



Pre-feasibility Study

CERAMIC TILES PRODUCTION PLANT

June 2020

“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. 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

Ceramic Tiles Production Plant is proposed to be located at cities where raw material is easily available, Quetta, Karachi, Lahore, Peshawar etc.

Product(s) include **Glazed Ceramic tiles**

Capacity; Installed capacity **632,000 Meters** and initial utilization **379,200 Meters, 60%**

Total Cost Estimates is **Rs. 116,314,112** with fixed investment **Rs. 102,965,693** and working capital **Rs. 13,348,420**

Given the cost assumptions IRR and payback are **35 %** and **3.61 years** respectively

The most critical considerations or factors for success of the project are:

- Most significant consideration
 - Large deposits of minerals in the country.
 - Availability of large variety of mineral mix.
 - Availability of hard working & low-cost labor.
 - Increasing inland trends towards use of Ceramic tiles.
 - Large and established world markets.
 - Improved technological changes available.
- Equally important factor
 - Emphasizing on excellent services to its customers such as standardized products and timely order fulfillment.
 - New machinery should be purchased in order to increase the efficiency and lower the maintenance cost.
 - Refurbished standardized machinery is also recommended.
 - Adapt to the rapid, social, economic and technological changes.
 - Hiring of well-trained / experienced staff will add in the efficiency of the facility.

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.

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 facilitate potential investors in **Ceramic Tiles Production Plant** by providing them with a general understanding of the business with the intention of supporting potential investors in crucial 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 set-up 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 & PRODUCT

This project envisages production of Ceramic Glazed Tiles which is having a very bright prospect in bathrooms and kitchen in modern housing and in Analytical Laboratories and toilets.

A ceramic surface unit, usually relatively thin in relation to facial area, made from clay or a mixture of clay and other ceramic materials, called the body of the tile, having either a glazed or unglazed surface and fired above red heat in the course of manufacture to a temperature sufficiently high to produce specific physical properties and characteristics.

The industry generally thinks of a tile as less than 1-1/4 inch thick. Ceramic products thicker than that are classified as structural rather than surface units. For example Brick.

How is Ceramic Tile Made?

The majority of ceramic tile is made by a process called the Pressed Dust Method. It is basically a process in which they make a powder by ball mill grinding a mix of clay and other mineral products (Feldspar) in a slurry and then spray drying this blend into a powder.

The body of the tile is then created by pressing (hydraulic). After the body is formed, the tile is dried in order to remove some of the moisture. When the tile is dried to the desired moisture content, it is ready for glazing, or if it is an unglazed tile, for firing in a kiln. Any type of tile may be glazed and fired or fired without glazing. The glaze is a fused impervious facial finish composed of ceramic material, fused to the body of the tile, which may be non-vitreous, semi-vitreous, vitreous, or impervious. These items will be defined under Types of Tile below.

Some tiles may be fired once (Monocottura), twice (Bicottura), etc. The reason why some manufacturers fire the tile more than once is that some glazes need to be fired at lower temperatures than the body of the tile. So they fire the body first, then, at a lower temperature, the glazed tile. After the tile completes the firing stage, it is inspected for any defects, then packaged and shipped.

Types of Tile

There are many names used to describe tile. You may have heard many of these terms such as: quarry, monocoturra, pavers, mosaics, wall, saltillo, Italian, porcelain, and many other terms.

1. Ceramic Mosaic Tile:

Tile formed by either dust pressed or plastic method, usually $\frac{1}{4}$ to $\frac{3}{8}$ inch thick, and having a facial area of less than nine square inches. It may be either porcelain or natural clay composition. Typically mounted in sheets or strips.

2. Quarry Tile:

Glazed or unglazed tile, made by the extrusion process from natural clay.

3. Pressed Floor Tile:

A manufacturer specified ceramic tile primarily for use on floors, but also suitable for use on walls and countertops, and have a facial area of nine square inches or more.

4. Glazed Wall Tile:

A glazed tile with a body that is suitable for interior use and which is usually non-vitreous and is not required nor expected to withstand excessive impact or be subject to freezing and thawing conditions.

5. Porcelain Tile:

A ceramic tile that has a water absorption of 0.5% or less that is generally made by the pressed or extruded method. Does not include materials with very little or no crystallinity, such as glass tile.

There are no more types of tile defined by the industry. All the other names are sub categories of these types. However, there are some terms that need to be defined. These are:

1. Porcelain:

An impervious tile, i.e., one with water absorption of less than 0.5% of the weight of the tile.

