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# Pre-Feasibility Study

## MILK PASTEURIZING UNIT



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**Ministry of Industries & Production**  
**Government of Pakistan**  
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**June 2017**

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## 1 DISCLAIMER

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### ***Document Control***

Document No.	PREF-NO 15
Revision	4
Prepared by	SMEDA-Punjab
Revision Date	June 2017
For information	Provincial Chief Punjab janjua@smeda.org.pk

## 2 EXECUTIVE SUMMARY

The project involves setting up a Milk Pasteurization unit in any big city of Pakistan. Milk pasteurization increases the shelf-life of milk by destroying certain pathogens found in milk. The process involves heating of milk to a specific temperature for a time period and then cooling it immediately. After completion of the pasteurization process, milk will be packaged into 1-litre plastic pouches for distribution through various departmental stores in the city. The unit will be using modern automated machinery for all the processes, ensuring quality check throughout the production process.

Pakistan has one of the highest per capita milk and dairy products consumption rates in Asia (150-200 liters per year) and is the fourth largest milk producing country in the world with approximately 33 billion liters annual milk production. Higher milk yield is indeed a notable aspect of the milk sector. However, only 3-4% of the total milk is processed and marketed through formal channels whereas the remaining 97% of the milk reaches end users for immediate consumption through an extensive, multi-layered distribution system of middlemen. Given that the milk distribution operates mostly in informal sector and the demand for processed milk is increasing with the growing awareness among the public, this project has great potential.

The total project cost for setting up this plant is estimated at Rs. 78.93 million out of which Rs. 58.06 million is estimated for capital cost and Rs. 20.87 million is kept for working capital. The project is financed through 50% debt and 50% equity. The project NPV is around Rs. 87.19 million, with an IRR of 37% and payback period of 3.47 years. The legal status of this business is proposed as 'Sole Proprietorship'.

The overall proposed processing capacity of the plant is 2,000 liters per hour. The plant will work in a single 8-hour shift and will operate at 70% capacity in the first year. The maximum capacity attained is 100% and the plant operates at this capacity fourth year onwards.

## 3 INTRODUCTION TO SMEDA

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

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the

number, scale and competitiveness of SMEs", SMEDA has carried out 'sectorial research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

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

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

#### **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 **Milk Pasteurizing Unit** 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 is about setting up a small scale milk pasteurization unit to process raw milk and market it under a brand name. Pasteurization is the process of heating the milk up to 70 – 80° C for a certain period of time and then cooling it to 4°C. The heat treatment must guarantee the destruction of unwanted pathogenic micro-organisms and should not affect the taste & nutritional value of the milk. The

commercial significance of pasteurizing milk is to increase the shelf life of milk up to 72 hours at cooling temperature.

In Pakistan only 3-4% of the total milk is processed and marketed through formal channels whereas the remaining 97% of the milk reaches end users for immediate consumption through an extensive, multi-layered distribution system of middlemen. However the processed milk consumption is growing at the rate of 20% per year. Pasteurized and UHT milk in tetra packs are very popular products. The demand is increasing with the increasing awareness among the consumers. Also the mass sale of unhygienic, adulterated milk by Milkmen is letting the urban low-income segment to shift from home delivered adulterated milk to self-purchased pasteurized milk from branded milk shops.

For pasteurized milk, a standard formula of 3.5% fat contents and 9% SNF (solids not fat) have to be maintained according to law. The fresh milk has 4 to 6% fats. The extra fat contents are removed through cream separator during milk processing. The extra cream can be sold to sweet makers. After cream separation, some milk powder is mixed and homogenized to make standardized milk of 3.5% fat and 9% SNF. The pasteurized milk will be filled in 1-litre plastic pillow-type pouches and sold at a number of departmental stores in the city.

