



Pre-feasibility Study

FABRICATION OF ALUMINIUM DOORS AND WINDOWS

October 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

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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 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.

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2. EXECUTIVE SUMMARY

Fabrication is the process of making products by combining standardized parts (aluminium bars/pipes in the proposed business) using different processes. Fabrication of aluminium doors and windows involves processes of cutting, grinding, drilling, joining and glass fitting. Aluminium fabrication can be used to make a wide range of products including tables, chairs, lamps, picture frames, decorative panels, doors and windows. Aluminium products have extensive use in industrial, commercial and household activities. The proposed study provides details about establishing and running a business of fabrication of aluminium doors and windows. The proposed business can be started with simple machinery and equipment with aluminium bars/pipes as the main raw materials.

Aluminium is a good choice for fabrication because it is lightweight, strong, corrosion-free, non-sparking and non-magnetic. There are many benefits that aluminium metal offers to the construction industry and is used for making external facades, roofs and walls, windows and doors, staircases, railings, shelves, and several other applications. Aluminium frames allow for an exceptionally tight seal. Dust, air, water, and sound are unable to penetrate aluminium doors and windows when they are closed. Therefore, aluminium has established itself as a highly valuable building material in the modern construction industry.

For the past decade, the local construction sector has been growing at a high rate which has generated an increase in demand for aluminium doors and windows.¹

The main raw materials of aluminium doors and windows include rectangular shaped aluminium bars/pipes of different shapes and sizes. The aluminium bars/pipes used in the fabrication process are 14 feet, 16 feet and 18 feet in lengths. The aluminium bars/pipes used in fabrication of doors are 1.5-inch in length, 3-inch in width and 1.2-mm in thickness. The aluminium bars/pipes used in fabrication of windows are 1-inch in length, 3.75-inch in width and with a thickness of 1.2-mm. The aluminium bar/pipes used in fabrication process have different section numbers (specific type of aluminium bars/pipes). In the process of fabricating aluminium doors, section numbers E-10, D-35, D-33, D-32, D-52 and D-61 (aluminium sheet) are used. In the process of fabricating aluminium windows, section numbers DC-26B, DC-30B, M-23, M-28, M-24 and D-29 are used. Detail of these numbers is provided in the main text.

Glass is fitted in the frames of aluminium doors and windows to complete those. Glass comes in wide variety of colors, thicknesses and sizes. The proposed business will provide glass fitting services to the potential customers instead of maintaining glass inventory. The proposed business will not purchase glass from the market. The customers will purchase glass from the market based on their preferences (color, quality and

¹ <https://invest.gov.pk/housing-and-construction>

thickness) from the market according to the size prescribed by proposed business. Fitting of glass will be done by aluminium door and window maker.

Other raw materials used in the fabrication of aluminium doors and windows include locks, joints, SS sliding wheels, PVC rubber, etc. These raw materials are locally manufactured and are easily available in the local markets of Pakistan.

The proposed Pre-feasibility Document provides details for setting up a business of “Fabrication of Aluminium Doors and Windows”. The suggested product portfolio includes different types of aluminium doors and aluminium windows. The proposed business may be established in large and medium cities like Karachi, Lahore, Islamabad, Peshawar, Rawalpindi, Quetta, Faisalabad, Sialkot, Hyderabad, Muzaffarabad, Sukkur, Gujranwala, Mardan, Gilgit, Multan, Bahawalpur, Lasbela, Mirpur, Skardu, etc. These cities are preferred for the proposed unit due to their large populations and presence of higher number of target customers. Raw materials and skilled labor required for the proposed fabrication unit are also easily available in larger cities.

The total manufacturing capacity of the proposed fabrication unit is dependent on the capacity of the team that will be engaged by the unit. The proposed business consists of two teams and each team has two skilled and two unskilled workers. The proposed business unit will operate in a single shift of 8 hours per day and will have maximum capacity to produce 1,396 aluminium doors and windows. It includes 3 feet x 3 feet aluminium windows (224 Units), 4 feet x 4 feet aluminium windows (149 Units), 4 feet x 3 feet aluminium windows (149 Units), 5 feet x 4 feet aluminium windows (149 Units), 6 feet x 4 feet aluminium windows (149 Units), 7 feet x 4 feet aluminium doors with aluminium sheet (64 Units), 6 feet x 2.5 feet aluminium doors with aluminium sheet (128 Units), 6 feet x 3 feet aluminium doors with aluminium sheet (128 Units), 7 feet x 4 feet aluminium doors without aluminium sheet (128 Units), 6 feet x 2.5 feet aluminium doors without aluminium sheet (64 Units), 6 feet x 3 feet aluminium doors without aluminium sheet (64 Units). During first year of operation, the fabrication unit is expected to achieve 60% of its installed capacity and will produce 836 units. The production capacity utilization is assumed to increase at a rate of 5% per annum and will achieve the maximum utilized capacity of 90% in Year 7.

The proposed project will be set up in a rented building having an area of 865 sq. ft. (3.84 Marla). The project requires a total investment of PKR 4.32 million. This includes capital investment of PKR 2.23 million and working capital of PKR 2.09 million. The project will be established using 100% equity financing. The Net Present Value (NPV) of project is PKR 7.35 million with an Internal Rate of Return (IRR) of 55% and a Payback period of 2.39 years. Further, the proposed project is expected to generate Gross Annual Revenues of PKR 19.05 million in 1st year of operations, Gross Profit (GP) ratio ranging from 23% to 27% and Net Profit (NP) ratio ranging from 6% to 13% during the projection

period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 38% (524 units) with gross revenue of PKR 11.95 million in a year.

The proposed project may also be established using debt financing. At 50% financing at a cost of KIBOR+3%, the proposed project will generate Net Present Value (NPV) of PKR 9.08 million, Internal Rate of Return (IRR) of 56% and Payback period of 2.38 years. Further, this project is expected to generate Net Profit (NP) ratio ranging from 3% to 13% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 44% (615 units) with breakeven revenue of PKR 14.01 million.

The proposed project will provide employment opportunities to 8 persons. It is evident from the above financial figures that the project for fabrication of aluminium doors and windows offers reasonable profitability and is economically and financially viable. The legal business status of this project is proposed as "Sole Proprietorship". The project may also be established as a 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 'sectoral 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 in objectively designed to support SMEDA's capacity of providing an effective

handholding to SMEs. The proposed program 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 the 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 establishing a business of “Fabrication of Aluminium Doors and Windows”. 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 attains 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 the basis of any investment decision.

5. BRIEF DESCRIPTION OF PROJECT & PRODUCT

The document provides detail for setting up a business of Fabrication of Aluminium Doors and Windows. Aluminium is the most preferred material in the market for making doors and windows. It is preferred because of its durability and weather-proof properties to withstand a wide range of harsh environmental conditions. It is non-toxic and has a low density, high thermal conductivity, excellent corrosion resistance and can be easily cast, machined and formed. Unlike other window materials, it does not swell, warp, crack, or split over time. Aluminium is the most common material for fabricating different items such as gates, fences, doors, railings and windows.

Aluminium fabrication is the process of cutting, grinding, drilling, joining and glass fitting to make the finished product (such as aluminium doors and windows) as per the requirements of customers. Compared to other metals, aluminium is a popular choice for fabrication of doors and windows, because it is lightweight, strong, corrosion resistant, non-sparking and non-magnetic.

Nowadays, aluminium doors and windows demand has increased in construction of household and commercial buildings. Some of the advantages of these products are given below:

Advantages

- Aluminium doors and windows are environment-friendly in comparison to wooden doors and windows.
- Aluminium doors and windows have longer life and are not affected by rust, corrosion and termite.
- Aluminium doors and windows can be cleaned easily by simple dusting and washing.
- Aluminium doors and windows have low maintenance cost and high weather-resistant quality (i.e., resistance against water, temperature and corrosion).
- Aluminium doors require no periodical or annual expenditure on paint or polish.

Manufacturers are able to easily fabricate door and window frames that offer high levels of airtightness against wind and water. Aluminium doors and windows are less expensive when compared to the wooden doors and windows. The success of the project depends on use of good quality raw material and availability of skilled labor. The installation services are not provided by the proposed business.

The proposed business unit of “Fabrication of Aluminium Doors and Windows Work” provides glass fitting services instead of maintaining an inventory of glass that is used in the aluminium doors and windows. The proposed business does not purchase glass from the market. The customers purchase glass from the market based on their preferences (color, quality and thickness) from the market according to the size prescribed by proposed business. The fitting of glass is done by aluminium door and window maker.

There are different varieties of glass used in aluminium doors and windows. Common types of glass are shown in the Table 1.

Table 1: Glass Types and Sizes

Glass Types	Sizes (mm)
White Glass	5 mm
White Blind Glass	5 mm
Simple Green Glass	5 mm
Light Green Glass	5 mm
Green Mercury Glass	5 mm
Simple Brown Glass	5 mm

Brown Mercury Glass	5 mm
Simple Brown Glass	8 mm
Simple Brown Glass	12 mm
Simple Blue Glass	5 mm
Blue Mercury Glass	5 mm
Simple Grey Glass	5 mm
Grey Mercury Glass	5 mm

Raw Materials

Aluminium bars/pipes (rectangular in shape) represent the main raw material used in fabrication of aluminium doors and windows. These aluminium bars/pipes are different in colors (such as grey, white and silver), sizes (such as 14 feet, 15 feet and 18 feet long) and also have different section numbers.

Section numbers are the local market terms/jargons which help the fabricator (door and window maker) to identify the specific type of aluminium bars/pipes used in the fabrication of aluminium doors and windows.

The section numbers used in the fabrication of aluminium doors are E-10, D-35, D-33, D-32, D-52 and D-61 (aluminium sheet). The specifications of aluminium bars/pipes used for aluminium doors are 1.5-inch in length by 3.0-inch in width and 1.2-mm in thickness.

