



**OFFICE OF DEVELOPMENT COMMISSIONER,
MINISTRY OF MICRO, SMALL AND MEDIUM ENTERPRISES**

**A Preliminary Report on
Distribution Boards (up to 15 Amperes)
to Enhance Export & reduce imports**

By

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Table of Contents

CHAPTER	TITLE	PAGE NO
	Acknowledgement	2
	Table of Contents	3
	List of Figures	6
	List of Tables	6
	Executive Summary	7
1	DISTRIBUTION BOARD – AN OVERVIEW	8-13
	1.1 Introduction	8
	1.2 Low Voltage Distribution Board	10
	1.3 Type of Distribution Boards	11
	1.3.1 Fuse Box type	11
	1.3.2 Main Breaker Panel	11
	1.3.3 Main Lug Panel Board	12
	1.3.4 Sub Panel Board	12
	1.3.5 Transfer Switches Boards	13

2	General Enterprise Information		14-17
	2.1	Commercial	14
		2.1.1 HSN & NIC Code of Product:	16
		2.1.2 Existing Cluster on Products	17
		2.1.3 Possibility to create establish cluster on the	17
		2.1.4. Probable Areas or Districts for new clusters	17
	2.2	Export Import Data and Possibilities	18-23
		2.2.1. Data of Export /Imports for past three years	19
		2.2.2. Global market and SWOT Analysis	19
		2.2.3 Domestic market	22
		2.2.4 Export market	23

3	Technical Aspect		23-25
	3.1	General Information	23
	3.2	Equipment required for manufacturing of the Product	23
	3.3	Test facilities required for the Products	24
	3.4	The Technology Existing the manufacturing of the Product	24
	3.5	Suggested modern technology for implementation	24
	3.6	Raw material required and availability	25
	3.7	Covering raw material Indian / International Standard	25

4	Project Report on Distribution Board		25-33
	4.1	Manufacturing Process	26
	4.2	Quality Control and Standards	27
	4.3	The Financial Analysis	28-33
5	5.0	Additional Information	33-38
	5.1	Details of Test Facility available in India	33
	5.2	Details of raw materials supplier	34
	5.3	Machine Supplier	34
	5.4	Schemes and consultancy services	36
6		Challenges and suggestions received from mfrs.	37
	6.1	Way forward	38

List of Figures

Fig No	Name of Figure	Page No
1	Distribution Board	12
2	Process of Distribution	17
3	Market size	19
4	Process Flow Chart of Manufacture	26

List of Tables

Table No.	Name	Page No.
1	Equipment and Test Facilities	21-22
2	Financial Analysis	27

EXECUTIVE SUMMARY

A distribution board (also known as panelboard, breaker panel, or electric panel) is a component of an electricity supply system that divides an electrical power feed into subsidiary circuits while providing a protective fuse or circuit breaker for each circuit in a common enclosure.

The global distribution boards market size is projected to reach USD 8.52 billion by 2025 growing at ~6.50% CAGR. Distribution market is growing in single digit globally but Asia Pacific (India and China in particular) growing at decent pace. Distribution board comes under Fast Moving Electrical Goods (FMEG) and lot of demands comes from replacement market.

The market is moving from unorganized sector to organized sector. India is having significant (in excess of Rs.300 Crore) export as well as import for this product. Demand for aesthetically and functional superior product is emerging from high end Housing sector. Recently after fire broke out in few hospitals, Maharashtra govt proposes standardization of electrical products to reduce the fire incidents. As per study most of the fire cause by short circuit and can be avoided by using superior products. This will bring threat as well as opportunities for efficient MSEs.

After discussion with stakeholders this product is having immense potential. MSEs are facing challenges like availability of raw material, state of the art machineries, Designing and Marketing. These challenges can be addressed by Cluster approach (under our MSECDP), Raw material assistance scheme (NSIC), Modernization of manufacturing like CNC and 3 D Printer under CLCSS, Aesthetic improvement by Design clinic scheme, Quality improvements and standardization by testing in our Testing centers, ZED certifications etc.

The production process and types of distribution board are mentioned in detail in the report. The financial calculations are given for a typical Micro Enterprises, profitability will increase considerably after upscaling the production.

1 DISTRIBUTION BOARD – AN OVERVIEW

A distribution board is the primary electrical supply system for the residential, commercial, and industrial entity. Being one of the most critical devices within the electricity distribution system, it makes sure that the current is correctly distributed to all the devices allowing proper functioning. There are main types of distribution boards, namely, single door distribution board and double door distribution board. Single door distribution boards are installed in relatively simple applications and are available in 4-way, 8-way, and 16-way configurations. On the other hand, double door distribution board used for heavy-duty operations and are majorly used in commercial applications. The global distribution boards market size is projected to reach USD 8.52 billion by 2025 growing a healthy ~6.50% CAGR. The major factors driving the growth of the global distribution boards market are increasing urbanization across the globe and increasing need for protective devices. Moreover, increasing access to electricity, especially in rural areas, will drive the demand of distribution boards market. Additionally, aging power infrastructure also presents a growth opportunity for the global distribution boards market. Energy-efficiency has become the primary driver for the growth of the global distribution boards market. Additionally, governments around the globe are developing policies to encourage the use of energy-efficient devices, due to their benefits, including reduced energy consumption and savings in cost. According to International Energy Efficiency (IEA), global energy demand rose by ~ 2% year on year, led by strong economic growth, ultimately driving energy efficiency. All these factors will drive the distribution boards, which also facilitates uninterrupted power. Many players, including Havells (India), Legrand (France), and Finolex (India) among others are focusing on providing highly competitive distribution boards products with varied categories. These players also aim to adopt organic as well as inorganic strategies in the form of new product development, contracts & agreements, and expansion as a part of their expansion strategies. For instance, Havells India focuses on innovation by making a considerable amount of investment in R&D for offering competitive

