

# Electronic Gas Lighters

PRODUCT CODE (ASICC)	: 77134
QUALITY AND STANDARDS	: The following BIS Standards may be referred: IS 11514:1985 Piezo electric ceramic cartridge for impact type gas lighters. IS 11519:1985 Piezo electric ceramic cartridge for squeeze type of gas lighters. IS 11013:1984 Piezo electric ceramic elements (impact type and squeeze type).
PRODUCTION CAPACITY	: Qty. : 30,000 Nos. (per annum) Value: Rs 15.00 lakhs
YEAR OF PREPARATION	: 2002–2003
PREPARED AND UPDATED BY	: Small Industries Service Institute Janak Kuti, Chambaghat, Solan -173213 (HP) and Office of the Development Commissioner, (Small Scale Industries), Electronics and Electrical Division, 7th Floor, Nirman Bhavan, New Delhi:110011.

## INTRODUCTION

The electronic gas lighter uses a piezo-electric crystal. This crystal has a property to generate voltage when it is mechanically deformed. It generates high voltage across a spark gap which when in proximity to a gas would ignite it.

Gas lighters are being used by cooking gas users. It is durable due to its performance and economical as compared to the mechanical and electrical lighters. It does not require battery for its operation. It is safer, economical, reliable and quick in action. It requires virtually no maintenance.

## MARKET POTENTIAL

The demand of any type of gas lighter is directly related to the use of domestic gas connections by various household in the country. However, users go in for various types of gas lighting devices i.e. matches, electrical or electronic gas lighter. The preference to use electronic gas lighters is quite high because of its inherent advantages stated above. Even existing gas users have been increasingly switching over to electronic gas lighters. At present, there are about 50 small scale units engaged in the manufacture of electronic gas lighter with an average capacity of 30,000 to 50,000 per annum. The cost of gas lighter is very well within the reach of users and therefore demand is increasing day by day.

## 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 2nd year of operation the capacity utilisation is 60% and 80% respectively. The unit is expected to achieve full capacity utilisation from the 3rd year onwards.
- iii) The salaries and wages, cost of raw-materials, utilities, rents etc. are based on the prevailing rates in and around Solan (H.P.). 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, prevailing. 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 the 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) set up by the State Governments and STQC Directorate of the Department of Information Technology, Ministry of Communication and Information Technology, to manufacture products conforming to Bureau of Indian Standards.

## 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:

Sl. No.	Name of Activity	Period in Months (Estimated)
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.

2. Period of spark generation should not be less than 10 milli second.
3. The gas lighters must be able to operate more than 30,000 times.

## TECHNICAL ASPECTS

### Process of Manufacture

Sheet metal components/parts are being manufactured with the help of hacks, saw machines, hand press, drilling machine, spot welding machine, etc. Moulded components are made on injection moulding machine. The metal turned parts are made on lathe machine. Assembly, on piezo electric ceramic cartridge along with sheet metal components/parts and moulded parts are carried out and fitted in M.S. tubing/cases. The complete assembled unit is tested for life cycle ignition before it is sent for packing and despatch.

### Quality Control and Standards

There is no BIS standard for this product, however the following Specifications may be referred for quality:

IS 11514:1985 Piezo electric ceramic cartridge for impact type of Gas Lighters.

IS 11519:1985 Piezo electric ceramic cartridge for squeeze type of Gas Lighters.

IS 11013:1985 Piezo electric ceramic elements (Impact type and squeeze type) for Gas Lighters.

It is envisaged that the gas lighter will be able to perform the following operations:

1. To generate voltage above 10 KV.

### Production Capacity

Quantity (per annum)	Value (Rs.)
30,000 Nos.	15.00 lakhs

Motive Power 10 KVA.

### Pollution Control

The Govt. 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 Sept. 1992, the production and use of Ozone Depleting Substances (ODS) like Chlorofluoro Carbon (CFC), 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 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 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) Electronic industry uses CFC, 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, Perchloroethylene and Methylene Chloride have been used as effective cleaners in electronics industry for many years. Other organic solvents such as Ketones and Alcohols are effective in removing both solder fluxes and many polar contaminants.

### 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 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 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 desoldering 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 of the lights; use of compact fluorescent lamps wherever possible etc.

## FINANCIAL ASPECTS

### A. Fixed Capital

#### (i) Land and building

The building is considered as rental with a rent of Rs. 2500 per month having covered area of 150 sq. mtrs.

