

Model Project on Wheat Milling

Govt. of West Bengal

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PROJECT PROFILE OF WHEAT MILLING

I. INTRODUCTION

Wheat is one of the cheapest and most nutritious crops. It is widely grown and is produced in abundance that is why it is used as staple food in most parts of India and the world. Clean, dry grains have to be milled to flour before further processing and consumption. Wheat flour is not only consumed for purposes at domestic level, but also finds use in bakery industry, confectionery, adhesives, fast foods, hotels, restaurants etc. in bulk. One of the great features about the flour is that its demand has to be directly proportional to the population growth. The whole grain can be milled to leave just the endosperm for white flour. The products of this are bran and germ. The whole grain is a concentrated source of vitamins, minerals, and protein.

II. OBJECTIVES

The commercial wheat milling will have a following objective

- Production of Maida, Atta, Sooji and bran.
- Maximize the yield and produce quality products.

III. RAW MATERIAL AVAILABILITY

Wheat constitutes an essential part of the Indian diet. Though West Bengal accounts for only 1.06% of the total wheat production in India, it is the 10th largest producing state in India. In the year 2011-2012, the production of wheat in West Bengal was 8.72 Lakh MT.

IV. MARKET OPPORTUNITIES

Wheat flour is used in the preparation of the staple foods and the snack foods in India. Wheat flour or Maida is mainly used in the preparation of most of the bakery items. Suji/ Rava are used in the preparation of sweets and meat products. Bran obtained during milling is used in the cattle feed. The products sold under the brand names are very few. The concept for the brand naming is increasing now. Hence there is a huge potential for milling of wheat.

V. PROJECT DESCRIPTION

• PRODUCT AND ITS USES

Foods made with wheat are a major part of Indian diet. In fact wheat can be found in some form at most of every meal. Bread, cookies, cakes, crackers, macaroni, spaghetti and other forms of pasta are made from flour, which is ground up kernel of wheat.

• CAPACITY

The production capacity for the wheat milling plant is 45MT per day for 300 working days per year

• MANUFACTURING PROCESS WITH FLOW CHART

Milling is the process by which wheat is ground into flour. Separating the wheat grain into its constituents (bran, germ and endosperm) involves the following:

Cleaning: During cleaning the coarse unwanted materials are separated using sieves.

Conditioning: Before milling grains are subjected to conditioning to produce uniform moisture throughout the grain. This helps in improving the milling efficiency.

Gristing: After conditioning, different batches of wheat are blended together (gristed) to make a mix capable of producing the required flour quality.

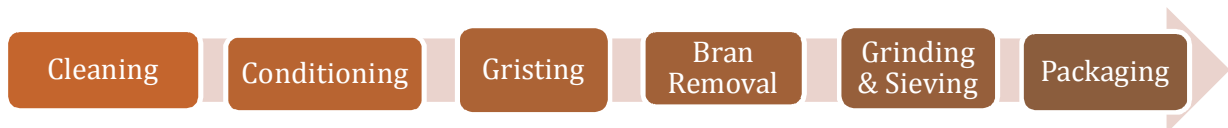
Hulling: In this process bran (5-7%) is removed from whole wheat grain.

Milling: Polished grains are then passed through grinder for milling. Essentially this is the separation of the bran and germ from the endosperm and the reduction of the endosperm to a uniform particle size (flour).

Sifting is done for obtaining bakery flour (30-35%).

Regrinding of oversized material gives the final product as chapatti flour (50-65%).

The process flow chart for wheat milling is as follows;



VI. PROJECT COMPONENTS

- **Land and Building**

A plot of land of around 0.5 acre shall be required which would cost around Rs.2.5 lakhs. In addition to the land an average Rs. 5.0 Lakhs are required for the development of land depending on the topography of land. The cost of land if purchased for the project can form part of margin of the promoters subject to a ceiling of 10% project cost.

