

INVERTER & CONVERTER

1. INTRODUCTION

INVERTER

An inverter is a device which converts DC power into alternating source of desired voltage. This conversion may be accomplished by electromechanical means by motor generator sets or by electronic means. Inverters in which power conversion is accomplished by electronic means using power transistors or thyristors are called static inverters.

Inverter find application were emergency standby power is required or where AC power is not available. Its application is more commonly found in fluorescent tube lightning during power failure in hospitals, airports etc. These also find wide use as standby power supply for computers, instrumentation and telecommunication equipments.

CONVERTER

A converter is a device which converts DC current into DC power source of a different voltage and similarly AC current into corresponding AC power source. Sometimes converter has same voltage output but change in polarity. DC -DC converter gives excellent line and load regulation. This converter finds application in instrumentation, computers and in industries. IS: 8573:1977 gives the standards for the proposed product.

2. RAW MATERIALS

The raw material requirement for 100 inverters and 100 converters.

Inverter (50VA)

Ferrite core transformers

Semi conductor devices

PCBs

Resistors

Capacitors
 Cabinets
 Transformers & Coils
 Indicator lamps
 Relays
 Wires & cables
 Switches & connectors
 Preset & potentiometers
 Mis. components
 Hardware

Converter (200 VA)

Semi Conductor devices
 PCBs
 Resistors
 Capacitor
 Cabinets
 Transformers & coils
 Indicator lamps
 Relays
 Wires & cables
 Switches & connectors
 Preset & potentiometers
 Mis. components
 Hardware



3. MANUFACTURING PROCESS

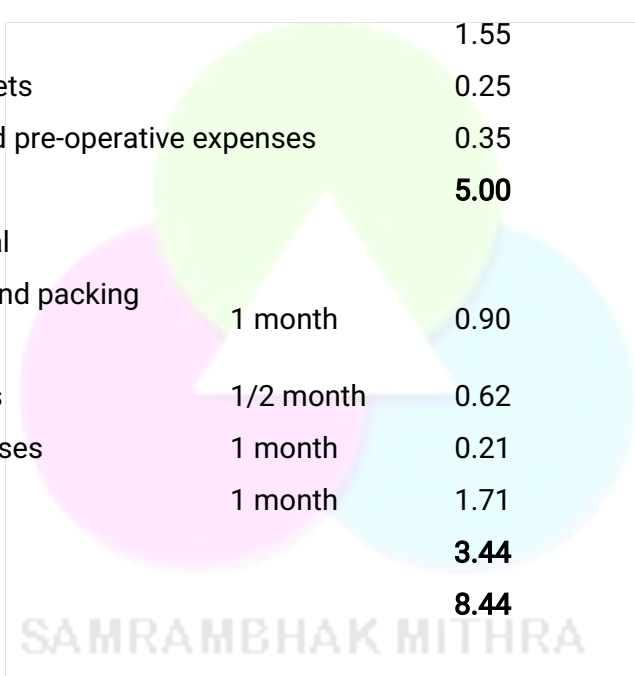
Special transformers which have to be made in -house, are wound with the help of coil winding machine. All the incoming components like semiconductors, transistors, capacitors, relays etc are inspected for their performance. The components are mounted and soldered on PCB according to the design. Controls and sockets are assembled on front and back panel individually. The PCB, transformers etc are mounted

on the chasis and all the inter connections made. The waveforms at various checkpoints , output voltage and power are checked. Necessary settings are made so that the products meet the desired performance specifications. Finally the instrument is kept for heat run for specific time period to test its quality and reliability.

4. MANPOWER REQUIREMENT: 11

5. PROJECT COST

A) Fixed capital		(Rs. lakh)
Land and building		2.85
Machinery		1.55
Misc.fixed assets		0.25
Preliminary and pre-operative expenses		0.35
		5.00
B) Working Capital		
Raw material and packing material	1 month	0.90
Finished goods	1/2 month	0.62
Working expenses	1 month	0.21
Receivables	1 month	1.71
		3.44
(A+B)		8.44



MEANS OF FINANCE

Bank finance	2.42
Margin money	1.02

The project cost may be financed as under

	(Rs. lakh)
Promoter's contribution	2.03
Term loan	3.49
	6.02

6. COST OF PRODUCTION

	(Rs. lakh)
Raw material & packing material	10.79
Utilities	0.32
Wages and salaries	1.33
Rent	-
Other overheads	0.41
Selling expenses	0.41
Interest on term loan	0.69
Interest on bank finance for working capital	0.45
Depreciation	0.46
Total	14.86

7. PROFITABILITY

Annual sales realisation	20.50
Annual operating expenses	14.86
Annual profit (pre-tax)	5.64
Break-even point	36 %
Return on Investment	86 %

Market potential :

The inverter is widely accepted now as an essential part of domestic and industrial appliances in view of frequent and sudden power failure. The market typically demands inverters capable of running a load of 2 lamps or tube lights and 2 fans (eg. 250V-500V) for about 4 hours on 12V and 100 amp hour lead acid battery set. A considerable demand for inverters and converters exists in India. At present there are about 15-20 small scale manufacturers producing various range (50/500VA) of converters and inverters. However, good quality and high reliability of performance is offered by very few manufacturers .

Production capacity :

Inverter 1200 nos

Converter 200 nos

List of Plant, Machinery & equipment :

- 1 Coil winding machine
- 2 LCR bridge
- 3 Dual Trace Oscilloscope
- 4 Frequency counter
- 5 DC Power supplies
- 6 Digital Multimeter
- 7 Line Frequency Monitor
- 8 True RMS meter
- 9 Dimmers
- 10 Test panel
- 11 HV Tester
- 12 Rheostates
- 13 Drilling Machine
- 14 Compressor with spray machine
- 15 Meggar
- 16 Assembly Tools
- 17 Production tables and Chairs

