

# PROJECT REPORT

Of

## ELECTRONIC WEIGHING SCALE

### PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding **Electronic weighing scale making 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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# **Electronic Weighing Scales**

## **Introduction**

Electronic weighing systems are used in industries and business establishments for weighing and segregating materials accurately for process sales. The main advantages of an electronic weighing system when compared with mechanical weighing systems are

- Compactness and small size independent of capacity.
- Ruggedness and high dependability.
- High speed of response and rapid weighing.
- Good accuracy.
- Excellent flexibility to monitor multiple loads.
- Analog and digital with print-out facility remote indication and parallel display.
- Online processing through computer.

The electronic weighing system comprises the basic load cell, suitable signal conditioners and output recorders/ indicators giving both the analog and digital output for further processing. The signals from the load cell are amplified and fed to analog/digital converter, which provide an output in the digital format for display/ printing/processing etc. The strain gauge based load cell is the most popular weight transducer used in the electronic weighing system.

## **Market Potential**

The total production in industrial electronic and control instrumentation is showing growth rate every year. This product requires a good marketing set up duly backed by after sales service facilities. If the price of the weighing scales is brought down and good after sales facility made available, there will be sufficient demand for this item.

## **Specification of the Product**

Product Code (ASICC)	7532
Quality and Standards	IS 9281:1981
Production Capacity	Qty. : 2400 Nos. per annum Value: Rs. 4,45,24,000

## **Basis and Presumptions**

- The basis for calculation of production capacity has been taken on two shifts of 8 hrs each per day basis on 75% efficiency.
- 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.
- The salaries and wages cost of raw materials, utilities, are based on the prevailing rates. These cost factors are likely to vary with time and location.
- Interest on term loan and working capital loan has been taken at the rate of 12% on an average. This rate may vary depending upon the policy of the financial institutions/agencies from time to time.
- The cost of machinery and equipment's refer to a particular make/model and prices are approximate.
- The break-even point percentage indicated is of full capacity utilization.
- The project preparation cost etc. whenever required could be considered under pre-operative expenses.
- 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.

## **Technical Aspects**

### **Process of Manufacture**

The manufacturing process involves the assembly of load cell, electronic circuits and electro mechanical hardware. Subsequently, the electronics assembly-the ICs, transistor, diodes, resistors, capacitors transformer, coils, relays, potentiometers are assembled on PCBs as per design.

The assembled PCBs are tested for performance. Subsequently the electronics assembly along with electromechanical assembly, hardware such as connectors/switches, terminals display, meters are assembled and housed in a metallic / fibre / plastic case with an appealing front panel. Finally the assembled unit is calibrated and tested as per the design specification.

### **Quality Control and Standards**

Weighing range	Upto 10 kgs.
Accuracy	0.02%
Output	Digital display (Fluorescent)
Power supply	230V, AC, 50 Hz

### **Production Capacity (per annum)**

Quantity	2400 Nos.
Value	Rs. 4,45,24,000
<b>Motive Power</b>	<b>5 KVA (approx.)</b>

## **Pollution Control**

The Govt. accords utmost importance to control environmental pollution. The small-scale entrepreneurs should have an environmentally 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

- 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.
- 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

- Adoption of energy conserving technologies, production aids and testing facilities.
- Efficient management of process/manufacturing machineries and systems, QC and testing equipment's for yielding maximum Energy Conservation.
- Optimum use of electrical energy for heating during soldering process can be obtained by using efficient temperature-controlled soldering and DE soldering stations.
- Periodical maintenance of motors, compressors etc.
- 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**

### **Machinery and Equipments**

Description	Qty.	Rate (Rs.)	Amount (Rs.)
Bench Drilling machine ½"	1	25,000	25,000
Digital Multi Meter (3½ digits)	3	30,000	90,000
Oscilloscope (0-20 MHz)	1	1,00,000	1,00,000
IC Tester/EEPROM Programmer	1	50,000	50,000
Digital LCR Meter	1	75,000	75,000
Load Cell Simulator (Imported)	1	2,00,000	2,00,000
Portable Grinder	1	25,000	25,000
Power Supply (0-30V, 2A)	2	10,000	20,000
Standard Weights Brass	LS	LS	50,000
Multimeter (Analog) , UV Eraser, Variac (4A)			1,00,000
Bore well for water and water distribution			3,00,000
Total cost pl. & m/c (add 1 to 11			10,35,000
Excise, sales tax, installation and electrification @ 40% on machinery and equipments			4,14,000
Office Furniture and Equipments			5,00,000
Tools, Dies and Equipments			2,00,000