- **Civil Works**

Main building area of 1000 sq. meters is sufficient for milling plant. Out of this the area of 400 sqm is required for main building, 500 sq. meters area is required as a storage space for finished product and 100 sq. meters is needed for office, lab and other supporting infrastructure. The construction cost is considered as Rs. 6000 per sq. meter. Hence the total construction cost for built up area is around Rs. 60 Lakhs.

Another 1000 sq. meter area is required for tube well, boundary wall, parking area etc. An amount of Rs. 10 Lakhs is necessary to take care of miscellaneous civil work.

- **Plant and Machinery**

In case of plant and machineries for wheat milling there are turnkey suppliers which undertake supply, erection as well as complete electrification of the plant. The main plant and machineries required for wheat milling includes;

Sr.	Particulars	Qty.	Amount
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No			(Rs. Lakhs)
A	Wheat Cleaning and Tempering Section		
1	Hexagonal Receiving Reel Machine	1	1.25
2	Separator with Aspirator	2	4.7
3	Scourer	1	1.95
4	Combined Washer, Wizzer and De-Stoner	1	5.5
	Disc Separator/ Cylindrical Grader	1	4.9
5	Magnetic Metal Separator	1	0.5
6	Grooving Machine (brush Machine)	1	6.0
7	Purification Machine	1	5.25
8	All Bucket Elevators	3	4.5
B	Milling Section		
	Double Roller Mills	6	20.0
	Chilled cast iron rolls	24	20.0
	Plan Sifters	2	7
	Double Purifier Machine	2	4.75
	Bran Sifter/ Finisher Machine	1	2.75
C	Pneumatic Conveying System	10	12.5
D	All Elevators, Worm Conveyors, Fans, Cyclones, Air Seals, etc.	1	12
E	Gravity Pipes, Spouting, Exhaust trunking, Hoppers, etc.	1	6
F	Weighing Machines with Platform and Digital Display indicators.	2	0.5
G	All Testing Equipments	1	0.5
H	All Spare Parts, including Nut/Bolts, H/Bolts, Bearings etc.	1 Lot	5
	Plant and Machineries		125.55
	Transportation, Erection, VAT, Excise duty etc.		23.11
	Total Cost of Plant and Machineries		148.66

- **Miscellaneous Fixed Assets**

Cost of office furniture and other infrastructure, telephone installation, electrical infrastructure is considered under miscellaneous fixed assets. A provision of Rs. 5.00 Lakhs is needed to take care of above expenditure.

- **Preliminary Preoperative Expenses**

There will be different preoperative expenses like registration, establishment, travelling, market survey, administrative, interest during construction period, trial run expenses etc. Rs. 29.00 Lakhs is required to pay these expenses.

- **Contingency**

Contingency charges are considered as a 2 % of the cost of project excluding the pre-operative expenses.

- **Margin Money for Working Capital**

Margin money for working capital is considered for one cycle in the project while calculating the project components.

VII. PROJECT COST

S. No.	Particulars	Amount (Rs. In Lakhs)
1	Land & Land Development	07.50
2	Civil Works	70.00
3	Plant & Machinerics	148.66
4	Working Capital Margin Money	25.77
4	Miscellaneous Fixed Assets	05.00
5	Preliminary & Preoperative Expenses	29.00
6	Contingency	04.57
Total Project Cost		316.27

VIII. MEAN OF FINANCE

The project is proposed to finance with a debt equity ratio 0.33:1 of and the means of finance is as follows:

S. No.	Source of Finance	Amount (Rs. In Lakhs)
1	Equity (25%)	79.07
2	Term Loan from Bank (75%)	237.20

IX. WORKING CAPITAL ASSESMENT

The working capital required to run the plant is worked out as under:

Rupees in Lakh

Working Capital Assessment				
Particulars	Days	Yr1	Yr2	Yr3

Raw material	25	26.73	62.37	71.28
WIP	5	5.84	13.64	15.58
Finished Goods	30	35.06	81.82	93.51
Debtors	30	35.43	83.03	94.72
Total		103.07	240.85	275.09
Creditors		0	0	0
Total		0	0	0
WCG		103.07	240.85	275.09
Margin	25%	25.77	60.21	68.77
MPBF		77.30	180.64	206.32
Interest	14%	10.82	25.29	28.88