2. Vitreous tile:

One with water absorption of more than 0.5%, but not more than 3%.

3. Semi-Vitreous tile:

One with water absorption of more than 3% but not more than 7%.

4. Non-Vitreous

Wall Tile has a water absorption rate of more than 7% but not more than 20%.

The manufacturing of ceramic products takes place in different types of kilns, with a wide range of raw materials and in numerous shapes, sizes and colours. The general process of manufacturing ceramic products, however, is rather uniform, besides the fact that for the manufacture of wall and floor tiles, household ceramics, sanitary ware and technical ceramics often a multiple stage firing process is used. In general, raw materials are mixed and cast, pressed or

extruded into shape. Water is regularly used for a thorough mixing and shaping. This water is evaporated in dryers and the products are either placed by hand in the kiln – especially in the case of periodically operated shuttle kilns – or placed onto carriages that are transferred through continuously operated tunnel or roller hearth kilns. For the manufacture of expanded clay aggregates, rotary kilns are used. During firing a very accurate temperature gradient is necessary to ensure that the products obtain the right treatment. Afterwards controlled cooling is necessary, so that the products release their heat gradually and preserve their ceramic structure. Then the products are packaged and stored for delivery.

Uses of Ceramic Glazed Tiles:

Ceramic Glazed tiles are made of porous body with a coating of white or colored Glaze. These are used extensively in the Bathrooms, Kitchen in modern buildings and in Hospitals and Analytical Laboratories, Toiletries. This is because of this products have properties like good resistance to weather and chemicals, having high strength, hard, glossy surface with different colors and pleasing appearance. In the near future the chances for replacing these items by other materials look very bleak. These tiles are rather cheap, easy to clean, have more life and are available in pleasing colours.

Following key parameters must be addressed as per pre-feasibility study under preparation

- **Technology:** This proposed unit with modern production machines including Ball Mill, Pan Mill, Agitator, Hydraulic filter press, bucket elevator, Glazing Line, Pot mill, Drier and Buller mill, etc.
- **Location:** The unit would be located in or near an area where the raw material is available easily like Swat, Peshawar, Bostan, Loralai, Quetta, Hub, or Lahore and Karachi or any other site where raw material can be transported easily.
- **Product:** The unit would produce glazed ceramic tiles for commercial and residential uses.
- **Target Market:** In addition to local markets in Karachi, Lahore, Rawalpindi, Quetta, Peshawar, and Islamabad an enormous export market for the Pakistani Glazed Ceramic tiles exists in Afghanistan, Middle East, etc.
- **Employment Generation:** The proposed project will provide direct employment to 21 people. Financial analysis shows the unit shall be profitable from the very first year of operation.

5.1 Manufacturing Process:

The raw materials like local clay, China clay, Ball clay, Wollastonite (calcium inosilicate mineral) chips and pitchers are mixed and ground thoroughly to form a uniform slip. They are unloaded in an agitator. The slip is screened, magnetized and kept in agitating tank with addition of required deflocculants. The material is then passed through filter press to get rid of soluble salts to make a plastic body. The plastic body is dried in a dryer to get the dried mass of 5-6 % moisture. The dried mass is subsequently fed into a pan mill. The output of the pan mill is stored in vertical silos. The mixture is now ready for pressing tiles. The pressed green tiles are stacked on the kiln car in a stack of 3 ft. height and dried by using hot waste air from the kiln. The green tiles are dried for 20 hrs. The dried tiles are pushed along with the kiln car and allowed for firing for 20 hrs. The outputs are known as Biscuits. The hot tiles at above 250-300C are allowed to cool in nature normally. The cooled tiles when come at normal room temperature 30-40C are screened through online sorting followed by

Hammer test and Brushing, water spraying and Glazing. Then the Glazed wares are loaded into refractory cassettes on an endless moving conveyor.

The cassettes are loaded onto Glost Kiln car and allowed for firing at a temperature of 1040C for a cycle of 18 hrs. The cooled tiles are unloaded from the cassettes and allowed for online inspection. The tiles are checked into 1st i.e. prime, 2nd as commercial grade, 3rd as Reject Variety. After sorting the tiles are packed and stripped and stamped and sent to stockyard. A single pack of tile weighs 16 kg and ready for sale.