products. The global distribution boards market has been segmented based on voltage rating and end use. Based on the voltage rating, the global market includes low voltage and medium voltage. The medium voltage segment is expected to dominate the global market. This share can be attributed to increasing investments in T&D infrastructure, construction sector, and growing renewable sector. Based on end-use, the market has been segregated into transmission & distribution utilities, manufacturing & processing industry, commercial & residential, and others. The T&D utilities are expected to dominate the market as the T&D infrastructure is aged and needs refurbishment.

A distribution board (also known as panelboard, breaker panel, or electric panel) is a component of an electricity supply system that divides an electrical power feed into subsidiary circuits while providing a protective fuse or circuit breaker for each circuit in a common enclosure. Normally, a main switch, and in recent boards, one or more residual-current devices (RCDs) or residual current breakers with over current protection (RCBOs) may also incorporated. Type of distribution boards may be

By Voltage Rating

- Medium
- Low

By End-Use

- Transmission and Distribution Utilities
- Manufacturing and Processing Industry
- Commercial and Residential Sector
- Others

There is huge business opportunity for domestic and global market.

These distribution boards may be for indoor or outdoor installations. These may be utilized for tractions power supply or fitted in boats, trains, electrical vehicles or transport bus for electrical appliances and customer power needs. Different application for distribution boards may involve specific testing before mass production or export to specific requirement and atmospheric conditions for wide

range of Temperature requirements. Hence all distribution boards cannot be same type tested as per standards. And an entrepreneur has huge opportunity to manufacture a distribution boards for customized requirements.

Based on the application, intended use, temperature and protection, security and price requirements the application-based distribution boards may be manufactured for current ratings up to 15 amperes. Accordingly, distribution boards may be housed in sheet metal or plastic body. Copper bus bars and aluminum may be used. These distribution boards may be automated or remote controlled using advance communications technologies. These may be fitted for security and spying cameras also. On very natural look may be manufactured in wood boxes. These may be housed in split phase or 3-phase requirements.

Even though we may categories the distribution boards on the application and requirements, here are some distribution boards (i.e.electrical panel boards) that one can choose:

1.2 Low Voltage Distribution Board

A wide variety of low voltage power distribution equipment is available on the market today to meet the varying needs of specific homes, commercial buildings and industrial facilities. By gaining greater familiarity with the basic similarities and differences between panel boards, switchboards, low voltage switchgear and bus way options, consumers can make more educated choices about the many products and services available in the electrical control, distribution, and power quality categories. High-quality vendors are innovative and knowledgeable about the increasing array of product options, but also capable of providing customized guidance on how best to meet consumers' specific needs.

In some cases, more highly functional low voltage distribution equipment is needed to best protect, control and monitor critical power electrical distribution systems safely and efficiently. In these instances, low voltage switchgear is often the optimal solution. Low voltage switchgear provides centralized control and protection of low voltage power equipment and circuits in industrial, commercial and

utility installations involving transformers, generators, motors and power feeder circuits. Unlike the other options reviewed, switchgear uniquely withstands short circuit currents for an extended period of time (30 electrical cycles). This time allows the downstream protective device closest to the fault to open and clear it; accordingly, these capabilities are referred to as short time or withstand ratings. Molded case circuit breakers in switchboard assemblies do not offer these ratings.

Low voltage switchgear may feature the following components: low voltage draw out power circuit breakers, circuit breaker compartments, primary and secondary power connections, secondary control compartments, structures, busbars (main and section) and customer termination areas. Low voltage draw out power circuit breakers automatically protect an electrical circuit from damage due to overload or short circuit. The term draw out refers to the ability of these circuit breakers to connect to the primary and secondary power connections without nuts, bolts, connector kits or other mechanical means.

1.3 Types of electrical distribution boards:

1.3.1 Fuse Boxes type:

A fuse box refers to a consumer unit where all the electricity is controlled and distributed. It's important to know where it is located in your home because, in the event of an emergency, it is vital to find your fuse box with ease and turn it off to avoid a short circuit. They contain three components – main switch, circuit breakers and residual current device. Modern Distribution board (DB) may incorporate sensors, cameras, fire fitting sensors and remote communication for automation purpose.

1.3.2 Main Breaker Panel:

A commonly used distribution board, main breaker panels protect the circuits and keep an eye on the panel's amperage capacity. They protect the circuits from getting overheated, with a breaker connected by 3 wires along each circuit. Incidentally, given its function, the main breaker panel can cut power to the house including the circuit breakers.

1.3.3 Main Lug Panel Boards:

Main lug units are essentially used as a distribution board when there appears to be the main breaker upstream. Line wires run into these lugs, wherein the main lug panel can be used as a sub-panel when it is connected to a breaker from the main panel. In the event of an emergency, the disconnection at the meter can cut power without it entering the house.

1.3.4 Subpanels Boards :

Subpanels are easy to install, safer and efficient for homes. They are smaller and help in distributing power to a specific part of your home or area in the property, focusing as a satellite circuit breaker panel specifically convenient to the area it functions for. They get their power from the main panel and are free to adjust the current distribution around the area or property. They, however, do not have disconnects.