The section numbers used in the fabrication of aluminium windows are DC-26B, DC-30B, M-23, M-28, M-24 and D-29 and specifications of aluminium bars/pipes used for aluminium windows are 1.0-inch in length by 3.75-inch in width and 1.2-mm in thickness.

Glass is fitted in the frames of aluminium doors and windows to complete those. There are many varieties of glass available in the market, including transparent, black, brown, green, blue. Also, that there are many different thickness ranges of glass. Therefore, it is not possible to maintain such large amount of inventory of glass because proper unit is required for handling and maintaining of these glasses which is not in the scope of the proposed business.

Other raw materials, including locks, joints, SS sliding wheels, PVC rubber etc., are also used in the fabrication of aluminium doors and windows. These raw materials are locally manufactured and easily available in the local markets of Pakistan.

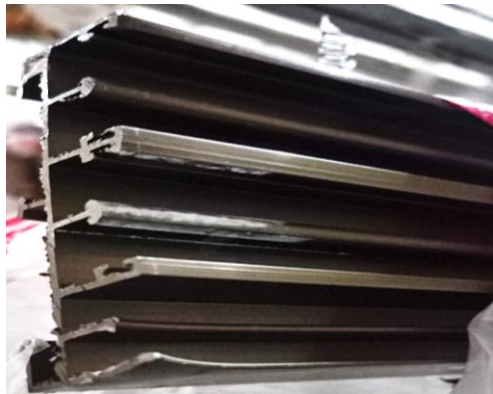
Aluminium Section Numbers

There are different aluminium materials used in the fabrication of aluminium doors and windows which are identified by their section numbers. Each aluminium section number is different from another with respect to its design and function. The details of different types of aluminium materials, used in the fabrication of aluminium doors and windows, classified under different section numbers are described below:

1) Aluminium Section DC-26B

Aluminium section DC-26B is used in the preparation of outer frame of aluminium windows. It is attached/joined at the bottom of the outer frame that helps the inner frame to slide easily. Figure 1 shows aluminium section DC-26B.

Figure 1: Aluminium Section DC-26B



2) Aluminium Section DC-30B

Aluminium section DC-30B is used in the preparation of outer frame of aluminium windows. The outer frame of windows is rectangular in shape and consist of four parts i.e., left length, right length, top length and bottom length. The left, right and top lengths of aluminium windows are made of aluminium section DC-26B. Figure 2 shows aluminium section DC-30B.

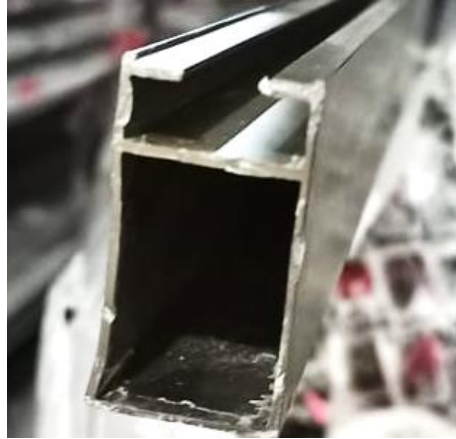
Figure 2: Aluminium Section DC-30B



3) Aluminium Section M-23

Aluminium section M-23 is used in the fabrication of inner frame of aluminium windows. The left length of aluminium inner frame is made of aluminium section M-23. Figure 3 shows aluminium section M-23.

Figure 3: Aluminium Section M-23



4) Aluminium Section M-28

Aluminium section M-23 is used in the preparation of inner frame of aluminium windows. The right length of aluminium inner frame is made up aluminium of section M-28. Figure 4 shows aluminium section M-28.

Figure 4: Aluminium Section M-28



5) Aluminium Section M-24

Aluminium section M-23 is used in the preparation of inner frame of aluminium windows. The top and bottom lengths of aluminium windows are made of aluminium section M-24. Figure 5 shows aluminium section M-24.

Figure 5: Aluminium Section M-24**6) Aluminium Section D-29**

Aluminium section D-29 is used in the preparation of rectangular mesh (Jali) frame of aluminium windows, the whole mesh frame (its left length, right length, top length and bottom length) is made of aluminium section D-29. Figure 6 shows aluminium section D-29.

Figure 6: Aluminium Section D-29**7) Aluminium Section E-10**

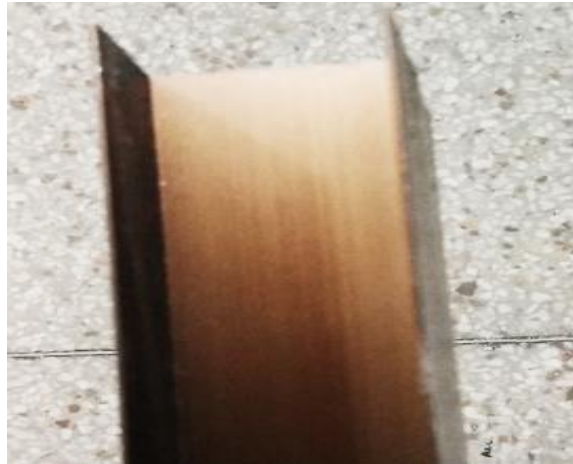
Aluminium section E-10 is used in the preparation of outer frame of aluminium doors. The whole rectangular outer frame (its left length, right length, top length and bottom length) is made of aluminium section E-10. Figure 7 shows aluminium section E-10.

Figure 7: Aluminium Section E-10**8) Aluminium Section D-35**

Aluminium section D-35 is used in the preparation of inner frame of aluminium doors. The left and right length of aluminium doors are made of aluminium section D-35. Figure 8 shows aluminium section D-35.

Figure 8: Aluminium Section D-35**9) Aluminium Section D-33**

Aluminium section D-35 is used in the preparation of inner frame of aluminium doors. The top and bottom lengths of aluminium doors are made of aluminium section D-33. Figure 9 shows aluminium section D-33.

Figure 9: Aluminium Section D-33**10) Aluminium Section D-32**

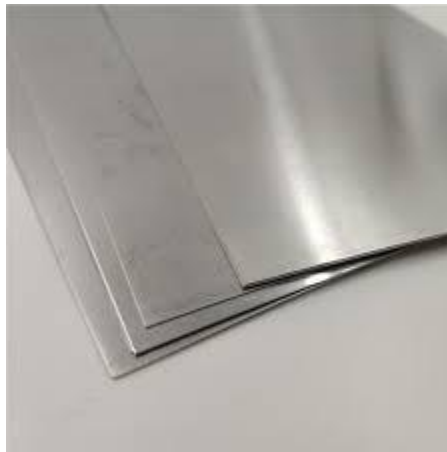
Aluminium section D-32 is used in the preparation of aluminium doors. This section is specifically used for holding glass in the inner frame of aluminium doors. Figure 10 shows aluminium section D-32.

Figure 10: Aluminium Section D-32**11) Aluminium Section D-52**

Aluminium Section D-52 is used in the preparation of aluminium door. The proposed business fabricates two types of doors: door with aluminium sheet and door without aluminium sheet. Aluminium Section D-52 is used as separator between upper part and lower part of door. The upper part of the door has glass and lower part is made of aluminium sheet. Figure 11 shows aluminium section D-52.

Figure 11: Aluminium Section D-52**12) Aluminium Section D-61 (Aluminium Sheet)**

Aluminium section D-61 represents aluminium sheet, used in the fabrication of doors with aluminium sheet. It is attached to the front half lower part of the door. Figure 12 shows aluminium section D-61 (aluminium sheet).

Figure 12: Aluminium Section D-61 (Aluminium Sheet)

Details of other raw materials used in the fabrication of aluminium doors and windows are presented below:

Locks

Lock is made of iron/aluminium/steel and used for security and protection. Common locks used in aluminium doors and windows are shown in Figure 13.

Figure 13: Window and Door Locks**SS Sliding wheels**

SS sliding wheels made of stainless-steel used to slide the inner frame of windows. Figure 14 shows SS sliding wheel.

Figure 14: SS Sliding Wheel**Door Handle**

Door handle of stainless steel is fixed into the door with screws that is used to open and close the aluminium door. Figure 15 shows door handle used in aluminium doors.

Figure 15: Door Handles

PVC Rubber

PVC (Polyvinyl Chloride) is a thermoplastic material that is used inside the frames of aluminium doors and windows. The main purpose of PVC rubber in the aluminium frame is to tightly hold the glass and not allow any movement (which may cause the risk of damage of glass). Figure 16 shows PVC rubber used in aluminium doors and windows.

Figure 16: PVC Rubber



Screws

Screws are used to join one aluminium length to another for preparing frames of aluminium doors and windows. Figure 17 shows commonly used screws.

Figure 17: Screws



Table 2: Major Raw Material Markets

Origin/City	Market
Karachi	D 166, Sindh Industrial Trading Estate
	Godhra timber market
Lahore	Cooper road
	Beadon road
Faisalabad	Link Road, Susan Road, near Bank of Khyber
	Satayana Road
Gujranwala	24/ A, Small Industries Estate #1
	Wania moor, Sialkot Road
Peshawar	Sial Flat Grand Trunk Road, Tahkal
	Kohat road
Quetta	Sirki road, Quetta

Raw Material Consumption of Aluminium Windows

Raw materials requirement for fabricating aluminium windows of different sizes and shapes are as follows:

- **Aluminium window (Length 3 feet *Width 3 feet)**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 3. Figure 18 shows aluminium window (Length 3 feet * Width 3 feet).

Table 3: Raw Material - Aluminium Window (Length (3 feet) * Width (3 feet))

Section Number	Unit of Measurement	Consumption per Window
Aluminium Bars/Pipes		
DC-26B	Feet	3.0
DC-30B	Feet	9.0
M-23	Feet	6.0
M-28	Feet	6.0
M-24	Feet	6.0
D-29	Feet	9.0
Other Materials		

SS sliding wheels	Unit	2
Lock	Unit	1
PVC Rubber	Feet	9.0

Figure 18: Aluminium Window (Length 3 feet * Width 3 feet)



- **Aluminium window (Length 4 feet * Width 4 feet)**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 4. Figure 19 shows aluminium window (Length 4 feet * Width 4 feet).