5.1 Installed And Operational Capacities

The total installed capacity of the project is 632,000 meters of Glazed Ceramic tile along with assumed operational capacity of 60% during the first year of operations i.e. 379,200 meters of Glazed Ceramic tile. A gradual increase of 4% in production capacity per annum.

6 CRITICAL FACTORS

Quality Control and Standards:

The raw materials are tested before taken into use for production and after the result is satisfactory they are used. During the manufacturing process quality is checked at the times of grinding, mixing and pressing. Finally finished products are selected at random and tested to ascertain its asset values with the help of Modulus of Rupture test (MOR), Warpage, Apparent porosity, Bulk density, Crazeing test, Scratch Hardness test on a regular basis as per BIS specification.

The standards being followed while making Ceramic Glazed Wall Tiles are:
PS: 804/1971 –China clay for ceramic Industry

Pollution Control:

Glaze tile has a share in the present Environmental Degradation. So it is advisable to get NOC from Pollution Control Authority as per statutory norms. In this project it would be better if the installed chimney height is of 30 ft and all the machineries are fitted with pollution arresting measures.

Emissions of dust (particulate matter)

To prevent diffuse and channeled dust emissions, techniques and measures are described, which can be applied individually or in combination. These are:

- Measures for dusty operations
- Measures for bulk storage areas
- Separation/filter systems. Gaseous compounds

To prevent emissions of gaseous air pollutants (in particular SOX_x, NOX_x, HF, HCl, VOC), primary and secondary measures/techniques are described, which can be applied individually or in combination. These are:

- Reduction of pollutant precursor input
- Addition of calcium rich additives
- Process optimization
- Sorption plants (adsorbers, absorbers)
- Afterburning.

Energy Conservation:

Considering the fuel reserves and its spiraling price it is essential to adopt energy conservation system by the entrepreneur. The efficiency of a furnace will depend on how efficient the combustion system is and secondly how best the generated heat is utilized.

Energy conservation could be achieved through following process:

- 1) Complete combustion with minimum excess air.
- 2) Proper heat distribution.
- 3) Operating the kiln at desired temperature.
- 4) Reducing heat losses from the openings.

- 5) Minimizing wall losses.
- 6) Waste heat recovery from fuel gasses and utilization for Drying Tiles
- 7) Control of Chimney draught and kiln pressure
- 8) Use of lubricants and proper maintenance

So the efficiency of a kiln will depend on how efficient the combustion system is and secondly how best the generated waste heat is utilized .So, it is always recommended that standard and good quality of fuel should be used.

7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

It is suitable to establish the production unit Quetta, Swat, Hub, Khuzdar, Loralai Bostan, Peshawar, Lahore and Karachi. However such a unit could be established in other parts of the country provided the main conditions are fulfilled such as China Clay, Feldspar, local clay, China clay, Ball clay, Wollastonite (calcium inosilicate mineral) chips and pitchers are available and man power availability, accessibility to markets, and reasonable demand & usage of Ceramic Glazed Tile.

8 POTENTIAL TARGET CUSTOMERS / MARKETS

The market of ceramic glazed Tiles are very bright since its demand is increasing at a faster rate. The reasons are not far to seek. The improved living standard coupled with good economic situation along with supporting Govt. policies for housing sector speak itself for the demand for these products. Side by side population growth is also creating a positive demand position of these products.

These items form an essential and integral part of consuming sector like housing, educational and research institutions, hospitals, Industries, hotels, restaurants, cinema halls and other public places. The demands of these products also increase by the need of renovation works of the old above similar buildings. The housing Development Finance Corporation and other Govt. Corporations and Banks for financing housing will go a long way for the demand of these products. The private sector which accounts for the lion's share of the investment in housing and construction is bound to increase further. Further Govt. of India as well as State Govt. is taking more care for the up-keeping of rural sanitation and water supply systems which will indirectly influence and increase the demand of ceramic glazed tiles. Further during the last few years before global economic recession the export opportunities of these tiles from Middle East and Developing countries was very encouraging and hopefully after the recession export opportunities of

these tiles will come back. Considering these opportunities new generation entrepreneurs could think of manufacturing this products “**Glazed Ceramic Tiles**”.

9 PROJECT COST SUMMARY

9.1 Project Economics

All the figures in this financial model have been calculated for estimated sales of Rs. 401.47 million in the year one. The capacity utilization during year one is worked out at 60% with 4% increase in subsequent years up to the maximum capacity utilization of 90%.