X. MANPOWER REQUIREMENT

a. Administrative and Supervisory

Designation	Quantity	Salary Per Month
Miller	1	15000
Lab Chemist	1	12000
Mechanic	1	8000
Carpenter	1	10000
Fitter	2	7000
Unskilled Worker	10	5500
Skilled Worker	5	6000
Operator	2	6000
Monthly Total Salary In Rupees		69500
Total Salary in INR Lakh	18.72	

b. Unskilled Labour

Ten labours are required for unskilled work like handling, packing etc. Wages per person per day is Rs. 220/-. Hence the annual working capital for wages of Rs. 6.60 Lakhs is needed to maintain.

XI. PROJECT PROFITABILITY

• Installed Capacity and Capacity Utilization

The production capacity for the wheat milling plant is 48MT per day. For 300 working days per year the production capacity would be 13500 MT per annum. As the first year is construction period there will not be any production during

this year. In first, second and third year 30%, 70% and 80 % of installed capacity would be utilized respectively and from fourth year onwards 90% will be the capacity utilization.

- **Yield and Production**

The products obtained after wheat milling is Maida, Sooji, Atta and Bran. These are obtained after sieving using different sieve sizes and regrinding process. The percentage yield from good quality wheat is as follows:

Maida	55%
Sooji	5%
Atta	20%
Bran	20%

- **Sales Revenue**

The sale value at 100% capacity utilization will be;

S. No.	Products	Price/MT (Rs.)	Income (Rs in Lakh)
1	Maida	11000.0	871.20
2	Sooji	12500.0	90.00
3	Atta	13750.0	396.00
4	Bran	1500.00	43.20
Total Sale			1400.4

- **Profit Calculations**

S. No.	Particulars	Amount (Rs. In lakhs)				
		1	2	3	4	5
	Installed capacity(MT per annum)	13500				
	Years	1	2	3	4	5
	Capacity utilization (%)	30	70	80	90	90
Total income						
1	Maida	261.36	609.84	696.96	784.08	784.08
2	Sooji	27.00	63.00	72.00	81.00	81.00
3	Atta	118.80	277.20	316.80	356.40	356.40
4	Bran	12.96	30.24	34.56	38.88	38.88
Total income		0.00	407.16	950.04	1085.76	1221.48
Total expenditure		7.05	551.92	767.12	982.56	982.98
PBDIT		-18.35	7.66	32.88	60.59	69.40
Depreciation		0.00	2.76	11.84	21.81	24.99

Interest on term loan	22.97	23.32	19.14	15.31	11.48
Interest on working capital	0.08	16.67	23.29	23.29	23.29
Intangible assets written off	0.00	4.40	4.40	4.40	4.40
Profit after depreciation and interest	-18.35	7.66	32.88	60.59	69.40
Tax @ 36%	0.00	2.76	11.84	21.81	24.99
PADIT	-18.35	4.90	21.04	38.78	44.42
Surplus available for repayment	38.54	78.90	84.20	91.92	88.26
Cash Accruals	10.08	50.43	60.48	72.94	74.02

XII. FINANCIAL PARAMETERS

• Cash Flow Statement

The statement of cash flow is concerned with the flow of cash in and out of the business.

