

Pre-Feasibility Study

MILK PASTEURIZING UNIT



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1 INTRODUCTION

1.1 Project Brief

Mini dairy is a small scale-milk-processing unit where milk is pasteurized and packed into plastic pillow-type pouches. Pasteurization is the process of heating the milk up to 70°C for a certain period of time and then cooling it to 4°C. The heat treatment must guarantee the destruction of unwanted pathogenic microorganisms 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.

For pasteurized milk, a standard formula of 3.5% fat contents and 9.5% 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. After cream separation, some milk powder is mixed and homogenized to make standardized milk of 3.5% fat and 9.5% SNF. This extra milk cream is sold to the sweet makers fetching higher prices in the range of Rs 40-50 per kg.

1.2 Opportunity Rationale

Mini dairy is an economically viable and financially profitable project. Pasteurized milk is a marketable product and its demand is increasing with the increase in awareness among the consumers. Also the mass sale of adulterated milk by Milkmen (*Dhodies*) is letting the urban low-income segment to shift from home delivered adulterated milk to self-purchased pasteurized milk from branded milk shop.

1.3 Proposed Milk Processing Capacity

Mini dairy unit with 2000 liters milk intake capacity per hour is an economical size for starting a milk processing business. However, due to the time required in installation and running of the unit, it is expected that the plant would achieve 100% efficiency in sixth year of operations.

1.4 Project Cost

Total project cost of this Milk Pasteurizing Unit is Rs. 27.411 million. Out of this, capital cost of the project is Rs. 27.21 million, and the rest is the working capital.

1.5 Product Mix

The product mix consists of Milk Pouches of 1 liters and 0.5 liter in the following ratio.

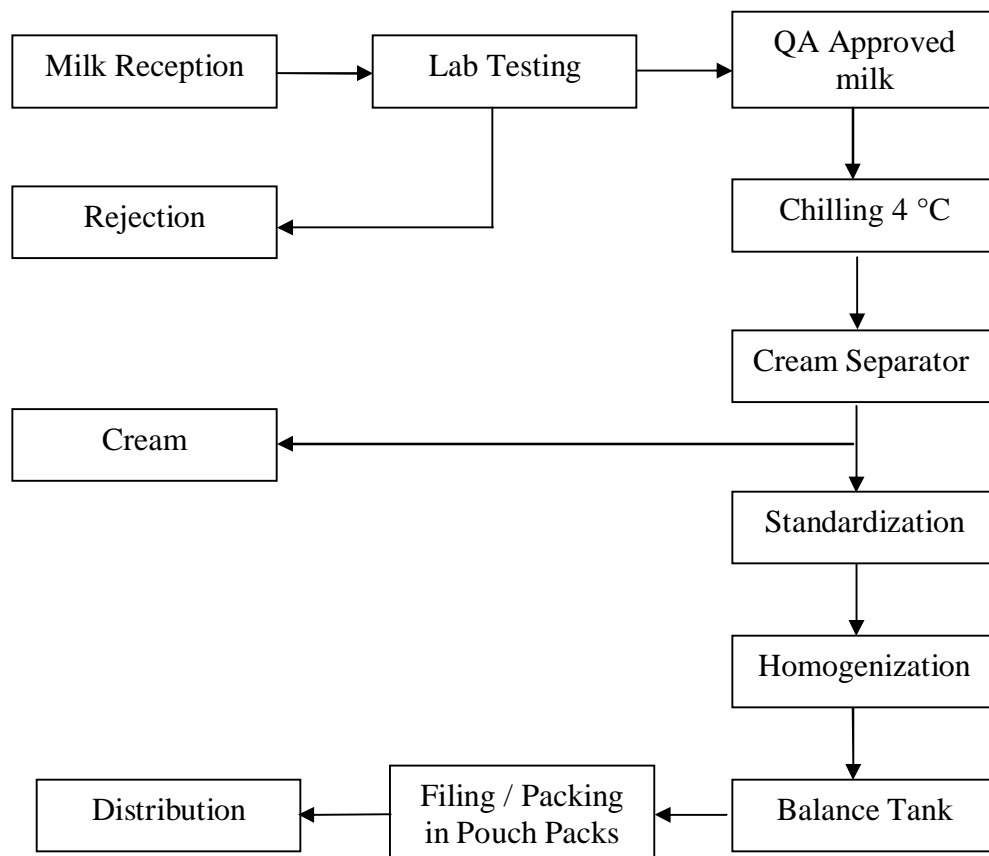
Product	%age of Production	Selling Price (Rs.)
1 Liter	75	27
0.5 Liters	25	15

1.6 Process Flow Chart

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 0.5 Ltrs capacity and then are ready for distribution in market. After the pasteurization process is completed, the tanks will be cleansed through steam for sterilization.