Table 4: Raw Materials - Aluminium Window (Length (4 feet) * Width (4 feet))

Section Number	Unit of Measurement	Consumption per Window
Aluminium Bars/Pipes		
DC-26B	Feet	4.0
DC-30B	Feet	12.0
M-23	Feet	8.0
M-28	Feet	8.0
M-24	Feet	8.0
D-29	Feet	12.0
Other Materials		

SS sliding wheels	Unit	2
Lock	Unit	1
PVC Rubber	Feet	16.0

Figure 19: Aluminium Window (Length 4 feet * Width 4 feet)



- **Aluminium window (Length 4 feet * Width 3 feet)**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 5. Figure 20 shows aluminium window (Length 4 feet * Width 3 feet).

Table 5: Raw Materials - Aluminium Window (Length (4 feet) * Width (3 feet))

Section Number	Unit of Measurement	Consumption per Window)
Aluminium Bars/Pipes		
DC-26B	Feet	3.0
DC-30B	Feet	11.0
M-23	Feet	8.0
M-28	Feet	8.0
M-24	Feet	8.0
D-29	Feet	11.0

Other Materials		
SS sliding wheels	Unit	2
Lock	Unit	1
PVC Rubber	Feet	12.0

Figure 20: Aluminium Window (Length 4 feet * Width 3 feet)



- **Aluminium window (Length 5 feet * Width 4 feet)**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 6. Figure 21 shows aluminium window (Length 5 feet * Width 4 feet).

Table 6: Raw Materials - Aluminium Window (Length (5 feet) * Width (4 feet))

Section Number	Unit of Measurement	Consumption per Window
Aluminium Bars/Pipes		
DC-26B	Feet	4.0
DC-30B	Feet	14.0
M-23	Feet	10.0
M-28	Feet	10.0
M-24	Feet	10.0
D-29	Feet	14.0

Other Materials		
Sliding wheels	Unit	2
Lock	Unit	1
PVC Rubber	Feet	20.0

Figure 21: Aluminium Window (Length 5 feet * Width 4 feet)



- **Aluminium window (Length 6 feet * Width 4 feet)**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 7. Figure 22 shows aluminium window (Length 6 feet * Width 4 feet).

Table 7: Raw Material - Aluminium Window (Length (6 feet) * Width (4 feet))

Section Number	Unit of Measurement	Consumption perWindow
Aluminium Bars/Pipes		
DC-26B	Feet	4.0
DC-30B	Feet	16.0
M-23	Feet	12.0
M-28	Feet	12.0
M-24	Feet	12.0
D-29	Feet	16.0

Other Materials		
Sliding wheels	Unit	2
Lock	Unit	1
PVC Rubber	Feet	24.0

Figure 22: Aluminium Window (Length 6 feet * Width 4 feet)



Raw Materials Consumption of Aluminium Doors

There are two sub categories of aluminium doors i.e., doors with aluminium sheet and doors without aluminium sheet. Door with aluminium sheet uses aluminium sheet in the lower half of the door and the upper half is covered with glass. Aluminium door without aluminium sheet is wholly covered with glass and does not use any sheet.

Different sizes and shapes of aluminium doors and its raw material consumption is as follows:

- **Aluminium Door (Length 7 feet * Width 4 feet) with Aluminium Sheet**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials are shown in Table 8. Figure 23 show aluminium door (Length 7 feet * Width 4 feet) with aluminium sheet.

Table 8: Raw Material - Aluminium Doors (Length (7 Feet) * Width (4 Feet) with Aluminium Sheet)

Section Number	Unit of Measurement	Consumption per Door
Aluminium Bars/Pipes		
E-10	Feet	18.0
D-35	Feet	14.0
D-33	Feet	8.0
D-32	Feet	14.0
D-52	Feet	4.0
D-61 (Aluminium Sheet)	Square Feet	14.0
Other Materials		
Star Lock	Unit	1
6-inch Handle	Feet	1
PVC Rubber	Feet	12.0

Figure 23: Aluminium Door (Length 7 feet * Width 4 feet) with Aluminium Sheet

- **Aluminium Door (Length 6 feet * Width 2.5 feet) with Aluminium Sheet**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 9. Figure 24 show aluminium door (Length 6 feet * Width 2.5 feet) with aluminium sheet.

Table 9: Raw Material - Aluminium Doors (Length (6 Feet) * Width (2.5 Feet) with Aluminium Sheet)

Section Number	Unit of Measurement	Consumption per Door
Aluminium Bars/Pipes		
E-10	Feet	14.5
D-35	Feet	12.0
D-33	Feet	5.0
D-32	Feet	22.0
D-52	Feet	2.5
D-61-Aluminium Sheet	Square Feet	7.5
Other Materials		
Star Lock	Unit	1
6-inch Handle	Unit	1
PVC Rubber	Feet	9.0

Figure 24: Aluminium Door (Length 6 feet *Width 2.5 feet) with Aluminium Sheet



- **Aluminium Doors (Length 6 feet * Width 3 feet) with Aluminium Sheet**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 10.

Figure 25 shows aluminium door (Length 6 feet * Width 3 feet) with aluminium sheet.

Table 10: Raw Material - Aluminium Doors (Length (6 Feet) * Width (3 Feet) with Aluminium Sheet)

Section Number	Unit of Measurement	Consumption per Door
Aluminium Bars/Pipes		
E-10	Feet	15.0
D-35	Feet	12.0
D-33	Feet	6.0
D-32	Feet	24.0
D-52	Feet	3.0
D-61 (Aluminium Sheet)	Square Feet	9.0
Other Materials		
Star Lock	Unit	1
6-inch Handle	Unit	1
PVC Rubber	Feet	9.0

Figure 25: Aluminium Door (Length 6 feet * Width 3 feet) with Aluminium Sheet



- **Aluminium Door (Length 7 feet * Width 4 feet) without Aluminium Sheet**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 11. **Error! Reference source not found.** Figure 26 shows aluminium door (Length 7 feet * Width 4 feet) without aluminium sheet.

Table 11: Raw Material - Aluminium Doors (Length (7 Feet) * Width (4 Feet) without Aluminium Sheet)

Section Number	Unit of Measurement	Consumption per Door
Aluminium Bars/Pipes		
E-10	Feet	18.0
D-35	Feet	14.0
D-33	Feet	8.0
D-32	Feet	14.0
Other Materials		
Star Lock	Unit	1
6-inch Handle	Unit	1
PVC Rubber	Feet	28.0

Figure 26: Aluminium Door (Length 7 feet * Width 4 feet) without Aluminium Sheet



- **Aluminium Door (Length 6 feet * Width 2.5 feet) without Aluminium Sheet**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 12. Figure 27 shows aluminium door (Length 6 feet * Width 2.5 feet) without aluminium sheet.

Table 12: Raw Material - Aluminium Doors (Length (6 Feet) * Width (2.5 Feet) without Aluminium Sheet)

Section Number	Unit of Measurement	Consumption per Door
Aluminium Bars/Pipes		
E-10	Feet	14.5
D-35	Feet	12.0
D-33	Feet	5.0
D-32	Feet	22.0
Other Materials		
Star Lock	Unit	1
6-inch Handle	Unit	1
PVC Rubber	Feet	15.0

Figure 27: Aluminium Door (Length 6 feet * Width 2.5 feet) without Sheet



- **Aluminium Doors (Length 6 feet * Width 3 feet) without Aluminium Sheet**

The raw materials used for the proposed product include aluminium bars/pipes of different section numbers. Consumption of the required raw materials is shown in Table 13 shows and Figure 28 shows aluminium door (Length 6 feet * Width 3 feet) without aluminium sheet.

Table 13: Raw Material - Aluminium Doors (Length (6 Feet) * Width (3 Feet) without Aluminium Sheet)

Section Number	Unit of Measurement	Consumption per unit (Feet) / (Number)
Consumption of Aluminium Bars/Pipes		
E-10	Feet	15.0
D-35	Feet	12.0
D-33	Feet	6.0
D-32	Feet	24.0
Other Material Consumption		
Star Lock	Unit	1
6-inch Handle	Unit	1
PVC Rubber	Feet	18.0

Figure 28: Aluminium Door (Length 6 feet *Width 3 feet) without Aluminium Sheet



5.1 Machinery and Equipment

Machinery and equipment required for establishing a business unit for “Fabrication of Aluminium Doors and Windows” are discussed below:

Pillar/Vertical Drill machine

A drill machine is a tool used for making round holes or driving fasteners. Pillar/Vertical drills are free-standing machines that use a motor to rotate at variable speeds to drill holes in the aluminium bars/pipes. Figure 29 shows pillar drill machine.

Figure 29: Pillar Drill Machines



Cut-off Saw Machine

An abrasive saw, also known as a cut-off saw or chop saw, is a circular saw (a kind of power tool) which is typically used to cut hard materials, such as metals, tiles, concrete, etc. Figure 30 shows cut off saw machine.

Figure 30: Cut off Saw Machine



Grinding Machine

Grinding is a machining process that is used to remove extra material from a workpiece. As the grinding wheel turns, it cuts the material from the workpiece to create a smooth surface. After joining, the attached metal structures are ground using angle grinder to make their surfaces smooth and also to remove any sharp metal edges formed due to cutting. Figure 31 shows grinder machine.

Figure 31: Grinder Machine



Manual Drill Machine

Manual drill machine is used for making holes in the aluminium bars/pipes for screw fitting and to join one bars/pipes to another. Figure 32 shows manual drill machine.