### 5.1 Installed and Operational Capacities

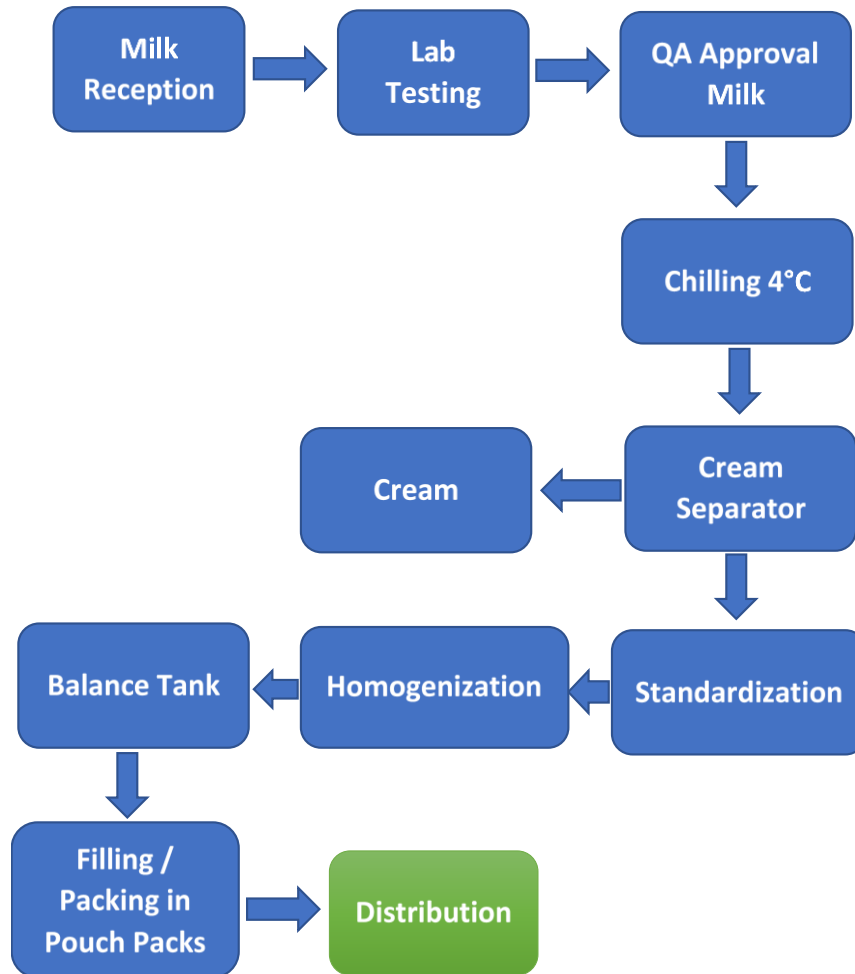
The milk pasteurization unit proposed has a maximum capacity to process 2,000 litres per hour. However, the unit will operate at 70% capacity processing 1,400 litres per hour in the first year and 8 hours is the milk processing time per day. The maximum operative capacity of 100% is achieved in the fourth year and 2,000 litres are processed per hour till the tenth year.

**Table 1: Installed and Operational Capacities**

Description	Per Hour Processing Capacity (Liters)	Installed Processing Capacity (Liters)	Operational Processing Capacity @ 70% in Year 1 (Liters)
Milk Pasteurization	2,000	5,840,000	4,088,000

## 5.2 Production Process Flow

Production Process of Milk Pasteurizing Unit is given below in detail;



After the fresh milk is received it is filtered and pumped into the dump tank. It is then chilled with help of a chiller so that the growth of bacteria is minimized. On average, fresh milk contain 4.5% fats which will be reduced to 3.5% with the help of a cream separator. The milk will then undergo the pasteurization process. This is based on heating the milk to 75°C and holding at that temperature for at least 15-20 seconds.

This heat treatment ensures the destruction of unwanted micro-organisms and all bacteria. During this process the temperature is reduced to 4°C as at this temperature ideal growth of bacteria is stopped. After milk processing, the pasteurized milk is filled in the cooling tanks for delivery to urban milk distribution centers. Milk is also filled and sealed in plastic pouches of 1 liter and then are

ready for distribution in market. After the pasteurization process is completed, the tanks will be cleansed through steam for sterilization.

## 6 CRITICAL FACTORS

Following principles need to be pursued for the best productivity of pasteurized milk:

- ⇒ The commercial viability of this project depends upon the availability of regular milk supply.
- ⇒ Another important aspect is the quality check at different stages of production. This is very important after the distribution of milk where there is a need to check that the distributors do not supply adulterated milk.
- ⇒ Smart milk distribution networks also play an important role in the success of this business.
- ⇒ To establish a brand name, aggressive marketing efforts are recommended.
- ⇒ Price of milk is volatile, so due care and diligence should be taken while procuring fresh milk. An experienced procurement officer having good knowledge and understanding of milk quality and price fluctuation should be permanently hired for the facility.
- ⇒ Quality raw material and adaptive research & development is necessary for the project.
- ⇒ Storage management and quality improvement is needed.
- ⇒ Policy intervention and government support is required.
- ⇒ Skill enhancement of the contract farmers, process relevant staff and management should be ensured.
- ⇒ Capacity building of the dairy farmers, company staff and the management are lacking, infusion of technical services & appropriate know-how are always a catalyst for the better performance.

## 7 GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Milk Pasteurizing Unit can be installed in any industrial / commercial area in major cities (i.e Lahore, Multan, Karachi, Peshawar, Quetta, Faisalabad, Okara, etc.) of the country where raw material is available with the proper road access and



availability of the utilities (i.e electricity, water, drainage, telephone and fax, etc.).

