

NAMKEEN BATCH PLANT: POTATO CHIPS

1. INTRODUCTION:

Namkeen/Farsan is very popular fast food item used in day to day life in almost all houses in the Country and also in abroad. Because of the taste and aroma of the product, the product has secured a very good market demand. The product is prepared in different tastes in accordance with the taste of the people of that Region. The product is packed in polythene pouches by using simple technology.

2. PRODUCT & ITS APPLICATION:

Potatoes are grown all over the country with concentration in Uttar Pradesh. It is probably the most popular food item of Indian diet. It is a rich source of starch and contains phosphorus, calcium, iron and vitamins. Apart from using fresh potatoes in vegetables and gravy they are dehydrated in the forms of slices and sticks, cubes or powder to impart better shelf life. Yet another popular use is to make wafers or chips to be consumed as snacks. Potatoes are grown and used in the Indian culinary since centuries with many end uses as stated. Fresh potatoes have very limited shelf life, but processed properly packed can be stored over a long period. Under the present conditions and with know- how developed by CFTRI value addition is possible and it is possible to store it over a long period. The technology is available with CFTRI. Compliance with PFA Act for such a unit is essential.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

The promoter does not require any qualification.

4. INDUSTRY LOOKOUT AND TRENDS

The average annual per capita consumption of commercial snacks is just 500g and that by urbanites is 10 times more than that by rural consumers. This may be since most rural households make these at home or buy from the local vendors that come in the unorganized market. Consumers from Western India are the leading snack consumers, followed by the North. While the domestic ethnic snack foods industry is hugely diverse, has easy access to indigenous technology and involves low entry barriers, standardization of product quality and backward links to testing facilities are at woefully low levels. Naturally, opportunity is screaming from the rooftops. K.P. Sareen, Executive Secretary, All India Food Processors' Association, calls it the third phase of the evolution of the salted snacks market. The first two, he says, dealt with development and nurturing of tastes respectively. The big question is whether branded players will edge past their unbranded counterparts? Brand marketers say they will. Factors like hygiene and quality is steadily bringing about a switch from unorganized to branded namkeens. One will not grow at the cost of the other and that both categories will co-exist.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

India is having good production of Potato. This vegetable is mainly used for making curry across India. Fried Potato Chips are also popular especially when multinational Company entered Indian market. Basically Potato carries enormous amount of Starch, some Protein, little fat and rich in mineral, vitamin. Extruded products are not much popular in India. This product attracted products like fried Potato Chips, Dehydrated Potato Chips and Colored Potato Flour can be manufactured. Potato is converted into different commercial products and marketed in India by large scale MNCs, Medium scale & Small Scale local units. The demand for Potato products such as Potato Chips & other products goes up every year due to growth in purchase power of people. Potato is a vegetarian delicacy and is a part of almost all Indian culinary dishes. It is easily digestible. It is also consumed in process form as a snack food. Their shelf life is enhanced by processing and properly packing in good quality polythene. This can then be stored and transported for selling in far off markets. It is

a very popular item in most of the star hotels and in urban households. The processed potato in the form of chips has a good market in metropolitan cities and center for tourists. The rural rich with changing lifestyle are also catching up with the urban tastes and eating habits. Processed and preserved potato ensures the availability throughout the year. It is a good substitute as a snack food and is very popular among children. Competitive pricing and easy availability will create its own market. The local manufacturer will have to compete with international brands and pricing will be its advantage.

6. RAW MATERIAL REQUIREMENTS:

The all-important raw material is good quality potato. Potatoes have high water content. Hence total loss during process shall be almost 30%. Potatoes are readily available hence procurement will not be a problem. Other ingredients like salt, spices etc. can be easily procured from local market. Packing items like plastic bags and corrugated boxes, labels, strapping etc. will be required. The other raw materials used are Dehydrated Potato Flour, Modified Starch, Palm Oil, Chili Powder, Refined Salt, Spice Powder, Salicylic Acid, Anti-Oxidants, Other Chemicals (Mono sodium glutamate, Bicarbonate, Food Colors, Flavors and preservatives).

7. MANUFACTURING PROCESS:

Extruded Potato snacks are developed in western countries. Dehydrated potato flour, modified starch, palm oil, and other ingredients are mixed into a mixer in pre-decided quantity up to required dough-consistency. It is then extruded through cooker-extruder to produce chips, cubes, sticks and granules of required size and shape. Extruded snacks are allowed to dry in a belt drier to required moisture-level. The dried products are either fried or Packed. Frying is carried out in a fryer where chips are deep-fat fried. Salt, flavouring, colors and preservatives are added during mixing. Hence, no need to add these ingredients during frying. Fryer must be semi-automatic or automatic type in which one can achieve desired frying temperature and recirculation of oil is possible. Fried chips are cooled and packing. For Potato chips, fully grown and ripe potatoes are thoroughly washed before peeling them.