Figure 32: Manual Drill Machine



General Tool Kit

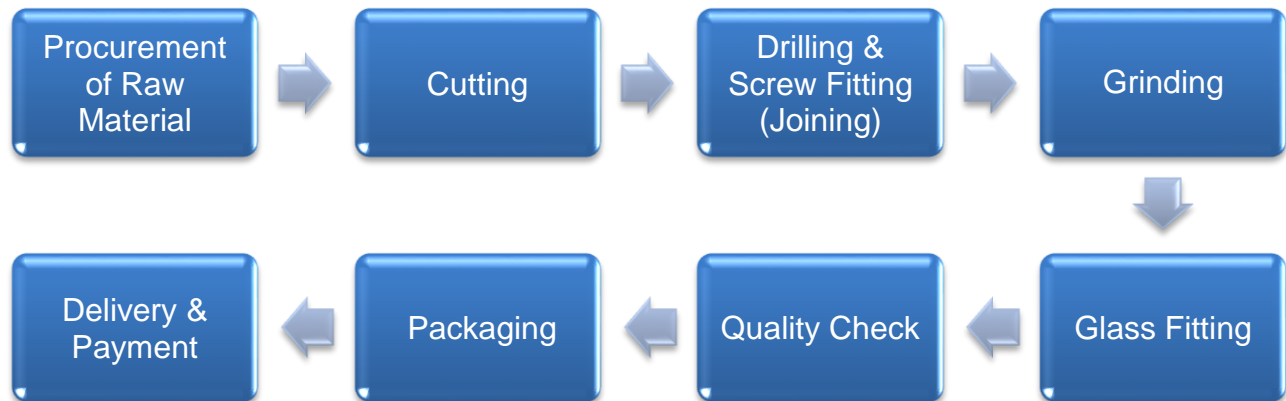
General Tool Kit includes fitting tools, such as wrenches, spanners, screwdrivers, pliers, etc. Figure 33 shows general tool kit.

Figure 33: General Tool Kit**Glass Cutter**

Glass cutter is a tool (also called glass cutter knife) that is used by fabricator for cutting glass. Figure 34 shows glass cutter tool.

Figure 34: Glass Cutter**5.2 Production Process Flow**

The process flow for fabrication of Aluminium doors and Windows is shown in figure 35.

Figure 35: Production Process Flow

Brief description of the process flow is as follows:

Procurement of Raw Materials

Raw materials include aluminium bars/pipes (having different sizes and section numbers), locks, joints, SS sliding wheels, screws and PVC rubber. All these raw materials are procured from the local markets of Pakistan. The proposed business maintains one-month raw materials stock.

Cutting

Cutting is the basic process in aluminium fabrication. Cutting of aluminium bars/pipes may be done by using laser cutting, waterjet cutting, shearing, sawing or flame cutting. However, in the proposed unit, cutting is done by cut-off saw machine which is a kind of power tool, typically used to cut hard materials, such as metals, tiles and concrete. In this step, the aluminium bars/pipes are cut into different sizes according to the design of the finished product. Figure 36 shows cutting process.

Figure 36: Cutting process**Drilling and Screw Fitting**

After cutting process, the next process is to drill holes in these aluminium bars/pipes by using either pillar or manual drill machine. After drilling, we use the screws in the drilled holes to join the separate parts of bars/pipes together. Figure 37 shows drilling and screw fitting process.

Figure 37: Drilling and Screw Fitting**Grinding**

After making aluminium frames of door and windows, the next process is grinding those to improve the finishing of the product. The grinding removes unwanted materials from the edges of the pipes that giving smooth and polished look. Figure 38 shows grinding process.

Figure 38: Grinding**Glass Fitting**

After successful completion of frames of aluminium doors and windows (prepared in cutting, drilling, screw fitting and grinding process), the next process is fitting of glass in the aluminium frames of doors and windows. The potential customers will provide the glass and proposed business in this regard will provide the glass fitting service. Figure 39 shows glass fitting process.

Figure 39: Glass Fitting**Quality check**

Before packaging, quality check is carried out on the products to ensure that they are made according to the standards and requirements of the customer. Following are the steps performed to ensure the quality check.

- The finished product dimension such as its size (length * width) should be appropriately measured according to standard requirements of the customers.
- The finished product should have a smooth and consistent finish.
- It should be confirmed that the surface of aluminium doors and windows is smooth, clean and do not have scratches.

- The windows are fully functional, operational and sliding easily without jamming.
- Glass attached to aluminium doors and windows are not broken and tightly fixed.

Packaging

After completion of satisfactory quality check, the final product is packed to ensure that it remains protected against scratches and other damages during transportation, handling and storage. Aluminium windows and doors are wrapped with thin polythene plastic sheet.

Delivery and payment

After packaging, the product is handed over to the customer after receiving full payment. According to the market norms, no credit facility is provided to the customers. The proposed business does not provide delivery services. The products are transported to the customer premises either by the manufacturer or by the customer. The customer pays the transportation cost of delivering the products to the customer premises.

5.3 Installed and Operational Capacities

The total production capacity of the proposed fabrication unit is dependent on the capacity of the team. There are two teams and each team has two skilled and two unskilled labor. The proposed unit would operate in a single shift of 8 hours per day and will have maximum capacity to produce 1396 units of aluminium and doors, which includes 3 feet x 3 feet aluminium windows (224 Units), 4 feet x 4 feet aluminium windows (149 Units), 4 feet x 3 feet aluminium windows (149 Units), 5 feet x 4 feet aluminium windows (149 Units), 6 feet x 4 feet aluminium windows (149 Units), 7 feet x 4 feet aluminium doors with aluminium sheet (64 Units), 6 feet x 2.5 feet aluminium doors with aluminium sheet (128 Units), 6 feet x 3 feet aluminium doors with aluminium sheet (128 Units), 7 feet x 4 feet aluminium doors without aluminium sheet (128 Units), 6 feet x 2.5 feet aluminium doors without aluminium sheet (64 Units), 6 feet x 3 feet aluminium doors without aluminium sheet (64 Units).

During first year of operation, the fabrication unit is expected to achieve 60% of its installed capacity and will produce 836 units of aluminium doors and windows, which includes 3 feet x 3 feet aluminium windows (134 Units), 4 feet x 4 feet aluminium windows (89 Units), 4 feet x 3 feet aluminium windows (89 Units), 5 feet x 4 feet aluminium windows (89 Units), 6 feet x 4 feet aluminium windows (90 Units), 7 feet x 4 feet aluminium doors with aluminium sheet (38 Units), 6 feet x 2.5 feet aluminium doors with aluminium sheet (77 Units), 6 feet x 3 feet aluminium doors with aluminium sheet (77 Units), 7 feet x 4 feet aluminium doors without aluminium sheet (77 Units), 6 feet x 2.5 feet aluminium doors without aluminium sheet (38 Units), 6 feet x 3 feet aluminium doors without aluminium sheet (38 Units). Table 14 shows the installed and operational capacities of the proposed unit.

Table 14: Installed and Operational Capacity

Particulars	Time required Per Unit (Hours)	Available Working Hours	Production Ratio	Product Wise Time (Hours)	Total Square Feet	Annual Production @ 100%	Annual Production @60%
Aluminium window (Length (3 feet) * Width (3 feet))	3.0	4,480	15%	672.0	9	224	134
Aluminium window (Length (4 feet) * Width (4 feet))	3.0		10%	448.0	16	149	89
Aluminium window (Length (4 feet) * Width (3 feet))	3.0		10%	448.0	12	149	89
Aluminium window (Length (5 feet) * Width (4 feet))	3.0		10%	448.0	20	149	89
Aluminium window (Length (6 feet) * Width (4 feet))	3.0		10%	448.0	24	149	90
Aluminium Doors (Length (7 feet) * Width (4 feet) with Aluminium Sheet)	3.5		5%	224.0	28	64	38
Aluminium Doors (Length (6 feet) * Width (2.5 feet) with Aluminium Sheet)	3.5		10%	448.0	15	128	77
Aluminium Doors (Length (6 feet) * Width (3 feet) with Aluminium sheet)	3.5		10%	448.0	18	128	77
Aluminium Doors (Length (7 feet) * Width (4 feet) without Aluminium sheet)	3.5		10%	448.0	28	128	77

Aluminium Doors (Length (6 feet)* Width (2.5 feet) without Aluminium sheet)	3.5		5%	224.0	15	64	38
Aluminium Doors (Length (6 feet) * Width (3 feet) without Aluminium sheet)	3.5		5%	224.0	18	64	38
Total				4,480		1,396	836

6. CRITICAL FACTORS

Before making the decision to invest in the business of fabrication of aluminium doors and windows business, one should carefully analyze the associated risk factors. The important considerations in this regard include:

- Good technical know-how and knowledge of the business
- Easy availability of quality raw materials
- Effective market linkages
- Easy availability of skilled workforce
- Awareness about new product designs and styles
- Awareness about the current modern trends

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

The proposed business "Fabrication of Aluminium Doors and Windows" will be established in large cities like Karachi, Lahore, Islamabad, Peshawar, Rawalpindi, Quetta, Faisalabad, Sialkot, Hyderabad, Muzaffarabad, Gujranwala, Gilgit, Multan, Sialkot, Mirpur, Skardu, Sukkur, Mardan or any other major city of Pakistan. The large cities are more suitable for the proposed business due to presence of large customer base. Furthermore, majority of public and private sector residential buildings, private/public sector health institutes, public/private sector educational institutes, large restaurants, hostels and hotels are also located in these cities. All the aforementioned buildings offer a big market for the proposed business. Additionally, due to increase in the urban population of Pakistan, large number of people are migrating to big cities. The work of aluminium doors and windows in the buildings, houses, offices and restaurants are in high demand because of increasing trend of urbanization in the cities.

In addition to large cities, such units may also be established in small cities / towns, which have a sizeable population and where the basic requirements of the business, such as raw material availability, skilled manpower availability, market access, etc. can be adequately fulfilled.

8. POTENTIAL TARGET CUSTOMERS / MARKETS

Potential target customers for this proposed unit are large houses, shopping malls, industrial units, schools, hospitals, clinics, hotels, restaurants and offices which require installation of aluminium doors and windows. Currently, aluminium doors and windows also seen as a status symbol in higher class, which also triggers a demand for the proposed products. Therefore, homeowners in upper to upper-middle class of the local population are one of the major potential customers of the proposed business. In addition to homeowners, there is high demand of aluminium doors and windows for luxury apartments, hotels, villas and shopping malls.