Figure 1-1: Process Flow of Milk Processing Plant



2 CURRENT INDUSTRY STRUCTURE

Milk processing industry has shown a growing trend in the country during the last decade. Dairy plants have been established in various parts of the country. Majority of the milk processing plants have been installed around the major urban cities. Lahore is a location where most of the plants are located. Nestle milkpak and Haleeb are the big players, which are currently in different milk and milk products like tetra pack UHT milk, yogurt, milk powder and other products. Small pasteurization units, which include Halla, Prime, Nurpur dairies, Dairy King, Butt dairies are successfully running. Currently, pasteurized milk is being supplied in Lahore market at open milk centers with a daily volume of approximately 80,000 liters.

Many of the milk processing plants are also closed, mostly due to management problems.

Table 2-1: Major Milk Processing Plants in Pakistan

Project	Location	Products
Am-Pak Dairy Ltd.	Raiwind	Past milk/Yogurt
Chaudhry Dairy Ltd.	Bhaipheru	UHT Milk, powder
Idara Kisan (Halla)	Pattoki/Lahore	Pasteurized Milk/Yogurt, UHT
Noon Pakistan Ltd.	Bhalwal	Milk powder/butter
Nestle` Milkpak Ltd.	Sheikhupura/Kabirwala	UHT Milk/Ghee
Prime Dairies Ltd.	Manga	Pasteurized milk/yogurt
Pakistan Milk Food	Jhang	Condensed Milk/Powder
United Dairies Ltd.	Lahore	Butter/Ghee
Gourmet	Lahore	Pasteurized milk

3 MARKETING

The market for pasteurized milk has shown a growth trend of 3% during the last decade. Currently, pasteurized milk has created a market in big urban city like Lahore where about 50,000 liters of milk is being sold at specialized milk shops. Open pasteurized milk centers have 2.5% of market share in 2 million liters daily milk consumption of Lahore City.

There are two ways of milk distribution i.e. through company's own distribution network or through third party distributor. Milk can be supplied once in a day at evening or in morning time.

3.1 Total Market Size and Growth

Processed milk has about 4% market share while rest of the market is with the informal (Dhodi) sector. The milk consumption is growing at a growth rate of 4.5% per annum, while milk production is growing at 4% per annum. The gap between supply and demand is fulfilled through adulteration and milk powder imports. Pakistan is the seventh largest producer of milk but even then we have to import powder milk to meet our domestic needs. About 30,000 tons of milk powder is imported from Poland and other European countries to meet the country requirements.

3.2 Major Urban Market

Urban markets are deficient in milk supply. Metropolitan cities like Lahore, Karachi, Multan, Rawalpindi, etc are the major markets of milk.

Milk collection and distribution for the urban areas, although commercially organized, is almost entirely handled by the informal sector. Organized collection, processing and marketing of milk represent hardly two percent of the total demand of the urban milk market.

4 RAW MILK

Fresh milk is purchased on fat content basis at the factory gate or collected through a milk collection agency. Fresh Milk on average contains 4.5% fats and 6.75% solids, to reach the standardized milk requirement (3.5% fats and 9% solids) 1% of fats is removed with the help of cream separator and milk powder is added to increase the solid contents of milk so that it reaches 9%. Raw milk price varies in the range of Rs 15 – 20 depending on the season. The feasibility study has taken an average price of Rs 18 per liter. Raw material must be free from dirt and have very low bacteria, and any powders must be easy to dissolve.

5 MANPOWER REQUIREMENTS

5.1 Number of People Required

14 persons can handle the operations of a mini dairy unit easily. The unit will be working on one shift basis. Technical staff with a level of secondary education is sufficient to look after specific tasks at the plant except for qualified laboratory staff.