## 8 POTENTIAL TARGET CUSTOMERS / MARKETS

With this increase in interest for healthy eating, people are avoiding to get milk from the milkmen due to contamination of germs and public awareness through ads. The target market is middle and upper middle-income group, specifically health conscious individuals particular about purchasing milk processed in a hygienic environment.

## 9 PROJECT COST SUMMARY

### 9.1 Project Economics

All the figures in this financial model have been calculated for estimated processing of 4,088,000 liters of milk year one. The capacity utilization during year one is worked out at 70% with 10% increase in subsequent years up to the maximum capacity utilization of 100%.

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

**Table 2: Project Economics**

Description	Details
Internal Rate of Return (IRR)	37%
Payback Period (Yrs.)	3.47
Net Present Value	Rs. 87,188,468

### 9.2 Project Financing

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

**Table 3: Project Financing**

Description	Details
Total Equity (50%)	Rs. 39,466,175
Bank Loan (50%)	Rs. 39,466,175
Annual Markup to the Borrower– Long Term Loan	14%
Tenure of the Loan (Years)	5

Annual Markup to the Borrower – Short Term Debt	15%
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### 9.3 Project Cost

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

**Table 4: Project Cost**

Description	Amount Rs.
Land	3,000,000
Building / Infrastructure	9,037,157
Machinery & Equipment	39,137,427
Furniture & Fixtures	440,000
Office Vehicles	4,347,000
Office Equipment	337,500
Pre-Operating Costs	1,515,756
Training Costs	250,000
<b>Total Capital Costs</b>	<b>58,064,840</b>
<b>Working Capital</b>	
Equipment Spare Part Inventory	97,844
Raw Material Inventory	20,269,667
Cash	500,000
<b>Total Working Capital</b>	<b>20,867,510</b>
<b>Total Investment</b>	<b>78,932,350</b>

### 9.4 Space Requirement

Approximately 2 kanal of land would be required for establishment of proposed unit, it is recommended that required land should be procured in the industrial estates of identified city / area. The cost of land is estimated at the rate of Rs. 1.5 million per kanal.

The infrastructural requirements of the project mainly comprise the construction of management building, laboratory, processing hall, store and other facilities. The cost of construction of building for the proposed unit is provided in the table below:

**Table 5: Space Requirement**

Description	Area (Sq.ft.)	Unit Cost (Rs.)	Total Cost (Rs.)
Management Building	600	2,000	1,200,000
Store Room	500	2,200	1,100,000
Factory	3,000	1,600	4,800,000

Testing Lab	300	2,000	600,000
Washrooms	100	800	80,000
Pavement / Driveway	2,000	200	400,000
Grounds	2,500	100	250,000
Boundary Wall (Running Feet)	379	1,600	607,157
<b>Total Infrastructure</b>			<b>9,037,157</b>

## 9.5 Machinery & Equipment Requirement

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

**Table 6: Machinery & Equipment Requirement**

Description	Quantity	Cost / Rate	Amount (Rs.)
Raw Milk Reception Tank 20,000 Liters	1	800,000	800,000
Milk Reception Unit	1	2,123,550	2,123,550
Double Static Filter With Bypass	1	882,090	882,090
Plates Milk Cooler	1	825,734	825,734
Raw Milk Storage Tank 3,000 Liters	1	2,041,875	2,041,875
Control Panel	1	196,020	196,020
Centrifugal Electro Pump	1	209,088	209,088
Skid Mounted Pasteurizer	1	3,838,725	3,838,725
Separators	1	3,721,930	3,721,930
Milk Degazing / Deodorizer Unit	1	4,083,750	4,083,750
Milk Storage Tank 3,000 Liters	1	2,041,875	2,041,875
Control Panel	1	196,020	196,020
Centrifugal Electro Pump	1	196,020	196,020
Automatic Filling Machine 2,000 Pouches/Hour	1	1,600,000	1,600,000
Ice Bank Unit	1	3,430,350	3,430,350
Semiautomatic Cip Unit	1	3,593,700	3,593,700
Steam Generator	1	3,593,700	3,593,700
Installation Charges	1	700,000	700,000
Refer Container - 600 Liters	2	904,000	1,808,000
Turnkey Operation	1	290,000	290,000
Generator - 70 KVA	1	1,345,000	1,345,000
Laboratory Equipment	1	500,000	500,000

Deep Freezers	3	40,000	120,000
Other Allied Equipment	1	1,000,000	1,000,000
<b>Total Machinery And Equipment</b>			<b>39,137,427</b>

## 9.6 Furniture & Fixtures Requirement

Details of the furniture and fixture required for Milk Pasteurizing Unit is given below:

**Table 7: Furniture & Fixtures Requirement**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Furniture	1	200,000	200,000
Water Dispenser	3	15,000	45,000
Fans, Energy Savers, and other equipment	1	20,000	20,000
Air conditioner 1.5 ton	2	65,000	130,000
UPS for Office	1	45,000	45,000
<b>Total Furniture &amp; Fixtures</b>			<b>440,000</b>

## 9.7 Office Equipment Requirement

Following office equipment will be required for Milk Pasteurizing Unit.