As per the population census of 2017, upper middle and upper classes constituted a sizeable portion of the total population; with 18.69 million people categorized under these groups.²

During the previous two decades, Pakistan has witnessed a fast growth of modern housing societies and commercial buildings in all the major cities of the country. The residents of these societies belong to the upper middle and upper class of society and thus can be classified as the primary customers of proposed business. Therefore, metropolitan cities and cities with large urban and commercial base are considered more suitable for this type of business.

As per Pakistan Bureau of Statistics, around 0.5 million houses were under construction in 2017-18 in Pakistan.³ Province-wise details of these houses is given in Table 15. The construction industry of Pakistan recorded a growth rate of 8.1% in 2021. Rapid growth in construction industry is expected to directly raise the demand for the proposed products.

Table 15⁴: Under-Construction Houses

Provinces	Under-Construction Houses
Punjab	212,382
Sindh	166,344
Khyber Pakhtunkhwa	60,577
Balochistan	45,047
Islamabad	3,452
Total	487,802

² : <https://www.pbs.gov.pk/content/final-results-census-2017-018>

³ <https://invest.gov.pk/housing-and-construction>

⁴ <https://www.pbs.gov.pk/content/final-results-census-2017-018>

The construction industry in Pakistan is expected to grow by 5.3% in real terms in 2021, following a 7.1% growth in 2020.⁵ This upward revision is mainly due to increased investment in the construction industry. According to Ministry of Information and Broadcasting, the federal and provincial governments approved construction projects totaling PKR1 trillion (US\$6.1 billion) as of July 2021.⁶

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of fabrication of aluminium doors and windows. 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.

All the figures in this financial model have been calculated after carefully taking into account the relevant assumptions and target market.

9.1 Initial Project Cost Estimates

Table 16 provides fixed and working capital requirements for establishment and operations.

Table 16: Initial Project Cost

Cost Item	Cost (PKR)	Details Reference
Land	-	9.1.1
Building / Infrastructure	246,479	9.1.2
Machinery & equipment	440,000	9.1.3
Tools & Equipment	82,000	9.1.4
Office equipment	406,000	9.1.5
Furniture & fixtures	316,000	9.1.6
Office vehicles	418,500	9.1.7
Pre-operating costs	151,762	9.1.8
Advance against Building Rent	174,000	9.1.9
Total Capital Cost	2,234,741	
Equipment spare part inventory	3,667	

⁵ <https://finance.yahoo.com/news/pakistan-construction-market-trends-opportunities-165800386.html>

⁶ <https://finance.yahoo.com/news/pakistan-construction-market-trends-opportunities-165800386.html>

Raw material inventory	1,024,333	
Prepaid Building Rent	58,000	
Cash	1,000,000	
Working Capital	2,086,000	
Total Project Cost	4,320,741	

9.1.1. Land

The proposed unit for fabrication of aluminium doors and windows will be established in a rented building to avoid the high cost of land. Suitable location for setting up of the unit like this can be easily found on rent. Therefore, no land cost has been added to the project cost. Total space requirement for the proposed fabrication unit has been estimated as 865 sq. ft. (3.84 Marla). The breakup of space requirement is provided in Table 17.

Table 17: Breakup of the Space Requirement

Description	% Break-Up	Number	Area (Sq. Ft.)
Shope Area	14%	1	120
Workshop	43%	1	375
Store Room Raw Material	17%	1	150
Store Room Finished Goods	17%	1	150
Washroom	8%	2	70
Total	100%		865

9.1.2. Building

There will be no cost of building since the proposed fabrication unit of aluminium doors and windows will be started in the rented premises. However, there will be a renovation cost, required to make the building usable for the business. The proposed fabrication unit requires estimated electricity load of around 11.67 KW for which an electricity connection under the industrial supply tariff, three phase will be required. Cost of such electricity connection has not been considered in this document since electricity connection is generally available in such rented premises. Building rent of PKR 58,000 per month has been included in the operating cost. Table 18 provides details of building renovation cost.

Table 18: Renovation Cost

Cost Item	Unit of Measurement	Total Units	Cost/Unit/ Sq.feet	Total Cost (PKR)
Paint Cost	Liter	37	800	29,384
Labour Cost	Feet	3,673	15	55,095
Wall Racks	Units	10	15,000	150,000
Curtains	Units	2	6,000	12,000
Total Renovation Cost (PKR)				246,479

9.1.3. Machinery and Equipment Requirement

Table 19 provides details of machinery and equipment required for the project.

Table 19: Machinery and Equipment Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Total Cost (PKR)
Pillar Drill Machine (1.5 HP Motor , 13 mm Drilling Capacity)	1	30,000	30,000
Cut off Saw Machine (4 HP)	2	50,000	100,000
Generator	1	310,000	310,000
Total Cost			440,000

9.1.4. Tools and Equipment Requirement

Table 20: Tools and equipment Requirement provides details of tools and equipment required for the project.

Table 20: Tools and equipment Requirement

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Grinder Machine	2	10,000	20,000
Drill Machine- Manual (600 W, 13 mm drilling Capacity)	2	6,000	12,000
General Tool Kit	2	15,000	30,000
Working Tables (Adda)	2	10,000	20,000

Total Cost			82,000
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9.1.5. Office Equipment Requirement

Table 21 presents the office equipment requirement proposed for the unit.

Table 21: Office Equipment Requirement

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Air Conditioners	1	85,000	85,000
Laptop / Computer	1	50,000	50,000
Printer	1	42,000	42,000
LED/LCD 32 inch	1	36,000	36,000
Water Dispenser	2	24,000	48,000
Ceiling Fan	8	8,000	64,000
Exhaust Fan	5	4,500	22,500
Bracket Fan	2	10,500	21,000
Wi-Fi Router and Connection	1	3,500	3,500
Security System (8 Cams, 1 MP)	8	2,500	20,000
DVR	1	14,000	14,000
Total			406,000

9.1.6. Furniture and Fixtures Requirement

Table 22 gives details of the furniture and fixture required for the project.

Table 22: Furniture and Fixtures Requirement

Cost Item	Units	Unit Cost(PKR)	Total Cost(PKR)
Executive Tables	1	60,000	60,000
Executive Chairs	1	30,000	30,000
Office Tables	2	30,000	60,000
Office Chairs	3	13,000	39,000
Sales Counter	1	30,000	30,000
Visitors Chairs	4	13,000	52,000
Sofa Sets	1	45,000	45,000

Total	316,000
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9.1.7. Vehicle Requirement

Details of vehicles required for the project is given in Table 23.

Table 23: Vehicle Requirement

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Loader Rickshaw	1	300,000	300,000
Motorcycle	1	112,000	112,000
Registration and Number plate Charges Bike		6,500	6,500
Registration and Number plate Charges Loader Rickshaw		13,000	13,000
Total Cost			431,500

9.1.8. Pre-Operating Cost Requirement

Details of pre operating cost required for the project is given in Table 24

Table 24: Pre-Operating Cost Requirement

Description	No.of Months	Unit Cost (PKR)	Total (PKR)
Production Supervisor	1	40,000	40,000
Skilled Worker	1	30,000	30,000
Sales Man	1	30,000	30,000
Security Guard	1	25,000	25,000
Utilities			26,762
Total (PKR)			151,762

9.1.9. Advance against Building Rent

Details of advance against building rent for the project is given in **Error! Reference source not found.**Table 25.

Table 25: Advance against Building Rent

Cost Item	Months	Unit Cost (PKR)	Total Cost (PKR)
Advance	3	58,000	174,000
Total Cost			174,000

9.1.10. Breakeven Analysis

Table 26 shows calculation of break-even analysis.

Table 26: Break-Even Analysis

Description	Amount First Year (PKR)	Ratios
Sales (PKR) – A	19,052,685	100%
Variable Cost (PKR) – B	15,274,385	80%
Contribution (PKR) (A-B) = C	3,778,300	20%
Fixed Cost (PKR) – D	2,368,836	12%
Contribution Margin	20%	
Breakeven Revenue	11,945,234	
Total Units Sold	1,396	
Contribution Margin Per Unit	4,519	
Breakeven Units	524	
Breakeven Capacity	38%	

9.2 Revenue Generation

Based on 60% capacity utilization, sales revenue during the first year of operations is shown in Table 27.

Table 27: Revenue Generation

Product	Production / Year (units)	Capacity Utilization @ 60%	Price/ Unit	Total Revenue (PKR)
Aluminium window (Length (3 feet) * Width (3 feet))	224	134	14,171	1,898,914
Aluminium window (Length (4 feet) * Width (4 feet))	149	89	20,344	1,810,616
Aluminium window (Length (4 feet) * Width (3 feet))	149	89	17,818	1,585,802
Aluminium window (Length (5 feet) * Width (4 feet))	149	89	24,380	2,169,820
Aluminium window (Length (6 feet) * Width (4 feet))	149	90	28,416	2,557,440
Aluminium Doors (Length (7 feet) * Width (4 feet) with Aluminium Sheet)	64	38	34,508	1,311,304
Aluminium Doors (Length (6 feet) * Width (2.5 feet) with Aluminium Sheet)	128	77	23,226	1,788,402
Aluminium Doors (Length (6 feet) * Width (3 feet) with Aluminium sheet)	128	77	26,071	2,007,467
Aluminium Doors (Length (7 feet) * Width (4 feet) without Aluminium sheet)	128	77	29,592	2,278,584
Aluminium Doors (Length (6 feet) * Width (2.5 feet) without Aluminium sheet)	64	38	20,480	778,240
Aluminium Doors (Length (6 feet) * Width (3 feet) without Aluminium sheet)	64	38	22,792	866,096
Total	1,396	836		19,052,685

9.3 Variable Cost Estimate

Variable costs of the project have been provided in Table 28.