The following table shows internal rate of return, payback period and net present value of the proposed venture.

Table 1: Project Economics

Description	Details
Internal Rate of Return (IRR)	35%
Payback Period (yrs.)	3.61
Net Present Value (Rs.)	177,547,007

9.2 Project Financing

Following table provides details of the equity required and variables related to bank loan;

Table 2: Project Financing

Description	Details
Total Equity (50%)	Rs. 58,157,056
Bank Loan (50%)	Rs. 58,157,056
Markup to the Borrower (%age / annum)	14%
Tenure of the Loan (Years)	5 Years

9.3 Project Cost

Following fixed and working capital requirements have been identified for operations of the proposed business.

Table 3: Project Cost

Description	Amount Rs.
-------------	------------

Capital Cost	
Land	16,675,554
Building / Infrastructure	27,755,309
Plant and Machinery	55,554,350
Furniture & Fixture	532,500
Office Equipment	697,500
Motor Vehicles	848,400
Pre-operating Cost	902,080
Total Capital Cost	102,965,693
Working Capital	
Equipment Spare Parts Inventory	869,000
Raw Material Inventory	9,159,282
Up-front Insurance Payments	2,8220,138
Cash	500,000
Total Working Capital	13,348,420
Total Project Cost	116,314,112

9.4 Space Requirement

The space requirement for the proposed **Ceramic Tiles Production Plant** is estimated considering various facilities including management office, production hall, storage, open space, etc. Details of space requirement and cost related to land & building is given below;

Table 4: Space Requirement

Description	Estimated Area (Sqft)	Unit Cost (Rs.)	Total Cost (Rs.)
Management Office	400	1,200	480,000
Working Shed Area	25,200	892	22,475,309
Laboratory	1,000	1,000	1,000,000
Cafeteria	600	1,000	600,000

Drive way / Pavement	40,000	50	2,000,000
Grounds	40,000	30	1,200,000
Total	107,200		27,755,309

9.5 Machinery & Equipment Requirement

Plant, machinery and equipment for the proposed project are stated below.

Table 5: Machinery & Equipment

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Ball Mill 04 T Cap.02 nos. Connected with 20 H.P. motor and accessories each	1	17,000,000	17,000,000
Agitator 02 T one no. with 10 H.P. motor and accessories	1	10,000,000	10,000,000
Hydraulic filter press 120 plates with 05 H.P. pump and filter clothes 01 set extra 02 nos.	1	1,200,000	1,200,000
Pan Mill 01 no Connected with 7.5 H.P. motor complete	1	420,000	420,000
Bucket Elevators and Silos	1	800,000	800,000
80 T Hydraulic press connected with 15 H.P. motor and suitable dies	3	800,000	2,400,000
Glazing line conveyor connected with 02 H.P. Motor two nos. and online blower 05 H.P.04 nos.	1	800,000	800,000
Ball Mill for glazing of 500 kg capacity connected with 05 H.P. motor	6	125,000	750,000
Glaze vat with vertical Pump arrangement with agitators connected with 0.5 H.P. motor	3	90,000	270,000
Pot Mill connected with 04 pot attachment and 01 H.P.1. motor	1	120,000	120,000
Drier and Shuttle kiln with 18 cars attachment with transfer car arrangement	2	2,100,000	4,200,000
Buller Ring Apparatus	1	45,000	45,000
Laboratory Equipment	1	7,800,000	7,800,000
Tube Well	1	800,000	800,000
Installation	1	450,000	450,000

Total machinery cost			47,055,000
GST 17%		0.17	
Total			55,054,350
Transportation charges	1	500,000	500,000
Total			55,554,350

9.6 Furniture & Fixtures Requirement

Details of the furniture and fixture required for the project are given below;

Table 6: Furniture & Fixture

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Tables	3	6,000	18,000
Executive Chairs	3	5,000	15,000
Visitors Chairs	7	3,500	24,500
Carpeting	1,000	300	300,000
Air Conditioners (with specs)	1	90,000	90,000
Tile Designer tables/chairs/cabinets	1	85,000	85,000
Total			532,500

9.7 Office Equipment Requirement

Following office equipment will be required for **Ceramic Tiles Production Plant**;

Table 7: Office Equipment

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Computer Server	1	125,000	125,000
Laptop	3	50,000	150,000
Printer	2	20,000	40,000
Telephone Exchange	1	150,000	150,000
Telephone Sets	5	2,500	12,500
Photo Copier	1	200,000	200,000
Total			697.500