Cash inflow= Equity + Loan from bank + cash accruals from the business

Cash Out flow= Increase in fixed assets + Repayment of term loan + Preoperative expenses + cash required for the payment of dividend

Particulars	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
Cash Inflow	326.35	50.43	60.48	72.94	74.02
Cash outflow	316.27	39.53	39.53	41.11	41.11
Opening Balance	0.00	10.08	20.98	41.92	73.75
Surplus	10.08	10.90	20.95	31.83	32.91
Closing Balance	10.08	20.98	41.92	73.75	106.66

• Break Even Analysis

Particulars (Rs. In Lakhs)	Year 1	Year 2	Year 3	Year 4	Year 5
Sales Revenue	407.16	950.04	1085.76	1221.48	1221.48
Total Variable Cost	350.65	818.18	935.06	1051.94	1051.94
Contribution	56.51	131.86	150.70	169.54	169.54
Total Fixed Cost	35.61	47.33	43.07	38.83	33.94
Break Even Point (%)	63.01	35.89	28.58	22.90	20.02

The unit is expected to break even at approximately more than 50% capacity utilisation during second year and during third year the breakeven will be at 28.58%

- **Debt Service Coverage Ratio (DSCR)**

DSCR	Year 1	Year 2	Year 3	Year 4	Year 5
Coverage Available	38.54	78.90	84.20	91.92	88.26
Debt	28.46	68.00	63.25	58.51	53.77
DSCR Ratio	1.354	1.160	1.331	1.571	1.642
Average DSCR Ratio	1.50				

The debt service coverage ratio based on the assumed techno economic parameters is found satisfactory. The average DSCR is 1.50.

- **Internal Rate of Return (IRR)**

The internal rate of return is found to be 48.35% and BCR is about 1.06.

- **Projected Balance Sheet**

Liabilities	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
Equity	79.07	79.07	79.07	79.07	79.07	79.07	79.07
Term Loan	237.20	197.67	158.13	118.60	79.07	39.53	0.00
Reserve & Surpluses	-18.35	-13.45	1.80	33.19	70.23	109.87	161.28
Total	297.92	263.29	239.00	230.86	228.36	228.47	240.35
Assets							
Gross Fixed Assets	287.27	287.27	287.27	287.27	287.27	287.27	287.27
Less Depreciation	28.43	73.96	113.40	147.56	177.17	202.83	225.08
Net Fixed Assets	258.84	213.31	173.87	139.71	110.10	84.44	62.19
Intangible Assets	29.00	29.00	23.20	17.40	11.60	5.80	5.80
Cash & Bank Balance	10.08	20.98	41.92	73.75	106.66	138.23	172.36
Total	297.92	263.29	239.00	230.86	228.36	228.47	240.35
TNW	376.98	342.35	318.06	309.93	307.43	307.54	319.41
TOL	237.20	197.67	158.13	118.60	79.07	39.53	0.00
TOL/TNW	0.63	0.58	0.50	0.38	0.26	0.13	0.00

XIII. ASSUMPTIONS

- The unit will work for 300 days per annum on single shift basis.

- b. Capacity utilization: First year –3%, Second year - 70%, Third year -80% and fourth year onwards - 90%.
- c. The wages for unskilled workers are taken as per prevailing rates in this type of industry.
- d. Interest rate for term loan is 12% per annum and that is for working capital is 14% per annum.
- e. Margin money considered at 25% of the financial outlay.
- f. Insurance charges for the fixed assets considered as 0.5% of the depreciated cost of the assets.
- g. Repayment period of seven years with one year grace period for repayment of principal.
- h. Costs of machinery and equipment are based on average prices of machinery manufacturers and applied taxes may vary from state to state.
- i. Power cost is considered as Rs. 6.00 per unit and that for the fuel is Rs. 55 per litre.
- j. Repair and maintenance is considered as a percentage of total project cost excluding preliminary preoperative expenses, land and land development cost. The percentages are 0.10, 0.25 and 0.5 for first three years respectively and 0.75 for fourth year onwards.
- k. The administrative expenses will be considered as Lump sum Rs. 25 thousand per annum.
- l. The cost of water is considered as 30 paisa per L.
- m. The 0.5% of total income would be considered to take care of promotion and marketing expenses.
- n. Insurance of the fixed assets is a function of their depreciated cost. It is considered as a 0.5% of depreciated cost (WDV method) of assets.
- o. Land cost is considered as Rs.5 Lakh per acre.

VII ADDRESSES OF SUPPLIER OF PLANT AND MACHINERY

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