**Table 8: Office Equipment Requirement**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Laptop	1	100,000	100,000
Computers	3	50,000	150,000
Computer printer (s)	3	20,000	60,000
Telephones	5	1,500	7,500
Fax machines	1	20,000	20,000
<b>Total Office Equipment</b>			<b>337,500</b>

## 9.8 Office Vehicle Requirement

Following office vehicles are required for Milk Pasteurizing Unit;

**Table 9: Office Vehicle Requirement**

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Milk Collection Vehicle	2	1,200,000	2,400,000
Refrigerated Delivery Van	1	1,800,000	1,800,000

Registration fee (% of office vehicles cost)	3.5%		147,000
<b>Total Cost</b>			<b>4,347,000</b>

### 9.9 Human Resource Requirement

To run operations of Milk Pasteurizing Unit smoothly, details of human resources required along with number of employees and monthly salary are recommended as under;

**Table 10: Human Resource Requirement**

Description	No. Of Employees	Salary Per Month (Rs.)
Factory Manager	1	65,000
Lab Analyst	1	30,000
Plant Operator	1	25,000
Operator Helper	5	15,000
Loader	2	15,000
Procurement Officer	1	30,000
Marketing Manager	1	50,000
Sales Person	2	22,000
Admin / Accounts Officer	1	20,000
Office Boy	1	15,000
Driver	3	18,000
Guard	2	16,000
<b>Total</b>	<b>21</b>	

### 9.10 Raw Material Requirement

Fresh cow milk is the main raw material for the proposed business, which will be procured either directly from the farms or from distributors.

### 9.11 Utilities and Other Costs

An essential cost to be borne by the project is the cost of electricity, gas and fuel for generator. The utility expenses are estimated to be around Rs. 3.01 million in year 1. Rs. 5 per liter would be given to shopkeepers / departmental stores as refrigeration cost for the product. Furthermore, promotional expenses are essential for marketing of this unit, and are estimated as 2% of revenue for first 3 year and 1% in subsequent years.

### 9.12 Revenue Generation

Based on the assumed capacity revenue during the first year of operations is estimated as under:

**Table 11: Revenue Generation – Year 1**

Description	Operational Processing Capacity @ 70% in Year 1 (Liters)	Sale Price / Unit	Revenue (Rs.)
1 Liter Pouches	4,088,000	75	306,600,000

## 10 USEFUL WEB LINKS

Small & Medium Enterprises Development Authority (SMEDA)	<a href="http://www.smeda.org.pk">www.smeda.org.pk</a>
Government of Pakistan	<a href="http://www.pakistan.gov.pk">www.pakistan.gov.pk</a>
Ministry of Industries & Production	<a href="http://www.moip.gov.pk">www.moip.gov.pk</a>
Ministry of National Food Security & Research	<a href="http://www.mnfsr.gov.pk">www.mnfsr.gov.pk</a>
Government of Punjab	<a href="http://www.punjab.gov.pk">www.punjab.gov.pk</a>
Government of Sindh	<a href="http://www.sindh.gov.pk">www.sindh.gov.pk</a>
Government of Khyber Pakhtunkhwa	<a href="http://www.khyberpakhtunkhwa.gov.pk">www.khyberpakhtunkhwa.gov.pk</a>
Government of Balochistan	<a href="http://www.balochistan.gov.pk">www.balochistan.gov.pk</a>
Government of Gilgit Baltistan	<a href="http://www.gilgitbaltistan.gov.pk">www.gilgitbaltistan.gov.pk</a>
Government of Azad Jamu Kashmir	<a href="http://www.ajk.gov.pk">www.ajk.gov.pk</a>
Trade Development Authority of Pakistan (TDAP)	<a href="http://www.tdap.gov.pk">www.tdap.gov.pk</a>
Security Commission of Pakistan (SECP)	<a href="http://www.secp.gov.pk">www.secp.gov.pk</a>
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	<a href="http://www.fpcci.com.pk">www.fpcci.com.pk</a>
State Bank of Pakistan (SBP)	<a href="http://www.sbp.org.pk">www.sbp.org.pk</a>
Punjab Small Industries Corporation	<a href="http://www.psic.gop.pk">www.psic.gop.pk</a>
Sindh Small Industries Corporation	<a href="http://www.ssic.gos.pk">www.ssic.gos.pk</a>
Punjab Board of Investment & Trade (PBIT)	<a href="http://www.pbit.gop.pk">www.pbit.gop.pk</a>
Sindh Board of Investment (SBI)	<a href="http://www.sbi.gos.pk">www.sbi.gos.pk</a>
Pakistan Agricultural Research Council (PARC)	<a href="http://www.parc.gov.pk">www.parc.gov.pk</a>
Balochistan Agricultural Research Centre (BARC)	<a href="http://www.parc.gov.pk">www.parc.gov.pk</a>
Southern-zone Agricultural Research Centre (SARC)	<a href="http://www.parc.gov.pk">www.parc.gov.pk</a>
Arid Zone Research Institute (AZRI)	<a href="http://www.parc.gov.pk">www.parc.gov.pk</a>

