PASTEURIZED MILK PLANT WITH COLD ROOM

1. INTRODUCTION:

Dairy is a part of fragmented industry and the local needs of consumers are to be met through local supplies of milk and milk products. On an average the demand of milk is around 20000 LPD for a population of 100000. The consumption for milk products will varydepending upon cultural diversity and seasonal conditions. While there are a few National brands in milk like Amul, Mother Dairy, Britannia and Nestle butfor small towns even these companies are making strategic alliances with local players in mini dairy segment to cater to the requirements of thosemarkets. India is currently largest producer of milk with around 122 million MT per day. By 2020 it is expected to have a demand supply gap of almost thesame volume as today's production.

2. PRODUCT & ITS APPLICATION:

Milk and milk products are stipulated diet for almost every Indian. Milk is rich source of many nutrients and has many uses in many recipes. Products made from milk are cheese, paneer, sweets, ghee, cream, buttermilk, curd, chocolates, cookies etc.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Successful running this project does not require any specific qualification.

4. INDUSTRY LOOKOUT AND TRENDS

The primary appeal of milk powder is the increased shelf life it offers due to less moisture content. Longer shelf life is desirable in places with extreme temperature and poor transport facilities. The reduced transportation and storage costs associated with milk powder fuels the

growth of the global milk powder market. Moreover, the rising disposable income of population living in emerging nations and increasing adoption as an alternative to milk are likely to boost the demand for milk powder.

The growth of the global milk powder market is anticipated to be hampered with the growing concerns for ultra-high temperature (UHT) milk. Whole milk powder has all the nutrients present in milk, except vitamin C, vitamin B12, thiamine, and a reduced amount of protein. Moreover, the 2008 Chinese milk scandal, in which hundreds of infants died due to the consumption of adulterated powdered milk, has led to the development of stringent regulations regarding milk powder in many countries including China. These regulations coupled with globally declining prices of dairy products pose a challenge to the manufacturers, thereby impeding the growth of the global milk powder market.

The global milk powder market is segmented on the basis of type, applications, and geography. The key regions studied are Asia Pacific, Europe, North America, and Rest of the World Globally, New Zealand is the leading exporter of milk powder. The U.S. is the leading producer of milk powder; however, a large part of the volume is consumed domestically. China and France are also among the largest markets for powdered milk.

By type, the global milk powder market is segmented into dry whey products, dry dairy blends, dry buttermilk, dry whole milk, and non-fat dry milk. Based on application, the market is segmented into infant formulas, nutritional foods, confectionaries, and baked sweets and savouries.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

India is a country of over 100 metropolitan cities (with population of more than 4 millions). There are 400 middle India towns (1lac to 1million population) and over 2000 small towns with population around 1lac of population. On an average the demand of milk is around 20000 lpd for a population of 100000. Major requirements of the milk in small towns is met by unorganized players who are exploiting farmers and bringing milk to the households in unclean utensils and by adulterating the milk with non-descript extraneous material. With

advanced pasteurized milk plant, storage of milk will be easy and shelf life will be increased. Moreover, there will be hygienic milk packets which will increase consumer's trust. It will also help in wastages of milk and thus help farmers to get more revenue and high yield. It will become win-win situation for farmers and consumers both.

6. RAW MATERIAL REQUIREMENTS:

The basic raw material is milk. Apart from this, packing materials of food grade quality and disinfectants/consumables will be required as per need.

7. MANUFACTURING PROCESS:

The major process steps involved are as follows:

Milking: The most important part of a milk collection is how cattle are prepared for milking. Poor milking practice cause poor quality of milk and mastitis. The milk produced from the cattle must be clean and low in sediment.

Storing: The collected milk should be stored at 10o C to prevent bacterial spoilage. Mechanical coolers do the cooling of stored raw milk.

Homogenization: This process mixes all type of milk and emulsifies the milk for better emulsion of that milk does not separate on standing.

Creamseparation: Clarification at this stage is carried out with simultaneous cream separation. The process of clarification is carried out in cold condition but after homogenization.

Pasteurization: The milk after clarification and separation is subject to a temperature of 62° – 63° C for about not less than 30 minutes. The process is carried out in vat pasteurizer with jackets and agitators. Separated cream is also pasteurized.