Table 28: Variable Cost Estimate

Description of Costs	Amount (PKR)
Aluminium window (Length (3 feet) * Width (3 feet))	1,440,634
Aluminium window (Length (4 feet) * Width (4 feet))	1,269,496
Aluminium window (Length (4 feet) * Width (3 feet))	1,179,962
Aluminium window (Length (5 feet) * Width (4 feet))	1,493,420
Aluminium window (Length (6 feet) * Width (4 feet))	1,736,640
Aluminium Doors (Length (7 feet) * Width (4 feet) with Aluminium Sheet)	726,104
Aluminium Doors (Length (6 feet) * Width (2.5 feet) with Aluminium Sheet)	1,153,152
Aluminium Doors (Length (6 feet) * Width (3 feet) with Aluminium sheet)	1,245,167
Aluminium Doors (Length (7 feet) * Width (4 feet) without Aluminium sheet)	1,092,784
Aluminium Doors (Length (6 feet) * Width (2.5 feet) without Aluminium sheet)	464,740
Aluminium Doors (Length (6 feet) * Width (3 feet) without Aluminium sheet)	489,896
Direct Labor	1,800,000
Utilities Cost	257,172
Packing Cost	122,920
Machinery Maintenance – Cost	44,000
Travelling expense	204,000
Communications expense (phone, fax, mail, internet, etc.)	102,000
Office expenses (stationery, entertainment, janitorial services, etc.)	204,000
Office vehicle running expense	248,298
Total	15,274,385

Table 29: Raw Material Cost

Material	Cost Per unit (PKR)	Units	Total Cost (PKR)
Aluminium window (Length (3 feet) * Width (3 feet))	10,751	134	1,440,634
Aluminium window (Length (4 feet) * Width (4 feet))	14,264	89	1,269,496
Aluminium window (Length (4 feet) * Width (3 feet))	13,258	89	1,179,962
Aluminium window (Length (5 feet) * Width (4 feet))	16,780	89	1,493,420
Aluminium window (Length (6 feet) * Width (4 feet))	19,296	90	1,736,640
Aluminium Doors (Length (7 feet) * Width (4 feet) with Aluminium Sheet)	19,108	38	726,104
Aluminium Doors (Length (6 feet) * Width (2.5 feet) with Aluminium Sheet)	14,976	77	1,153,152
Aluminium Doors (Length (6 feet) * Width (3 feet) with Aluminium sheet)	16,171	77	1,245,167
Aluminium Doors (Length (7 feet) * Width (4 feet) without Aluminium sheet)	14,192	77	1,092,784
Aluminium Doors (Length (6 feet) * Width (2.5 feet) without Aluminium sheet)	12,230	38	464,740
Aluminium Doors (Length (6 feet) * Width (3 feet) without Aluminium sheet)	12,892	38	489,896
Total			12,291,995

Table 30: Raw Material - Aluminium Window (Length (3 feet) * Width (3 feet))

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
DC-26B	Feet	420	3.0	1,260
DC-30B	Feet	350	9.0	3,150
M-23	Feet	200	6.0	1,200
M-28	Feet	250	6.0	1,500

M-24	Feet	240	6.0	1,440
D-29	Feet	200	9.0	1,800
SS Sliding wheels	Unit	100	2	200
Lock	Unit	120	1	120
PVC Rubber	Feet	9	9	81
Material Cost (PKR)				10,751

Table 31: Raw Material - Aluminium Window (Length (4 feet) * Width (4 feet))

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
DC-26B	Feet	420	4.0	1,680
DC-30B	Feet	350	12.0	4,200
M-23	Feet	200	8.0	1,600
M-28	Feet	250	8.0	2,000
M-24	Feet	240	8.0	1,920
D-29	Feet	200	12.0	2,400
SS Sliding wheels	Unit	100	2	200
Lock	Unit	120	1	120
PVC Rubber	Feet	9	16.0	144
Material Cost (PKR)				14,264

Table 32: Raw Material - Aluminium Window (Length (4 feet) * Width (3 feet))

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
DC-26B	Feet	420	3.0	1,260
DC-30B	Feet	350	11.0	3,850
M-23	Feet	200	8.0	1,600
M-28	Feet	250	8.0	2,000

M-24	Feet	240	8.0	1,920
D-29	Feet	200	11	2,200
SS Sliding wheels	Unit	100	2	200
Lock	Unit	120	1	120
PVC Rubber	Feet	9	12.0	108
Material Cost (PKR)				13,258

Table 33: Raw Material - Aluminium Window (Length (5 feet) * Width (4 feet))

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
DC-26B	Feet	420	4.0	1,680
DC-30B	Feet	350	14.0	4,900
M-23	Feet	200	10.0	2,000
M-28	Feet	250	10.0	2,500
M-24	Feet	240	10.0	2,400
D-29	Feet	200	14.0	2,800
SS Sliding wheels	Unit	100	2	200
Lock	Unit	120	1	120
PVC Rubber	Feet	9	20.0	180
Material Cost (PKR)				16,780

Table 34: Raw Material - Aluminium Window (Length (6 feet) * Width (4 feet))

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
DC-26B	Feet	420	4.0	1,680
DC-30B	Feet	350	16.0	5,600
M-23	Feet	200	12.0	2,400
M-28	Feet	250	12.0	3,000

M-24	Feet	240	12.0	2,880
D-29	Feet	200	16.0	3,200
SS Sliding wheels	Unit	100	2	200
Lock	Unit	120	1	120
PVC Rubber	Feet	9	24.0	216
Material Cost (PKR)				19,296

Table 35: Raw Material - Aluminium Doors (Length (7 feet) * Width (4 feet) with Aluminium Sheet)

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
E-10	Feet	250	18.0	4,500
D-35	Feet	280	14.0	3,920
D-33	Feet	350	8.0	2,800
D-32	Feet	80	14.0	1,120
D-52	Feet	250	4.0	1,000
D-61 (Aluminium Sheet)	Square Feet	290	14.0	4,060
Star Lock	Unit	1000	1	1,000
PVC Rubber	Feet	9	12.0	108
Handle 6"	Unit	600	1	600
Material Cost (PKR)				19,108

Table 36: Raw Material - Aluminium Doors (Length (6 feet) * Width (2.5 feet) with Aluminium Sheet)

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
E-10	Feet	250	14.5	3,625
D-35	Feet	280	12.0	3,360

D-33	Feet	350	5.0	1,750
D-32	Feet	80	22.0	1,760
D-52	Feet	250	2.5	625
D-61-Aluminium Sheet	Square Feet	290	7.5	2,175
Star Lock	Unit	1000	1	1,000
PVC Rubber		9	9.0	81
Handle 6"	Unit	600	1	600
Material Cost (PKR)				14,976

Table 37: Raw Material - Aluminium Doors (Length (6 feet) * Width (3 feet) with Aluminium Sheet)

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
E-10	Feet	250	15.0	3,750
D-35	Feet	280	12.0	3,360
D-33	Feet	350	6.0	2,100
D-32	Feet	80	24.0	1,920
D-52	Feet	250	3.0	750
D-61 (Aluminium Sheet)	Square Feet	290	9.0	2,610
Star Lock	Unit	1000	1	1,000
PVC Rubber	Feet	9	9.0	81
Handle 6"	Unit	600	1	600
Material Cost (PKR)				16,171

Table 38: Raw Material - Aluminium Doors (Length (7 feet) * Width (4 feet) without Aluminium Sheet)

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
E-10	Feet	250	18.0	4,500
D-35	Feet	280	14.0	3,920
D-33	Feet	350	8.0	2,800
D-32	Feet	80	14.0	1,120
Star Lock	Unit	1000	1	1,000
Handle 6"	Unit	600	1	600
PVC Rubber	Feet	9	28.0	252
Material Cost (PKR)				14,192

Table 39: Raw Material - Aluminium Doors (Length (6 feet) * Width (2.5 feet) without Aluminium Sheet)

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
E-10	Feet	250	14.5	3,625
D-35	Feet	280	12.0	3,360
D-33	Feet	350	5.0	1,750
D-32	Feet	80	22.0	1,760
Star Lock	Unit	1000	1.0	1,000
Handle 6"	Unit	600	1.0	600
PVC Rubber	Feet	9	15.0	135
Material Cost (PKR)				12,230

Table 40: Raw Material - Aluminium Doors (Length (6 feet) * Width (3 feet) without Aluminium Sheet)

Item	Unit of Measurement	Price per /Sq. Feet	Consumption per unit	Cost per unit (PKR)
Aluminium				
E-10	Feet	250	15.0	3,750
D-35	Feet	280	12.0	3,360
D-33	Feet	350	6.0	2,100
D-32	Feet	80	24.0	1,920
Star Lock	Unit	1000	1.0	1,000
Handle 6"	Unit	600	1.0	600
PVC Rubber	Feet	9	18.0	162
Material Cost (PKR)				12,892

Table 41: Direct Labor

Post	No. of personnel	Monthly Salary (PKR)	Annual Salary (PKR)
Production Supervisor	1	40,000	480,000
Worker- Skilled	2	30,000	720,000
Worker- Unskilled	2	25,000	600,000
Total Direct Labor (PKR)	5		1,800,000

Table 42: Machinery Maintenance Cost

Cost Item	Cost of Machinery (PKR)	Machinery Maintenance Rate	Total Cost (PKR)
Maintenance Cost	440,000	10%	44,000
Total Cost (PKR)			44,000

Table 43: Variable Cost Assumptions

Particulars	Details
Travelling expense	20% of administration expense

Communications expense (phone, mail, internet)	10% of administration expense
Office expenses (stationery, entertainment, janitorial services, etc.)	20% of administration expense

9.4 Fixed Cost Estimate

Table 44 shows the estimated fixed cost of the project.