Punjab Livestock & Dairy Development Board	<a href="http://www.plddb.pk">www.plddb.pk</a>
University of Agriculture, Faisalabad,	<a href="http://www.uaf.edu.pk">www.uaf.edu.pk</a>
Lasbela University of Agriculture, Water & Marine Sciences, Lasbela	<a href="http://www.luawms.edu.pk">www.luawms.edu.pk</a>
Sindh Agriculture University, Tondojam	<a href="http://www.sau.edu.pk">www.sau.edu.pk</a>
Gomal College of Veterinary Sciences, Dera Ismail Khan	<a href="http://www.gu.edu.pk">www.gu.edu.pk</a>
KPK Agricultural University, Peshawar	<a href="http://www.aup.edu.pk">www.aup.edu.pk</a>
Pir Mehr Ali Shah Arid Agricultural University, Rawalpindi	<a href="http://www.uaar.edu.pk">www.uaar.edu.pk</a>
University College of Veterinary & Animal Sciences, Islamia University Bahawalpur (IUB),	<a href="http://www.iub.edu.pk">www.iub.edu.pk</a>
University of Veterinary & Animal Sciences (UVAS), Lahore	<a href="http://www.uvas.edu.pk">www.uvas.edu.pk</a>
Bahauddin Zakariya University (BZU), Multan	<a href="http://www.bzu.edu.pk">www.bzu.edu.pk</a>
Agribusiness Support Fund (ASF), Lahore,	<a href="http://www.asf.org.pk">www.asf.org.pk</a>
Livestock and Dairy Development Department, Punjab	<a href="http://www.livestockpunjab.gov.pk">www.livestockpunjab.gov.pk</a>
Livestock & Fisheries Department, Sindh	<a href="http://www.sindh.gov.pk">www.sindh.gov.pk</a>
Agriculture & Livestock Department, KPK	<a href="http://www.khyberpakhtunkhwa.gov.pk">www.khyberpakhtunkhwa.gov.pk</a>
Livestock & Dairy Development, Balochistan	<a href="http://www.balochistan.gov.pk">www.balochistan.gov.pk</a>

