



**Pre-feasibility Study**

# **MANUFACTURING UNIT FOR ELECTRICAL DISTRIBUTION BOXES**

**December 2022**

*“The figures and financial projections are approximate due to fluctuations in exchange rates, energy costs, and fuel prices etc. Users are advised to focus on understanding essential elements such as production processes and capacities, space, machinery, human resources, and raw material etc. requirements. Project investment, operating costs, and revenues can change daily. For accurate financial calculations, utilize financial calculators on SMEDA’s website and consult financial experts to stay current with market conditions.”*

**Small and Medium Enterprises Development Authority**  
Ministry of Industries and Production  
Government of Pakistan

## Table of Contents

<b>1. DISCLAIMER .....</b>	<b>5</b>
<b>2. EXECUTIVE SUMMARY .....</b>	<b>6</b>
<b>3. INTRODUCTION TO SMEDA .....</b>	<b>8</b>
<b>4. PURPOSE OF THE DOCUMENT .....</b>	<b>8</b>
<b>5. BRIEF DESCRIPTION OF PROJECT &amp; PRODUCTS .....</b>	<b>9</b>
5.1. Machinery and Equipment .....	13
5.2. Production Process Flow .....	20
5.3. Installed and Operational Capacities .....	29
<b>6. CRITICAL FACTORS .....</b>	<b>32</b>
<b>7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT .....</b>	<b>33</b>
<b>8. POTENTIAL TARGET MARKETS/customers .....</b>	<b>33</b>
<b>9. PROJECT COST SUMMARY .....</b>	<b>34</b>
9.1. Project Cost .....	34
9.1.1. Land .....	35
9.1.2. Building .....	35
9.1.3. Machinery and Equipment Requirement .....	36
9.1.4. Tools and Equipment .....	37
9.1.5. Office Equipment Requirement .....	37
9.1.6. Furniture and Fixtures Requirement .....	37
9.1.7. Vehicle Requirement .....	38
9.1.8. Pre-Operating Cost Requirement .....	38
9.1.9. Advance against Building .....	38
9.1.10. Working Capital Requirement .....	39
9.2. Breakeven Analysis .....	39
9.3. Revenue Generation .....	40
9.4. Cost of Goods Sold Estimate .....	41
9.5. Variable Cost Estimate .....	46
9.6. Fixed Cost Estimate .....	46
9.7. Financial Feasibility Analysis .....	47
9.8. Financial Feasibility Analysis with 50% Debt .....	47
9.9. Human Resource Requirement .....	48
<b>10. CONTACT DETAILS .....</b>	<b>49</b>
<b>11. USEFUL LINKS .....</b>	<b>50</b>

<b>12. ANNEXURES .....</b>	<b>51</b>
12.1. Income Statement .....	51
12.2. Balance Sheet .....	52
12.3. Cash Flow Statement .....	53
<b>13. KEY ASSUMPTIONS .....</b>	<b>54</b>
13.1. Operating Cost Assumptions.....	54
13.2. Revenue Assumptions .....	54
13.3. Financial Assumptions .....	55
13.4. Debt-Related Assumptions .....	55
13.5. Cash Flow Assumption.....	55

## Table of Tables

Table 1: Installed and Operational Capacity .....	30
Table 2: Shearing Machine Capacity .....	31
Table 3: Power Press Machine Capacity .....	31
Table 4: Hydraulic Machine Capacity .....	31
Table 5: Spot Welding Machine Capacity .....	31
Table 6: Powder Coating Oven Capacity .....	32
Table 7: Powder Coating Gun Capacity .....	32
Table 8: Initial Project Cost.....	34
Table 9: Breakup of Space Requirement .....	35
Table 10: Building Renovation Cost.....	36
Table 11: Machinery and Equipment Requirement .....	36
Table 12: Tools and Equipment .....	37
Table 13: Office Equipment Requirement .....	37
Table 14: Furniture and Fixtures Requirement.....	37
Table 15: Vehicle Requirement.....	38
Table 16: Pre-Operating Cost Requirement .....	38
Table 17: Advance against Building.....	38
Table 18: Working Capital Requirement .....	39
Table 19: Break-Even Analysis.....	39
Table 20: Revenue Generation.....	40
Table 21: Cost of Goods sold.....	41
Table 22: Raw Material Cost 06-Electrical Distribution Box.....	41
Table 23: 06-Electrical Distribution Box MS Sheet Consumption .....	42
Table 24: Raw Material Cost 010-Electrical Distribution Box.....	42
Table 25: 010-Electrical Distribution Box MS Sheet Consumption .....	42
Table 26: Raw Material Cost 013-Electrical Distribution Box.....	43
Table 27: 013-Electrical Distribution Box MS Sheet Consumption .....	43
Table 28: Raw Material Cost 018-Electrical Distribution Cost .....	43
Table 29: 018-Electrical Distribution Box MS Sheet Consumption .....	44
Table 30: Powder Coating Cost Per Distribution Box .....	44
Table 31: Powder Coating Oven Gas Cost.....	44
Table 32: Vehicle Running Expense .....	45
Table 33: Cost of Goods Sold Assumption – Direct Labor.....	45
Table 34: Cost of Goods Sold Assumption – Machinery Maintenance Cost.....	46
Table 35: Variable Cost Estimate .....	46
Table 36: Fixed Cost Estimate .....	46
Table 37: Financial Feasibility Analysis.....	47
Table 38: Financial Feasibility Analysis with 50% Debt.....	47
Table 39: Human Resource Requirement.....	48
Table 40: Details of Suppliers .....	49
Table 41: Useful Web Links.....	50
Table 42: Operating Cost Assumptions.....	54
Table 43: Revenue Assumptions.....	54

Table 44: Financial Assumptions.....	55
Table 45: Debt Related Assumption .....	55
Table 46: Cash Flow Assumption.....	55

### Table of Figures

Figure 1: 06-Electrical Distribution (DP) Box .....	11
Figure 2: 010-Electrical Distribution (DP) Box .....	12
Figure 3: 013-Electrical Distribution (DP) Box .....	12
Figure 4: 018-Electrical Distribution (DP) Box .....	13
Figure 5: Hand Operated Shearing Machine .....	14
Figure 6: Semi-Automatic Hydraulic Press Machine .....	14
Figure 7: Manual Power Press Machine .....	15
Figure 8: Spot Welding Machine.....	16
Figure 9: Powder Coating Machine .....	16
Figure 10: Powder Coating Oven .....	17
Figure 11: Generator 45 KVA.....	17
Figure 12: Drill Machine with Accessories .....	18
Figure 13: Grinding Machine .....	18
Figure 14: Hydraulic Press Die .....	19
Figure 15: Power Press Die.....	19
Figure 16: Combination Tool Set (142 Pieces) .....	20
Figure 17: Production Process Flow .....	20
Figure 18: Mild Steel (MS Sheet).....	21
Figure 19: Voltmeter .....	22
Figure 20: Indicator Lights .....	22
Figure 21: Brass Plate .....	23
Figure 22: Window Handle .....	23
Figure 23: Glass Pane for window .....	23
Figure 24: Screws and bolts .....	24
Figure 25: Cut MS Sheet.....	24
Figure 26: Drawn MS Sheet .....	25
Figure 27: Bended MS Sheet.....	25
Figure 28: Punched MS Sheet.....	26
Figure 29: Grinding Process.....	26
Figure 30: Spot Welding.....	27
Figure 31: Powder Coating Process .....	27
Figure 32: Packing material.....	28

## 1. DISCLAIMER

This information memorandum is to introduce the subject matter and provide a general idea and information on the said matter. Although, the material included in this document is based on data/information gathered from various reliable sources; however, it is based upon certain assumptions, which may differ from case to case. The information has been provided on as is where is basis without any warranties or assertions as to the correctness or soundness thereof. Although, due care and diligence has been taken to compile this document, the contained information may vary due to any change in any of the concerned factors, and the actual results may differ substantially from the presented information. SMEDA, its employees or agents do not assume any liability for any financial or other loss resulting from this memorandum in consequence of undertaking this activity. The contained information does not preclude any further professional advice to be obtained by the user. The prospective user of this memorandum is encouraged to carry out additional diligence and gather any information which is necessary for making an informed decision, including taking professional advice from a qualified consultant/technical expert before taking any decision to act upon the information.

For more information on services offered by SMEDA, please contact our website:

[www.smeda.org.pk](http://www.smeda.org.pk)

### **Document Control**

Document No.	268
Prepared by	SMEDA-Punjab (OS)
Preparation Date	December 2022
For information	<a href="mailto:helpdesk.punjab@smeda.org.pk">helpdesk.punjab@smeda.org.pk</a>

## 2. EXECUTIVE SUMMARY

A distribution board/box or distribution panel (DP) box is an important part of an electricity supply system. The role of this device is to split an incoming electrical power feed into multiple secondary or subsidiary circuits. An electrical distribution box is a key component in the supply system of electrical power. It takes an incoming connection, splits it in several ways, and reroute it to multiple sub-circuits. This allows for control of the electrical supply to different areas and enables the user to shut down supply to a specific area without cutting off the electric supply entirely.

Electrical distribution box or DP box can vary from high end to low end depending upon the capacity and load requirement.<sup>1</sup> Commercial and industrial estates use high-capacity distribution boxes, whereas low end or domestic boxes are used for residential housings or individual floors or rooms in commercial properties such as offices, hotels, shops etc. Modern real estate is a large user of electrical distribution boxes for distribution of electricity in the buildings, as per the specific requirements.

Distribution boxes are empty enclosures that can be square or rectangular in shape. These enclosures have cut-outs that are used to install components of distribution boxes such as breakers, main switch, fuses, lights and power cables, etc. A simple non-technical way of differentiation of distribution boxes can be based upon the number of components that can be installed in the distribution boxes.

The local market has demand for both residential/commercial distribution boxes and industrial distribution cabinets however due to custom based nature of industrial distribution cabinets the proposed unit will not manufacture industrial distribution cabinets rather it will only deal in manufacturing of standardized residential/commercial distribution boxes. The proposed unit will manufacture 4 types of electrical distribution (DP) boxes, 06-electrical distribution box, 010-electrical distribution box, 013-electrical distribution box and 018-electrical distribution boxes. These boxes have been selected for being the most common and demanded boxes in the local market.

The electrical distribution box is a necessary part of every household. Considering the increasing urbanization in Pakistan, the potential for establishing the proposed unit appears to be high. Pakistan's current population comprises of about one-third urban households which is expected to reach around 50% by the year 2025.<sup>2</sup>

The proposed unit will manufacture electrical distribution boxes by manufacturing different panels of distribution boxes, such as base box, front panel, side pockets and windows. All these parts are manufactured using 22 gauge or 0.7mm MS (Mild Steel) sheet. The components such as voltmeter and lights are purchased from the local market and

---

<sup>1</sup> DP (Distribution Panel) Box is another terminology used for electrical distribution boxes.

