

Electronic Quartz Analog Clocks

PRODUCT CODE (ASICC)	: 91403
QUALITY AND STANDARDS	: N.A.
PRODUCTION CAPACITY	: Qty. : 90,000 Nos. (per annum) Value : Rs. 70,20,000
YEAR OF PREPARATION	: 2002 – 2003
PREPARED AND UPDATED BY	: Small Industries Service Institute 22, Godown Industrial Estate, Jaipur- 6 And Office of the Development Commissioner (Small Scale Industries), Electronics and Electrical Division, 7th Floor, Nirman Bhavan, New Delhi –110011

INTRODUCTION

The electronic quartz analog clock has brought a revolution in the clock industry. The quartz clocks were introduced in the Indian market in 1977-78 and since then market as well as production in India has been growing at a tremendous rate. Some of the main features of the quartz clock are; high accuracy, no winding required, works in any position, very low power consumption, hardly any service required and the longer life of the clock.

MARKET POTENTIAL

Consumer electronic sector has achieved a production of Rs. 127000 crore in 2001-02 compared to Rs. 26000 crore production in 1996-97. During the year 2001, the production of electronic clock was of the order of Rs 210 crores.

The electronic Quartz Clocks are technically superior to the mechanical ones. Since the raw materials and components are available at a cheaper rate, the price of the electronic clocks has come down substantially. This reduction in prices has boosted the demand.

PRICING OF QUARTZ ANALOGY CLOCKS

The customer price of Clock ranges from Rs. 60 to Rs. 450. Different types of clocks in the market, and their prices are as follows:

Sl. No.	Type of Quartz Clocks	Price Range (Rs.)
1.	Ordinary Plastic Case	60 – 80
2.	Good finished Plastic case and Anodized Dial	80 – 150
3.	Ordinary Picture	100 – 150
4.	Laminated Picture	180 – 250

Sl. Type of Quartz Clocks No.	Price Range (Rs.)
5. Striking (Ordinary)	200 – 300
6. Striking (Quadrasonic)	280 – 380
7. Pendulum (Simple)	250 – 350
8. Pendulum Striking	300 – 450

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, rents, etc. are base on the prevailing rates in and around Jaipur. 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 equipments refer to a particular make/model and 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.

TECHNICAL ASPECTS

Process of Manufacture

The Quartz wall clock will be assembled and for assembly other raw materials such as quartz clock movement, Cabinet, hand etc., will be purchased from the market. In this project profile, it is assumed that the complete Quartz movement is procured from outside. The movement is fitted into Cabinet case which is fitted with dial and the hands are mounted on the movement and after the glass and back cover of Cabinet are fitted. The needles have to be properly fitted at accurate position on dial which shows time. Finally, the battery should be put into the clocks put for testing for at least 2 days before despatch.

Production Capacity (per annum)

Quantity	Value (Rs.)
90000 Nos.	72,00,000

Motive Power 5 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

Built up area	150 Sq. mts.
Office, Stores	50 Sq. Mts.
Assembly and testing	100 Sq. Mts.
Rent payable/annum	Rs. 48,000

(ii) Machinery and Equipments

Sl. No.	Description	Ind./ Imp.	Qty.	Value (Rs.)
1.	Quartz Clock Tester	Ind.	3	60,000
2.	Digital Multimeter (3 1/2 Digit)	Ind.	4	14,000
			Total	74,000
<i>Other Fixed Assets</i>				
3.	Electrification charges @ 10% of the cost of machinery and equipment			7,400
4.	Office equipments, furniture and working table etc.			25,000
5.	Tools, jigs and fixtures, soldering iron/station etc.			10,000
	(iii) Pre-operative Expenses			10,000
			Total	52,400
	Total Fixed Capital			1,26,400

B. Working Capital (per month)

(i) Staff and Labour

Sl. No.	Designation	No. of persons	Salary (Rs.)	Total (Rs.)
1.	Manager	1	5,000	5,000
2.	Sales and Service Assistance	1	2,000	2,000
3.	Clerk/Typist	1	2,000	2,000
4.	Peon/ Watchman	1	1,500	1,500
5.	Skilled Workers	3	2,500	7,500

Designation	No. of persons	Salary (Rs.)	Total (Rs.)
6. Semi-Skilled Workers	2	2,000	4,000
	Total		22,000
Add perquisites @ 15% of salary			3,300
	Total		25,300
	Or Say		25,000

(ii) Raw Material Requirement (per month)

Particulars	Qty.	Cost/unit (Rs.)	Total of 750 unit(Rs.)
1. Quartz Movement (Complete)	1	25	1,87,500
2. Case (Cabinet) with Dial and Hands (Appearance Parts) with packaging	1	35	2,62,500
	Total		4,50,000

Note: The quantity and quality of raw material vary with design requirements and features of the Clock.