Table 5-1: Manpower Requirement

Title	Number	Monthly Salary (Rs)	Annual Salary (Rs)
Factory Manager	1	30,000	360,000
Laboratory Technician	2	15,000	360,000
Boiler Operator	2	15,000	360,000
Operator	3	15,000	540,000
Distribution Supervisor	2	20,000	480,000
Watchman / Driver	2	5,000	120,000
Office Clerk	2	5,000	120,000
TOTAL	14		2,340,000

6 MACHINERY DETAILS

6.1 Plant and Machinery

In a pasteurization unit, the major cost of equipment is that of pasteurizer. Second hand used milk pasteurizer is also available in the market.

Tale 6-1 shows the list of machinery required for a pasteurization & packing unit:

Table 6-1: Machinery Required

Equipment	No.	Cost/ Machinery
Dairy Plant: (including)		
Pasteurization Plant		
Boiler		
Chiller		
Cream Separator - Centrifugal Clarifier / Standardizer	1	11,500,000
Thermostatic Tank		
Sanitary Centrifugal Electro-pump		
Platform		
Pre-assemblage on Platform		
High Pressure Milk Homogenizer	1	2,800,000
Stand-A-Pac Form, Fill & Seal Machine	1	1,500,000
Generator	1	275,000
Total Machinery Cost		

7 LAND & BUILDING

7.1 Total Land Required (Area)

About 1.4 Kanal (6,750 sq. ft.) of land along the roadside is sufficient for the installation of plant and machinery of a mini dairy.

Table 7-1: - Building Requirement

Description	Sq ft	Construction (Rs/ Sq. ft)	Total
Management building	400	800	320,000
store Room	240	600	144,000
Factory	2,600	700	1,820,000
Washrooms		500	
Pavement/driveway	2,000		40,000
Grounds	1,048		20,960
Total Construction Cost			2,344,960
Total Cost of Land			6,986,666
Total Land & Building/Construction Cost			9,331,626

7.2 Recommended mode for acquiring Land

It is recommended that the unit of this size should be installed on purchased land.

7.3 Suitable Locations

Sub-urban areas around the major cities of the country would be a suitable location for a milk-pasteurizing unit.

7.4 Infrastructure Requirements

- Road
- Electricity
- Water
- Diesel fuel
- Drainage
- Gas
- Telephone and Fax

8 PROJECT ECONOMICS

Table 8-1 Total Project Cost

Account Head	Total Cost (Rs)
Land	6,986,666
Building/Infrastructure	2,344,960
Plant & Machinery	16,075,000
Furniture & Fixtures/Office Equipment	248,500
Pre-operating costs	100,000
Vehicle	1,454,400
Total Capital Cost	27,209,526
Upfront Insurance Payment	101,808
Cash	100,000
Total Working Capital	201,808
Total Project Cost (Rs)	27,411,334

Table 8-2 Project Returns

	Project
IRR	43%
Payback Period (Years)	2.77

Table 8-3 Financing Plan

Financing	Ratio	Rs
Equity	50%	13,705,667
Debt	50%	13,705,667

9 REGULATIONS

Food laws are applicable as pasteurized milk has standard formula of 3.5% fats and 9.5% SNF according to food act 1965. There are no needs of getting a license prior to start a dairy unit in rural surroundings.

10 KEY SUCCESS FACTORS

- 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 also required.

11 THREATS FOR THE BUSINESS

- Shortage of milk supplies in the summer season.
- Higher milk prices in summer.
- Competition with milkmen supplying adulterated milk.

12 FINANCIAL ANALYSIS

12.1 Projected Sales Revenue

Revenue Generation											
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Production capacity (units)		5,280,000	5,280,000	5,280,000	5,280,000	5,280,000	5,280,000	5,280,000	5,280,000	5,280,000	5,280,000
Starting capacity utilization		75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Capacity utilization growth rate			5%	5%	5%	5%	5%	5%	5%	5%	5%
Capacity utilization for the year		75%	80%	85%	90%	95%	100%	100%	100%	100%	100%
Production 1 - Ltr (units)		2,970,000	3,168,000	3,366,000	3,564,000	3,762,000	3,960,000	3,960,000	3,960,000	3,960,000	3,960,000
Production 0.5 - Ltr (Units)		990,000	1,056,000	1,122,000	1,188,000	1,254,000	1,320,000	1,320,000	1,320,000	1,320,000	1,320,000
Production per year		3,960,000	4,224,000	4,488,000	4,752,000	5,016,000	5,280,000	5,280,000	5,280,000	5,280,000	5,280,000
Sale price per unit in year 1 - 1 Ltr	27										
Sale price per unit in year 1 - 0.5 Ltr	15										
Revenue		95,040,000	106,444,800	118,752,480	132,024,816	146,327,504	161,730,400	169,816,920	178,307,766	187,223,154	196,584,312