(i) Total pl & M/c cost		21,49,000
<b>Pre-operative Expenses</b>		<b>3,00,000</b>
<b>Total fixed cost 21,49,000 + 3,00,000</b>		<b>2,449,000.00</b>

## **B. Working Capital (per month)**

### **(i) Salaries and Wages**

Designation	Qty.	Rate (Rs.)	Amount (Rs.)
General Manager	1	35,000	35,000
Production Manager	1	25,000	25,000
Sales and marketing team	5	15000	75,000
Finance and accounts team	3	13333	40,000
Administration, purchase and stores personnel	5	10000	50,000
Semi skilled workers	6	4000	24,000
Skilled workers	10	5000	50,000
Watchman and peon	6	3000	18,000
<b>Total</b>			<b>3,17,000</b>
Perquisites@ 22%			70,000
<b>Total</b>			<b>3,87,000</b>

### **(ii) Raw Material Requirements (per month)**

Description	Qty. unit	Imp/Ind.	Cost (Rs.)
Cabinet/Housing (Metal)	200	450	90,000
Capacitors+	200	250	50,000
Fluorescent display (Imp.)	200	1500	3,00,000
Integrated circuits (Imp)	200	1500	3,00,000
Load cell (strain gauge)(Imp)	200	5000	10,00,000
Mechanical hardware	200	600	1,20,000

Noise Filter (Imp)	200	250	50,000
PCB	200	450	90,000
Rectifier (Imp)	200	160	32,000
Resistors (Diodes and switches)	200	300	60,000
Transformer	200	150	30,000
Transistors	200	200	40,000
Wires and cables. Connectors, consumables, Packing materials, etc.	200	500	1,00,000
<b>Total</b>			<b>22,62,000</b>

**(iii) Utilities (per month)**

	(Rs.)
Power	15,000
Water	2,000
<b>Total</b>	<b>17,000</b>

**(iv) Other Contingent Expenses (per month)**

	(Rs.)
Advertisement	1,00,000
Conveyance expenses	25,000
Transport and packaging	40,000
Misc. expenses	50,000
Postage and stationery	5,000
Traveling expenses	1,00,000
Repair and maintenance	5,000
Insurance and taxes	9,000
<b>Total</b>	<b>3,34,000</b>
<b>Working Capital (per month) (i + ii + iii + iv)</b>	<b>Rs.3,87,000 + Rs. 22,62,000 + Rs. 17,000 + Rs. 3,34,000</b>
	<b>Rs. 30,00,000</b>
<b>Working Capital (for 3 month)</b>	<b>Rs. 90,00,000</b>



### Financial Analysis

Cost of Production (per annum)	(Rs.)
Depreciation on pl. & m/c @ 10%	1,45,000
Depreciation on office furniture & tools @ 20%	1,40,000
Depreciation on civil construction	4,25,000
Recurring expenditure	3,60,00,000
Interest on capital investment @ 12%	28,14,000
<b>Total</b>	<b>3,95,24,000</b>

### Turnover (per annum)

2400 Nos. of Electronic weighing scales upto 10 kgs @ Rs. 9500 each	Rs. 4,45,24,000
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### Profit (per annum) (Before Taxes)

	(Rs.)
	Rs. 4,45,24,000 - Rs. 3,95,24,000
	Rs. 50,00,000

### Net Profit Ratio

	Profit (per annum) x 100 ----- Sales (per annum)
	50,00,000 × 100
	3,95,24,000

	<b>12.65%</b>
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### Rate of Return

	Profit (per annum) ×100 ----- Total capital investment
	50,00,000 × 100
	2,34,49,000
	21.3%

### Break-even Point

Fixed Cost (per annum)	(Rs.)
Total Depreciation	7,10,000
Interest on capital investment @12%	20,14,000
40% Salaries and wages	15,22,000
40% of other contingent expenses	16,03,000
<b>Total</b>	<b>58,49,000</b>
B.E.P	Fixed cost ×100 ----- Fixed cost + Profit
	58,49,000 × 100
	58,49,000 + 50,00,000
	53.9%

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