9.8 Human Resource Requirement

In order to run operations of **Ceramic Tiles Production Plant** smoothly, details of human resources required along with number of employees and monthly salary are recommended as under;

Table 8: Human Resource Requirement

Description	No. of Employees	Monthly Salary per person (Rs.)
CEO	1	50,000
Manager	1	45,000
Supervisor	1	35,000
Electrician	1	25,000
Accountant cum Receptionist	1	22,000
Salesman	2	22,000
Skilled Worker	4	22,000
Semi-Skilled Worker	8	18,000
Security Guard	2	18,000
Total	21	257,000

9.9 Utilities and other costs

An essential cost to be borne by the project is the cost of electricity and gas. The electricity expenses are estimated to be around Rs. 319,691- per month, whereas, gas expenses are estimated to be Rs. 5,400,000 / year (including both natural gas and LPG). Furthermore, promotional expense being essential for marketing of **Ceramic Tiles Production Plant** is estimated as 1% of administrative / Cost of Sales expenses.

9.10 Revenue Generation

Based on the capacity utilization of 100% for Glazed Ceramic Tiles Sales revenue during the first year of operations is estimated as under;

Table 9: Revenue Generation – Year 1

Description	No. of Units Produced (No.)	Finished Goods Inventory (No.)	Units available for Sale (No.)	Sale Price / unit (Rs.)	Sales Revenue (Rs.)
Glazed Ceramic Tile	379,200	31,600	347,600	1,155	401,472,720
Total	379,200	31,600	347,600	1,155	401,472,720

10 CONTACT DETAILS

In order to facilitate potential investors, contact details of private sector Service Providers relevant to the proposed project be given.

10.1 Machinery Suppliers

Name of Supplier	Address	Phone	Fax	E-mail	Website
Allied Machine Craft	Opposite Fruit Mandi, Gujrat	03338484124 03328484124			

10.2 Raw Material Suppliers

Name of Supplier	Address	Phone	Fax	E-mail	Website
J.R. Corporation	G.T. Road Gujranwala	055-4275911			
Parey Enterprises	G.T. Road Gujranwala	055-4242619			
Bashir Traders	G.T. Road Gujranwala	055-4552364			

10.3 Technical Experts / Consultants

Name of Expert/Organization	Address	Phone	Fax	E-mail	Website
Nayyar Ali Dada & Associates	7 F/3 New Muslim Town 54600 Lahore, Pakistan	042-35830810 042-35864884			

11 USEFUL WEB LINKS

Small & Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
Government of Pakistan	www.pakistan.gov.pk
Ministry of Industries & Production	www.moip.gov.pk
Ministry of Education, Training & Standards in Higher Education	http://moptt.gov.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Khyber Pakhtunkhwa	www.khyberpakhtunkhwa.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Government of Azad Jamu Kashmir	www.ajk.gov.pk
Trade Development Authority of Pakistan (TDAP)	www.tdap.gov.pk
Security Commission of Pakistan (SECP)	www.secp.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
State Bank of Pakistan (SBP)	www.sbp.org.pk
Punjab Small Industries Corporation	www.psic.gop.pk
Sindh Small Industries Corporation	www.ssic.gos.pk
Pakistan Horticulture Development and Export Company (PHDEC)	www.phdec.org.pk
Punjab Vocational Training Council (PVTC)	www.pvtc.gop.pk
Technical Education and Vocational Training Authority (TEVTA)	www.tevta.org
Pakistan Readymade Garment Technical Training Institute	www.prgmea.org/prgtti/
Livestock & Dairy Development Department, Government of Punjab.	www.livestockpunjab.gov.pk
Punjab Industrial Estates (PIE)	www.pie.com.pk
Faisalabad Industrial Estate Development and Management Company (FIEDMC)	www.fiedmc.com.pk