<sup>2</sup><https://www.files.ethz.ch/isn/159296/4c5b5fa0ebc5684da2b9f244090593bc.pdf>

installed in assembly process. Whereas, the components such as breakers, main switches, fuses and switch overs etc., are installed by customers according to their specific requirements.

This “Pre-feasibility Document” provides details for setting up “Manufacturing Unit for Electrical Distribution Boxes” (herein after referred to as the proposed unit). The proposed unit manufactures electrical distribution boxes of 4 different sizes, 06-electrical distribution box, 010-electrical distribution box, 013-electrical distribution box and 018-electrical distribution box. Based on the capacity of shearing machine, the unit has a capacity of manufacturing 144,000 electrical distribution boxes in a year, at a maximum capacity utilization of 100%, including 36,000 06-electrical distribution boxes, 43,200 010-electrical distribution boxes 36,000 013-electrical distribution boxes and 28,800 018-electrical distribution boxes. The initial capacity utilization in “Year One” is assumed to be 50%. The unit is expected to obtain a maximum capacity of 95% in the 10<sup>th</sup> operational year.

The proposed business unit targets the wholesale/distributor market. The unit is proposed to be ideally located in industrial areas of larger cities like Karachi, Lahore, Gujranwala, Hyderabad, Faisalabad, Multan, Sialkot, Gujrat, Sheikhpura, Wazirabad, Peshawar, Quetta, etc. These areas are preferred due to presence of major industries and easy availability of skilled manpower, raw materials and easy market access as well as being some of the most populated cities of Pakistan.

“Manufacturing Unit for Electrical Distribution Boxes” will be set up in a rented building with an area of 2,282 square feet (10 Marla). The project requires a total investment of PKR 15.24 million. This includes capital investment of PKR 11.03 million and working capital of PKR 4.21 million. This project is financed through 100% equity. The Net Present Value (NPV) of project is PKR 73.94 million with an Internal Rate of Return (IRR) of 72% and a Payback period of 2.40 years. Further, this project is expected to generate Gross Annual Revenue of PKR 103.16 million during 1<sup>st</sup> year, with Gross Profit (GP) ratio ranging from 16% to 41% and Net Profit (NP) ratio ranging from 3% to 22% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 37% at breakeven revenue of PKR 77.06 million (53,785 distribution boxes) during first year.

The proposed project may also be established using leveraged financing. At 50% financing from debt sources at a cost of KIBOR+3%, the proposed manufacturing unit provides Net Present Value (NPV) of PKR 89.54 million, Internal Rate of Return (IRR) of 71% and Payback period of 2.45 years. Further, this project is expected to generate Net Profit (NP) ratio ranging from 2% to 22% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 39% with annual breakeven revenue of PKR 80.02 million (55,852 distribution boxes).



The proposed project will provide employment opportunities to 35 people. High return on investment and steady growth of business is expected with the entrepreneur having some prior experience or education in the related field of business.

The proposed project for “Manufacturing Unit for Electrical Distribution Boxes” shows reasonable profitability and is financially viable. The legal form of this project is proposed as “Sole Proprietary” or “Partnership Concern”.

### **3. INTRODUCTION TO SMEDA**

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out ‘sectorial research’ to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need-based capacity building programs of different types in addition to business guidance through help desk services.

National Business Development Program for SMEs (NBDP) is a project of SMEDA, funded through Public Sector Development Program of Government of Pakistan.

The NBDP envisages provision of handholding support / business development services to SMEs to promote business startup, improvement of efficiencies in existing SME value chains to make them globally competitive and provide conducive business environment through evidence-based policy-assistance to the Government of Pakistan. The Project is objectively designed to support SMEDA's capacity of providing an effective handholding to SMEs. The proposed program is aimed at facilitating around 314,000 SME beneficiaries over a period of five years.

### **4. PURPOSE OF THE DOCUMENT**

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study

covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to provide information to the potential investors about “Manufacturing Unit for Electrical Distribution Boxes”. The document provides a general understanding of the business to facilitate potential investors in crucial and effective investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attain greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error and certain industrial norms that become a guiding source regarding various aspects of business setup and its successful management.

Apart from carefully studying the whole document, one must consider critical aspects provided later on, which form basis of any investment decision.

## **5. BRIEF DESCRIPTION OF PROJECT & PRODUCTS**

An electrical distribution box or Distribution Panel (DP) is an important part of an electricity supply system. This device is used to split an incoming electrical power feed into multiple secondary or subsidiary circuits. A distribution box or breaker panel separates incoming mains power into various sub-panels. A subpanel is a smaller service panel that distributes power to a specific area of the home or other buildings on the property. Large office and residential buildings are heavily dependent on electrical distribution boxes for the distribution of electricity to various parts of the buildings.

In most residential buildings, the electrical distribution box serves as the main supply source for electrical power. Distribution boxes come in various sizes and capacities, with some targeted for residential uses while others for commercial and industrial uses. Whether it is an outdoor distribution box, a commercial distribution box or a dedicated lighting distribution box for large public venues, all these variants essentially perform the same function. These receive an incoming electrical supply, split it several ways and reroute it to multiple sub-circuits. This enables more precise and granular control of the supply to different areas, including the ability to isolate and shut down parts of the circuit without completely shutting down the incoming power.

Almost all of the distribution boxes are versatile and are in the form of empty enclosures when manufactured. Components such as breakers, switch-overs and fuse links are installed by customers according to their specific requirements. The empty enclosure of distribution box can be manufactured from a number of materials such as ABS (Acrylonitrile Butadiene Styrene) plastic, SMC (Sheet Molding Compound), PC

(Polycarbonate) or wood. However, the most common material used for manufacturing of distribution box is MS sheet also called Mild Steel.

Electrical distribution box market is huge as every real estate either residential, commercial or industrial needs electric distribution channels. Currently, there are several types of distribution boxes being used in residential housings, commercial businesses and industrial corporations. However, the proposed business will only manufacture distribution boxes for residential houses, because these are the most commonly used and demanded type of distribution boxes.

The distribution boxes usually consist of 4 Panels. The first panel (base panel also called base box) contains the space for installing all the components such as breakers, main switches, fuses and switch overs etc. The breakers are installed on a thin plate made of brass, also called brass connectors, mounted inside the base box with screws. The second panel of distribution box is the front panel which contains all the cut-outs for operating of components such as breakers, main switch and switch overs, etc. Components such as light and voltmeters are also attached to the front panel. Third panel is side pocket which is used to cover the top and bottom sides of the distribution box. One side of the side panel is connected to base box and the other side is connected to the front panel of distribution box. Side pockets also contain cut-outs for main power lines providing electricity to the distribution box. The last panel of distribution box is the window panel which is used to seal the distribution box and protect its components from dust and water. The window panel consists of a glass pane and a small handle for opening and closing.

Electrical distribution box market is a distributor/wholesaler driven market. The production quantity and margins for distribution box, both are partially determined by distributor since monthly production can vary depending upon orders from distributors. The local market for panels, consoles of electric control such as distribution box is a competitive market since these products can sometimes be imported at much affordable rates as compared to locally manufactured products from countries like China. Therefore, the margins for manufacturer and retail market are influenced by distributor/wholesalers since the distributor can switch to more reasonable options between imported or locally manufactured products. The margins in the proposed unit have been determined based on results of market research.

### **Proposed Products**

The local market has demand for both residential/commercial distribution boxes and industrial electrical distribution cabinets however the industrial electrical distribution cabinets market is a very vast and custom based market meaning every industrial customer may require a custom size distribution cabinet catering his own need. Therefore, a standard size industrial distribution cabinet cannot be proposed in this unit. The residential/commercial electrical distribution boxes market however, is a very

standardized market. Some of the standard electrical distribution boxes used in residential houses include 04, 06, 07, 010, 013, 018 and 020-electrical distribution boxes however 06, 010, 013 and 018-electrical distribution (DP) boxes are observed to be most commonly used in both residential as well as small commercial real estate such as shops, offices and individual hotel rooms etc., therefore, the proposed unit will manufacture residential/commercial electrical distribution (DP) boxes of four different capacities (06, 010, 013 and 018) to target both residential and small commercial real estate. The number 06, 010, 013 and 018 defines the number of components such as breakers, main switch and switch overs that can be installed in the distribution box. Although three phase distribution boxes also have potential demand in local market; however, they are perceived to be more electricity consuming. The proposed business will sell its products to the local wholesale distributor markets.

### **06 Electrical Distribution Box:**

06 or 6-way electrical distribution box is a type of distribution box that has a maximum capacity of installing 5 breakers and 1 main switch. Although the dimensions of distribution boxes can vary depending upon the design however the weight of 06 distribution boxes usually averages around 1 kg. A small indicator light is also installed in 06 distribution box to indicate normal flow of electricity. Figure 1 shows 06 or 6-way electrical distribution (DP) box.

**Figure 1: 06-Electrical Distribution (DP) Box**



### **010 Electrical Distribution Box:**

010 or 10-way electrical distribution box is a type of distribution box that has a maximum capacity of installing 9 breakers and 1 main switch. These box average around 1.75 kg in weight, 2 lights (one green and one red) are installed in the distribution box, with 1 digital voltmeter.

Figure 2 shows 010 or 10-way electrical distribution (DP) box.

**Figure 2: 010-Electrical Distribution (DP) Box**



**013 Electrical Distribution Box:**

013 electrical distribution box is a type of distribution box, that has a maximum capacity of installing 12 breakers and 1 main switch. The weight of 013 distribution box averages around 2.25 kg. Similar to 010 distribution box, it also contains one digital voltmeter to show current load of electricity and 2 lights (green and red). Some distribution boxes also contain an additional yellow light which represents state changes such as tripped breakers that need to be reset. Figure 3 shows 013 or 13-way electrical distribution (DP) box.

**Figure 3: 013-Electrical Distribution (DP) Box**



**018 Electrical Distribution Box:**

018 electrical distribution box is a type of distribution box that has a maximum capacity of installing 17 breakers and 1 main switch. The weight of 018 distribution box averages around 3 kg. Similar to 013 distribution box, it also contains one digital voltmeter to show current load of electricity and 3 lights (green, red and yellow). Figure 4 shows 018 or 18-way electrical distribution (DP) box.

**Figure 4: 018-Electrical Distribution (DP) Box**

**5.1. Machinery and Equipment**

Details of the machinery and equipment required for the proposed manufacturing unit are as follows:

**Shearing Machine**

A shearing machine is an industrial equipment with rotary disks and blades used to cut hard iron sheets and metal bars. There are different types of shearing machines such as bench shear, guillotine shear, power shears, and throat less shears. For the proposed project, a manual hand operated guillotine shearing machine will be used.

Guillotine machine is hand or foot powered and sometimes mechanically powered. The material to be cut is first cramped with a ram and a moving blade goes down and shears the metal. A power shearing machine consists of a shear table to place the material being sheared, a holding device to hold the material in place to avoid movement, a gauging device to make sure that the material is in the right place and the lower and upper blades to do the cutting. For manufacturing of electrical distribution boxes, shearing machine is used to cut MS sheet to required sizes. Figure 5 shows a hand operated shearing machine.