Refrigeration: The pasteurized milk is stored in a chilled condition for further packing and delivery. The cream is also stored in chilled in a storage tank before packing

8. MANPOWER REQUIREMENT:

The enterprise requires 12employees as detailed below**:**

Sr. No.	Designation of Employees	Salary Per Person	Monthly Salary ₹	Number of employees required				
				Year-1	**Year-2**	**Year-3**	**Year-4**	**Year-5**
	Variable Labour: Workers							
1	Operator	₹ 10,000.00	₹ 10,000.00	2	2	2	3	3
2	Un Skilled Workers	₹ 8,000.00	₹ 24,000.00	4	4	4	7	7
	sub-total		₹ 34,000.00	6	6	6	10	10
	Fixed Staff:							
1	Accountant	₹ 12,000.00	₹ 12,000.00	1	1	1	1	1
2	Store Keeper	₹ 8,000.00	₹ 8,000.00	2	2	2	3	3
3	Sales Staff	₹ 12,000.00	₹ 24,000.00	3	3	3	5	5
	sub-total		₹ 44,000.00	6	6	6	9	9
	Total		₹ 78,000.00	12	12	12	19	19

9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 6 – 8months' time as detailed below:

Sr. No.	Activity	Time Required *(in months)*
1	Acquisition of premises	1.00
2	Construction (if applicable)	2.50
3	Procurement & installation of Plant & Machinery	2.50

4	Arrangement of Finance	1.00
5	Recruitment of required manpower	1.00
	Total time required *(some activities shall run concurrently)*	6.00 - 8.00

10. COST OF PROJECT:

The project shall cost ₹ 67.69lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	10.00
2	Building	8.50
3	Plant & Machinery	12.40
4	Furniture, other MiscEquipments	1.20
5	Other Assets including Preliminary / Pre-operative expenses	1.24
6	Margin for Working Capital	34.35
	Total	**67.69**

11. MEANS OF FINANCE:

Bank term loans are assumed @ 75% of Project Cost . The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	16.92
2	Bank Finance	50.77
	Total	**67.69**

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹34.35lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
1	Inventories	17.18	0.25	4.29	12.88
2	Receivables	8.59	0.25	2.15	6.44
3	Overheads	8.59	100%	8.59	0.00
4	Creditors	-		0.00	0.00
	Total	34.35		15.03	19.32

13. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below:

Sr. No.	Particulars	UOM	Qtty	Rate (₹ in Lacs)	Value (₹ in Lacs)
	Plant & Machinery / equipments				
a)	***Main Machinery***				
1	Homogenizer	Nos	1	₹ 1.35	₹ 1.35
2	Refrigeration Plant	Nos	1	₹ 1.20	₹ 1.20
3	Filtration Plant	Nos	1	₹ 1.05	₹ 1.05
4	Pasterizer	Nos	1	₹ 1.55	₹ 1.55
5	Emulsifier	Nos	1	₹ 0.95	₹ 0.95
6	Cream Separator	Nos	1	₹ 1.20	₹ 1.20
7	Packing Machine	Nos	1	₹ 1.50	₹ 1.50
8	Boiler	Nos	1	₹ 1.10	₹ 1.10
9	Milk Cans, Storage Tanks	Nos	LS	₹ 1.30	₹ 1.30
10	Material Handling Equipment	Nos	LS	₹ 0.55	₹ 0.55
11	Misc. Tools	Nos	LS	₹ 0.65	₹ 0.65
	sub-total Plant & Machinery				**₹ 12.40**
Sr. No.	**Particulars**	**UOM**	**Qtty**	**Rate (₹ in Lacs)**	**Value (₹ in Lacs)**
	Furniture / Electrical installations				
1	Office furniture and Electrification	LS	1	₹ 1.20	₹ 1.20

	sub total				**₹ 1.20**
	Other Assets				
1	preliminary and preoperative	LS		1.24	₹ 1.24
	sub-total Other Assets				**₹ 1.24**
	Total				**₹ 14.84**

All the machines and equipments are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

1. Fry-Tech Food Equipments Private Limited
   S. No. 4, Raviraj Industrial Estate,
BhikhubhaiMukhi Ka KuwaBharwadvash,
Ramol, Ahmedabad - 380024,
   Gujarat, India

2. Hindustan Vibrotech Pvt. Ltd.
Office No. 2, Ground Floor,
   Vrindavan Building, Vile Parle East,
Mumbai – 400057,
   Maharashtra, India

3. Electrons cooling systems Pvt. Ltd.
   S-27, SIDCO Industrial Estate
Kakkalur Industrial Estate
   Tiruvallur – 602003,
   Tamil Nadu, India

4. Springboard Enterprises India Ltd.

1st, 2nd & 3rd Floor,
Plot No. 7, 8 & 9,
Garg Shopping Mall,
Service Centre, Rohini Sector 2
New Delhi – 110085,
Delhi, India

5. Flour Tech Engineers Private Limited
Plot No. 182, Sector 24,
Faridabad - 121005,
Haryana, India

6. P Square Technologies
3, Swami Mahal,
Gurunanak Nagar,
Off. Shankarsheth Road Bhavani Peth,
Pune - 411002,
Maharashtra, India

7. Ricon Engineers
10 To 13, Bhagwati Estate,
Near Amraiwadi Torrent Power,
Behind Uttam Dairy,
Rakhial, Ahmedabad - 380023,
Gujarat, India