Table 44: Fixed Cost Estimate

Description of Costs	Amount (PKR)
Management Staff	1,020,000
Building rental expense	696,000
Utilities	63,974
Promotional expense	190,527
Depreciation expense	367,983
Amortization of pre-operating costs	30,352
Total	2,368,836

Table 45: Fixed Cost Assumption-Management Staff Salary

Post	No of personnel	Monthly Salary (PKR)	Annual Salary (PKR)
Sales Man	1	30,000	360,000
Procurement Officer	1	30,000	360,000
Security Guard	1	25,000	300,000
Total (PKR)			1,020,000

Table 46: Fixed Cost Assumptions

Particulars	Details
Promotional expense	1.0% of revenue
Depreciation expense	
Building	10% of cost
Machinery	33%
Vehicle & Office Equipment	15% of cost

9.5 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 proposed business, which is shown in Table 47.

Table 47: Financial Feasibility Analysis

Description	Project
IRR	55%
NPV (PKR)	7,349,426
Payback Period (years)	2.39
Projection Years	10
Discount rate used for NPV	25%

9.6 Financial Feasibility Analysis with 50% Debt

The financial feasibility analysis provides the information regarding projected IRR, NPV and payback period of the proposed business on the basis of Debt: Equity Model (50:50), which is shown in Table 48.

Table 48: Financial Feasibility Analysis with 50% Debt

Description	Project
IRR	56%
NPV (PKR)	9,084,943
Payback Period (years)	2.38
Projection Years	10
Discount rate used for NPV	22%

9.7 Human Resource Requirement

For the 1st year of operations, the Fabrication of Aluminium doors and window Work shall require the workforce at a salary cost shown in Table 49.

Table 49: Human Resource Requirement

Position	No of Personnel	Monthly Salary (PKR)	Annual Salary (PKR)
Production supervisor	1	40,000	480,000
Worker- Skilled	2	30,000	720,000
Worker- Unskilled	2	25,000	600,000
Salesman	1	30,000	360,000
Procurement/Accountants Officer	1	30,000	360,000
Security Guard	1	25,000	300,000
Total (PKR)	8		2,820,000

10. CONTACT DETAILS

Contact details of some suppliers of the relevant machinery and equipment are provided in Table 50.

Table 50: Contact Details

Supplier Name	Origin	Nature of Supplier	Contact Number	Email/Website
SS Aluminium Trader	Lahore	Aluminium for doors & windows	(042) 37110010	
Buttar Enterprises	Lahore	Aluminium for doors & windows	0321 4467295	https://www.facebook.com/buttaraluminium
Pakistan Alco Products (Pvt)Ltd.	Lahore	Aluminium for doors & windows	0330 9179893	http://pakistanalco.com/
Metalife Aluminium Distributor	Karachi	Aluminium for doors & windows	0321 3429750	
Prime Aluminium House Peshawar	Peshawar	Aluminium Supplier	0321 8466063	
Zia Glass and Aluminium works	Peshawar	Aluminium Glass & mirror supplier	0345 9199947	
Lucky Aluminium	Sialkot	Material Supplier	0321 6142836	http://www.luckyaluminium.com/

Mughal Aluminium And Steel	Faisalabad	Aluminium Supplier	0324 7693188	https://mughal-aluminium-and-steel.business.site/?utm_source=gmb&utm_medium=referral
Ittehad Aluminium & Glass Co	Islamabad	Aluminium and glass work	(051) 2227683	https://ittehadaluminium.com.pk/
Lahore Central Iron & Hardware Machinery Merchants	Lahore	Machinery and tools	(042) 37641426	
Japan Hardware & Machinery Store	Peshawar	Machinery	(091) 2550148	
Pakistan Machine Tool Factory Private Limited	Karachi	Machinery and equipment	(021) 35082450	
Mechanical Zone	Islamabad	Machinery and equipment	0321 5086986	
Pak Hardware Machinery	Quetta	Machinery and equipment	0302 5130250	

11. USEFUL WEB LINK

Table 51: Useful Web Links

Name of the Organization	Email/Website
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program	www.nbdp.org.pk
Government of Pakistan	www.pakistan.gov.pk
Federal Ministry of Industries & Production	www.moip.gov.pk/
State Bank of Pakistan	www.sbp.org.pk
Trade Development Authority of Pakistan	www.tdap.gov.pk
Punjab Small Industries Corporation (PSIC)	www.psic.org.pk
Sindh Small Industries Corporation (SSIC)	www.ssic.gos.pk
Small Industries Development Board KPK	www.small_industries_de.kp.gov.pk
Industries and Commerce Department 9	www.dgicd.gob.pk/
Federal Board of Revenue	www.fbr.gov.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Khyber Pakhtunkhwa	www.kp.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Azad Jammu and Kashmir	www.ajk.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Sindh Small Industries Corporation	www.ssic.gos.pk
Small Industries Development Board Khyber Pakhtunkhwa	www.small_industries_de.kp.gov.pk
All Pakistan Aluminium Utensils Manufacturers Association	http://info-pk.com/all_pakistan_aluminium_utensils_manufact/10360/

12. ANNEXURES

12.1 Income Statement

Calculations	SMEDA									
Income Statement										
Revenue	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Aluminum Window (Length (3 feet) * Width (3 feet))	1,898,914	2,282,069	2,706,769	3,194,746	3,754,530	4,395,737	5,154,718	5,685,654	6,271,277	6,917,218
Aluminum Window (Length (4 feet) * Width (4 feet))	1,810,616	2,176,625	2,574,072	3,057,602	3,583,318	4,218,107	4,909,013	5,414,642	5,972,350	6,587,502
Aluminum Window (Length(4feet)*Width(3feet))	1,585,802	1,906,366	2,254,464	2,677,956	3,138,398	3,694,369	4,299,489	4,742,336	5,230,797	5,769,569
Aluminum Window (Length (5 feet) * Width (4 feet))	2,169,820	2,608,441	3,084,736	3,664,192	4,294,204	5,054,928	5,882,901	6,488,840	7,157,191	7,894,382
Aluminum Window (Length (6 feet) * Width (4 feet))	2,557,440	3,040,256	3,629,972	4,270,783	5,005,091	5,891,749	6,856,790	7,563,039	8,342,032	9,201,261
Aluminum Doors (Length (7Feet)*Width(4Feet) with Aluminum Sheet)	1,311,304	1,598,618	1,889,223	2,222,734	2,604,906	3,042,223	3,604,133	3,975,359	4,384,821	4,836,458
Aluminum Doors(Length (6Feet)*Width (2.5Feet)with Aluminum Sheet)	1,788,402	2,126,317	2,543,126	2,992,073	3,506,523	4,133,124	4,809,781	5,305,189	5,851,623	6,454,341
Aluminum Doors (Length (6Feet) * Width(3Feet)with aluminum sheet)	2,007,467	2,386,774	2,854,639	3,358,578	3,936,044	4,639,399	5,398,941	5,955,032	6,568,401	7,244,946
Aluminum Doors (Length(7Feet)* Width(4Feet)without Aluminum sheet)	2,278,584	2,709,118	3,240,170	3,812,169	4,467,623	5,265,970	6,128,091	6,759,285	7,455,491	8,223,407
Aluminum Doors(Length(6Feet)* Width(2.5Feet)without Aluminum sheet)	778,240	948,756	1,121,227	1,319,161	1,545,974	1,805,516	2,139,001	2,359,318	2,602,328	2,870,368
Aluminum Doors(Length (6Feet)* Width(3Feet)without Aluminum sheet)	866,096	1,055,862	1,247,803	1,468,082	1,720,500	2,009,342	2,380,474	2,625,663	2,896,107	3,194,405
Total Revenue	19,052,685	22,839,202	27,146,203	32,038,076	37,557,110	44,150,464	51,563,335	56,874,358	62,732,417	69,193,856
<i>Cost of sales</i>										
Material Cost										
Aluminum Window (Length (3 feet) * Width (3 feet))	1,440,634	1,731,320	2,053,523	2,423,732	2,848,419	3,334,879	3,910,689	4,313,490	4,757,780	5,247,831
Aluminum Window (Length (4 feet) * Width (4 feet))	1,269,496	1,526,120	1,804,786	2,143,808	2,512,409	2,957,485	3,441,908	3,796,424	4,187,456	4,618,764
Aluminum Window (Length(4feet)*Width(3feet))	1,179,962	1,418,487	1,677,499	1,992,611	2,335,216	2,748,902	3,199,159	3,528,673	3,892,126	4,293,015
Aluminum Window (Length (5 feet) * Width (4 feet))	1,493,420	1,795,309	2,123,129	2,521,950	2,955,568	3,479,151	4,049,019	4,466,068	4,926,073	5,433,459
Aluminum Window (Length (6 feet) * Width (4 feet))	1,736,640	2,064,498	2,464,947	2,900,093	3,398,727	4,000,816	4,656,131	5,135,712	5,664,691	6,248,154
Aluminum Doors (Length (7Feet)*Width(4Feet) with Aluminum Sheet)	726,104	885,197	1,046,113	1,230,787	1,442,406	1,684,560	1,995,705	2,201,262	2,427,992	2,678,076
Aluminum Doors(Length (6Feet)*Width (2.5Feet)with Aluminum Sheet)	1,153,152	1,371,038	1,639,794	1,929,273	2,260,987	2,665,016	3,101,321	3,420,757	3,773,095	4,161,724
Aluminum Doors(Length (6Feet)* Width(3Feet)with aluminum sheet)	1,245,167	1,480,439	1,770,641	2,083,218	2,441,401	2,877,670	3,348,789	3,693,714	4,074,167	4,493,806
Aluminum Doors(Length(7Feet)* Width(4Feet)without Aluminum sheet)	1,092,784	1,299,263	1,553,950	1,828,274	2,142,623	2,525,502	2,938,966	3,241,679	3,575,572	3,943,856
Aluminum Doors (Length(6Feet)* Width(2.5Feet)without Aluminum sheet)	464,740	566,567	669,561	787,761	923,206	1,078,196	1,277,343	1,408,909	1,554,027	1,714,092
Aluminum Doors(Length (6Feet)* Width(3Feet)without Aluminum sheet)	489,896	597,235	705,804	830,401	973,179	1,136,558	1,346,485	1,485,172	1,638,145	1,806,874
<i>Packing Cost</i>	122,920	147,355	175,097	206,719	242,341	284,887	332,655	366,919	404,711	446,396
<i>Utilities Cost</i>	257,172	290,984	328,535	370,202	416,403	467,592	524,271	565,688	610,378	658,598
<i>Generator Fuel Cost</i>	102,869	116,394	131,414	148,081	166,561	187,037	209,708	226,275	244,151	263,439
<i>Direct Labor</i>	1,800,000	1,974,600	2,166,136	2,376,251	2,606,748	2,859,602	3,136,984	3,441,271	3,775,074	4,141,257
<i>Machinery Maintenance - Cost</i>	44,000	48,532	53,531	59,044	65,126	71,834	79,233	87,394	96,396	106,324
Total cost of sales	14,618,955	17,313,337	20,364,460	23,832,206	27,731,320	32,359,688	37,548,365	41,379,410	45,601,834	50,255,664
Gross Profit	4,433,730	5,525,865	6,781,742	8,205,869	9,825,790	11,790,776	14,014,969	15,494,948	17,130,583	18,938,192
<i>General administration & selling expenses</i>										
Management Staff	1,020,000	1,118,940	1,227,477	1,346,542	1,477,157	1,620,441	1,777,624	1,950,054	2,139,209	2,346,712
Building rental expense	696,000	765,600	842,160	926,376	1,019,014	1,120,915	1,233,006	1,356,307	1,491,938	1,641,132
Utilities	63,974	72,385	81,726	92,091	103,584	116,317	130,417	140,720	151,836	163,832
Travelling expense	204,000	223,788	245,495	269,308	295,431	324,088	355,525	390,011	427,842	469,342
Communications expense (phone, fax, mail, internet, etc.)	102,000	111,894	122,748	134,654	147,716	162,044	177,762	195,005	213,921	234,671
Office vehicles running expense	248,298	273,873	302,082	333,196	367,516	405,370	447,123	1,137,487	1,254,648	1,383,877
Office expenses (stationery, entertainment, janitorial services, etc.)	204,000	223,788	245,495	269,308	295,431	324,088	355,525	390,011	427,842	469,342
Promotional expense	190,527	228,392	271,462	320,381	375,571	441,505	515,633	568,744	627,324	691,939
Depreciation expense	367,983	367,983	367,983	236,568	231,348	460,973	416,305	637,238	414,571	423,880
Amortization of pre-operating costs	30,352	30,352	30,352	30,352	30,352	-	-	-	-	-
Subtotal	3,127,134	3,416,995	3,736,981	3,958,778	4,343,120	4,975,742	5,408,920	6,765,576	7,149,131	7,824,727
Operating Income	1,306,596	2,108,870	3,044,762	4,247,091	5,482,670	6,815,034	8,606,049	8,729,372	9,981,451	11,113,465
Gain / (loss) on sale of machinery & equipment	-	-	-	-	208,800	-	-	43,182	-	-
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	101,500	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	104,625	-	-	-
Earnings Before Interest & Taxes	1,306,596	2,108,870	3,044,762	4,247,091	5,691,470	6,815,034	8,812,174	8,772,555	9,981,451	11,113,465
Earnings Before Tax	1,306,596	2,108,870	3,044,762	4,247,091	5,691,470	6,815,034	8,812,174	8,772,555	9,981,451	11,113,465
Tax	238,159	285,490	381,190	694,127	1,127,441	1,505,261	2,204,260	2,190,393	2,613,507	3,009,712
NET PROFIT/(LOSS) AFTER TAX	1,068,437	1,823,380	2,663,572	3,552,964	4,564,029	5,309,773	6,607,914	6,582,161	7,367,944	8,103,753