(iii) Utilities (per month)	(Rs.)
Power	2000
Water	200
Total	2200

(iv) Other Contingent Expenses (per month) (Rs.)	(Rs.)
1. Rent	4000
2. Postage and stationery	2000
3. Telephone/Telex/Fax charges	1000
4. Repair and maintenance	1000
5. Transport and conveyance charges	6000
6. Advt. and publicity	5000
7. Insurance and taxes	300
8. Consumable Stores	2000
9. Miscellaneous expenditure	1000
Total	22300
Or Say	22000

(v) Total Recurring Expenditure (per month) (i + ii + iii + iv) Rs. 4,99,500

C. Total Capital Investment

(i) Fixed Capital	Rs. 126400
(ii) Working Capital on 3 months basis	Rs. 1498500
Total	Rs. 1624900

FINANCIAL ANALYSIS

(1) Cost of Production (per annum)	(Rs.)
Total recurring expenditure	5994000
Depreciation on machinery and equipment @ 10 %	7400
Depreciation on tools, jigs and fixtures @ 25%	2500
Depreciation on office equipment, furniture @ 20%	5000
Interest on total capital investment @ 16%	259984
Total	6268884
Or Say	6269000

(2) Turnover (per annum)

Item	Qty. (Nos.)	Rate/Unit (Rs.)	Total Sales (Rs.)
Electronic quartz analogy clocks	90000	78	7020000

(3) Profit (per annum) (Before Taxes) Rs. 751000

(4) Net Profit Ratio

$$= \frac{\text{Profit per annum} \times 100}{\text{Sales per annum}}$$

$$= \frac{751000 \times 100}{7020000}$$

$$= 10.70\%$$

(5) Rate of Return

$$= \frac{\text{Profit per annum} \times 100}{\text{Total capital investment}}$$

$$= \frac{751000 \times 100}{1624900}$$

$$= 46.22\%$$

(6) Break-even Point

Fixed Cost (per annum)	(Rs.)
Rent	48000
Depreciation on machinery and equipment @ 10 %	7400
Depreciation on tools, jigs and fixtures @ 25%	2500

Fixed Cost (per annum)	(Rs.)
Depreciation on office equipment, furniture @ 20%	5000
Interest on total capital investment @ 16%	259984
Insurance and Taxes	3600
40% Salaries and wages	12000
40% other contingent expenses and utilities (excluding rent and insurance)	96960
Total	543444
or Say	543000

B.E.P.

$$\begin{aligned}
 &= \frac{\text{Fixed cost} \times 100}{\text{Fixed cost} + \text{Profit}} \\
 &= \frac{543000 \times 100}{543000 + 751000} \\
 &= 41.96\%
 \end{aligned}$$

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 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 and Equipment Suppliers

- M/s. Toshniwal Bros. (Delhi) Pvt. Ltd.
3-E/8, Jhandewalan Extn.,
New Delhi-110055.
- M/s. Ruttonsha Simpson Pvt. Ltd.
14, Jhandewalan Link Road,
New Delhi-110055.
- M/s. Motwane Pvt. Ltd.
68, Janpath, Post Box No. 47,
New Delhi.
- M/s. British Physical Laboratories
93, Nehru Place,
New Delhi-110019
- M/s. EM Electronics Pvt. Ltd.
158, III Main Industrial Town,
Rajaji Nagar,
Bangalore-560004.

Raw Material / Component Suppliers

- M/s. H.B. Chugh and Co.
14 A/31, W.E. Area,
Karol Bagh, New Delhi.
- M/s. Semiconductor Complex
(A Govt. of India Enterprises),
(Marketing Division),
C5/18, Safdarjung Dev./Area,
New Delhi-110028.

3. M/s. Sargodha Radio Co.
C-134, Naraina Industrial Area,
New Delhi-110028.
4. M/s. Chawla Plastics Works Pvt. Ltd.
A-4, Mayapuri, Phase-I,
New Delhi.
5. M/s. Bholia Plastic Industries
B-34/5, G.T. Karnal Road,
Industrial Area,
Delhi-110033.
6. M/s. Kanwar S.M. Co.
Naraina Inds.Area, Phase-I,
Delhi-110028.
7. M/s. CINA Electronics
1A/218, Ashok Vihar,
Phase-I,
Delhi-110052.
8. M/s. Copwud Arts
118-120, Satguru Nanak Inds.
Estate,
Western Express Highway,
Goregaon (East),
Mumbai-400063.
9. M/s. Boble Electronics
354, Lajpat Rai Market,
Delhi-110006.