**Figure 5: Hand Operated Shearing Machine****Hydraulic Press**

Hydraulic presses are ideal for many heavy-duty jobs, such as stamping and forming sheet metal, extruding plastic pipe, molds and dies, bending oversized diameter tubing, and forging. A hydraulic press is an efficient tool for shaping metals and plastics and it can punch, shear or bend materials into various shapes. For manufacturing of electrical distribution boxes, hydraulic press machine is used for drawing required shape on cut-out MS sheet. Keeping in view the production capacity of the proposed unit, a semi-automatic hydraulic press machine will be used for manufacturing of electrical distribution (DP) boxes. Figure 6 shows semi-automatic hydraulic press machine.

**Figure 6: Semi-Automatic Hydraulic Press Machine**



### **Power Press Machine**

Power presses are metalworking machines used primarily to cut, punch, bend or form metal using tooling (dies) attached to the slide (ram) and bed. It is a machine with a controlled system that is used for processing various types of sheet metal.

For manufacturing of electrical distribution boxes, two manual power press machines are used, one machine is used for bending of MS sheet and another is used for punching of MS Sheet. Figure 7 shows manual power press machine.

**Figure 7: Manual Power Press Machine**



### **Spot Welding Machine**

For manufacturing of electrical distribution boxes, spot welding machine is used to join together different pieces or parts of the distribution box to give it a final shape.

This welding process is used primarily for welding two or more metal sheets together by applying pressure and heat from an electric current to the weld area. It works by contacting copper alloy electrodes to the sheet surfaces, whereby pressure and electric current are applied, and heat is generated by the passage of current through resistive materials such as low carbon steels. The weld created between copper electrodes is also sometimes called nuggets. Figure 8 shows spot welding machine.



**Figure 8: Spot Welding Machine****Powder Coating Machine**

Powder coating machines apply dry powder to a charged surface, creating a thicker coating in one application, which is more than a single coat of paint. An electrostatic charge holds the coating onto the surface, which remains in place after curing the object. The machine uses a spraying gun which uses a strong electromagnetic to provide consistent and smooth finish. The gun also offers different nozzles to adjust the pressure of the spraying gun. Figure 9 shows powder coating machine.

**Figure 9: Powder Coating Machine**

**Powder Coating Oven**

After the product is coated, a powder coating oven is used to cause the powder to firmly adhere to the metal, to make it long-lasting. The powder then becomes a smooth substance which looks as if it has been painted on. Powder coating requires either oven or infrared heating to cure the powder. Oven for powder coating should be large enough to fit the powder coating objects and sustain a temperature of 150-200 degrees centigrade. Figure 10 shows powder coating oven.

**Figure 10: Powder Coating Oven**

**Generator 45 KVA**

The total load of the proposed unit is around 49 KW. The proposed project requires generator of 45 KVA as a backup when normal electricity supply is not available. Figure 11 shows generator 45 KVA.

**Figure 11: Generator 45 KVA**



## **Assembly Tools**

### **Drill Machine with Accessories**

A drill machine is a tool used for making round holes or driving fasteners. It is fitted with a bit, either a drill or driver, depending on application, secured by a chuck. Drill machine requires an electric power of 0.55 KW. Figure 12 shows drill machine.

**Figure 12: Drill Machine with Accessories**



### **Grinding Machine**

A grinding machine is used for removing of rough surface of a work piece with the help of rotating abrasive wheel that acts as a tool. Grinding machine is used to smoothen out any excess or sharp metal off the edges of the metal piece. Most common grinder used for such purpose is angle grinder. Figure 13 shows grinding machine.

**Figure 13: Grinding Machine**



**Dies for Hydraulic and Power Press**

Hydraulic machine die is used to draw a three-dimensional form into the MS sheet. It is basically a plate that enables the machine to push sheet metal with force into any cavity to create the required shape or form. Similarly, power press dies are used to bend, cut, punch or form the MS sheet. For manufacturing of electrical distribution boxes hydraulic dies are used to form the shape on MS sheet and power press dies are used to bend and punch the MS sheet. Figure 14 shows hydraulic press die and Figure 15 shows power press die.

**Figure 14: Hydraulic Press Die****Figure 15: Power Press Die****Combination Tool Set (142 Pieces)**

Combination tool set includes hexagonal sockets, star sockets, flex handle, ratchet wrench, extension bar, universal joint, three-way adopter, spark plug socket, L-handle,

spinner handle, nut spanner, hammer, combination pliers,<sup>3</sup> curved jaw locked wrench, screw drivers and flexible extension bar. Figure 16 shows combination tool set (142 Pieces).

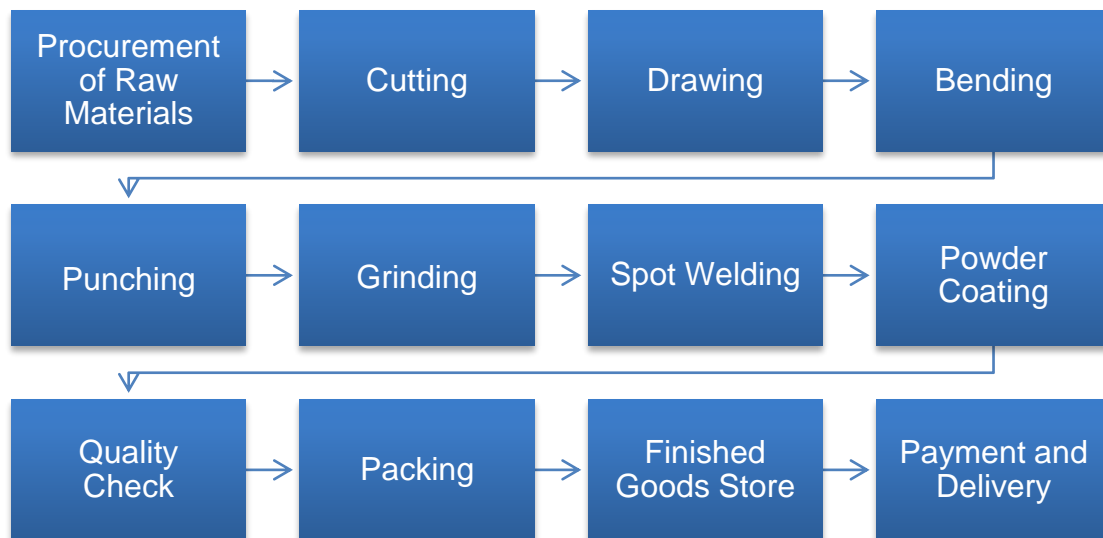
**Figure 16: Combination Tool Set (142 Pieces)**



## 5.2. Production Process Flow

Electrical distribution boxes manufacturing process flow chart is shown in Figure 17.

**Figure 17: Production Process Flow**



<sup>3</sup> Pliers are hand-operated tool for holding and gripping small objects or for bending and cutting wire.

Brief description of process flow is as follows:

### **Procurement of Raw Materials**

Main raw material used to manufacture electrical distribution box is Mild Steel, also known as MS sheet. Although MS sheet is not manufactured in Pakistan and needs to be imported, however the proposed business will not directly import this material and will source this material from the existing local importers. Other components required for electrical distribution box are:

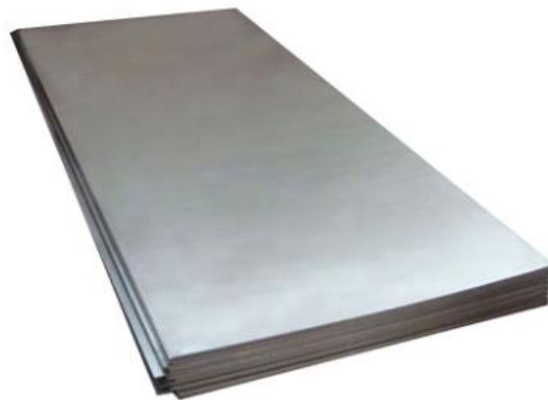
- Voltmeter
- Indicator Lights
- Brass plate
- Window Handle
- Glass
- Screws

The above-mentioned parts are purchased from local hardware markets since they are easily available in all major cities of Pakistan. The proposed project maintains raw material inventory for 15 days.

- **Mild Steel Sheet (MS Sheet)**

Mild steel is steel that combines iron and carbon and has good magnetic properties. Mild Steel has a good strength to weight ratio and a good surface quality. Despite being light weight, it is a durable and hard metal with ideal mechanical properties. One of the biggest advantages of using mild steel is its ductility, which helps in shaping the product without fracturing or permanent deforming of the sheet. MS Sheet comes in different sizes and thicknesses. For manufacturing distribution boxes, the most common thickness used is 0.7 mm or 22 gauge. The payment to supplier is made on credit basis within 30 days of receipt of raw material. Figure 18 shows Mild Steel (MS Sheet).

**Figure 18: Mild Steel (MS Sheet)**



- **Volt Meter**

A voltmeter, also known as a voltage meter, is an instrument used for measuring the potential difference or voltage between two points in an electrical or electronic circuit. Voltmeter is used in electrical distribution boxes to indicate the flow of current being passed through the distribution box. Figure 19 shows voltmeter.

**Figure 19: Voltmeter**



- **Indicator Lights**

Indicator lights are a type of illuminating device that is commonly used to signify that equipment is either receiving power or that there is some form of malfunction. Most of the electrical distribution boxes use 2 indicator lights i.e., red and green. Red light indicates any malfunction in the equipment and green light indicates right functioning of equipment. Figure 20 shows indicator lights.

**Figure 20: Indicator Lights**



- **Brass Plate**

Brass plate is a thin metal plate screwed inside the base box of electrical distribution box. The plate is used to attach components of electrical distribution box such as breakers or switch overs. Figure 21 shows brass plate.



**Figure 21: Brass Plate**

- **Window Handle**

A window handle is a small round object or lever that is attached to a window and is used for opening or closing it. It is used to open or close the front panel of electrical distribution box. Figure 22 shows window handle.

**Figure 22: Window Handle**

- **Glass Pane for window**

A glass pane is fitted in the window of the electrical distribution box. Different types of glasses such as simple glass, acrylic glass or plexiglass can be used in the window of electrical distribution box. Figure 23 shows glass pane for window.