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
Assets											
<i>Current assets</i>											
Cash & Bank	1,000,000	1,939,684	2,636,121	3,224,110	3,737,983	7,116,114	11,796,337	15,671,284	21,744,167	27,939,212	43,744,928
Accounts receivable	-	-	-	-	-	-	-	-	-	-	-
Raw material inventory	1,024,333	1,227,956	1,609,438	2,095,802	2,710,023	3,513,937	4,525,750	5,506,068	6,698,732	8,149,738	-
Equipment spare part inventory	3,667	4,433	5,359	6,478	7,831	9,467	11,444	13,835	16,725	20,218	-
Pre-paid building rent	58,000	63,800	70,180	77,198	84,918	93,410	102,751	113,026	124,328	136,761	-
Total Current Assets	2,086,000	3,235,872	4,321,097	5,403,588	6,540,754	10,732,927	16,436,281	21,304,213	28,583,952	36,245,929	43,744,928
<i>Fixed assets</i>											
Land	-	-	-	-	-	-	-	-	-	-	-
Building/Infrastructure	246,479	221,831	197,183	172,535	147,887	123,240	98,592	73,944	49,296	24,648	0
Machinery & equipment	522,000	349,740	177,480	113,176	72,330	732,539	609,415	331,809	55,282	188,536	1,225,786
Furniture & fixtures	316,000	268,600	221,200	173,800	126,400	79,000	31,600	600,290	510,246	420,203	330,159
Office vehicles	418,500	355,725	292,950	230,175	167,400	104,625	41,850	868,873	738,542	608,211	477,880
Office equipment	406,000	345,100	284,200	223,300	162,400	101,500	40,600	771,258	655,570	539,881	424,192
Advance Against Building Rent	174,000	174,000	174,000	174,000	174,000	174,000	174,000	174,000	174,000	174,000	174,000
Total Fixed Assets	2,082,979	1,714,996	1,347,013	1,086,986	850,418	1,314,903	996,057	2,820,174	2,182,935	1,955,479	2,632,018
<i>Intangible assets</i>											
Pre-operation costs	151,762	121,410	91,057	60,705	30,352	-	-	-	-	-	-
Total Intangible Assets	151,762	121,410	91,057	60,705	30,352	-	-	-	-	-	-
TOTAL ASSETS	4,320,741	5,072,278	5,759,168	6,551,279	7,421,524	12,047,830	17,432,338	24,124,386	30,766,888	38,201,408	46,376,946
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	217,319	259,628	309,353	363,709	425,985	500,721	584,855	645,195	711,772	783,557
Total Current Liabilities	-	217,319	259,628	309,353	363,709	425,985	500,721	584,855	645,195	711,772	783,557
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	4,320,741	4,320,741	4,320,741	4,320,741	4,320,741	4,320,741	4,320,741	4,320,741	4,320,741	4,320,741	4,320,741
Retained earnings	-	534,219	1,178,799	1,921,185	2,737,075	7,301,104	12,610,877	19,218,791	25,800,952	33,168,896	41,272,649
Total Equity	4,320,741	4,854,959	5,499,540	6,241,926	7,057,815	11,621,845	16,931,618	23,539,531	30,121,693	37,489,637	45,593,389
TOTAL CAPITAL AND LIABILITIES	4,320,741	5,072,278	5,759,168	6,551,279	7,421,524	12,047,830	17,432,338	24,124,386	30,766,888	38,201,408	46,376,946

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		1,068,437	1,823,380	2,663,572	3,552,964	4,564,029	5,309,773	6,607,914	6,582,161	7,367,944	8,103,753
Add: depreciation expense		367,983	367,983	367,983	236,568	231,348	460,973	416,305	637,238	414,571	423,880
amortization of pre-operating costs		30,352	30,352	30,352	30,352	30,352	-	-	-	-	-
Equipment inventory	(3,667)	(766)	(926)	(1,119)	(1,353)	(1,636)	(1,977)	(2,391)	(2,890)	(3,494)	20,218
Raw Material Inventory	(1,024,333)	(203,623)	(381,482)	(486,365)	(614,220)	(803,914)	(1,011,813)	(980,318)	(1,192,664)	(1,451,006)	8,149,738
Pre-paid building rent	(58,000)	(5,800)	(6,380)	(7,018)	(7,720)	(8,492)	(9,341)	(10,275)	(11,303)	(12,433)	136,761
Accounts payable		217,319	42,309	49,726	54,356	62,276	74,735	84,134	60,340	66,576	71,785
Cash provided by operations	(1,086,000)	1,473,903	1,875,236	2,617,130	3,250,948	4,073,964	4,822,350	6,115,369	6,072,883	6,382,160	16,906,135
<i>Financing activities</i>											
Issuance of shares	4,320,741	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	4,320,741	-	-	-	-	-	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(2,234,741)	-	-	(107,956)	-	(695,834)	(142,127)	(2,240,421)	-	(187,115)	(1,100,419)
Cash (used for) / provided by investing activities	(2,234,741)	-	-	(107,956)	-	(695,834)	(142,127)	(2,240,421)	-	(187,115)	(1,100,419)
NET CASH	1,000,000	1,473,903	1,875,236	2,509,174	3,250,948	3,378,131	4,680,223	3,874,947	6,072,883	6,195,045	15,805,716

13. KEY ASSUMPTIONS

13.1 Operating Cost Assumptions

Table 52: Operating Cost Assumptions

Description	Details
Building rent growth rate	10%
Machinery and Equipment depreciation	33%
Furniture and fixtures 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%

13.2 Revenue Assumptions

Table 53: Revenue Assumptions

Description	Details
Sale price growth rate	10.3%
Initial year capacity utilization	60%
Capacity growth rate	5%
Maximum capacity utilization	90%

13.3 Financial Assumptions

Table 54: Financial Assumptions

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

13.4 Financial Assumptions

Table 55: Debt-Related Assumption

Description of Cost	Details
Project Life (Years)	10
Debt: Equity	50:50
Discount Rate	22%
Debt Tenure	5 years
Grace Period	1 Year
Interest Rate (KIBOR+3%)	19%

13.5 Financial Assumptions

Table 56: Cash Flow Assumption

Description	Days
Accounts receivable cycle	0
Accounts payable cycle	25

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