## 11 ANNEXURES

### 11.1 Income Statement

Calculations	SMEDA									
Income Statement	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	306,600,000	367,920,000	434,605,500	507,039,750	532,391,738	559,011,324	586,961,891	616,309,985	647,125,484	679,481,759
<b>Cost of Sales</b>										
Raw Milk Cost	224,840,000	269,808,000	318,710,700	371,829,150	390,420,608	409,941,638	430,438,720	451,960,656	474,558,689	498,286,623
Packing Cost	18,396,000	22,075,200	26,076,330	30,422,385	31,943,504	33,540,679	35,217,713	36,978,599	38,827,529	40,768,906
Refridgeration cost (at shops)	20,440,000	23,360,000	26,280,000	29,200,000	29,200,000	29,200,000	29,200,000	29,200,000	29,200,000	29,200,000
Operating costs 1 (direct labor)	2,700,000	2,962,876	3,251,346	3,567,901	3,915,277	4,296,474	4,714,785	5,173,823	5,677,554	6,230,328
Operating costs 2 (machinery maintenance)	1,174,123	1,232,829	1,294,470	1,359,194	1,427,154	1,498,511	1,573,437	1,652,109	1,734,714	1,821,450
Operating costs 3 (direct electricity)	3,014,900	3,790,160	4,690,323	5,732,617	6,305,879	6,936,467	7,630,113	8,393,125	9,232,437	10,155,681
Diesel expense (Boiler)	521,220	547,281	574,645	603,377	633,546	665,223	698,485	733,409	770,079	808,583
Transportation cost (farm to plant)	1,635,200	1,962,240	2,317,896	2,704,212	2,839,423	2,981,394	3,130,463	3,286,987	3,451,336	3,623,903
Transportation cost (distribution of pastuerized milk)	2,555,000	2,682,750	2,816,888	2,957,732	3,105,618	3,260,899	3,423,944	3,595,142	3,774,899	3,963,644
CIP costs	240,000	252,000	264,600	277,830	291,722	306,308	321,623	337,704	354,589	372,319
Lab testing cost of milk	300,000	315,000	330,750	347,288	364,652	382,884	402,029	422,130	443,237	465,398
<b>Total cost of sales</b>	<b>275,816,443</b>	<b>328,988,336</b>	<b>386,607,948</b>	<b>449,001,686</b>	<b>470,447,382</b>	<b>493,010,478</b>	<b>516,751,312</b>	<b>541,733,682</b>	<b>568,025,062</b>	<b>595,696,834</b>
<b>Gross Profit</b>	<b>30,783,557</b>	<b>38,931,664</b>	<b>47,997,552</b>	<b>58,038,064</b>	<b>61,944,356</b>	<b>66,000,847</b>	<b>70,210,578</b>	<b>74,576,303</b>	<b>79,100,422</b>	<b>83,784,924</b>
<b>General administration &amp; selling expenses</b>										
Administration expense	2,940,000	3,226,243	3,540,354	3,726,475	4,089,289	4,487,428	4,924,331	5,403,771	5,929,889	6,507,232
Electricity expense	458,075	503,883	554,271	609,698	670,668	737,734	811,508	892,659	981,924	1,080,117
Communications expense (phone, fax, mail, internet, etc.)	588,000	645,249	708,071	745,295	817,858	897,486	984,866	1,080,754	1,185,978	1,301,446
Travelling expense	735,000	806,561	885,089	931,619	1,022,322	1,121,857	1,231,083	1,350,943	1,482,472	1,626,808
Office expenses (stationary, entertainment, janitorial services, etc.)	294,000	322,624	354,035	372,647	408,929	448,743	492,433	540,377	592,989	650,723
Promotional expense	6,132,000	7,358,400	8,692,110	5,070,398	5,323,917	5,590,113	5,869,619	6,163,100	6,471,255	6,794,818
Depreciation expense	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051
Amortization of pre-operating costs	151,576	151,576	151,576	151,576	151,576	151,576	151,576	151,576	151,576	151,576
Amortization of legal, licensing, and training costs	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
<b>Subtotal</b>	<b>16,201,701</b>	<b>17,917,585</b>	<b>19,788,556</b>	<b>16,510,757</b>	<b>17,387,610</b>	<b>18,337,988</b>	<b>19,368,466</b>	<b>20,486,229</b>	<b>21,699,134</b>	<b>23,015,770</b>
<b>Operating Income</b>	<b>14,581,856</b>	<b>21,014,080</b>	<b>28,208,997</b>	<b>41,527,307</b>	<b>44,556,746</b>	<b>47,662,859</b>	<b>50,842,113</b>	<b>54,090,074</b>	<b>57,401,288</b>	<b>60,769,155</b>
<b>Earnings Before Interest &amp; Taxes</b>	<b>14,581,856</b>	<b>21,014,080</b>	<b>28,208,997</b>	<b>41,527,307</b>	<b>44,556,746</b>	<b>47,662,859</b>	<b>50,842,113</b>	<b>54,090,074</b>	<b>57,401,288</b>	<b>60,769,155</b>
Interest expense on long term debt (Debt facility : Bank 1)	5,225,297	4,357,533	3,361,753	2,219,073	907,821	-	-	-	-	-
<b>Subtotal</b>	<b>5,225,297</b>	<b>4,357,533</b>	<b>3,361,753</b>	<b>2,219,073</b>	<b>907,821</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Earnings Before Tax</b>	<b>9,356,559</b>	<b>16,656,547</b>	<b>24,847,244</b>	<b>39,308,235</b>	<b>43,648,925</b>	<b>47,662,859</b>	<b>50,842,113</b>	<b>54,090,074</b>	<b>57,401,288</b>	<b>60,769,155</b>
Taxable earnings for the year	9,356,559	16,656,547	24,847,244	39,308,235	43,648,925	47,662,859	50,842,113	54,090,074	57,401,288	60,769,155
Tax	2,497,295	5,052,291	7,919,035	12,980,381	14,499,623	15,904,500	17,017,239	18,154,025	19,312,950	20,491,703
<b>NET PROFIT/(LOSS) AFTER TAX</b>	<b>6,859,264</b>	<b>11,604,256</b>	<b>16,928,209</b>	<b>26,327,853</b>	<b>29,149,302</b>	<b>31,758,359</b>	<b>33,824,874</b>	<b>35,936,049</b>	<b>38,088,338</b>	<b>40,277,451</b>