1.3.5 Transfer Switches Boards:

A transfer switch shifts load between two electrical sources. Often described as a type of subpanel, transfer switches are best for backup power generators wherein they convert generator power to electrical power via the breaker panel. The idea is to have the best quality switchboard connection that ensures a seamless supply of power and guarantees safety. There are essentially two types of transfer switches – Manual Transfer Switches and Automatic Transfer Switches. Manual, like its name suggests, works when one operates the switch to generate the electrical load to the backup power. Automatic, on the other hand, is for when the utility source fails, and the generator is used to provide electrical power temporarily. Automatic is considered more seamless and easier to use, with most homes opting for this convenient distribution board.

It is important to understand the different purposes of the distribution board. Bearing industrial uses in mind, different boards are suggested based on electricity

and power usage and usage of cost-efficiency products. Here are some of the types of distribution boards used in industries:

- Motor Control Centers (MCCs)
- User-Friendly Human Machine Interface (HMI)
- Operator Panels boards
- Industrial Hydraulic Control Panels
- Programmable Logic Controller (PLC) Panels
- Industrial Hydraulic Control Panels
- Mobile Phone Panel Boards
- Electric Vehicle Charging Panel Boards
- Home automation Panel Boards
- Many applications up to 15 Ampere current capacity



Fig.1 A type of Distribution Board

2 General Information about Distribution Boards up to 15 A

2.1 Commercial :

2.1.1 HSN Code of Product: 8537

HS Codes of Boards, panels, consoles desks, cabinets and other bases, equipped with two or more apparatus of heading 8535 or 8536, for electric control or the distribution of electricity, including those incorporating instruments or apparatus of Chapter 90.

Compulsory compliance requirement (CCR) is that voltage shall not exceed 1000V. Basic Duty is 10% and IGST is 18 % . Social welfare surcharge is 10%.

Calculation of CIF , Custom duty for Import of 10,000 is described in table below:

<input checked="" type="radio"/> CIF Value <input type="radio"/> Assess Value		
Formula	Duty Rates	Duty Amount
Assessable Value – (A) (CIF Value + 1% Landing Charge of CIF)		(A) 10100
Basic Duty – (B) (A) x Basic Duty Rate	<input type="text" value="10"/>	(B) 1010
Preferential Duty – (B) (A) x Pref. Duty Rate	<input type="text" value="0"/>	(B) 0.00
IGST: Additional Duty – (C) (A+B) x IGST Rate	<input type="text" value="18"/>	(C) 1999.8
Central Excise Edu Cess – (D) (C) x Central Excise Edu Cess rate	<input type="text" value="0"/>	(D) 0.0
Customs Education Cess – (E) (B+C+D) x Customs Edu. Cess rate	<input type="text" value="0"/>	(E) 0.0
Social Welfare Surcharge – Special Duty – (F) (A+B+C+D+E) x Social Welfare Surcharge	<input type="text" value="10"/>	(F) 1310.98
Total Custom Duty	(B+C+D+E+F)	4320.78

Similarly assessable value for 10,000 shall be as described below :

OCIF Value Assess Value

Formula	Duty Rates	Duty Amount
Assessable Value – (A) (CIF Value + 1% Landing Charge of CIF)		(A) 10000.00
Basic Duty – (B) (A) x Basic Duty Rate	<input type="text" value="10"/>	(B) 1000.00
Preferential Duty – (B) (A) x Pref. Duty Rate	<input type="text" value="0"/>	(B) 0.00
IGST: Additional Duty – (C) (A+B) x IGST Rate	<input type="text" value="18"/>	(C) 1980.00
Central Excise Edu Cess – (D) (C) x Central Excise Edu Cess rate	<input type="text" value="0"/>	(D) 0.00
Customs Education Cess – (E) (B+C+D) x Customs Edu. Cess rate	<input type="text" value="0"/>	(E) 0.00
Social Welfare Surcharge – Special Duty – (F) (A+B+C+D+E) x Social Welfare Surcharge	<input type="text" value="10"/>	(F) 1298.00
Total Custom Duty	(B+C+D+E+F)	4278.00

NIC code of the Product: 27104:

The product NIC code for uddyam registration is 27104. The NIC code is essential for Uddyam registration in SME sector in India.

NIC code under section 27 describe that ‘manufacture of electricity distribution and control apparatus (electrical apparatus for switching or protecting electrical circuits (e.g. switches, fuses, voltage limiters, surge suppressors, junction boxes etc.) for a voltage exceeding 1000 volts; similar apparatus (including relays, sockets etc.) for a voltage not exceeding 1000 volts; boards, panels, consoles, cabinets and other bases equipped with two or more of the above apparatus for electricity control or distribution of electricity including power capacitors.)

2.1.2 Cluster Already exist for the product :

No such specific cluster in India that support manufacturing of distribution board. Although two clusters existed on similar products

- 'Electrical Equipment's Control Panels' Perungudi Chennai,
- Electrical items manufacturing Bhilai.

2.1.3 Possibility to establish cluster on the Products

There is huge possibility for generating employment and export potential. Export oriented distribution board cluster (EODBC) may be planned. A primary meeting and awareness program has been conducted for switch gear and Panel Board at Sundargarh, Raurkela. Such a cluster may be formed with common facility centre to process plastic and steel that may be obtained from scrap. The nut and bolt of specific size may be manufactured in CFC that meet the standard norms.