**Figure 23: Glass Pane for window**



**Screws and bolts**

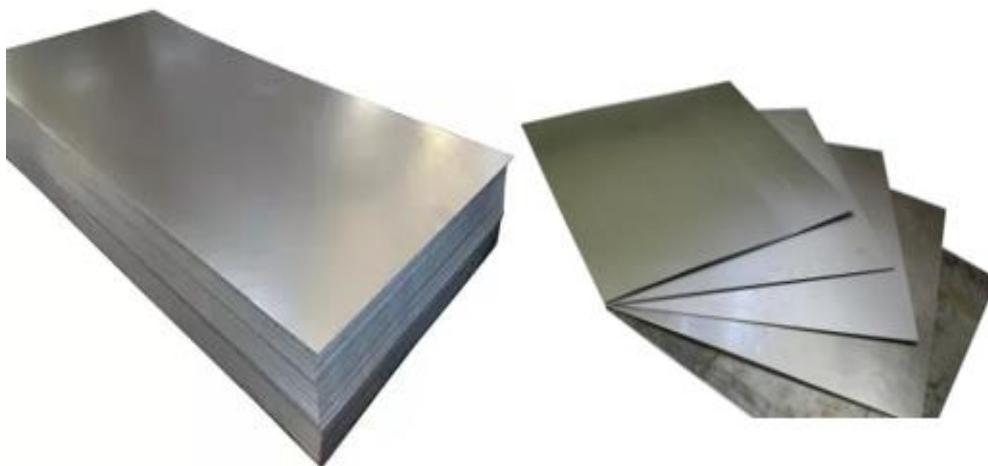
Screws and bolts are used to tighten, hold or position together different objects. Figure 24 shows screws and bolts.

**Figure 24: Screws and bolts**

**Cutting**

A manual hand operated shearing machine is used to cut the MS sheet into the required size for each distribution box. The machine is operated by two workers who carefully measures and place the MS sheet into the machine. The blades of the shearing machine exert force on the MS Sheet and cut it in the desired sizes. Each distribution box consists of 4 panels i.e., front panel, base box, window panel and side pockets. Different size of MS sheet is therefore cut for each panel. Figure 25 shows MS sheet before(left) and after cutting process(right).

**Figure 25: Cut MS Sheet**



### **Drawing**

After cutting the MS sheet to the required size with a shearing machine, the cut pieces are then transferred to drawing process. A semi-automatic hydraulic machine is used to draw the desired shape on the MS sheet. A worker places the cut-out MS sheet in the hydraulic machine between the hydraulic press and die. The hydraulic press applies pressure and draws the desired shape on the MS Sheet. Cut MS sheets for the front panel and the window panel are drawn in this process. Figure 26 shows hydraulic press drawn MS sheet.

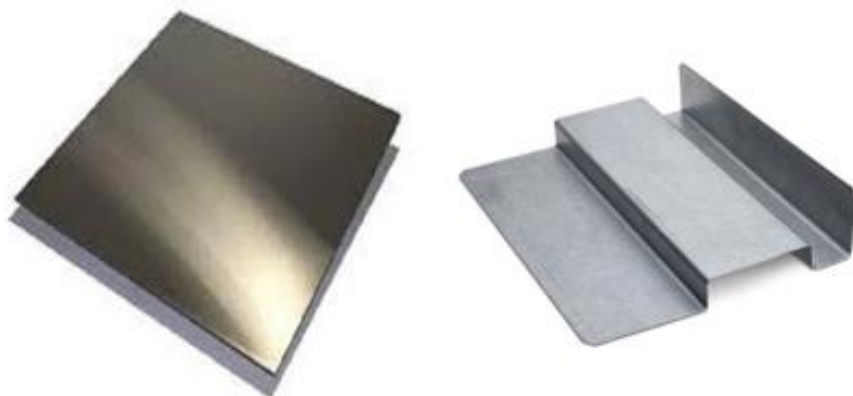
**Figure 26: Drawn MS Sheet**



### **Bending**

Next step in the production process is bending of MS Sheet. For this purpose, a manually operated power press machine is used. A worker carefully places the MS Sheet into the power press, which applies pressure and bends the MS sheet. Cut MS sheet for only base box is bended in this process. Drawn MS sheets for front panel and window panel are not required to be bended. Different types of dies are used for different bending styles applied to the sheet. Figure 27 shows MS sheet before (left) and after (right) bending process.

**Figure 27: Bended MS Sheet**



### **Punching**

After bending, the MS sheet is transferred to another power press machine. This power press machine punches the MS sheet with force, creating cuts in the sheet for installation of components such as breakers, switch overs, voltage meters, lights, screws etc. Only side pockets, front panel and window panel are punched in this process. The base box is not required to be punched. Figure 28 shows punched MS sheet.

**Figure 28: Punched MS Sheet**



### **Grinding**

After cutting, drawing, bending and punching of different panel parts, the parts are ground with a grinding machine. The process smoothens out any sharp or excess metal off the corner of the piece, giving it a smooth and polished look. Figure 29 shows grinding process.

**Figure 29: Grinding Process**



### **Spot Welding**

The panels after grinding process are then transferred for welding process. A worker using a spot-welding machine welds together different panels of an electrical distribution box. Spot welding is much quicker and cleaner method as compared to traditional welding. Figure 30 shows spot welding process.

**Figure 30: Spot Welding**



### **Powder Coating**

Subsequent to the spot-welding process, all the panel parts are then ready for powder coating. For this process, a worker powder coats the panels using a spraying gun. The coated panels are then transferred to a baking oven where these panels are dried for 15 minutes at 170-200 degrees centigrade. The baking oven not only makes the powder paint dry faster but also offers a thick coating that is durable and resistant to chipping. Figure 31 shows powder coating process.

**Figure 31: Powder Coating Process**



### **Assembling**

Next step after powder coating is the final assembly of electrical distribution box. All other processes such as glass fitting, indicator lights attachment, screw fittings, window attachments are performed by a worker in assembly process. After final assembly, the distribution box is ready for packing and delivery.

### **Quality Check**

Quality checks are performed at the beginning of every process. Each worker before performing their respective function, carefully checks each panel for any fault or defect. A final quality check is performed by a worker after assembly and before packing of distribution boxes.

### **Packing**

The final stage of the process is the packing of distribution boxes. The packing of distribution boxes includes plastic wrappers, carton boxes and brand stickers. A plastic strap is then stretched around the packed sewing machine. Figure 32 shows finished products before packing (left) and after packing (right).

**Figure 32: Packing material**



### **Finished Goods Store**

After packing, the packed distribution boxes are transferred to finished goods store manually by labor. A finished goods inventory of 15 days' production is maintained by the proposed business.

### **Payment and Delivery**

Finished products are delivered to the target market through loader rickshaws. The sales are made to customers on an average credit period of 15 days.

Excess MS sheet cut during the cutting or punching process is sold as scrap in local market at PKR 190 per Kg.

### 5.3. Installed and Operational Capacities

The total production capacity of the proposed manufacturing unit is dependent on the capacity of the shearing machine. The machine shall run in a single shift of 8 hours for 300 days in a year and shall operate at maximum capacity of 100% and will manufacture 144,000 electrical distribution boxes annually. This includes 36,000 06-electrical distribution boxes, 43,200 010-electrical distribution boxes and 36,000 013-electrical distribution boxes and 28,800 018-electrical distribution boxes. A team of 15 skilled labor shall be hired to assemble the manufactured electrical distribution (DP) boxes.

During first year of operation, the manufacturing unit is expected to achieve 50% of its installed capacity and will manufacture 72,000 electrical distribution (DP) boxes which includes 18,000 06-electrical distribution boxes, 21,600 010-electrical distribution boxes, 18,000 013-electrical distribution boxes and 14,400 018-electrical distribution boxes. Based on the current market trend, the production ratio of each product is shown in tables below. Table 1 shows installed and operational capacity of electrical distribution boxes. Table 2, Table 3, Table 4, Table 5, Table 6, Table 7 show capacities of different machines required for manufacturing of electrical distribution boxes.

**Table 1: Installed and Operational Capacity**

Products	Time Required to Assemble one Box Per Team (hrs)	Boxes Assembling Per Day Per worker	Boxes Assembling Per Day	No of Workers	Boxes Production Per Year	Ratio	Distribution Boxes Production 100% Capacity Per Year	Annual Production @50% Capacity
06 Electrical Distribution Box	0.25	32	480	15	144,000	25%	36,000	18,000
010 Electrical Distribution Box						30%	43,200	21,600
013 Electrical Distribution Box						25%	36,000	18,000
018 Electrical Distribution Box						20%	28,800	14,400
<b>Total</b>						<b>100%</b>	<b>144,000</b>	<b>72,000</b>

**Table 2: Shearing Machine Capacity**

<b>Shearing Machine (Hand Operated)</b>	
Time Required to Cut MS Sheet for 1 Distribution Box	1 per minute
Shearing Capacity Per Hour	60 units
Shearing Capacity Per Day	480 units

**Table 3: Power Press Machine Capacity**

<b>Power Press Machine Capacity (Manually Operated)</b>	
No of Strokes	6 per minutes
Required No of Strokes Per Distribution Box ( 1 for front panel , 2 for side pockets, 1 for window panel )	4 strokes
Time Required to Punch All Panels for 1 Distribution Box	1.5 per minute
Press Capacity Per Hour	90 units
Press Capacity Per Day	720 units

**Table 4: Hydraulic Machine Capacity**

<b>Hydraulic Machine Capacity (Semi-Automatic)</b>	
Time Taken to Draw 1 Panel	30 seconds
No of Panels to Be Drawn Per Distribution Box (1 front panel and 1 window panel)	2 panels
Total Time Taken to Draw All Panels for 1 Distribution Box	60 seconds
Drawing Capacity Per Hour	60 units
Drawing Capacity Per Day	480 units
Required No of Distribution Box Production Per Day	480 units
Required No of Machines	1 machine

**Table 5: Spot Welding Machine Capacity**

<b>Spot Welding Machine Capacity</b>	
Time Required by Single Worker to Weld Panels for 1 Distribution Box	2 minutes
No of Distribution Boxes to be Welded	480 units
Welding Capacity Per hour	40 units
Welding Capacity Per day	320 units
Required No of Machines	2 machines



**Table 6: Powder Coating Oven Capacity**

<b>Powder Coating Oven/Baking Machine Capacity</b>	
Required Bake Time	15 minutes
Distribution Boxes Per Baking Time	15 units
Capacity Per Hour	60 units
Required Boxes to be Coated	480 units
Capacity Per Day	480 units
Required No of Ovens/Machines	1 machine

**Table 7: Powder Coating Gun Capacity**

<b>Powder Coating Gun/Machine Capacity</b>	
Average Time Required To Coat Panels for 1 Distribution Box	2 minutes
Coating Capacity Per Hour	30 units
No of Machines	2 machines
Capacity Per Day	480 units
Required Boxes to be Coated	480 units
Required No of Ovens/Machines	1 machine

## 6. CRITICAL FACTORS

Following factors should be taken into account while making the investment decision in “Manufacturing Unit for Electrical Distribution Boxes”.

- Sound technical knowhow and basic knowledge of the business
- Use of quality raw materials
- Effective market linkages
- Availability of specialized workforce
- Regular and strict checks on quality standards
- Up-to-date knowledge of technological innovations
- Rigorous supervision of the production process at all process stages
- Regular checks on the machinery and equipment for proper working

## 7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Electrical distribution box is an integral part of every modern building. The geographical potential for setting up this proposed unit is high and the products of the unit can be sold anywhere across Pakistan. However, the unit is proposed to be ideally located in any industrial areas of large cities like Karachi, Lahore, Gujranwala, Hyderabad, Faisalabad, Multan, Sialkot, Gujrat, Sheikhupura, Wazirabad, Peshawar, Quetta etc. In addition, the proposed unit can also be established in cities such as Bahawalpur, Sargodha, Sukkur, Rahim Yar Khan, Okara, Sahiwal, Mardan, Kohat, Larkana, Jhang, Dera Ghazi Khan, Kasur, Nowshera, etc. These areas are preferred due to presence of major industries and easy availability of skilled manpower, raw materials and easy market access as well as being some of the most populated cities of Pakistan. These cities also have the required infrastructure for transport of raw materials and finished products.