12 ANNEXURES

12.1 Income Statement

Statement Summaries										SMEDA
Income Statement										
	Rs. in actuals									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	401,472,720	511,208,597	597,659,056	696,287,521	808,665,088	936,555,294	1,081,936,889	1,247,029,251	1,405,634,303	1,549,066,374
Cost of goods sold	348,383,000	442,524,183	516,033,432	599,819,167	695,201,607	808,073,930	931,705,086	1,071,981,585	1,207,256,233	1,330,350,616
Gross Profit	53,089,720	68,684,414	81,625,624	96,468,353	113,463,481	128,481,364	150,231,803	175,047,666	198,378,070	218,715,758
<i>General administration & selling expenses</i>										
Administration expense	2,389,200	3,360,560	3,687,748	4,046,793	4,440,794	7,015,665	7,698,720	8,448,278	9,270,814	10,173,434
Rental expense	-	-	-	-	-	-	-	-	-	-
Utilities expense	1,509,691	1,660,660	1,826,726	2,009,399	2,210,339	2,431,373	2,674,510	2,941,961	3,236,157	3,559,773
Travelling & Comm. expense (phone, fax, etc.)	21,720	30,551	33,525	36,789	40,371	63,779	69,988	76,803	84,280	92,486
Office vehicles running expense	25,452	27,997	30,797	33,877	37,264	40,991	45,090	49,599	54,559	60,014
Office expenses (stationary, etc.)	21,720	30,551	33,525	36,789	40,371	63,779	69,988	76,803	84,280	92,486
Promotional expense	4,014,727	5,112,086	5,976,591	6,962,875	8,086,651	9,365,553	10,819,369	12,470,293	14,056,343	15,490,664
Insurance expense	2,820,138	2,538,124	2,256,110	1,974,096	1,692,083	1,410,069	1,128,055	846,041	564,028	282,014
Professional fees (legal, audit, etc.)	2,007,364	2,556,043	2,988,295	3,481,438	4,043,325	4,682,776	5,409,684	6,235,146	7,028,172	7,745,332
Depreciation expense	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040
Amortization expense	180,416	180,416	180,416	180,416	180,416	-	-	-	-	-
Property tax expense	-	-	-	-	-	-	-	-	-	-
Miscellaneous expense	-	-	-	-	-	-	-	-	-	-
Subtotal	20,141,468	22,648,027	24,164,774	25,913,512	27,922,655	32,225,024	35,066,445	38,295,963	41,529,673	44,647,243
Operating Income	32,948,252	46,036,386	57,460,850	70,554,841	85,540,826	96,256,339	115,165,358	136,751,702	156,848,397	174,068,516
Other income	-	-	-	-	-	-	-	-	-	-
Gain / (loss) on sale of assets	-	-	-	-	-	-	-	-	-	-
Earnings Before Interest & Taxes	32,948,252	46,036,386	57,460,850	70,554,841	85,540,826	96,256,339	115,165,358	136,751,702	156,848,397	174,068,516
Interest expense	7,640,944	6,668,576	6,231,946	5,730,109	5,153,326	4,490,405	3,728,482	2,852,772	1,846,282	689,480
Earnings Before Tax	25,307,308	39,367,810	51,228,904	64,824,733	80,387,500	91,765,934	111,436,876	133,898,930	155,002,115	173,379,036
Tax	8,098,339	12,597,699	16,393,249	20,743,914	25,724,000	29,365,099	35,659,800	42,847,658	49,600,677	55,481,291
NET PROFIT/(LOSS) AFTER TAX	17,208,969	26,770,111	34,835,655	44,080,818	54,663,500	62,400,835	75,777,076	91,051,273	105,401,438	117,897,744
Balance brought forward		17,208,969	32,984,310	50,864,974	71,209,344	94,404,633	117,604,101	145,035,883	177,065,367	211,850,104
Total profit available for appropriation	17,208,969	43,979,080	67,819,965	94,945,792	125,872,844	156,805,468	193,381,177	236,087,156	282,466,805	329,747,848
Dividend	-	10,994,770	16,954,991	23,736,448	31,468,211	39,201,367	48,345,294	59,021,789	70,616,701	82,436,962
Balance carried forward	17,208,969	32,984,310	50,864,974	71,209,344	94,404,633	117,604,101	145,035,883	177,065,367	211,850,104	247,310,886