The distribution board may be manufactured by micro enterprises if common facility for IP testing, design, innovation, fire retardant material under the guidance of the MSME-Testing Centers, MSME-DI and MSME-Technology Centers. A Cluster at Nashik and Pune may be planned for making distribution boards to be used in Electrical Vehicles.

Cluster is feasible so that distribution board may manufactured based on

- a. Material such as wood, ceramic, plastic and steel
- b. Intended use in temperature range -25°C to 50°C .
- c. Indoor/Outdoor type
- d. According to Standards for export quality or customized application

2.1.4 Probable Areas or Districts

Probable districts the products Product manufacturing or Project can be established:

- Assam
- J&K
- Sikkim
- Ahemdabad

- Nashik and Pune
- Coimbatore
- Navi Mumbai

Number of Industries registered as MSME is available in the manufacturing of the Products.

Around 15000 Units across country which are manufacturing distribution boards and selling in local areas due to lack of branding, bulk production incapability and proper finish. If common facility is created with testing facility, design and material bank the distribution boards above 15 Ampere current may also be manufactured and have export potential.

Number of Units available in Large scale are Around 12 in India like L&T, Havells etc.

2.2 Export Import Data and Possibilities

There is huge potential for export of distribution boards. After discussion with manufacturers and industry veterans it appears that more and more manufacturers either started outsourced the manufacturing from China or importing from China and putting their label in India. The main reasons for shifting manufacturing base or importing the finished products are

- Costing
- Finishing
- Ease of Operation
- Non availability of raw material (Fire retardant glass filled FRP)

MSME sector may be given support through the cluster approach for manufacturing all type of distribution boards up to 15 Ampere. There will be huge demand for such products in India and globally due to lifestyle changes. The demand will emerge from new infra, home automation, security etc. apart from replacement.

2.2.1 Data of Export / Imports for the past three years :

096	Item Description (Export Data)	Value in (Rs. Crore)		
	Distribution Board 15Ampere Range	2017-2018		2018-2019
		340.33		384.42
096	Item Description (Import Data)	2017-18	2018-19	2019-2020
	Distribution Board 15Ampere Range	461.20	595.55	556.88

2.2.2 Global market and SWOT Analysis

The global distribution boards market is of USD 5.91 Billion (app. INR 40,000 crore) and projected to grow at a CAGR of 6.5%. Market growth is driven by factors such as the growing need to protect electrical components and networks, increasing global electricity demand, subsequent investments in renewable power plants, and increasing construction and infrastructural activities across the globe. The market is segmented by voltage rating, end-user, and region.

Market Ecosystem:

The ecosystem of the distribution boards market is often categorized into in-house and outsourced tasks. In-house activities mainly focus on critical aspects and components of a product, while the required auxiliary parts are usually outsourced. The basic components of the power distribution board are manufactured during this stage; these include the contacts and the tripping mechanism. The components are then assembled according to the required specification during the assembly stage. All parts are configured before the final packaging of the product. The product is introduced in the market through the process of distribution, marketing, and sales.



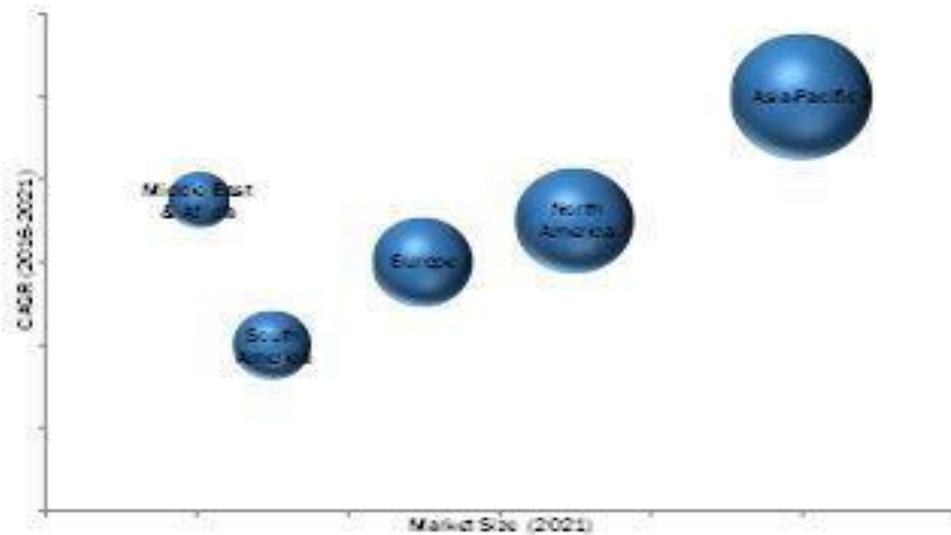
The original equipment manufacturers (OEMs) of distribution boards include ABB Ltd. (Switzerland), Eaton Corporation (Ireland), General Electric (U.S.), Schneider Electric SE (France), and Siemens AG (Germany)

The medium voltage segment is expected to grow at the highest CAGR . This can be credited to the increasing investments in transmission & distribution infrastructure, renewable power plants, and construction and infrastructural activities. However, the demand for low voltage distribution panels is also set to increase rapidly, given the increasing access to electricity in countries such as India, South Africa, and Nigeria.

Based on end-use, the electrical distribution boards have been segmented into transmission & distribution utilities, manufacturing & processing industry, commercial & residential sector, and others, which include marine, transportation (rail traction systems, ports, and airports), mining, and offshore applications. The transmission & distribution utilities segment recorded the largest market size in last few years. The transmission & distribution infrastructure in developed economies in North America and Europe is aging and outdated. These economies are modernizing their grids and replacing old installations. Investments in offshore wind farms, which increase their capacity, are also expected to drive the market.