12.2 Projected Income Statement

Income Statement

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	Rs. in actuals									
Revenue	95,040,000	106,444,800	118,752,480	132,024,816	146,327,504	161,730,400	169,816,920	178,307,766	187,223,154	196,584,312
Cost of goods sold	75,319,200	84,572,928	94,603,450	105,470,022	117,236,432	129,971,362	136,903,609	144,225,835	151,961,877	160,137,197
Gross Profit	19,720,800	21,871,872	24,149,030	26,554,794	29,091,072	31,759,037	32,913,311	34,081,931	35,261,277	36,447,115
<i>General administration & selling expenses</i>										
Administration expense	2,340,000	2,567,826	2,817,833	3,092,181	4,350,308	4,773,860	5,238,650	5,748,692	6,308,393	6,922,587
Rental expense	-	-	-	-	-	-	-	-	-	-
Utilities expense	-	-	-	-	-	-	-	-	-	-
Communications expense (phone, fax, etc.)	-	-	-	-	-	-	-	-	-	-
Repairs & renewals	-	-	-	-	-	-	-	-	-	-
Office vehicles running expense	-	-	-	-	-	-	-	-	-	-
Office expenses (stationary, etc.)	11,700	12,839	14,089	15,461	21,752	23,869	26,193	28,743	31,542	34,613
Promotional expense	-	-	-	-	-	-	-	-	-	-
Insurance expense	101,808	91,627	81,446	71,266	61,085	50,904	40,723	30,542	20,362	10,181
Professional fees (legal, audit, etc.)	-	-	-	-	-	-	-	-	-	-
Depreciation expense	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038
Amortization expense	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Miscellaneous expense	4,415,400	4,945,248	5,517,042	6,133,653	6,798,132	7,513,725	7,889,411	8,283,882	8,698,076	9,132,979
Subtotal	8,773,946	9,522,578	10,335,449	11,217,598	13,136,314	14,267,396	15,100,015	15,996,898	16,963,410	18,005,398
Operating Income	10,946,854	12,349,294	13,813,582	15,337,195	15,954,758	17,491,641	17,813,296	18,085,033	18,297,866	18,441,717
Other income	258,486	807,067	1,518,873	2,412,777	3,420,782	4,745,645	6,411,882	8,217,705	10,164,700	12,253,485
Gain / (loss) on sale of assets	-	-	-	-	-	-	-	-	-	-
Earnings Before Interest & Taxes	11,205,340	13,156,361	15,332,455	17,749,972	19,375,540	22,237,286	24,225,177	26,302,738	28,462,567	30,695,201
Interest expense	1,791,469	1,487,496	1,138,127	736,583	275,071	-	-	-	-	-
Earnings Before Tax	9,413,871	11,668,865	14,194,328	17,013,389	19,100,468	22,237,286	24,225,177	26,302,738	28,462,567	30,695,201
Taxable earnings for the year	9,413,871	11,668,865	14,194,328	17,013,389	19,100,468	22,237,286	24,225,177	26,302,738	28,462,567	30,695,201
Tax	3,294,855	4,084,103	4,968,015	5,954,686	6,685,164	7,783,050	8,478,812	9,205,958	9,961,898	10,743,320
NET PROFIT/(LOSS) AFTER TAX	6,119,016	7,584,762	9,226,313	11,058,703	12,415,304	14,454,236	15,746,365	17,096,780	18,500,668	19,951,881
Balance brought forward		6,119,016	13,703,779	22,930,092	33,988,795	46,404,099	60,858,335	76,604,700	93,701,480	112,202,148
Total profit available for appropriation	6,119,016	13,703,779	22,930,092	33,988,795	46,404,099	60,858,335	76,604,700	93,701,480	112,202,148	132,154,029
Dividend	-	-	-	-	-	-	-	-	-	-
Balance carried forward	6,119,016	13,703,779	22,930,092	33,988,795	46,404,099	60,858,335	76,604,700	93,701,480	112,202,148	132,154,029