12.2

Statement Summaries											SMEDA
Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Rs. in actuals Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	500,000	553,021	18,069,607	31,385,237	45,679,973	60,207,014	69,213,231	79,006,481	90,217,607	101,872,281	208,802,597
Accounts receivable	-	16,498,879	18,753,726	22,784,952	26,587,943	30,923,684	35,860,693	41,475,867	47,855,469	54,506,785	60,713,028
Finished goods inventory	-	31,671,182	37,070,089	43,214,622	50,217,419	58,188,681	67,621,249	77,951,422	89,671,463	100,791,337	110,862,551
Equipment spare part inventory	869,000	1,161,853	1,426,251	1,744,698	2,127,598	2,587,281	3,138,351	3,798,092	4,495,215	5,201,606	-
Raw material inventory	9,159,282	12,829,101	16,498,493	21,143,265	27,011,259	34,411,392	43,728,384	55,440,971	68,741,534	83,331,574	-
Pre-paid annual land lease	-	-	-	-	-	-	-	-	-	-	-
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Pre-paid insurance	2,820,138	2,538,124	2,256,110	1,974,096	1,692,083	1,410,069	1,128,055	846,041	564,028	282,014	-
Total Current Assets	13,348,420	65,252,159	94,074,275	122,246,871	153,316,275	187,728,120	220,689,963	258,518,874	301,545,315	345,985,597	380,378,176
<i>Fixed assets</i>											
Land	16,675,554	16,675,554	16,675,554	16,675,554	16,675,554	16,675,554	16,675,554	16,675,554	16,675,554	16,675,554	16,675,554
Building/Infrastructure	27,755,309	26,367,543	24,979,778	23,592,012	22,204,247	20,816,481	19,428,716	18,040,951	16,653,185	15,265,420	13,877,654
Machinery & equipment	55,554,350	49,998,915	44,443,480	38,888,045	33,332,610	27,777,175	22,221,740	16,666,305	11,110,870	5,555,435	-
Furniture & fixtures	532,500	479,250	426,000	372,750	319,500	266,250	213,000	159,750	106,500	53,250	-
Office vehicles	848,400	763,560	678,720	593,880	509,040	424,200	339,360	254,520	169,680	84,840	-
Office equipment	697,500	627,750	558,000	488,250	418,500	348,750	279,000	209,250	139,500	69,750	-
Total Fixed Assets	102,063,612	94,912,572	87,761,532	80,610,491	73,459,451	66,308,410	59,157,370	52,006,329	44,855,289	37,704,249	30,553,208
<i>Intangible assets</i>											
Pre-operation costs	902,080	721,664	541,248	360,832	180,416	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	902,080	721,664	541,248	360,832	180,416	-	-	-	-	-	-
TOTAL ASSETS	116,314,112	160,886,396	182,377,055	203,218,194	226,956,141	254,036,530	279,847,333	310,525,203	346,400,604	383,689,845	410,931,384
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	28,482,983	36,277,339	42,570,990	49,799,579	58,096,474	67,614,560	78,529,325	90,919,628	102,975,008	105,463,442
Export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Short term debt	-	-	-	-	-	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	-	28,482,983	36,277,339	42,570,990	49,799,579	58,096,474	67,614,560	78,529,325	90,919,628	102,975,008	105,463,442
<i>Other liabilities</i>											
Lease payable	-	-	-	-	-	-	-	-	-	-	-
Deferred tax	-	8,098,339	8,942,994	8,970,142	8,997,291	9,024,440	7,219,552	5,414,664	3,609,776	1,804,888	(0)
Long term debt	58,157,056	48,939,049	46,015,356	42,655,032	38,792,871	34,353,928	29,252,063	23,388,275	16,648,777	8,902,789	-
Total Long Term Liabilities	58,157,056	57,037,388	54,958,350	51,625,175	47,790,163	43,378,368	36,471,615	28,802,939	20,258,553	10,707,677	(0)
<i>Shareholders' equity</i>											
Paid-up capital	58,157,056	58,157,056	58,157,056	58,157,056	58,157,056	58,157,056	58,157,056	58,157,056	58,157,056	58,157,056	58,157,056
Retained earnings	-	17,208,969	32,984,310	50,864,974	71,209,344	94,404,633	117,604,101	145,035,883	177,065,367	211,850,104	247,310,886
Total Equity	58,157,056	75,366,026	91,141,366	109,022,030	129,366,400	152,561,689	175,761,157	203,192,939	235,222,423	270,007,160	305,467,942
TOTAL CAPITAL AND LIABILITY	116,314,112	160,886,396	182,377,055	203,218,194	226,956,141	254,036,530	279,847,333	310,525,203	346,400,604	383,689,845	410,931,384
Note: Total assets value will differ from project cost due to first installment of leases paid at the start of year 0											