8. Kamdhenu Agro Machinery
Plot No. 6, Near Power House,
Wathoda Road Wathoda,
Nagpur - 440035,
Maharashtra, India

14. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	124.20	144.90	165.60	186.30	207.00
3	Raw Materials & Other direct inputs	₹. In Lacs	90.44	105.52	120.59	135.67	150.74
4	Gross Margin	₹. In Lacs	33.76	39.38	45.01	50.63	56.26
5	Overheads except interest	₹. In Lacs	17.46	18.55	20.73	21.38	21.82
6	Interest @ 10 %	₹. In Lacs	5.08	5.08	3.38	2.54	2.03
7	Depreciation @ 30 %	₹. In Lacs	3.72	2.79	2.23	1.49	1.12
8	**Net Profit before tax**	₹. In Lacs	**7.50**	**12.97**	**18.66**	**25.22**	**31.29**

The basis of profitability calculation:
This unit will have 1000Liter/Day capacity. The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study; it can be increased according to the selling strategy.)

Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per liter. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 42.39% of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	207.00
2	Variable costs	₹. In Lacs	150.74
3	Fixed costs incl. interest	₹. In Lacs	23.85

4	BEP = FC/(SR-VC) x 100 =	% of capacity	42.39%

16. STATUTORY / GOVERNMENT APPROVALS

The Ministry of Food Processing Industries has been operating several plan schemes for the development of processed food sector in the country during the 10th Plan. One of the schemes relates to the Technology Up-gradation/ Establishment/ Modernization of food processing industries.

The Indian food processing industry is regulated by several laws which govern the aspects of sanitation, licensing and other necessary permits that are required to start up and run a food business. The legislation that dealt with food safety in India was the Prevention of Food Adulteration Act, 1954 (hereinafter referred to as "**PFA**"). The PFA had been in place for over five decades and there was a need for change due to varied reasons which include the changing requirements of our food industry. The act brought into force in place of the PFA is the Food Safety and Standards Act, 2006 (hereinafter referred to as "**FSSA**") that overrides all other food related laws.

FSSA initiates harmonization of India's food regulations as per international standards. It establishes a new national regulatory body, the Food Safety and Standards Authority of India (hereinafter referred to as "**FSSAI**"), to develop science based standards for food and to regulate and monitor the manufacture, processing, storage, distribution, sale and import of food so as to ensure the availability of safe and wholesome food for human consumption. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

All food imports will therefore be subject to the provisions of the FSSA and rules and regulations which as notified by the Government on 5th of August 2011 will be applicable.

Key Regulations of FSSA

A. Packaging and Labelling

B. Signage and Customer Notices

C. Licensing Registration and Health and Sanitary Permits

17. BACKWARD AND FORWARD INTEGRATIONS

The objective of the scheme is to provide effective and seamless backward and forward integration for processed food industry by plugging the gaps in supply chain in terms of availability of raw material and linkages with the market. Under the scheme, financial assistance is provided for setting up of primary processing centers/ collection centers at farm gate and modern retail outlets at the front end along with connectivity through insulated/ refrigerated transport.

The Scheme is applicable to perishable horticulture and non-horticulture produce such as, fruits, vegetables, dairy products,meat,poultry,fish,Ready to Cook Food Products,Honey,Coconut,Spices,Mushroom,Retails Shops for Perishable Food Products etc.The Scheme would enable linking of farmers to processors and the market for ensuring remunerative prices for agri produce.

The scheme is implemented by agencies/ organizations such as Govt. / PSUs/ Joint Ventures/ NGOs/ Cooperatives/ SHGs / FPOs / Private Sector / individuals etc.

Backward Linkage:

- Integrated Pack-house(s) (with mechanized sorting & grading line/ packing line/ waxing line/ staging cold rooms/cold storage, etc.)
- Pre Cooling Unit(s)/ Chillers
- Reefer boats
- Machinery & equipment for minimal processing and/or value addition such as cutting, dicing, slicing, pickling, drying, pulping, canning, waxing, etc.
- Machinery & equipment for packing/ packaging.

Forward Linkage:

- Retail chain of outlets including facilities such as frozen storage/ deep freezers/ refrigerated display cabinets/cold room/ chillers/ packing/ packaging, etc.

- Distribution center associated with the retail chain of outlets with facilities like cold room/ cold storage/ ripening chamber.

18. TRAINING CENTERS AND COURSES

There are few specialized Institutes provide degree certification in Food Technology, few most famous and authenticate Institutions are as follows:

1. Indian Institute of Food Science & Technology,
   Plot No.1, Near Maa-BaapkiDargah,Opp to Nath Seeds,
   Paithan Road Aurangabad
   Aurangabad - 431005
   Maharashtra, India

2. MIT College of Food Technology, Pune
   Gate.No.140, Raj Baugh Educational Complex,
   Pune Solapur Highway,
   LoniKalbhor, Pune – 412201
   Maharashtra, India

3. CSIR - Central Food Technological Research Institute (CFTRI)
   Cheluvamba Mansion, Opp. Railway Museum,
   Devaraja Mohalla, CFTRI Campus, Kajjihundi, Mysuru
   Karnataka – 570020

Udyamimitraportal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.