PROJECT PROFILE ON ASSEMBLY OF ELECTRONIC B. P. MACHINE

1. Product Code : ASICC79503
NIC33112

2. Production Capacity : 6000 Nos per Annum

3. Year of Preparation: : 2020-21

Prepared By:

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1. Introduction:

Convention Blood Pressure Machine is a device used to measure blood pressure, composed of an inflatable cuff to collapse and then release the artery under the cuff in a controlled manner and a mercury or aneroid manometer to measure the pressure. It is always used with a means to determine at what pressure blood flow is just starting, and at what pressure it is unimpeded.

Doctors use to measure the blood pressure of Patient in the clinic by Blood Pressure machines. Blood pressure is the pressure that the blood exerts against the walls of the arteries as it passes through them. The high and low points of this pressure waves are measured with the sphygmomanometer or blood pressure monitor and are expressed numerically in millimeter of mercury.

Pulse refers to the periodic ejection of blood from the heart left ventricle into the aorta. The left ventricle or chamber receives blood from the left atrium, another of the heart chambers. By contracting the left ventricle drives the blood into the aorta, a central artery through which blood is relayed into the arteries of all limbs and organs except lungs. Pulse transmitted through the arteries as a repeated pressure wave is the mechanism that moves blood through the body.

The high and low points of this pressure waves are measured with the sphygmomanometer or blood pressure monitor and are expressed numerically in millimeter of mercury. The higher number systolic pressure measures the maximum pressure exerted on arteries and the heart muscles. The lower figure diastolic pressure measures the minimum pressure exerted. If the display of B.P. Machine is digital then it is called as Digital Blood Pressure Machines.

2. Market Potential

Digital Blood Pressure Machines have a wide market potential. They can be sold in Local/National market and also there are avenues for its export in International market.

3. Basis & 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 the first year and second year of operations the capacity utilization 60% and 80% respectively. The unit is expected to achieve full capacity utilization from the third year onward.

iii) The salary and wages, cost of raw materials, utilization, rent etc are based on prevailing rate in and around local Market. These cost factors are likely to vary with time and location.

iv) Interest on term loan and working capital loan must be preferably current rate. Otherwise the rate of interest on an average may be taken as 16%. 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 full capacity utilization.

vii) The project preparation cost etc wherever required could be considered under preoperative expenses.

viii) The essential production machinery and test equipments required for the project have been indicated. The unit may utilize common test facilities available at electronic test & development center (ETDC) and electronic regional test laboratories and regional testing center (RTC).

4. Implementation schedule

The major activity in the implementation of project has been listed and the average time for implementation of the project is estimated at 12 months.

Period in months (suggestive)

1. Registration and other formalities	1
2. Sanction of loan by financial institutions	3
3. Plant and machinery	
a. Placement of orders	1
b. Procurement	2
c. Power connection electrification	2
d installation of machinery/test equipments	2
4. Procurement of raw materials	2

5. Recruitment of technical person 2

6. Trial production 11th

7. commercial production 12th

-Many of the above activities shall be initiated concurrently.

-Procurement of raw material commences from 8th month onward.

-When imported plant and machinery are required the implementation period of the project may vary from 12 months to 15 months.

5. Technical Aspect

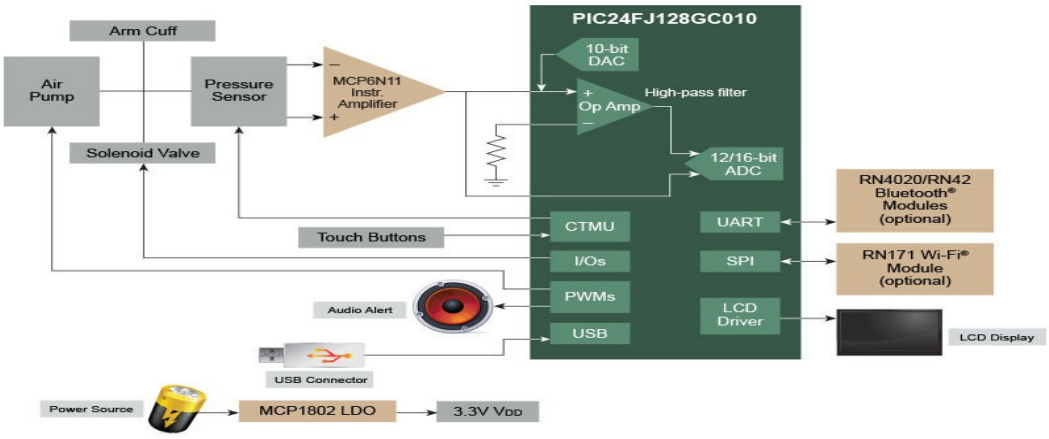
A digital BP monitor uses an inflatable air-bladder cuff, a battery-powered air pump and a pressure sensor for sensing arterial wall vibrations to measure blood pressure in an artery. This is known as *oscillometric method*.