## 11.2 Balance Sheet

Calculations											SMEDA
Balance Sheet											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Assets</b>											
<i>Current assets</i>											
Cash & Bank	500,000	1,537,759	3,775,359	10,599,355	28,648,365	47,919,649	79,856,085	113,381,909	148,494,005	185,180,867	297,343,539
Accounts receivable		12,600,000	27,720,000	32,980,500	38,697,750	42,716,363	44,852,181	47,094,790	49,449,529	51,922,006	54,518,106
Equipment spare part inventory	97,844	107,873	118,929	131,120	144,560	159,377	175,713	193,724	213,580	235,472	-
Raw material inventory	20,269,667	25,539,780	31,677,308	38,804,703	42,782,185	47,167,359	52,002,013	57,332,219	63,208,772	69,687,671	-
<b>Total Current Assets</b>	<b>20,867,510</b>	<b>39,785,412</b>	<b>63,291,597</b>	<b>82,515,678</b>	<b>110,272,859</b>	<b>137,962,747</b>	<b>176,885,992</b>	<b>218,002,642</b>	<b>261,365,886</b>	<b>307,026,016</b>	<b>351,861,645</b>
<i>Fixed assets</i>											
Land	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Building/Infrastructure	9,037,157	8,585,299	8,133,442	7,681,584	7,229,726	6,777,868	6,326,010	5,874,152	5,422,294	4,970,437	4,518,579
Machinery & equipment	39,137,427	35,223,684	31,309,942	27,396,199	23,482,456	19,568,714	15,654,971	11,741,228	7,827,485	3,913,743	-
Furniture & fixtures	440,000	396,000	352,000	308,000	264,000	220,000	176,000	132,000	88,000	44,000	-
Office vehicles	4,347,000	3,912,300	3,477,600	3,042,900	2,608,200	2,173,500	1,738,800	1,304,100	869,400	434,700	-
Office equipment	337,500	303,750	270,000	236,250	202,500	168,750	135,000	101,250	67,500	33,750	-
<b>Total Fixed Assets</b>	<b>56,299,084</b>	<b>51,421,034</b>	<b>46,542,983</b>	<b>41,664,933</b>	<b>36,786,882</b>	<b>31,908,831</b>	<b>27,030,781</b>	<b>22,152,730</b>	<b>17,274,680</b>	<b>12,396,629</b>	<b>7,518,579</b>
<i>Intangible assets</i>											
Pre-operation costs	1,515,756	1,364,180	1,212,604	1,061,029	909,453	757,878	606,302	454,727	303,151	151,576	(0)
Training costs	250,000	225,000	200,000	175,000	150,000	125,000	100,000	75,000	50,000	25,000	-
<b>Total Intangible Assets</b>	<b>1,765,756</b>	<b>1,589,180</b>	<b>1,412,604</b>	<b>1,236,029</b>	<b>1,059,453</b>	<b>882,878</b>	<b>706,302</b>	<b>529,727</b>	<b>353,151</b>	<b>176,576</b>	<b>(0)</b>
<b>TOTAL ASSETS</b>	<b>78,932,350</b>	<b>92,795,626</b>	<b>111,247,184</b>	<b>125,416,639</b>	<b>148,119,195</b>	<b>170,754,456</b>	<b>204,623,075</b>	<b>240,685,099</b>	<b>278,993,717</b>	<b>319,599,220</b>	<b>359,380,224</b>
<b>Liabilities &amp; Shareholders' Equity</b>											
<i>Current liabilities</i>											
Accounts payable		12,886,245	26,483,545	31,470,568	36,733,728	40,419,397	42,529,656	44,766,807	47,139,375	49,656,541	49,160,093
<b>Total Current Liabilities</b>	<b>-</b>	<b>12,886,245</b>	<b>26,483,545</b>	<b>31,470,568</b>	<b>36,733,728</b>	<b>40,419,397</b>	<b>42,529,656</b>	<b>44,766,807</b>	<b>47,139,375</b>	<b>49,656,541</b>	<b>49,160,093</b>
<i>Other liabilities</i>											
Long term debt (Debt facility : Bank 1)	39,466,175	33,583,942	26,833,945	19,088,167	10,199,710	-	-	-	-	-	-
<b>Total Long Term Liabilities</b>	<b>39,466,175</b>	<b>33,583,942</b>	<b>26,833,945</b>	<b>19,088,167</b>	<b>10,199,710</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<i>Shareholders' equity</i>											
Paid-up capital	39,466,175	39,466,175	39,466,175	39,466,175	39,466,175	39,466,175	39,466,175	39,466,175	39,466,175	39,466,175	39,466,175
Retained earnings		6,859,264	18,463,520	35,391,729	61,719,582	90,868,884	122,627,243	156,452,117	192,388,166	230,476,504	270,753,955
<b>Total Equity</b>	<b>39,466,175</b>	<b>46,325,439</b>	<b>57,929,695</b>	<b>74,857,904</b>	<b>101,185,757</b>	<b>130,335,060</b>	<b>162,093,418</b>	<b>195,918,293</b>	<b>231,854,341</b>	<b>269,942,679</b>	<b>310,220,131</b>
<b>TOTAL CAPITAL AND LIABILITIES</b>	<b>78,932,350</b>	<b>92,795,626</b>	<b>111,247,184</b>	<b>125,416,639</b>	<b>148,119,195</b>	<b>170,754,456</b>	<b>204,623,075</b>	<b>240,685,099</b>	<b>278,993,717</b>	<b>319,599,220</b>	<b>359,380,224</b>