12.3 Cash Flow Statement

Statement Summaries											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
	Rs. in actuals										
<i>Operating activities</i>											
Net profit	-	17,208,969	26,770,111	34,835,655	44,080,818	54,663,500	62,400,835	75,777,076	91,051,273	105,401,438	117,897,744
Add: depreciation expense	-	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040	7,151,040
amortization expense	-	180,416	180,416	180,416	180,416	180,416	-	-	-	-	-
Deferred income tax	-	8,098,339	844,655	27,149	27,149	27,149	(1,804,888)	(1,804,888)	(1,804,888)	(1,804,888)	(1,804,888)
Accounts receivable	-	(16,498,879)	(2,254,847)	(4,031,226)	(3,802,992)	(4,335,740)	(4,937,009)	(5,615,174)	(6,379,602)	(6,651,317)	(6,206,242)
Finished good inventory	-	(31,671,182)	(5,398,907)	(6,144,534)	(7,002,796)	(7,971,262)	(9,432,569)	(10,330,172)	(11,720,042)	(11,119,873)	(10,071,215)
Equipment inventory	(869,000)	(292,853)	(264,398)	(318,447)	(382,900)	(459,683)	(551,069)	(659,741)	(697,123)	(706,391)	5,201,606
Raw material inventory	(9,159,282)	(3,669,819)	(3,669,392)	(4,644,773)	(5,867,994)	(7,400,133)	(9,316,992)	(11,712,587)	(13,300,563)	(14,590,040)	83,331,574
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Advance insurance premium	(2,820,138)	282,014	282,014	282,014	282,014	282,014	282,014	282,014	282,014	282,014	282,014
Accounts payable	-	28,482,983	7,794,356	6,293,651	7,228,589	8,296,895	9,518,087	10,914,765	12,390,303	12,055,380	2,488,434
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(12,848,420)	9,271,028	31,435,050	33,630,945	41,893,345	50,434,196	53,309,449	64,002,332	76,972,412	90,017,364	198,270,067
<i>Financing activities</i>											
Change in long term debt	58,157,056	(9,218,007)	(2,923,693)	(3,360,323)	(3,862,161)	(4,438,944)	(5,101,865)	(5,863,788)	(6,739,498)	(7,745,988)	(8,902,789)
Change in short term debt	-	-	-	-	-	-	-	-	-	-	-
Change in export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Add: land lease expense	-	-	-	-	-	-	-	-	-	-	-
Land lease payment	-	-	-	-	-	-	-	-	-	-	-
Change in lease financing	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	58,157,056	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financ	116,314,112	(9,218,007)	(2,923,693)	(3,360,323)	(3,862,161)	(4,438,944)	(5,101,865)	(5,863,788)	(6,739,498)	(7,745,988)	(8,902,789)
<i>Investing activities</i>											
Capital expenditure	(102,965,693)	-	-	-	-	-	-	-	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by invest	(102,965,693)	-	-	-	-	-	-	-	-	-	-
NET CASH	500,000	53,021	28,511,357	30,270,621	38,031,184	45,995,252	48,207,584	58,138,545	70,232,914	82,271,376	189,367,278
Cash balance brought forward		500,000	553,021	18,069,607	31,385,237	45,679,973	60,207,014	69,213,231	79,006,481	90,217,607	101,872,281
Cash available for appropriation	500,000	553,021	29,064,378	48,340,229	69,416,421	91,675,225	108,414,598	127,351,775	149,239,395	172,488,983	291,239,559
Dividend	-	-	10,994,770	16,954,991	23,736,448	31,468,211	39,201,367	48,345,294	59,021,789	70,616,701	82,436,962
Cash carried forward	500,000	553,021	18,069,607	31,385,237	45,679,973	60,207,014	69,213,231	79,006,481	90,217,607	101,872,281	208,802,597

13 KEY ASSUMPTIONS

13.1 Operating Assumptions

Description	Details
Days operational per month	27.5
Days operational per year	330

13.2 Production Assumptions

Description	Details
Maximum Capacity Utilization	90%
Total Production of the meters per day	1,915
Total Production of the meters per month	52,667
Total Production of the meters per year (100%)	632,000

13.3 Economy Related Assumptions

Description	Details
Electricity price growth rate	10%
Wage growth rate	10%
Sales price growth rate	10%

13.4 Cash Flow Assumptions

Description	Details
Accounts Receivable cycle (in days)	15
Accounts payable cycle (in days)	30

Small and Medium Enterprises Development Authority

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Tel: (92 42) 111 111 456, Fax: (92 42) 36304926-7

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