Then these potatoes are trimmed and put in brine water for 30-35 minutes to prevent browning. They are afterwards cut in the required sizes on slicing machine. These slices are then blanched in boiling water and are then placed on drying trays which are then put in the drying machine. The temperature of the dryer is maintained in the range of 140 to 150 F. After drying they are fried in edible oil to make them crisp and brown and packed in polythene bags. The chips could be salty or spiced. Some other flavors which are locally popular can also be tried.

8. MANPOWER REQUIREMENT :

The enterprise requires 10 employees as detailed below:

Sr. No.	Designation	SALARY	Salary ₹	Number of Employees				
	Working Staff		PER ANNUM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Production Manager	18000	18000	1	1	1	1	1
2	Operators	12000	12000	1	1	1	2	2
3	Helpers	10000	50000	5	5	5	7	7
			80000	7	7	7	10	10
1	Fixed Staff:							
2	Admin Manager	15000	15000	1	1	1	1	1
3	Accounts/Assistant	12500	12500	1	1	1	1	1
	Office Boy	9000	9000	1	1	1	1	1
	<i>Sub-Total</i>		36500	3	3	3	3	3
	Total		116500	10	10	10	13	13

9. IMPLEMENTATION SCHEDULE:

Sr. No.	Activity	Time Required (in months)
1	Acquisition of premises	2.00
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 <i>(some activities shall run concurrently)</i>	4.00

10. COST OF PROJECT:

The project shall cost ₹ 38.20lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	0.00
2	Building	0.00
3	Plant & Machinery	22.00
4	Furniture, other Misc. Equipments	2.00
5	Other Assets including Preliminary / Pre-operative expenses	2.20
6	Margin for Working Capital	12.00
	Total	38.20

11. MEANS OF FINANCE:

	Particulars	₹ in Lacs
1	Promoter's contribution	9.55
2	Bank Finance	28.65
	Total	38.20

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 12.00 lacs as detailed below:

Sr. No.	Particulars	Gross Amt	Margin %	Margin Amt	Bank Finance
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1	Inventories	6.00	0.25	1.50	4.50
2	Receivables	3.00	0.25	0.75	2.25
3	Overheads	3.00	100%	3.00	0.00
4	Creditors	-		0.00	0.00
	Total	12.00		5.25	6.75

13. LIST OF MACHINERY REQUIRED:

The main plant and machinery required for a capacity of 60 tons per year working for 300 days on Two shift basis shall comprise; SS slicer with attachments - 1 nos. Electrically perated drier with trolleys - 1nos. Coal fired furnace. - 1nos Motorized potato peeling machine - 1 no's Automatic sealing machine - 1 no's Cutting peeling knives, aluminium utensils, weighing scales - 1 nos. The total cost of machinery is estimated to be Rs.22.00 lakhs.

Infrastructure: The total requirement of power shall be 10 HP; the unit will need 1000 lts.of water daily and coal about 1 ton per month. Dielse Reqd in Diesel Furnace: 12 - 15 L, Roaster RPM: 20 - 22 RPM."

Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value (₹ in Lacs)
	Main Plant and Machineries				22.00
	Furniture / Electrical installations				
c)	Office furniture	LS	1	50000	0500
	Stores Cupboard	LS	2	50,000	1.00
	Computer & Printer	LS	1	50000	0.50
a)	<i>sub total</i>				2.00
	Other Assets				
	Preliminary and preoperative				2.20
	<i>sub-total Other Assets</i>				2.20
	Total				26.20

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,
Bhikhubhai Mukhi Ka Kuwa Bharwadvash,
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. Electronics 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

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	36.00	42.00	48.00	54.00	60.00
3	Raw Materials & Other direct inputs	₹. In Lacs	25.26	29.47	33.68	37.89	42.10
4	Gross Margin	₹. In Lacs	10.74	12.53	14.32	16.11	17.90
5	Overheads except interest	₹. In Lacs	4.70	5.00	5.59	5.76	5.88
6	Interest @ 10 %	₹. In Lacs	2.87	2.87	1.91	1.43	1.15
7	Depreciation @ 30 %	₹. In Lacs	6.60	4.62	3.37	2.64	1.98
8	Net Profit before tax	₹. In Lacs	-3.43	0.05	3.46	6.28	8.89

The basis of profitability calculation:

This unit will have capacity of 200 METRIC TONNES at 100 INR/ KG. 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 39.25 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	60.00
2	Variable costs	₹. In Lacs	42.10
3	Fixed costs incl. interest	₹. In Lacs	7.03
4	$BEP = FC/(SR-VC) \times 100 =$	% of capacity	39.25%

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, Retailers 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 centre associated with the retail chain of outlets with facilities like cold room/ cold storage/ ripening chamber.

18. TRAINING CENTERS AND COURSES

There are few specialised 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-Baap ki Dargah,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,
Loni Kalbhor, Pune – 412201
Maharashtra, India

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

Udyamimitra portal (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