mukesh@indiatimes.com Web: www.Maxtechnoindia.com — **Soldering equipments**
12. M/s. Sumitron Exports Pvt. Ltd. 27, Community Centre, Narina Phase-I Near Delhi-110028 Ph. 011-25893783/ 25891519 Email: sumitron@vsnl.com ,Web: www.sumitron.com — **Soldering equipments and tools etc.**