## 8. POTENTIAL TARGET MARKETS/CUSTOMERS

Electrical Distribution Boxes manufactured by the proposed unit shall be sold to residential houses, apartments and small real estates through wholesale distribution channels. Although commercial properties such as offices, shopping malls, departmental stores and hotels etc., use high-capacity industrial distribution boxes, however single-phase distribution boxes are used to control electric supply for individual offices, shops and rooms in these buildings.

The local manufacturers of electrical distribution boxes mainly operate in large cities of Pakistan such as Lahore, Karachi and Rawalpindi however there are a large number of manufactures of distribution boxes present in Gujranwala which mostly manufacture distribution boxes for residential and commercial properties in lieu of industrial distribution boxes which are mainly manufactured in cities like Lahore, Karachi and Rawalpindi. Small scale manufacturers of DP boxes are also present in different cities of all provinces of Pakistan however the majority of the electrical distributor manufacturers are observed to be located in these four aforementioned cities, however due to undocumented nature of economy, an exact figure of local number of manufacturers of distribution boxes cannot be estimated.

DP box is a necessary part of every common household. With increasing population, increasing number of households and increase in urban population in Pakistan, the proposed project has an excellent potential for investment. Globally, the percentage of population living in urban areas is expected to increase from 55% in 2018 to 68% by 2050.<sup>4</sup> Pakistan's current population comprises of about one-third urban households. It is expected to reach around 50% by 2025.<sup>5</sup> The number of households

---

<sup>4</sup><https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>

<sup>5</sup><https://www.files.ethz.ch/isn/159296/4c5b5fa0ebc5684da2b9f244090593bc.pdf>

also increased to 37.5 million in 2020 showing an increase of 1.88% from previous year.<sup>6</sup> The imports for boards, panels and consoles for electric control and distribution boxes amounted to \$ 72.59 million in 2021.<sup>7</sup>

## 9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of Manufacturing Unit for Electrical Distribution Boxes. Various costs and revenue related assumptions, along with results of the analysis are outlined in this section.

The projected Income Statement, Cash Flow Statement and Balance Sheet are attached as Annexure.

Project is proposed to be financed through 100% equity. Total project cost has been estimated as PKR 15,240,934 which comprises of capital investment and working capital of PKR 11,026,747 and 4,214,188 PKR respectively.

### 9.1. Project Cost

The details of initial project cost calculated for the manufacturing unit are shown in Table 8.

**Table 8: Initial Project Cost**

Cost Item	Cost (PKR)	Details Reference
Land	-	9.1.1
Building / Infrastructure	989,254	9.1.2
Machinery and Equipment	5,675,000	9.1.3
Other Tools and Equipment	750,000	9.1.4
Furniture & fixtures	772,000	9.1.5
Office vehicles	439,000	0
Office equipment	1,542,000	0
Pre-operating costs	448,733	9.1.8
Advance Against Building Rent	410,760	9.1.9
<b>Total Capital Cost</b>	<b>11,026,747</b>	
<b>Working Capital</b>		
Equipment spare part inventory	26,771	
Material Inventory	3,050,497	

<sup>6</sup><https://www.helgilibrary.com/indicators/number-of-households/pakistan/>

<sup>7</sup> <https://comtrade.un.org/data>

Upfront building rent	136,920	
Cash	1,000,000	
<b>Total</b>	<b>4,214,188</b>	
<b>Total Project Cost</b>	<b>15,240,934</b>	

### 9.1.1. Land

The proposed unit will be established on a rented land having an area of 2,282 square feet (10 Marla). Total rental cost has been estimated as PKR 136,920 per month. The breakup of the space requirement is provided in Table 9.

**Table 9: Breakup of Space Requirement**

Production Area	Number	Length	Width	Area (Sq. Ft.)
Owners' Office	1	15	10	150
Office Area	1	25	20	500
Production Area	1	30	30	900
Raw Material Store	1	20	18	360
Finished Goods Store	1	15	15	225
Washrooms	3	7	7	147
<b>Total Area</b>				<b>2,282</b>

### 9.1.2. Building

There will be no cost of building construction since the manufacturing unit for electrical distribution box will be started in a rented building having an area of 2,282 square feet. However, there will be a renovation cost required to make the building usable for the business. Building rent of PKR 136,920 per month has been included in the operating cost. The proposed project requires electricity load of around 49 KW for which an industrial electricity connection will be required. Table 10 provide details of building renovation cost.

**Table 10: Building Renovation Cost**

Cost Item	Unit of Measurement	Total Units	Cost /Unit (PKR)	Total Cost (PKR)
Paint Cost	Liter	61	800	48,784
Labour Cost-Paint	Sq. Feet	6098	15	91,470
Wall Racks	Units	33	15,000	495,000
Curtains	Units	5	3000	15,000
Blinds	Units	6	7,000	42,000
Glass Partition	Sq. Feet	540	550	297,000
<b>Total</b>				<b>989,254</b>

### 9.1.3. Machinery and Equipment Requirement

Table 11 provides details of machinery and equipment required for the project:

**Table 11: Machinery and Equipment Requirement**

Cost Item	Unit	Unit Cost (PKR)	Total Cost (PKR)
Manual Power Press Machine 5 Ton 3KW	2	280,000	560,000
Semi Automatic Hydraulic Press 10 Ton 4 KW	1	220,000	220,000
Hand Operated Shearing Machine	1	120,000	120,000
Spot Welding Machine 7 KW	2	50,000	100,000
Powder Coating/Baking Oven	1	400,000	400,000
Dies for Hydraulic machine	8	250,000	2,000,000
Dies for Power Press machine (Holes, Bending and Punching)	8	100,000	800,000
Powder Coating Gun/ Machine 1000 Watt	1	125,000	125,000
Generator (45 KVA)	1	1,350,000	1,350,000
<b>Total</b>			<b>5,675,000</b>

#### 9.1.4. Tools and Equipment

Table 12 shows details of tools and equipment required for the project.

**Table 12: Tools and Equipment**

Cost Item	Unit	Unit Cost (PKR)	Total Cost (PKR)
Drilling Machine	15	14,000	210,000
Grinding Machine	15	16,000	240,000
Tool Kit	15	20,000	300,000
<b>Total</b>			<b>750,000</b>

#### 9.1.5. Office Equipment Requirement

Table 13 presents the office equipment requirement proposed for the unit.

**Table 13: Office Equipment Requirement**

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Air Conditioner (1 Ton Inverter)	4	80,000	320,000
Laptop	4	150,000	600,000
Desktop Computer	3	50,000	150,000
Laser Printer	1	50,000	50,000
LED/LCD 32	2	36,000	72,000
Water Dispenser	2	24,000	48,000
Ceiling Fan	22	8,000	176,000
Exhaust Fan	12	4,500	54,000
Pedestal Fan	3	10,000	30,000
Wi-Fi Router and Connection	2	3,500	7,000
Security Cameras (2 MP)	8	2,500	20,000
DVR	1	15,000	15,000
<b>Total</b>			<b>1,542,000</b>

#### 9.1.6. Furniture and Fixtures Requirement

Table 14 gives details of the furniture and fixture required for the project.

**Table 14: Furniture and Fixtures Requirement**

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Executive Table	1	60,000	60,000

Office Table	6	30,000	180,000
Executive Chairs	1	30,000	30,000
Office Chairs	12	14,000	168,000
Visitor Chairs	12	15,000	180,000
Other Staff Chair	20	2,000	40,000
Staff Table	4	6,000	24,000
Sofa Set	2	45,000	90,000
<b>Total</b>			<b>772,000</b>

### 9.1.7. Vehicle Requirement

Details of vehicles required for the project is given in Table 15.

**Table 15: Vehicle Requirement**

Cost Item	Unit	Unit Cost (PKR)	Registration Fee	Total Cost (PKR)
Loader Rikshaw	1	300,000	13,000	313,000
Motorcycle	1	120,000	6,000	126,000
<b>Total</b>				<b>439,000</b>

### 9.1.8. Pre-Operating Cost Requirement

Details of pre operating cost required for the project is given in Table 16.

**Table 16: Pre-Operating Cost Requirement**

Description	No.of Months	Unit Cost (PKR)	Total (PKR)
Administration exp.	1	355,000	355,000
Utilities exp.	1	93,733	93,733
<b>Total</b>			<b>448,733</b>

### 9.1.9. Advance against Building

Details of advance against building cost as shown in Table 17.

**Table 17: Advance against Building**

Description	Rent (PKR)	No of months	Total
Advance against building	136,920	3	410,760
<b>Total</b>			<b>410,760</b>

### 9.1.10. Working Capital Requirement

Details of working capital required for the project is given in Table 18.

**Table 18: Working Capital Requirement**

Cost Item	Total Cost (PKR)
Equipment spare part inventory	26,771
Material Inventory	3,050,497
Upfront building rent	136,920
Cash	1,000,000
<b>Total Working Capital</b>	<b>4,214,188</b>

### 9.2. Breakeven Analysis

Table 19 shows calculation of break-even analysis.

**Table 19: Break-Even Analysis**

Description	Amount First Year (PKR)	Ratios
Sales (PKR) – A	103,155,000	100%
Variable Cost (PKR) – B	87,847,643	85%
Contribution (PKR) (A-B) = C	15,307,357	15%
Fixed Cost (PKR) – D	11,434,853	11%
Contribution Margin Per unit	213	15%
<b>Breakeven</b>		
Breakeven Revenue	77,058,518	
Breakeven Units	53,785	
Breakeven Capacity	37%	



### 9.3. Revenue Generation

Based on 50% capacity utilization, sales revenue during the first year of operations is shown in Table 20. The revenue is generated from wholesale channel.

**Table 20: Revenue Generation**

Products	No of Workers	Ratio	Annual Capacity @ 100%	Annual Capacity @ 50%	Units Sold	Sale Price (PKR)	Revenue (PKR)
06 Electrical Distribution Box	15	25%	36,000	18,000	17,250	700	12,075,000
010 Electrical Distribution Box		30%	43,200	21,600	20,700	1,500	31,050,000
013 Electrical Distribution Box		25%	36,000	18,000	17,250	1,800	31,050,000
018 Electrical Distribution Box		20%	28,800	14,400	13,800	2,100	28,980,000
<b>Total</b>		<b>100%</b>	<b>144,000</b>	<b>72,000</b>	<b>69,000</b>		<b>103,155,000</b>

#### 9.4. Cost of Goods Sold Estimate

Based on 50% capacity utilization, the calculation of cost of goods sold during the first year of operations is shown in Table 21.