Asia-Pacific is estimated to lead the distribution panels market, owing to increased electrification rates, urbanization, and industrialization, which propel the demand for electrical distribution boards. China has dominated the global market on account of extensive upgradation of electrical infrastructure and installation of new transmission & distribution lines. China and India are estimated to be the fastest-growing markets for distribution panel boards in the region. The figure given below indicates the market size of various regions, with their respective CAGR.

Distribution Boards Market Size, by Region, 2021 (USD Billion)



Source: MarketsandMarkets Analysis

Some of the leading players in the distribution boards market are ABB Ltd. (Switzerland), Siemens AG (Germany), General Electric (U.S.), Schneider Electric SE (France), and Siemens AG (Germany). New product launch was the strategy most commonly used by top players in the market in last few years, followed by contracts & agreements, expansion, and other developments.

SWOT Analysis for MSME Sector :

Strength in Distribution board manufacturing Business:

- Demand from Indian market in rural and urban infrastructure
- Global demand/export potential particularly in African countries
- Domestic Demand is growing with highest CAGR globally.

Weakness

- Non availability of policy and subsidy support
- Non availability of Raw material in India(fire resistant glass filled FRP)
- The COVID -19 problems and global slow down
- Challenging Prices/products from China

Opportunities

- Availability of resources including labour
- Untapped domestic demand
- Innovation and customized design

Threat

- Large Industries aggressive pricing within India
- To meet the Global standards and testing compliances like RoHS, UL, IEC

2.2.3 The demand in domestic market

Demand from domestic manufacturers has never stopped. Average life of a distribution board is 3 to 5 years for functionality without electric shock. Huge business scope in repair maintenance of distribution boards.

These may be used in many areas.

1. Interior decoration if customized with wi-fi and Artificial intelligence chips
2. Indoor and outdoor application as per IP protection
3. Specific used in areas like Leh, J&K and Kargil
4. Specific for defense purpose
5. Remote controlled and accessed DB for Home automation
6. Real estate, Railways and Road transport in electric vehicle charging station

2.2.4 Export market

1. Export oriented competitive products as per International Standards (ISO/IEC/UL) and IP norms with RoHS compliances has huge potential for ready to use distribution board up to 15 Amps
2. Export to African countries may be taken in mission mode

3 Technical Aspect

3.1 General Information

- Sector in which the product is falling: **Electrical**
- End users of the Product/ sectors: **Real estate, Engineering, domestic consumers and Industrial**
- Governing Indian Specification: IS 2675 (1983), IS:8623, IS/IEC 60947-1
- Governing International Specification: Standards IEC 61439, BS 7671 UK
- Flow chart of the manufacturing process:
- Qualitative parameters of the Product :
- Voltage, Current, LT/HT, Input / output Cables, Fuse, IP protection, Single Phase, 3 phase ,
- Details of the Products Licenses to be obtained: IS, BIS, IP and ROHS

3.2 Equipment required for manufacturing of the Product :

Table-1

Sr.No.	Name of Machine	Qty
1.	Hand Operated Sheet Bending Machine	1
2.	Guillotine shearing Machine 1200mm	1
3.	Drilling machine 15mm & 25mm Cap	1
4.	Bench Grinder Transformer 300A	1
5.	Gas welding Equipment	1
6.	Arc welding Machine	1
7.	Hand Shearing Machine	3
8.	Power Hacksaw Machine 150mm	1
9.	Air Compressor with Spray gun	1
10.	Flexible Shaft Grinder	1

11.	Portable drilling Machine 15mm capacity	1
12.	Fly press No.8	1
13.	Coil winding machine hand operated	1
14.	Baking Oven 700mm x 700mm x 700mm	1
15.	Tools , Dies etc	1

3.3 Test facilities required for the Products: Table-2

Sr.No.	Name of Instrument	Qty
1.	HV Insulation Tester 5kV AC	1
2.	IR tester 1000V DC	1
3.	Multimeter	2
4	Portable Voltmeter	1
5	Portable Ammeter	1
6	Loading Rehostat 0-30A	3
7	Auto Transformer 0-20A	1
8	LCR Bridge	1

3.4 The Technology for the manufacturing of the Product :

- Metal Body Distribution Board
- This may require steel cutting, punching and folding
- Plastic Body Distribution Board
- This may require Plastic Molding and Auto-cad design etc.
- Plastic test lab with ROHS compliance

3.5 Suggested modern technology for implementation or available in the market

Auto-cad design & 3D printing

3.6 Raw material required and availability: Fuse, Glands, nut-screw, MCB, Plastic or iron sheet, painting arrangement

3.7 Covering raw material standards Indian / International Standard

BIS and NABL Accredited Laboratories may be approached for testing for compliance as per ISI mark, IP testing etc

4 Project Report on Distribution Board

The Distribution Board, refers to an equipment which consists of bus bars, and possible switches, fuse links and Automatic protective equipment, bypass equipment, for connecting, controlling and protecting a number of branch circuits fed from one main circuit of a wiring installation in a building or premises for easy and safe handling of incoming power supply. These are, also used to protect the electrical distribution system in turn, connected electrical equipment from being damaged due to various faults like short circuit, over load, earth leakage, etc. The Conductor system by means of which electrical energy is conveyed from bulk power source or sources to the consumers is known as distribution system, which may be divided into two systems known as high voltage (primary) distribution and low voltage (secondary distribution). From generating station the Electrical Power is usually transmitted to various Sub-stations, through extra high tension transmission lines at voltages from 33 to 220 kV and at these Sub-stations this voltage is stepped down to 11 or 6.6 or 3.3 kV and power at this voltage is conveyed to different sub- stations for distribution and to the bulk supply consumer.