12.3 Projected Cash Flow Statement

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
										Year 9	Year 10
<i>Operating activities</i>											
Net profit	-	6,119,016	7,584,762	9,226,313	11,058,703	12,415,304	14,454,236	15,746,365	17,096,780	18,500,668	19,951,881
Add: depreciation expense	-	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038	1,895,038
amortization expense	-	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Deferred income tax	-	50,904	50,904	50,904	50,904	50,904	(50,904)	(50,904)	(50,904)	(50,904)	(50,904)
Accounts receivable	-	(4,320,000)	(4,838,400)	(1,077,840)	(1,162,728)	(1,253,410)	(1,350,254)	(1,067,701)	(753,517)	(791,192)	(830,752)
Finished good inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment inventory	-	-	-	-	-	-	-	-	-	-	-
Raw material inventory	-	-	-	-	-	-	-	-	-	-	-
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Advance insurance premium	(101,808)	10,181	10,181	10,181	10,181	10,181	10,181	10,181	10,181	10,181	10,181
Accounts payable	-	3,240,000	3,628,800	808,380	872,046	940,058	1,012,690	800,776	565,137	593,394	623,064
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(101,808)	7,005,139	8,341,285	10,922,976	12,734,144	14,068,075	15,980,987	17,343,755	18,772,715	20,167,185	21,608,508
<i>Financing activities</i>											
Change in long term debt	13,705,667	(2,035,414)	(2,339,387)	(2,688,755)	(3,090,300)	(3,551,811)	-	-	-	-	-
Change in short term debt	-	-	-	-	-	-	-	-	-	-	-
Change in export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Add: land lease expense	-	-	-	-	-	-	-	-	-	-	-
Land lease payment	-	-	-	-	-	-	-	-	-	-	-
Lease principal repayment	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	13,705,667	-	-	-	-	-	-	-	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing activ	27,411,334	(2,035,414)	(2,339,387)	(2,688,755)	(3,090,300)	(3,551,811)	-	-	-	-	-
<i>Investing activities</i>											
Capital expenditure	(27,209,526)	-	-	-	-	-	-	-	-	-	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by investing activ	(27,209,526)	-	-	-	-	-	-	-	-	-	-
NET CASH	100,000	4,969,725	6,001,899	8,234,220	9,643,844	10,516,263	15,980,987	17,343,755	18,772,715	20,167,185	21,608,508
Cash balance brought forward		100,000	5,069,725	11,071,624	19,305,844	28,949,688	39,465,952	55,446,939	72,790,693	91,563,409	111,730,594
Cash available for appropriation	100,000	5,069,725	11,071,624	19,305,844	28,949,688	39,465,952	55,446,939	72,790,693	91,563,409	111,730,594	133,339,101
Dividend	-	-	-	-	-	-	-	-	-	-	-
Cash carried forward	100,000	5,069,725	11,071,624	19,305,844	28,949,688	39,465,952	55,446,939	72,790,693	91,563,409	111,730,594	133,339,101