Blood pressure monitor uses an air pump to inflate a cuff surrounding an upper arm or a wrist with sufficient pressure to prevent blood flow in the local main artery. This pressure is then gradually released using a digitally-controlled solenoid valve until the moment that the blood begins to flow through the artery.

The blood pressure measured by a pressure sensor at this point

determines the systolic pressure. Pulse rate is also sensed at this time. The measurement taken when the blood flow is no longer restricted determines the diastolic pressure. This complete measurement cycle is controlled automatically by the micro-controller.

The signal from the pressure sensor is conditioned with an instrumentation amplifier before data conversion by an Analog-to-Digital converter (ADC). The systolic pressure, diastolic pressure, and pulse rate are then calculated in the digital domain using an algorithm appropriate for the type of monitor and sensor utilized. The resulting Systolic, Diastolic and pulse-rate measurements are displayed on a liquid-crystal display (LCD), time-stamped, and stored in non-volatile memory.



Functional diagram of a typical digital blood pressure Monitor

Typical BP monitor module combining an air pump, an air valve and a pressure sensor

User Interface

Most BP monitors use a simple monochrome LCD with 100 segments or less that can be driven by a driver integrated within the micro-controller. Backlighting can be added by using one or more white light emitting diodes (LEDs).

A one or more physical push buttons and/or switches are typically used to turn the power on and off and to initiate blood pressure measurement.

A high-end BP monitor may use a color LCD with a touch screen to implement advanced user interface such as on-screen virtual buttons, touch menus, graphics, animations, etc.

Audible notifications in blood pressure monitors can be provided by simple beepers driven by one or two micro-controller port pins that have pulse-width modulation (PWM) capability. More advanced voice announcements can be achieved by adding an audio digital-to-analog converter (DAC) and an amplified speaker.

Connectivity

In recent years, connectivity, health data aggregation and sharing have become a trend in consumer digital health space, particularly among younger users.

Connected BP monitors have the ability to upload data to a computer or a smart phone for further analysis and tracking of measurements over time. This data transfer is usually done through a USB interface or wirelessly using Bluetooth Low-Energy (BLE) radio link.

An advanced BP monitor may also utilize Wi-Fi and/or cellular wireless networking to upload data to a remote digital health information management system without relying on a computer or a smart phone.

Power Management

Upper-arm BP monitors typically use four AA or AAA (1.5V) alkaline batteries and wrist monitors typically use two AAA alkaline batteries. Alternatively, a high-end BP monitor may use a rechargeable Li-Ion battery and a plug-in wall charger similar to ones used for smart phones.

The monitor's air pump and analog circuitry require a 5V or 3.3V supply and the digital circuitry needs a 3.3V or 1.8V supply, depending on the technology used.

Consequently, a typical BP monitor would need a buck-boost switching regulator to regulate the pump/analog supply voltage to 5V and a low-dropout linear regulator (LDO) for the 3.3V or 1.8V digital requirement.

To extend battery life, an automatic power shutdown after a certain period of inactivity may be implemented. However, a real-time clock (RTC) must be always powered on to maintain the current time while the monitor is turned off.

Processes of Manufacturing:-

The digital blood pressure machine has several parts including the display unit, the arm cuff and the air hose. All the parts of Electronic BP machine viz. Electronic PCB, Air tube and plug & Blood pressure cuff are assembled.

6. 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 1980. The energy conservation act 2001 has been enacted on 18th August 2001, which provides for efficient use of energy, its conservation & capacity building of Bureau of Energy Efficiency created under the act. The following steps may help for conservation of energy:

1. Adoption of Energy conserving technologies, production aids and testing facilities.
2. Efficient managements of process/manufacturing machineries and systems QC and testing equipments for yielding maximum energy conservation.
3. Using efficient temperature controlled soldering and disordering stations can obtain optimum use of electrical energy for heating, during soldering process.
4. Periodical maintenance of motors, compressors etc.
5. Use of power factor correction capacitors, proper selection and layout of lighting system, timely switching on off of the lights use of LEDs wherever Possible.

7. FINANCIAL ASPECT

A. Fixed Capital

(i) Land and Building

Built up Area	500 Sqft
Office, stores	100 Sqft
Assembling and Testing	400 Sqft
Rent Payable per annum@ Rs 12/- per Sq. Ft.	72000 per annum

(ii) Machinery and Equipment- The unit is supposed to carry out the assembling of BP machines therefore there is not specific requirement of Plant and Machinery.