**Table 21: Cost of Goods sold**

Products	Annual Capacity @ 50%	Units Sold	Raw Material Cost Per Unit	Total Cost (PKR)
06 Electrical Distribution Box	18,000	17,250	487	8,405,265
010 Electrical Distribution Box	21,600	20,700	1,050	21,739,306
013 Electrical Distribution Box	18,000	17,250	1,229	21,197,471
018 Electrical Distribution Box	14,400	13,800	1,437	21,869,882
<b>Total</b>	<b>72,000</b>	<b>69,000</b>		<b>73,211,924</b>

Electrical Distribution Boxes of same capacity can be different in shape (rectangular and square), however are similar in terms of weight therefore the raw material calculation is based on kilo gram weight of MS Sheet and not on Sq feet.

**Table 22: Raw Material Cost 06-Electrical Distribution Box**

Particulars	Unit of Measurement	Required Box Per Kg	Price Per Unit	Total (PKR)
MS Sheet (22 gauge) (1.5 ft length*1.3 feet width)	Kg	1	260	260
Indicator Light	No.	1	30	30
Window Plastic Glass	No.	1	60	60
Brass Connector	No.	1	40	40
Screws (10)				35
Handle for Window	No.	1	30	30
Powder Coating Cost				4
Packaging Cost	No.	1	15	15
Wastage (10%)	Kg	0.05	260	13
<b>Total</b>				<b>487</b>

**Table 23: 06-Electrical Distribution Box MS Sheet Consumption**

Body Part	Weight Kg
Base Box	0.4
Side Pockets (2)	0.15
Channels for Breakers	0.05
Front	0.25
Window	0.15
<b>Total</b>	<b>1</b>

**Table 24: Raw Material Cost 010-Electrical Distribution Box**

Particulars	Unit of Measurement	Required Box Per Kg	Price Per Unit	Total (PKR)
MS Sheet (22 gauge) (2 ft length*1.75 feet width)	Kg	1.75	260	455
Indicator Light	No.	2	30	60
Volt Meter (Digital)	No.	1	280	280
Window Plastic Glass	No.	1	80	80
Brass Connector	No.	1	50	50
Screws (10)				35
Handle for Window	No.	1	30	30
Powder Coating Cost				7
Packaging Cost	No.	1	30	30
Wastage (10%)	Kg	0.09	260	23
<b>Total</b>				<b>1050</b>

**Table 25: 010-Electrical Distribution Box MS Sheet Consumption**

Body Parts	Weight Kg
Base Box	0.70
Side Pockets (2)	0.26
Channels for Breakers	0.09
Front	0.44
Window	0.26
<b>Total</b>	<b>1.75</b>

**Table 26: Raw Material Cost 013-Electrical Distribution Box**

Particulars	Unit of Measurement	Required Box Per Kg	Price Per Unit	Total (PKR)
MS Sheet (22 gauge) (2.5 ft length*1.75 feet width)	Kg	2.25	260	585
Indicator Light	No.	3	30	90
Volt Meter (Digital)	No.	1	250	250
Window Plastic Glass	No.	1	100	100
Brass Connector	No.	1	60	60
Screws (10)				35
Handle for Window	No.	1	30	30
Powder Coating Cost				10
Packaging Cost	No.	1	40	40
Wastage (10%)	Kg	0.11	260	29
<b>Total</b>				<b>1229</b>

**Table 27: 013-Electrical Distribution Box MS Sheet Consumption**

Body Parts	Weight Kg
Base Box	0.9
Side Pockets (2)	0.34
Channels for Breakers	0.11
Front	0.56
Window	0.34
<b>Total</b>	<b>2.25</b>

**Table 28: Raw Material Cost 018-Electrical Distribution Cost**

Particulars	Unit of Measurement	Required Box Per Kg	Price Per Unit	Total (PKR)
MS Sheet (22 gauge) (3 ft length*2 feet width)	Kg	3	260	780
Indicator Light	No.	3	30	90
Volt Meter (Digital)	No.	1	250	250

Window Plastic Glass	No.	1	100	100
Brass Connector	No.	1	60	60
Screws (10)				35
Handle for Window	No.	1	30	30
Powder Coating Cost				13
Packaging Cost	No.	1	40	40
Wastage (10%)	Kg	0.15	260	39
<b>Total</b>				<b>1,437</b>

**Table 29: 018-Electrical Distribution Box MS Sheet Consumption**

Body Parts	Weight Kg
Base Box	1.2
Side Pockets (2)	0.45
Channels for Breakers	0.15
Front	0.75
Window	0.45
<b>Total</b>	<b>3.00</b>

**Table 30: Powder Coating Cost Per Distribution Box**

Particulars	Weight (kgs)	Area (Sq feet)	Required Grams (A)	Material Loss (B)	Price PKR (A*1+B)*1
06 Distribution Box	1	1.73	4.06	5%	4.26
010 Distribution Box	1.75	3.03	7.10	5%	7.46
013 Distribution Box	2.25	3.90	9.13	5%	9.59
018 Distribution Box	3	5.20	12.18	5%	12.79

**Table 31: Powder Coating Oven Gas Cost**

Particulars	Unit, Rate, Amount
Baking Time (hrs)	0.25
Items/Boxes Per Baking	15
Per Day Baking time (hrs)	8.00
Heat Required (KWh/Baking)	100.00

Total heat required/day (KWh/Day)	800
KWh/MMBTU	293.07
Gas Consumption/Day (MMBTU)	2.73
Cost/MMBTU (PKR)	1,054
Cost/Day (PKR)	2,877
<b>Annual Cost (PKR)</b>	<b>863,138</b>

**Table 32: Vehicle Running Expense**

Particulars	Loader Rickshaw	Motorcycle	Total (PKR)
KM Per Year	21,000	27,000	
Fuel cost (PKR)	236,250	173,571	409,821
Oil & Tuning Cost per Year (PKR)	15,750	20,250	36,000
<b>Yearly Cost (PKR)</b>			<b>445,821</b>

**Table 33: Cost of Goods Sold Assumption – Direct Labor**

Post	No of Persons	Monthly Salary (PKR)	Annual Salary (PKR)
Production Manager	1	80,000	960,000
<b>Labor:</b>	0		0
Skilled Labor Shearing Machine	1	35,000	420,000
Unskilled Labor Shearing Machine	1	30,000	360,000
Skilled Labor Hydraulic Press Machine	1	35,000	420,000
Skilled Labor Power Press Machine	2	35,000	840,000
Skilled Labor Spot Welding Machine	2	35,000	840,000
Skilled Labor Drilling and Grinding	1	35,000	420,000
Skilled Labor Powder Coating Machine	1	35,000	420,000
Skilled Labor Assembling	15	35,000	6,300,000
Skilled Labor Packaging	1	35,000	420,000
<b>Total</b>	<b>26</b>		<b>11,400,000</b>

**Table 34: Cost of Goods Sold Assumption – Machinery Maintenance Cost**

Cost Item	Cost of Machinery (PKR)	Machinery Maintenance Rate	Total Cost (PKR)
Maintenance Cost	6,425,000	5%	321,250
<b>Total Cost (PKR)</b>			<b>321,250</b>

### 9.5. Variable Cost Estimate

Variable costs of the project have been provided in Table 35.

**Table 35: Variable Cost Estimate**

Description of Costs	Amount (PKR)
Material Cost	73,211,924
Direct Labor	11,400,000
Direct Electricity Cost	614,700
Direct Gas Cost	863,138
Fuel Cost-Generator	184,410
Machinery Maintenance - Cost	321,250
Communications expense (phone, fax, mail, internet, etc.)	302,400
Office vehicles running expense	445,821
Office expenses (stationery, entertainment, janitorial services, etc.)	504,000
<b>Total Variable Cost</b>	<b>87,847,643</b>

### 9.6. Fixed Cost Estimate

Table 36 shows the estimated fixed cost of the project.

**Table 36: Fixed Cost Estimate**

Description of Costs	Amount (PKR)
Management Staff	5,040,000
Administration benefits expense	822,000
Building rental expense	1,643,040
Indirect Electricity	510,091
Promotional expense	1,031,550
Depreciation expense	1,266,875



Amortization of pre-operating costs	89,747
Bad debt expense	1,031,550
<b>Total Fixed Cost</b>	<b>11,434,853</b>

### 9.7. Financial Feasibility Analysis

The financial feasibility analysis provides the information regarding projected Internal Rate of Return (IRR), Net Present Value (NPV) and Payback period of the study, which is shown in Table 37.

**Table 37: Financial Feasibility Analysis**

Description	Project
IRR	72%
NPV (PKR)	73,940,256
Payback Period (years)	2.40
Projection Years	10
Discount rate used for NPV	25%

### 9.8. Financial Feasibility Analysis with 50% Debt

The financial feasibility analysis provides the information regarding projected IRR, NPV and payback period of the study on the basis of Debt: Equity Model (50:50) with the interest rate of KIBOR+3%, which is shown in Table 38.

**Table 38: Financial Feasibility Analysis with 50% Debt**

Description	Project
IRR	71%
NPV (PKR)	89,541,008
Payback Period (years)	2.45
Projection Years	10
Discount rate used for NPV	22%

### 9.9. Human Resource Requirement

For the 1<sup>st</sup> year of operations, the proposed unit shall require the workforce at a salary cost shown in Table 39.

**Table 39: Human Resource Requirement**

Post	No. of Employees	Monthly Salary (PKR)	Annual Salary (PKR)
Production Manager	1	80,000	960,000
HR & Admin Manager	1	70,000	840,000
Accounts Manager	1	70,000	840,000
Marketing Officer	1	70,000	840,000
Procurement Officer	1	60,000	720,000
Quality Control Officer	1	50,000	600,000
Skilled Labor Shearing Machine	1	35,000	420,000
Unskilled Labor Shearing Machine	1	30,000	360,000
Skilled Labor Hydraulic Press Machine	1	35,000	420,000
Skilled Labor Power Press Machine	2	35,000	840,000
Skilled Labor Spot Welding Machine	2	35,000	840,000
Skilled Labor Drilling and Grinding	1	35,000	420,000
Skilled Labor Powder Coating Machine	1	35,000	420,000
Skilled Labor Assembling	15	35,000	6,300,000
Skilled Labor Packaging	1	35,000	420,000
Office Boy	1	25,000	300,000
Sweeper	1	25,000	300,000
Security Guard	2	25,000	600,000
<b>Total</b>	<b>35</b>		<b>16,440,000</b>

The labor will work in a single shift of 8 hours.

## 10. CONTACT DETAILS

The contact details of all the major suppliers of machinery and equipment and raw materials are given in Table 40.