12.4 Projected Balance Sheet

Balance Sheet

	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										
Assets											
<i>Current assets</i>											
Cash & Bank	100,000	5,069,725	11,071,624	19,305,844	28,949,688	39,465,952	55,446,939	72,790,693	91,563,409	111,730,594	133,339,101
Accounts receivable	-	4,320,000	9,158,400	10,236,240	11,398,968	12,652,378	14,002,632	15,070,333	15,823,849	16,615,042	17,445,794
Finished goods inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment spare part inventory	-	-	-	-	-	-	-	-	-	-	-
Raw material inventory	-	-	-	-	-	-	-	-	-	-	-
Pre-paid annual land lease	-	-	-	-	-	-	-	-	-	-	-
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Pre-paid insurance	101,808	91,627	81,446	71,266	61,085	50,904	40,723	30,542	20,362	10,181	-
Total Current Assets	201,808	9,481,353	20,311,470	29,613,350	40,409,741	52,169,234	69,490,294	87,891,568	107,407,620	128,355,816	150,784,895
<i>Fixed assets</i>											
Land	6,986,666	6,986,666	6,986,666	6,986,666	6,986,666	6,986,666	6,986,666	6,986,666	6,986,666	6,986,666	6,986,666
Building/Infrastructure	2,344,960	2,227,712	2,110,464	1,993,216	1,875,968	1,758,720	1,641,472	1,524,224	1,406,976	1,289,728	1,172,480
Machinery & equipment	16,075,000	14,467,500	12,860,000	11,252,500	9,645,000	8,037,500	6,430,000	4,822,500	3,215,000	1,607,500	-
Furniture & fixtures	160,000	144,000	128,000	112,000	96,000	80,000	64,000	48,000	32,000	16,000	-
Office vehicles	1,454,400	1,308,960	1,163,520	1,018,080	872,640	727,200	581,760	436,320	290,880	145,440	-
Office equipment	88,500	79,650	70,800	61,950	53,100	44,250	35,400	26,550	17,700	8,850	-
Total Fixed Assets	27,109,526	25,214,488	23,319,450	21,424,412	19,529,374	17,634,336	15,739,298	13,844,260	11,949,222	10,054,184	8,159,146
<i>Intangible assets</i>											
Pre-operation costs	100,000	90,000	80,000	70,000	60,000	50,000	40,000	30,000	20,000	10,000	-
Training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	100,000	90,000	80,000	70,000	60,000	50,000	40,000	30,000	20,000	10,000	-
TOTAL ASSETS	27,411,334	34,785,840	43,710,920	51,107,762	59,999,115	69,853,570	85,269,592	101,765,828	119,376,842	138,420,000	158,944,041
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	3,240,000	6,868,800	7,677,180	8,549,226	9,489,284	10,501,974	11,302,750	11,867,887	12,461,281	13,084,345
Export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Short term debt	-	-	-	-	-	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	-	3,240,000	6,868,800	7,677,180	8,549,226	9,489,284	10,501,974	11,302,750	11,867,887	12,461,281	13,084,345
<i>Other liabilities</i>											
Lease payable	-	-	-	-	-	-	-	-	-	-	-
Deferred tax	-	50,904	101,808	152,712	203,616	254,520	203,616	152,712	101,808	50,904	-
Long term debt	13,705,667	11,670,253	9,330,866	6,642,111	3,551,811	-	-	-	-	-	-
Total Long Term Liabilities	13,705,667	11,721,157	9,432,674	6,794,823	3,755,427	254,520	203,616	152,712	101,808	50,904	-
<i>Shareholders' equity</i>											
Paid-up capital	13,705,667	13,705,667	13,705,667	13,705,667	13,705,667	13,705,667	13,705,667	13,705,667	13,705,667	13,705,667	13,705,667
Retained earnings	-	6,119,016	13,703,779	22,930,092	33,988,795	46,404,099	60,858,335	76,604,700	93,701,480	112,202,148	132,154,029
Total Equity	13,705,667	19,824,683	27,409,446	36,635,759	47,694,462	60,109,766	74,564,002	90,310,367	107,407,147	125,907,815	145,859,696
TOTAL CAPITAL AND LIABILITY	27,411,334	34,785,840	43,710,920	51,107,762	59,999,115	69,853,570	85,269,592	101,765,828	119,376,842	138,420,000	158,944,041

13 KEY ASSUMPTIONS

Table 13-1 Machinery Assumptions

Maximum capacity utilization	100%
Maximum capacity utilization (Year 1)	75%
Total Capacity intake per Hour (liters)	2,000
Actual Production of the unit per day (liters) ¹	16,000
Total Production of the unit (Year 1) @ 100%	5,280,000

Table 13-2 Operating Assumptions

Hours operational per day	8
Processing Hours	6
Cleaning Hours	2
Days operational per year	330

Table 13-3 Economy-Related Assumptions

Electricity price growth rate	10%
Gas price growth rate	10%
Wage growth rate	2%

Table 13-4 Cash Flow Assumptions

Accounts Receivable cycle (in days)	7
Accounts payable cycle (in days)	15
Raw material inventory (in day)	15
Equipment and spare part inventory (in days)	30

Table 13-5 Revenue Assumptions

Production capacity of the unit in Year 1(liters) @ 75%	3,960,000
Sale price -1 Ltr pouch Year 1 (in Rs.)	27
Sale price – 0.5 Ltr pouch in Year 1 (in Rs)	15
Maximum capacity utilization	100%
Sale price growth rate	5%

Table 13-Table 13-6 Financial Assumptions

Project life (Years)	10
Debt	50%
Equity	50%
Interest rate on long-term debt	14%
Debt tenure (Years)	5
Debt payments per year	12

¹ Total Production per day is calculated on the basis processing hours operational.