SN	Description	Indian/Imported	Qty	Value (Rs.)
1	Electronic measuring And testing Equipment	Indian	01 set	20000
2	Tools, Jigs/ Fixtures	Indian		10000
3	Other Miscellaneous items	Indian		5000
4	Computer & Furniture	Indian		50000
			Total	85000
			Total Fixed Capital Rs.	85000

B. WORKING CAPITAL PER MONTH

(i)Manpower

SN	Designation	No of Persons	Salary Per Month	Total Salary Per Month
1	Skilled Worker	1	15000	15000

2	Unskilled Worker	1	12000	12000
2	Supervisor Cum Manager	1	18000	18000
			Total	45000

(ii) Raw Material Requirement Per Month

SN	Description	Indian/Imported	Qty	Rate	Value
1	Complete PCB with all components	Indian	500	250	125000
2	LCD Display Unit	Indian	500	100	50000
3	Casing for PCB & LCD Display	Indian	500	15	7500
4	Air Tube & Plug	Indian	500	60	30000
5	Blood Pressure Cuff	Indian	500	160	80000
6	AC Adapter	Indian	500	50	25000
7	Battery	Indian	500	30	15000
8	Packing Material	Indian	500	15	7500
				Total	340000

(iii) Utilities per month

Power 4KW	4500
Water	500
Total	5000

(iv) Other contingent expenditure per month

SN	Description	Amount
1	Rent	6000
2	Postage and stationary	1000
3	Telephone/Fax/Internet	1000
4	Transport and Conveyance	1000

5	Advt. And Publicity	10000
6	Insurance and Taxes	1000
7	Miscellaneous expenses	2000
	Total	22000

Total recurring expenditure per month (i+ii+iii+iv) = 412 000

C. Total capital Investment

Fixed Capital	85000
Working capital on three month basis	1236000
Total	1321000

D. Financial Analysis

(I) cost of production per annum

Total recurring expenditure	4944000
Depreciation on machinery and equipment @10%	8500
Depreciation on tools, jigs, fixtures & office equipments @10%	Included
Interest on capital Investment @ 16%	211360
Total	5163860

Turnovers per annum

Item	Qty (nos)	Rate/unit	Total sales (Rs.)
Electronic BP Machine	6000	1000	6000000

(II) Profit per annum (Before Taxes)

(Turnover per annum- cost of production per annum)= 6000000-5163860= 836140

Profit ratio = profit per annum*100/Sales/Annum

=836140x100/6000000=13.94%

Rate of Return= Profit/Annumx100/ Total Capital Invest.

= 836140 x 100/1321000=63.29%

D. Break Even Point

Fixed cost per annum

Rent per annum	72000
Depreciation on machinery and equipment @ 10%	8500
Depreciation on office equipment furniture @ 10%	Included
Interest on total capital Investment@16%	211360
40% of salary and wages	216000
40% of other contingent & utilities	129600
Total Fixed cost	637460

Break Even Point= fixed Cost x 100/Fixed Cost+ Profit =

637460x100/637460+836140 = 43.26%

List of Address of Supplier of Machinery and Raw material

1. Medicare Products Inc.
   C-53A, Mansarover Garden
   NewDelhi-110015

2. Hospital Devices
   A-33, DSIDC Engg. Complex
   Mangolpuri Industrial Area
   Phase 1 New Delhi-110083

3. Leela Enterprises
   Shop No 1 Varsha Building
   Datta Pada Road, Opposite SBI, Borivali east
   Mumbai, Maharastra

4. Hospital Supply company
   111,Chitaranjan Avenue Kolkatta,
   west Bengal-700001

5. SS Technomed Pvt. Ltd.
   A-128, sector A-4, Tronica City,
   UPSIDC Industrial Area, Loni, Ghaziabad UP

6. HI-TEK Medical Solutions
   346, Sultanpur,M.G. Road, New Delhi-110030

7. Shri Krishna International
   A-85, Flat No 04, Paryavaran Complex
   IGNOU Road, New Delhi

8 Noble Healthcare
   Shop No. 14/127, Ground Floor, Subhash Nagar, Near Subhash Nagar Petrol Pump, Mayapuri,
   New Delhi-110027, Delhi

9. A.R. Electronics & Circuit,
   Plot No. K-91, Sector-1, DSIIDC
   Bawana Ind. Area,
   N.Delhi-19

10. Nemani Poly Products (P) Ltd.,
    24-A Bajrangbali Ind. Area,
    Near Panki Site –IV,
    Kanpur.

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