Similarly at distribution Sub-stations the voltage is stepped down to 400 volts. From these Sub-stations various low Voltage (400 volts between phases and 230 Volt between phase and neutral) distributed and radiated out to feed the consumer. This system of distribution of power is known as low voltage or secondary distribution system.

The distribution system is classified in many ways i.e. according to current A. C. or D. C. distribution, or according to the character of service i.e. it may be:

- (i) General light and power,
- (ii) Industrial Power,
- (iii) Railway
- (iv) Street lights etc.

and according to number of wire i.e.:

- (i) Two wire
- (ii) Three wire
- (iii) Four wire etc.

But now a days AC distribution system almost universally employed. The choice of the system of power distribution is determined by the type of power that is available and by the nature of the load required for particular user.

4.1 Manufacturing process

The distribution boards are sheet metal fabricated enclosures open, semi-closed or totally enclosed type which provide and control, electric power to distribution systems. Provision for indicating the parameters like voltage, current frequency per unit will be reflected on the face of the board. Regulation of the power supply is available through switches and MCB's and fault protection through the use of different relays.

The sheet metal enclosure for the control panel is designed and fabricated in the unit. The components and accessories are bought out from the market and fitted as designed in the board. The circuit as per the design is laid out and the board is tested for proper functioning as per relevant standards. In brief the manufacturing process consists of:

- i) Establishing the requirement and accordingly designing circuit diagram.
- ii) Marking
- iii) Fabricating the Distribution Board - Marking, cutting, and bending of sheet, welding and Grinding and holing.
- iv) Fixing the joint clips
- v) Fixing the frame of battons

- vi) Wiring according to circuit diagram
- vii) Fitting and connecting components/ accessories
- viii) Testing as per relevant specifications/ standards.

Note: In house, wiring meter, fuse and link board should be installed by the Electricity Board. General Process flow chart is indicative in nature and has been shown in **Fig.No.1**

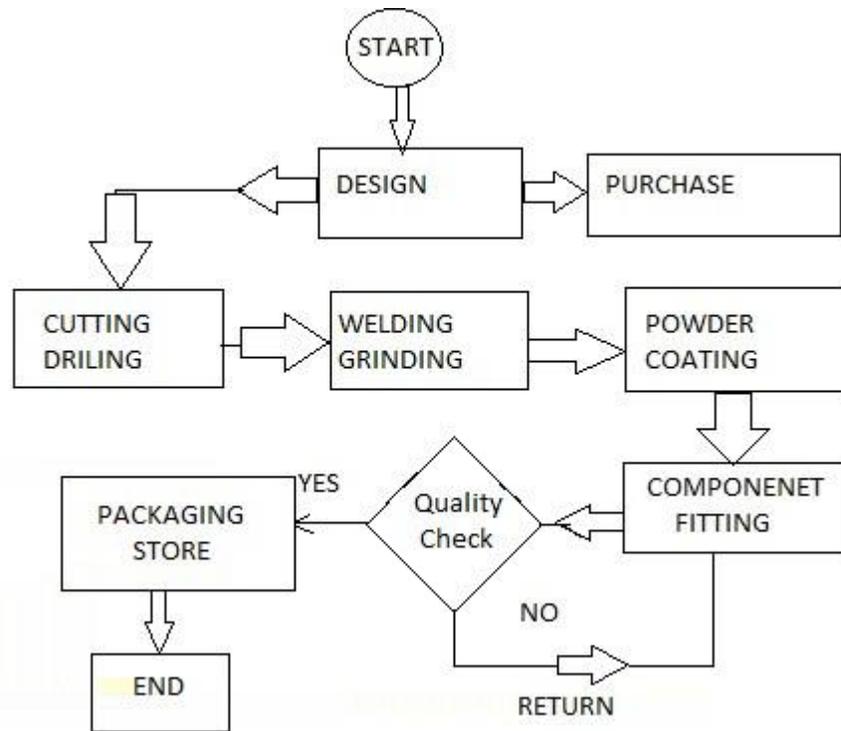


Fig. No.1

4.2 Quality Control and Standards:

The distribution boards are manufactured as per **IS 2675:1983 and IS 8623 : 1977** referred for Control Panels, regarding technical aspects and testing requirements. The components and accessories are incorporated conforming to customer's requirement and demand. However, the standard of workmanship and quality of the raw material to be used are the basic needs of quality control. Obtaining ISO Certification can further boost the credibility of the unit concerned.

4.3 The Financial Analysis

A. Fixed Capital

(i) **Land and Building** (Rs.) Rented building with a built up area of 1000 sq.ft. for office and workshop shed- Rented @ Rs. 10,000 permonth.