**Table 40: Details of Suppliers**

Name Of Supplier	Location	Name of the Item	Contact No	E-mail/Web Address
Steel international	Lahore	MS Sheet	042-37379200	<a href="http://www.steelinternational.com.pk">www.steelinternational.com.pk</a>
Lokhandwala Traders	Karachi	MS Sheet	021-32730738	<a href="mailto:info@lokhandwalapk.com">info@lokhandwalapk.com</a>
Best machinery corporation	Lahore	Power press machine	0320-0452499	
Asia power press	Gujranwala	Power press machine	0300-3011198	<a href="https://asia-power-press.business.site/">https://asia-power-press.business.site/</a>
Al-Noor Machinery	Lahore	Hydraulic Power Press	0321-8481392	<a href="mailto:info.alnoormachinery@gmail.com">info.alnoormachinery@gmail.com</a>
Haroon Hydraulic Works	Lahore	Hydraulic Power Press	0300-9483101	<a href="mailto:greatharoon@yahoo.com">greatharoon@yahoo.com</a>
786 welding machinery store	Lahore	Spot Welding Machine	0300-4289191	
New light house pvt ltd	Karachi	Spot Welding Machine	0333-2116520	<a href="https://newlighthousepk.com/">https://newlighthousepk.com/</a>
Pakistan Safety Glass Works Pvt Ltd	Karachi	Glass	021-35042276	<a href="https://www.pakistansafetyglass.com.pk/">https://www.pakistansafetyglass.com.pk/</a>
Y & M Glass Co	Lahore	Glass	0300-8490788	
Shahvar Industrial Coating	Karachi	Powder Coating Machine	021-35063262	<a href="mailto:ptfe@raziki.com">ptfe@raziki.com</a>
Bari engineering	Lahore	Powder Coating Machine	0302-4448392	<a href="mailto:bariengineering@gmail.com">bariengineering@gmail.com</a>

## 11. USEFUL LINKS

**Table 41: Useful Web Links**

<b>Name of Organization</b>	<b>E-mail Address</b>
Small and Medium Enterprises Development Authority (SMEDA)	<a href="http://www.smeda.org.pk">www.smeda.org.pk</a>
National Business Development Program (NBDP)	<a href="http://www.nbdp.org.pk">www.nbdp.org.pk</a>
Government of Pakistan	<a href="http://www.pakistan.gov.pk">www.pakistan.gov.pk</a>
Pakistan Plastic Manufacturers Association	<a href="https://www.pakplas.com.pk/">https://www.pakplas.com.pk/</a>
Government of Punjab	<a href="http://www.punjab.gov.pk">www.punjab.gov.pk</a>
Government of Sindh	<a href="http://sindh.gov.pk/">sindh.gov.pk/</a>
Government of Balochistan	<a href="http://balochistan.gov.pk/">balochistan.gov.pk/</a>
Government of KPK	<a href="http://kp.gov.pk/">kp.gov.pk/</a>
Government of Gilgit Baltistan	<a href="http://gilgitbaltistan.gov.pk/">gilgitbaltistan.gov.pk/</a>
Government of Azad Jammu & Kashmir	<a href="http://ajk.gov.pk/">ajk.gov.pk/</a>
Trade Development Authority of Pakistan	<a href="http://www.tdap.gov.pk">www.tdap.gov.pk</a>
Securities and Exchange Commission of Pakistan	<a href="http://www.secp.gov.pk">www.secp.gov.pk</a>
State Bank of Pakistan	<a href="http://www.sbp.gov.pk">www.sbp.gov.pk</a>
Federal Board of Revenue	<a href="http://www.fbr.gov.pk">www.fbr.gov.pk</a>
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	<a href="http://www.fpcci.com.pk">www.fpcci.com.pk</a>
Pakistan Stock Exchange (PSX)	<a href="http://www.psx.com.pk">www.psx.com.pk</a>
Pakistan Standards and Quality Control Authority (PSQCA)	<a href="http://www.psqca.com.pk">http://www.psqca.com.pk</a>
Punjab Small Industries Corporation	<a href="https://www.psic.gop.pk/">https://www.psic.gop.pk/</a>
Sindh Small Industries Corporation	<a href="https://ssic.gos.pk/">https://ssic.gos.pk/</a>
Government of KPK	<a href="https://small_industries_de.kp.gov.pk/">https://small_industries_de.kp.gov.pk/</a>
Government of Balochistan Industries and Commerce	<a href="https://balochistan.gov.pk/departments-download/industries-and-commerce/">https://balochistan.gov.pk/departments-download/industries-and-commerce/</a>

## 12. ANNEXURES

### 12.1. Income Statement

Calculations	SMEDA									
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Revenue</b>										
06 Electrical Distribution Box	12,075,000	15,353,940	18,631,627	22,450,915	26,892,010	32,046,285	38,017,784	44,924,911	52,902,339	62,103,172
010 Electrical Distribution Box	31,050,000	39,481,560	47,909,897	57,730,925	69,150,882	82,404,732	97,760,016	115,521,199	136,034,585	159,693,872
013 Electrical Distribution Box	31,050,000	39,481,560	47,909,897	57,730,925	69,150,882	82,404,732	97,760,016	115,521,199	136,034,585	159,693,872
018 Electrical Distribution Box	28,980,000	36,849,456	44,715,904	53,882,197	64,540,823	76,911,084	91,242,682	107,819,786	126,965,613	149,047,614
<b>Total Revenue</b>	<b>103,155,000</b>	<b>131,166,516</b>	<b>159,167,325</b>	<b>191,794,963</b>	<b>229,734,597</b>	<b>273,766,833</b>	<b>324,780,499</b>	<b>383,787,095</b>	<b>451,937,122</b>	<b>530,538,529</b>
<b>Cost of sales</b>										
Material Cost	73,211,924	86,143,843	101,283,346	118,452,526	137,929,590	160,028,519	185,103,493	213,553,835	245,829,558	282,437,567
Direct Labor	11,400,000	12,505,800	13,718,863	15,049,592	16,509,403	18,110,815	19,867,564	21,794,718	23,908,805	26,227,959
Fuel Cost-Generator	184,410	223,745	269,226	321,702	382,133	451,599	531,321	622,676	727,212	846,677
Machinery Maintenance - Cost	321,250	354,339	390,836	431,092	475,494	524,470	578,490	638,075	703,797	776,288
Direct Electricity Cost	614,700	676,170	737,640	799,110	860,580	922,050	983,520	1,044,990	1,106,460	1,167,930
Direct Gas Cost	863,138	931,326	1,004,901	1,084,288	1,169,947	1,262,373	1,362,101	1,469,706	1,585,813	1,711,093
Total cost of sales	86,595,422	100,835,223	117,404,811	136,138,311	157,327,146	181,299,826	208,426,489	239,123,999	273,861,645	313,167,513
<b>Gross Profit</b>	<b>16,559,578</b>	<b>30,331,293</b>	<b>41,762,515</b>	<b>55,656,653</b>	<b>72,407,451</b>	<b>92,467,007</b>	<b>116,354,010</b>	<b>144,663,096</b>	<b>178,075,477</b>	<b>217,371,016</b>
<b>General administration &amp; selling expenses</b>										
Management Staff	5,040,000	5,528,880	6,065,181	6,653,504	7,298,894	8,006,887	8,783,555	9,635,559	10,570,209	11,595,519
Administration benefits expense	822,000	901,734	989,202	1,085,155	1,190,415	1,305,885	1,432,556	1,571,514	1,723,951	1,891,174
Building rental expense	1,643,040	1,807,344	1,988,078	2,186,886	2,405,575	2,646,132	2,910,746	3,201,820	3,522,002	3,874,202
Indirect Electricity	510,091	550,388	593,869	640,784	691,406	746,027	804,963	868,555	937,171	1,011,208
Communications expense (phone, fax, mail, internet, etc.)	302,400	331,733	363,911	399,210	437,934	480,413	527,013	578,134	634,213	695,731
Office vehicles running expense	445,821	491,741	542,390	598,257	659,877	727,844	802,812	885,502	976,709	1,077,310
Office expenses (stationery, entertainment, janitorial services, etc)	504,000	552,888	606,518	665,350	729,889	800,689	878,355	963,556	1,057,021	1,159,552
Promotional expense	1,031,550	1,311,665	1,591,673	1,917,950	2,297,346	2,737,668	3,247,805	3,837,871	4,519,371	5,305,385
Depreciation expense	1,266,875	1,266,875	1,266,875	1,513,725	1,326,225	1,326,225	1,513,561	2,865,548	2,865,548	3,293,402
Amortization of pre-operating costs	89,747	89,747	89,747	89,747	89,747	-	-	-	-	-
Bad debt expense	1,031,550	1,311,665	1,591,673	1,917,950	2,297,346	2,737,668	3,247,805	3,837,871	4,519,371	5,305,385
Miscellaneous expense 1	-	-	-	-	-	-	-	-	-	-
<b>Subtotal</b>	<b>12,687,074</b>	<b>14,144,660</b>	<b>15,689,118</b>	<b>17,668,517</b>	<b>19,424,653</b>	<b>21,515,439</b>	<b>24,149,172</b>	<b>28,245,930</b>	<b>31,325,565</b>	<b>35,208,868</b>
<b>Operating Income</b>	<b>3,872,504</b>	<b>16,186,633</b>	<b>26,073,396</b>	<b>37,988,135</b>	<b>52,982,797</b>	<b>70,951,568</b>	<b>92,204,839</b>	<b>116,417,166</b>	<b>146,749,912</b>	<b>182,162,148</b>
Other income (interest on cash)	-	-	-	-	-	-	-	-	-	-
Revenue from Scrap	415,215	507,298	614,751	739,869	885,267	1,053,923	1,249,231	1,475,049	1,735,770	2,036,383
Gain / (loss) on sale of machinery & equipment	-	-	-	-	-	-	1,418,750	-	-	-
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	385,500	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	109,750	-	-	-
<b>Earnings Before Interest &amp; Taxes</b>	<b>-</b>	<b>4,287,719</b>	<b>16,693,931</b>	<b>26,688,147</b>	<b>38,728,004</b>	<b>53,868,064</b>	<b>72,005,491</b>	<b>95,368,069</b>	<b>117,892,215</b>	<b>148,485,682</b>
<b>Subtotal</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Earnings Before Tax</b>	<b>4,287,719</b>	<b>16,693,931</b>	<b>26,688,147</b>	<b>38,728,004</b>	<b>53,868,064</b>	<b>72,005,491</b>	<b>95,368,069</b>	<b>117,892,215</b>	<b>148,485,682</b>	<b>184,198,531</b>
Tax	1,289,438	8,703,179	11,701,444	16,131,601	22,773,823	29,121,922	37,298,824	45,182,275	55,889,989	68,389,486
<b>NET PROFIT/(LOSS) AFTER TAX</b>	<b>2,998,282</b>	<b>7,990,752</b>	<b>14,986,703</b>	<b>22,596,403</b>	<b>31,094,242</b>	<b>42,883,569</b>	<b>58,069,245</b>	<b>72,709,940</b>	<b>92,595,693</b>	<b>115,809,045</b>