## 11.3 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		6,859,264	11,604,256	16,928,209	26,327,853	29,149,302	31,758,359	33,824,874	35,936,049	38,088,338	40,277,451
Add: depreciation expense		4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051	4,878,051
amortization of pre-operating costs		151,576	151,576	151,576	151,576	151,576	151,576	151,576	151,576	151,576	151,576
amortization of training costs		25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Accounts receivable		(12,600,000)	(15,120,000)	(5,260,500)	(5,717,250)	(4,018,613)	(2,135,818)	(2,242,609)	(2,354,739)	(2,472,476)	(2,596,100)
Equipment inventory	(97,844)	(10,029)	(11,057)	(12,190)	(13,440)	(14,817)	(16,336)	(18,011)	(19,857)	(21,892)	235,472
Raw material inventory	(20,269,667)	(5,270,113)	(6,137,528)	(7,127,394)	(3,977,482)	(4,385,174)	(4,834,654)	(5,330,206)	(5,876,552)	(6,478,899)	69,687,671
Accounts payable		12,886,245	13,597,300	4,987,023	5,263,160	3,685,669	2,110,260	2,237,150	2,372,569	2,517,166	(496,448)
Other liabilities		-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(20,367,510)	6,919,992	8,987,597	14,569,774	26,937,468	29,470,993	31,936,436	33,525,824	35,112,095	36,686,862	112,162,672
<i>Financing activities</i>											
Debt facility : Bank 1 - principal repayment		(5,882,233)	(6,749,997)	(7,745,777)	(8,888,458)	(10,199,710)	-	-	-	-	-
Additions to Debt facility : Bank 1	39,466,175	-	-	-	-	-	-	-	-	-	-
Issuance of shares	39,466,175	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares		-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activities	78,932,350	(5,882,233)	(6,749,997)	(7,745,777)	(8,888,458)	(10,199,710)	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(58,064,840)	-	-	-	-	-	-	-	-	-	-
Acquisitions		-	-	-	-	-	-	-	-	-	-
Cash (used for)/ provided by investing activities	(58,064,840)	-	-	-	-	-	-	-	-	-	-
<b>NET CASH</b>	<b>500,000</b>	<b>1,037,759</b>	<b>2,237,599</b>	<b>6,823,996</b>	<b>18,049,010</b>	<b>19,271,284</b>	<b>31,936,436</b>	<b>33,525,824</b>	<b>35,112,095</b>	<b>36,686,862</b>	<b>112,162,672</b>

## 12 KEY ASSUMPTIONS

### 12.1 Machinery Assumptions

Maximum capacity utilization	100%
First year capacity utilization	70%
Total Capacity intake per Hour (liters)	2,000
Actual Production of the unit per day (liters)	16,000
Total Production of the unit at 100%	5,840,000

### 12.2 Operating Assumptions

Hours operational per day	8
Days operational per year	365

### 12.3 Economy-Related Assumptions

Electricity price growth rate	10%
Wage growth rate	10%

### 12.4 Cash Flow Assumptions

Accounts Receivable cycle (in days)	30
Accounts payable cycle (in days)	30
Raw material inventory (in days) <sup>1</sup>	30
Equipment spare part inventory (in days)	30

### 12.5 Revenue Assumptions

Production capacity of the unit in Year 1 (liters) at 70%	4,088,000
Sale price -1 Liter pouch Year 1 (in Rs.)	75
1 <sup>st</sup> Year Capacity Utilization	70%
Maximum capacity utilization	100%
Sale price growth rate	10%

### 12.6 Expense Assumptions

Cost of raw milk per liter (Rs.)	55
Refrigeration cost at shops per liter (Rs.)	5
Cost of raw milk growth rate	5%
Machinery maintenance (% of machinery cost)	3%
Office expenses (% of administration expense)	10%
Promotional expense Year 1-3 (% of revenue)	2%

<sup>1</sup> Amount for these days production will be kept as working capital.

Promotional expense Year 3-10 (% of revenue)	1%
Communication expense (% of administration expense)	20.0%
Travelling expense ( % of administration expense)	25.0%

### 12.7 Financial Assumptions

Project life (Years)	10
Debt	50%
Equity	50%
Interest rate on long-term debt	14%
Interest rate on short-term debt	15%
Debt tenure (Years)	5
Debt payments per year	4

### 12.8 Depreciation Rate Assumptions

Land	0%
Buildings	5%
Machinery and Equipment	10%
Office Equipment	10%
Furniture & Fixtures	10%
Vehicles	10%