(ii) **Machinery and Equipments**

Sl.	Description	Rate(Rs.)	Qty.	Amount(Rs.)
1	Bench Drilling Machine 20 mm Dia	16,500	1	16,500
2.	Table Grinding Machine 200 mm dia	1,25,000	1	1,25,000
3.	Hand Grinding Machine	4,000	1	4000
4.	Cutting machine Hilem Ply wood & PVC	35,000	1	35,000
5	Bench Vice & table	5,000	2	10,000
	Total machineries			1,90,500
6	Hand Tools	5,000	Lump sum	5,000
	Total Tools			5,000
	Office table with 3 chairs	10,250	2	20,500
8	Almirah	7,500	2	15000
	Total Furnitures			35,000
9	Electrification & Installation	15,000	--	15,000
10	Pre-Operative Expenses	10,000	Lump sum	10,000
	Total Fixed Capital			2,55,500

B. Working Capital (per month)**(i) Personnel**

Sl.	Designation	Salary(Rs.)	Strength	Amount(Rs.)
1	Manager / Entrepreneur	50,000	2	100,000
2	Helper	15,000	4	60,000
	Perquisite @ 15% of salaries			24,675
	Total			184,675

(ii) Raw Material (per month)

Sl.	Description	Rate (Rs.)	Qty	Amount(Rs.)
1.	Cutting tools (consumables)	12,000	Lump sum	12,000

iii) Utilities (per month)

Sl.	Description	Rate (Rs.)	Qty	Amount (Rs.)
1	Electricity Charges	8 /- per unit	500 units	4,000
2	Water	100 per can	20 cans	2,000
	TOTAL			6,000

Other Contingent Expenses (per month)

Sl.	Item Description	Rate (Rs.)		Amount (Rs)
1	Rent	100,000	Agreement	100,000
2	Postage, stationery and telephone	3000	Approx.	3,000
3	Transportation	50000	Approx.	50,000
4	Insurance	10,000	Approx.	10,000
5	Miscellaneous Expenses	5000	Approx.	5,000
	TOTAL			168,000

iv) Total Recurring Expenditure

Personnel	184,675
Raw Material Lump sum	12,000
Utilities	6,000
Other Contingent Expense	168,000
Total	370,675

v) Total Working Capital (for 6 month) = 22,24,050/-

This unit is manufacture oriented, working capital for 6 month is required.

Total Capital	a) Fixed Capital	2,55,500
Investment :	b) Working Capital	22,24,050
	Total:	24,79,550/-

4.3 Financial Analysis

(1) Total Cost of Production (per year) (Rs.)

Total recurring expenditure	44,48,100
Rent of building	12,00,000
Depreciation on machinery and equipment @ 10%	19,050
Depreciation on Tools@ 20% and others @10%	4,000
Depreciation on office equipment @ 20%	3,500
Interest on Capital Investment @ 14% of 2479550	3,47,137
Total	60,21,787

(2) Turnover (per year) (Rs.)

Turn over = 4 50 Nos per month x 12 @ Rs. 1300 /= Rs. 62,40,000 per ANNUM

(3) Net Profit (per year) (Before Income Tax)

= Turnover- Total Cost of Production

= Rs. 6240,000 – R s 60,21,787 = Rs. 2,18,213

(4) Net Profit Ratio = $\frac{\text{Net Profit per year} \times 100}{\text{Turnover per annum}}$ = $\frac{218213 \times 100}{6240,000}$ = **3.4%**

(5) Rate of Return	= $\frac{\text{Net profit per year} \times 100}{\text{Total investment}}$	= $\frac{218213 \times 100}{2479550}$	=	8.8%
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(5) **Break Even Point**

Break-even Point (% of Total Production Envisaged)	
Fixed Cost	(Rs)
Depreciation on Machinery and equipment,	19050
Depreciation on Tools, office equipment & others	7500
Rent on Building and insurance	12,10,000
Interest on total investment	34,7137
40% of salary and wages	886440
40% of other contingent expenses (Excluding Rent and Insurance)	27,200
Total	2497363.0
(6) Break-even Point (% of Total Production Envisaged)	
Fixed Cost	(Rs)
Depreciation on Machinery and equipment,	19050
Depreciation on Tools, office equipment & others	7500

Rent on Building and insurance	12,10,000
Interest on total investment	34,7137
40% of salary and wages	886440
40% of other contingent expenses (Excluding Rent and Insurance)	27,200
Total	2497363.0

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

Fixed Cost + Profit

$$= \frac{2497363 \times 100}{2497363 + 218313 + 271567} = \frac{2497363 \times 100}{4956063} = 91.96 \%$$

5.0 Additional Information

1. The Project Profile may be modified/tailored to suit the individual entrepreneurship qualities/capacity, production program and also to suit the locational characteristics, wherever applicable.
2. The Electrical 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 operated. 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 to face global competition.
3. 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.
4. ZED certification may be taken for Zed rating of the product.

5.1 Details of Test Facility available in India

1. MSME Testing Centres and State Govt test Labs
2. CPRI
3. IREDA
4. IDEMI
5. NTH
6. ERTL
7. NPL
8. Private labs accredited by BIS and NABL such as M/s.RTRC Manesar, RE Laboratories New Delhi etc

5.2 Details of raw materials supplier

1. Steel Authority of India Ltd. (Marketing Divn.), Bhubaneswar.
2. M/s. Premji Electronic Industries 14, Errabalu Chetty Street, Chennai-1.
3. M/s. Puse Gear Industries, PH Road, Chennai-49. 4. M/s. Sahoo Traders, Cuttack.
5. M/s. Mutual Insulated Cables and Conductors Ltd., A-25 and 26, Phase-III, New Industrial Estate, Jagatpur, Cuttack-21.
6. M/s. Indian Oxygen Limited Chennai-21.
7. M/s. Single Window Switch Gear Solutions, The Central House, 222 Okhla Industrial Estate, New Delhi-110020. [Tel.-91-11-6848242-45](tel:91-11-6848242-45). [E-mail-info@contralsindia.com](mailto:info@contralsindia.com)
8. M/s. Newtech Switch Gear, K-50, Udyog Nagar, Delhi-110041.
9. M/s. Minilec (India) Pvt. Ltd. S.No. 1073/1-2-3, Post- Pirangoat, Pune - 412111(India) Tel 0213922162
10. M/s. Larsen and Toubro Ltd. Kolkata, Tel-033-2822301.