## 12.2. Balance Sheet

Calculations	SMEDA										
Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Assets</b>											
<i>Current assets</i>											
Cash & Bank	1,000,000	2,017,788	4,969,476	7,812,221	12,471,691	17,072,680	21,284,875	57,876,384	124,693,112	207,359,119	346,004,756
Accounts receivable		4,239,247	4,814,826	5,965,764	7,211,554	8,661,566	10,345,920	12,298,918	14,559,608	17,172,415	20,187,856
Raw material inventory	3,050,497	3,959,027	5,134,260	6,623,074	8,506,448	10,885,884	13,888,535	17,673,588	22,440,212	28,437,462	-
Equipment spare part inventory	26,771	32,363	39,123	47,296	57,175	69,118	83,556	101,010	122,110	147,617	-
Finished Goods inventory	-	3,979,781	5,111,543	6,564,493	8,395,976	10,702,124	13,603,142	17,249,252	21,828,104	27,573,988	34,779,280
Upfront Building rental											
Pre-paid building rent	136,920	150,612	165,673	182,241	200,465	220,511	242,562	266,818	293,500	322,850	-
<b>Total Current Assets</b>	<b>4,214,188</b>	<b>14,378,819</b>	<b>20,234,901</b>	<b>27,195,088</b>	<b>36,843,308</b>	<b>47,611,884</b>	<b>59,448,590</b>	<b>105,465,970</b>	<b>183,936,647</b>	<b>281,013,452</b>	<b>400,971,892</b>
<i>Fixed assets</i>											
Land	-	-	-	-	-	-	-	-	-	-	-
Building/Infrastructure	989,254	890,329	791,403	692,478	593,552	494,627	395,702	296,776	197,851	98,925	-
Machinery & equipment	5,675,000	5,107,500	4,540,000	3,972,500	3,405,000	2,837,500	2,270,000	12,483,021	10,837,469	9,191,917	7,546,365
Tools and Equipment	750,000	562,500	375,000	1,174,900	740,550	493,700	1,546,794	974,958	649,972	2,036,405	1,283,564
Furniture & fixtures	772,000	656,200	540,400	424,600	308,800	193,000	77,200	1,466,531	1,246,551	1,026,572	806,592
Office vehicles	439,000	373,150	307,300	241,450	175,600	109,750	43,900	911,434	774,719	638,004	501,289
Office equipment	1,542,000	1,310,700	1,079,400	848,100	616,800	385,500	154,200	2,929,262	2,489,873	2,050,484	1,611,094
Advance Against Building Rent	410,760	410,760	410,760	410,760	410,760	410,760	410,760	410,760	410,760	410,760	410,760
<b>Total Fixed Assets</b>	<b>10,578,014</b>	<b>9,311,139</b>	<b>8,044,263</b>	<b>7,764,787</b>	<b>6,251,062</b>	<b>4,924,837</b>	<b>4,898,555</b>	<b>19,472,742</b>	<b>16,607,195</b>	<b>15,453,066</b>	<b>12,159,664</b>
<i>Intangible assets</i>											
Pre-operation costs	448,733	358,986	269,240	179,493	89,747	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
<b>Total Intangible Assets</b>	<b>448,733</b>	<b>358,986</b>	<b>269,240</b>	<b>179,493</b>	<b>89,747</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>TOTAL ASSETS</b>	<b>15,240,934</b>	<b>24,048,943</b>	<b>28,548,404</b>	<b>35,139,368</b>	<b>43,184,117</b>	<b>52,536,721</b>	<b>64,347,145</b>	<b>124,938,712</b>	<b>200,543,842</b>	<b>296,466,517</b>	<b>413,131,555</b>
<b>Liabilities &amp; Shareholders' Equity</b>											
<i>Current liabilities</i>											
Accounts payable		7,308,868	8,562,523	10,032,609	11,712,068	13,633,109	15,833,087	18,355,409	21,250,599	24,577,581	25,433,574
Other liabilities											
<b>Total Current Liabilities</b>	<b>-</b>	<b>7,308,868</b>	<b>8,562,523</b>	<b>10,032,609</b>	<b>11,712,068</b>	<b>13,633,109</b>	<b>15,833,087</b>	<b>18,355,409</b>	<b>21,250,599</b>	<b>24,577,581</b>	<b>25,433,574</b>
<i>Other liabilities</i>											
<b>Total Long Term Liabilities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Shareholders' equity</i>											
Paid-up capital	15,240,934	15,240,934	15,240,934	15,240,934	15,240,934	15,240,934	15,240,934	15,240,934	15,240,934	15,240,934	15,240,934
Retained earnings		1,499,141	4,744,946	9,865,825	16,231,114	23,662,678	33,273,124	91,342,369	164,052,309	256,648,002	372,457,047
<b>Total Equity</b>	<b>15,240,934</b>	<b>16,740,075</b>	<b>19,985,880</b>	<b>25,106,759</b>	<b>31,472,048</b>	<b>38,903,612</b>	<b>48,514,058</b>	<b>106,583,303</b>	<b>179,293,243</b>	<b>271,888,936</b>	<b>387,697,981</b>
<b>TOTAL CAPITAL AND LIABILITIES</b>	<b>15,240,934</b>	<b>24,048,943</b>	<b>28,548,404</b>	<b>35,139,368</b>	<b>43,184,117</b>	<b>52,536,721</b>	<b>64,347,145</b>	<b>124,938,712</b>	<b>200,543,842</b>	<b>296,466,517</b>	<b>413,131,555</b>

### 12.3. Cash Flow Statement

Calculations	SMEDA										
Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit		2,998,282	7,990,752	14,986,703	22,596,403	31,094,242	42,883,569	58,069,245	72,709,940	92,595,693	115,809,045
Add: depreciation expense		1,266,875	1,266,875	1,266,875	1,513,725	1,326,225	1,326,225	1,513,561	2,865,548	2,865,548	3,293,402
amortization of pre-operating costs		89,747	89,747	89,747	89,747	89,747	-	-	-	-	-
Accounts receivable		(4,239,247)	(575,579)	(1,150,938)	(1,245,790)	(1,450,012)	(1,684,353)	(1,952,998)	(2,260,690)	(2,612,807)	(3,015,440)
Finished goods inventory		(3,979,781)	(1,131,762)	(1,452,950)	(1,831,483)	(2,306,149)	(2,901,017)	(3,646,110)	(4,578,853)	(5,745,884)	(7,205,292)
Equipment inventory	(26,771)	(5,592)	(6,760)	(8,172)	(9,879)	(11,943)	(14,438)	(17,454)	(21,100)	(25,507)	147,617
Raw Material Inventory	(3,050,497)	(908,531)	(1,175,232)	(1,488,815)	(1,883,374)	(2,379,436)	(3,002,651)	(3,785,052)	(4,766,624)	(5,997,250)	28,437,462
Pre-paid building rent	(136,920)	(13,692)	(15,061)	(16,567)	(18,224)	(20,046)	(22,051)	(24,256)	(26,682)	(29,350)	322,850
Accounts payable		7,308,868	1,253,655	1,470,086	1,679,459	1,921,040	2,199,979	2,522,322	2,895,189	3,326,983	855,992
Other liabilities		-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(3,214,188)	2,516,929	7,696,634	13,695,969	20,890,584	28,263,667	38,785,262	52,679,258	66,816,728	84,377,426	138,645,637
<i>Financing activities</i>											
Issuance of shares	15,240,934	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares											
Cash provided by / (used for) financing activitie	15,240,934	-	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(11,026,747)	-	-	(987,400)	-	-	(1,299,944)	(16,087,748)	-	(1,711,419)	-
Acquisitions											
Cash (used for) / provided by investing activitie	(11,026,747)	-	-	(987,400)	-	-	(1,299,944)	(16,087,748)	-	(1,711,419)	-
<b>NET CASH</b>	<b>1,000,000</b>	<b>2,516,929</b>	<b>7,696,634</b>	<b>12,708,570</b>	<b>20,890,584</b>	<b>28,263,667</b>	<b>37,485,318</b>	<b>36,591,510</b>	<b>66,816,728</b>	<b>82,666,007</b>	<b>138,645,637</b>



## 13. KEY ASSUMPTIONS

### 13.1. Operating Cost Assumptions

**Table 42: Operating Cost Assumptions**

Description	Details
Machinery Maintenance – Cost	5% Cost of Machinery
Genertor Fuel cost	30% Direct electricity
Operating costs growth rate	10.3%
Administration benefits expense	5% of administration expense
Commuication expense	6% of administration expense
Office expenses (stationery, entertainment, etc.)	10% of administration expense
Promotional Expense	1.0% of revenue
Bad Debt Expense	1.0% of revenue
Furniture and fixture depreciation	15%
Vehicle depreciation	15%
Office equipment depreciation	15%
Inflation growth rate	10.3%
Wage growth rate	9.7%
Electricity price growth rate	7.9%
Office equipment price growth rate	9.6%
Office vehicle price growth rate	11.0%

### 13.2. Revenue Assumptions

**Table 43: Revenue Assumptions**

Description	Details
Sale price growth rate	11.2%
Initial year capacity utilization	50%
Capacity growth rate	5%
Maximum capacity utilization	95%



**13.3. Financial Assumptions****Table 44: Financial Assumptions**

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate	25%

**13.4. Debt-Related Assumptions****Table 45: Debt Related Assumption**

Description	Details
Project Life (Years)	10
Debt: Equity	50:50
Discount Rate	22%
Debt Grace Period	1 Years
Interest Rate (KIBOR+3%)	19%

**13.5. Cash Flow Assumption****Table 46: Cash Flow Assumption**

Description	Details
Accounts receivable cycle (in days)	15 Days
Accounts payable cycle (in days)	30 Days

# Small and Medium Enterprises Development Authority

## HEAD OFFICE

4th Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road, Lahore  
Tel: (92 42) 111 111 456, Fax: (92 42) 36304926-7

[www.smeda.org.pk](http://www.smeda.org.pk), [helpdesk@smeda.org.pk](mailto:helpdesk@smeda.org.pk)

REGIONAL OFFICE PUNJAB	REGIONAL OFFICE SINDH	REGIONAL OFFICE KPK	REGIONAL OFFICE BALOCHISTAN
3 <sup>rd</sup> Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road Lahore, Tel: (042) 111-111-456 Fax: (042) 36304926-7 <a href="mailto:helpdesk.punjab@smeda.org.pk">helpdesk.punjab@smeda.org.pk</a>	5 <sup>TH</sup> Floor, Bahria Complex II, M.T. Khan Road, Karachi. Tel: (021) 111-111-456 Fax: (021) 5610572 <a href="mailto:helpdesk-khi@smeda.org.pk">helpdesk-khi@smeda.org.pk</a>	Ground Floor State Life Building The Mall, Peshawar. Tel: (091) 9213046-47 Fax: (091) 286908 <a href="mailto:helpdesk-pew@smeda.org.pk">helpdesk-pew@smeda.org.pk</a>	Bungalow No. 15-A Chaman Housing Scheme Airport Road, Quetta. Tel: (081) 831623, 831702 Fax: (081) 831922 <a href="mailto:helpdesk-qta@smeda.org.pk">helpdesk-qta@smeda.org.pk</a>