#### (ii) Machinery and Equipments

Sl. No.	Description	Ind/ Imp.	Qty.	Value (Rs.)
1.	Precision type bench lathe (4 1/2" feet bed with 2 HP motor)	Ind.	1	40,000
2.	Fly press (No.31)	Ind.	1	4,000
3.	Bench Drilling Machine (1/2")	Ind.	1	4,000
4.	Bench Grinder	Ind.	1	4,000
5.	Shearing machine (10"×10" SWG)	Ind.	1	5,000
6.	Injection Moulding machine 15 Gm	Ind.	1	5,000
7.	Test Bench with Jigs fitted (Motorised)	Ind.	1	5,000
8.	Spot welding machine	Ind.	1	8,000
9.	Cost of dies/mould/Tools and Fixtures			15,000
	<b>Total</b>			<b>90,000</b>

Sl. No.	Description	Ind/ Imp.	Qty.	Value (Rs.)
	Add, 10% of the total cost of machinery, equipments towards electrification charges			9,000
	Total			99,000
	Cost of office equipment/furniture			20,000
(iii)	Pre-operative Expenses			10,000
	Total Fixed Capital			39,000
	Total			1,29,000

## B. Working Capital (per month)

### (i) Staff and Labour

Sl. No.	Designation	No.	Salary (Rs.)	Total (Rs.)
<i>(a) Staff</i>				
1.	Manager	1	5,000	5,000
2.	Sales Asstt.	1	2,500	2,500
3.	Clerks/Typists	1	2,000	2,000
4.	Peon/Watchman	1	1,500	1,500
	Total			11,000
<i>(b) Labour</i>				
1.	Skilled Worker	3	2,000	6,000
2.	Semi-skilled Worker	2	1,500	3,000
	Total			9,000
	Total (a+b)			20,000
	Add 15% perquisites towards, PF, Bonus etc.			3,000
	Total			23,000

### (ii) Raw Material Requirement (for 2500 Gas Lighters) (per month)

Sl. No.	Particulars	Qty.
1.	Peizo electric ceramic cartridge/slug	2500 Nos.
2.	Copper Contacts	2500 sets.
3.	M.S. Tubing	500 Mtrs.
4.	Spring	2500 Nos.
5.	Plastic powder/granules	15 Kgs
6.	M.S. Strip	50 Kgs.
7.	Hardware	2500 sets
8.	Packing materials	2500 sets

The average cost of raw material per set works out to be Rs. 27 per set.

Total Cost of Raw Material (per month) for 2500 Nos. Gas Lighters 67,500

(iii) Utilities	(Rs.)
Power	3,000
Water	300
Total	3,300

### (iv) Other Contingent Expenses (per annum)

Sl. No.	Particulars	Value (Rs.)
1.	Rent	2,500
2.	Postage and Stationery	500
3.	Consumable	500
4.	Repairs and maintenance	1,000
5.	Conveyance and transport	3,000
6.	Advertisement and Publicity	2,000
7.	Insurance	500
8.	Miscellaneous expenses	1,000
	Total	11,000

(v) Total Recurring Expenditure (per month) (i+ii+iii+iv) 10,4800

## C. Total Capital Investment

Fixed capital	1,29,000
Working capital (for 3 months basis)	3,14,400
Total	4,43,400

## FINANCIAL ANALYSIS

(1) Cost of Production (per annum)	(Rs.)
i) Working capital	12,57,600
ii) Depreciation on Machinery and equipment @ 10%	9,000
iii) Depreciation on office equipment/furniture @ 20%	4,000
iv) Interest on total capital Investment @ 16%	70,944
Total	13,41,544
Say	13,41,500

(2) Turnover (per annum)

Sl. Item No.	Qty.	Rate (Rs.)	Total (Rs.)
Electronic Gas Lighter	30,000	50	15,00,000

(3) Profit 1,58,500

(4) Profit Ratio 10.57%

(5) Rate of Return 35.75%

(6) Break-even Point

Fixed Cost	(Rs.)
(i) Annual Rent	30,000
(ii) Depreciation	13,000
(iii) Interest	70,944
(iv) 40% of salary and wages	11,04,00
(v) Insurance/Taxes	6,000
(vi) 40% of other contingent expenses and utilities (excluding rent and insurance)	54,240
Total	28,45,84
Say	28,45,00

$$\text{B.E.P.} = \frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Profit}}$$

$$= 64.22\%$$

### 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 therefore adopt these 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.

### Addresses of Machinery/Equipment and Raw Material Suppliers

#### Machinery/Equipment

- M/s. Perfect Machine Tools Co.  
Sir P. M. Road,  
Mumbai-400007.
- M/s. Batliboi and Co.  
G.T. Road,  
Delhi-110006.
- M/s. Jeet Machine Tools, Corporation  
Shardanand Marg,  
Delhi-110006.

#### Raw Material

- M/s. Calico Chemical and Plastic Fibres Division  
Anik Chambers,  
Mumbai-400074.  
(for Plastic Materials)

2. M/s. Central Electronics Ltd.  
Industrial Area, Sahibabad,  
Distt. Ghaziabad (U.P.)  
*(for Piezo Ceramics)*
3. M/s. Brisk Electro Sales (P) Ltd.  
394-A, Lamington Road,  
Lamington Chambers,  
Mumbai-400004.  
*(for Piezo Ceramics).*
4. M/s Keltron Crystals Ltd.  
Keltron Nagar, Mangatparamba,  
P.O. Kalliasseri,  
Cannanore-670562.  
*(for Piezo Crystals)*