11. M/s. Udar Cable and Conductors (P) Ltd.52/7, Plot No. 7 & 8, Athagarh I.E., Radhadamodarpur, Cuttack - 29 12. Local Market.

5.3 Machinery Suppliers

1. M/s Harshite Enterprises, SIDCO Industrial Estate, Ambattur, Chennai – 98.
2. M/s Bright Engineering works, Peenya Industrial Estate, Bangalore
3. M/s Bharat Machines & spares, Andheri East, Mumbai
4. M/s Perfect machines centre, 214 Lingi chetty steet, parrys, Chennai - 1.
5. M/s Chandra machine tools 42, 2bd floor Post office street, Chennai – 1
6. M/s Prosol, 192, 1st cross SIDCO Industrial estate, Chennai 600 098.
7. M/s Vedant Engineering, 15, Shree harikrupa estate, Ahmadabad - 380038
8. M/s Kabir Foundry works, 334, Industrial Area, Opp Gun Anged park, Ludhiana, Punjab.
9. German Tools & Instruments, No.61/29, saify house1st floor – shop no.2, sembudoss street, parrys, Chennai – 600 001
10. M/s. HMT Ltd. 31, Chowranghee, Kolkata.
11. M/s. Manaklal and Sons 23 Ganesh Chandra Avenue, Kolkata-700013.
12. M/s. B.B. Engineering Works 166/22, B. T. Road, Ashok Garh (E), Kolkata-700035.
13. M/s. Atlas Works Pvt. Ltd. 119, Ribbons Street, Kolkata-16.
5. M/s. Nandy and Co. 125 Belidious Road, Howrah-1
6. M/s. Pipalia Engg. Works Premnagar, Pipala, Rajasthan.
14. M/s. NSIC Ltd. Link Road, Badambadi, Cuttack-753001.
8. M/s. Perfect Machine Tools Co. Pvt. Ltd. 17, Kharvela Nagar, Bhubaneshwar.
15. M/s. Mohan Enterprises Mangalabag, Cuttack-753001.
10. M/s. Orissa Machine Tools Nuapatna,Cuttack-753001.
11. M/s. Patel and Co. Nuapatna, Cuttack-753001.
12. M/s. Engg. and Industrial Foundry Company Ramnagar, Coimbatore-9.

5.4 Schemes and Consultancy services

- Existing scheme available and their details: **CLCSS/ZED/PLI scheme/Cluster**
- Proposed scheme : **Specific Cluster based Scheme**
- Details of agencies who can provide guidance (CSIR/ MSME TCs / Sector council)

Name of Institute	Functional Assistance
MSME-DI	Scheme and Enterprise setup Guidance
MSME-Testing Center	Testing Certification IS/IEC/BIS Recognition
MSME-Technology Centre	Autocad, Design and Production Support
NSIC	Raw Material Assistance/Marketing
CSIR, NPL, IISC Bangalore	Advance Material, Technique, Innovation Support

6.0 Suggestions received from Manufacturers to increase export and reduce import

- In order to purchase raw material, the prices are not in our favour. We need a price regulatory body which helps us to acquire raw material at the best possible rates.

[NSIC Scheme will address this issue]

- In order to manufacture in quantity, there would be a need to import high end machineries in order to meet the quality of imported products and we request our government to support us in this case by providing reduced or exempted import duty.

[CLCSS May address this issue]

- Also, Depreciation on such imported machinery should be provided at a higher rates may be up to 25%.
- Banks can also provide loan at a low interest rates in order to encourage the manufacturers to undertake production and avoid imports.
- The Import Duty should be increased on the Finished Goods in order to curb the imports of such products including Ant dumping duty to encourage MAKE IN INDIA.
- All the government requirements should be purchased only through approved manufacturers and approvals should be provided only on the basis of actual factory visits with confirmation that the vendor is an actual manufacturer of the said product and not Importers.
- GST rate on the said products should be comparatively less to encourage consumption.
- Government should provide subsidies to local manufacturers to discourage imports.
- There should be single platform to introduce such manufacturers in the market and help such manufacturers to acquire raw material with best quality at a cheaper rate through which we can manufacturer import quality products at the best rates to boost Make in India.

6.1 Way forward to increase export and reduce imports.

- Dedicated Cluster under MSECDP scheme will definitely improve the export and reduce the import by creating Common Facility Centre (designing, moulding, testing, packing etc.)
- Raw material Assistance scheme of NSIC will reduce the raw material cost
<https://www.nsic.co.in/Schemes/Raw-Material-Against-BG>
- For Modernization of manufacturing to get better finishing and quality product our Credit Linked Capital Subsidy Scheme may play an important role.
- The Import Duty should be increased on the Finished Goods in order to curb the cheap substandard imports of such products including Ant dumping duty to encourage MAKE IN INDIA.
- Product should include in Compulsory product certification scheme to discourage substandard import and improve safety.