

## **1 BREAKFAST CEREALS**

### **1.1 Introduction**

Extruded breakfast cereal products such as corn flakes, rice flakes, wheat flakes and other formulated breakfast cereal product are now gaining popularity in India.

### **1.2 Objective**

The primary objective of the model report is to facilitate the entrepreneurs in understanding the importance of setting up unit of Breakfast Cereals technology and financial parameters of various components for preparation and submission of project proposal to bank for sanction of long term loan. This model report will serve as guidance to the entrepreneurs on starting up such a new project and basic technical knowledge for setting up such a facility.

### **1.3 Raw Material Availability**

Corn, Rice, Wheat are the major raw materials required for the production of extruded breakfast cereals.

### **1.4 Market Opportunities**

- Retail outlets through Provision Stores & Eateries
- Bulk outlets to Hotels, School- or Office / Industrial Canteens
- Exports to under developed countries

### **Trade practices**

Well – planned product promotion efforts are required to boost consumption of breakfast cereals and other convenience foods in India. A strong distribution network backed by exhaustive advertising campaign and cash incentives offers to dealers are needed to capture good share of the market.

### **1.5 Project description**

#### **Applications**

- As being ready – to – eat breakfast products, it is widely consumed in urban area particularly by office going persons and school- going children.
- Also as they are tasty and nutritious, their consumptions is increasing day by day
- Good export potential for exporting to under developed countries.

## **Availability of know how and compliances**

Foreign machinery suppliers provide know-how for production of breakfast cereals. CFTRI-Mysore also provides assistance for the project. Professional experts can be hired for setting-up project.

## **Capacity of the Project**

The rated capacity of the unit of breakfast cereals is 1200 MT per annum.

## **Manufacturing process**

### **❖ Evaluation of Available Technology & Selection of Technology**

Breakfast cereals are produced by extrusion cooking method. For this purpose single screw and twin screw extruders are available. Twin screw extrusion cooking method is used for producing high quality products with better texture and precise process control. Many companies providing turnkey plants based on twin screw extrusion technology. Wenger and APV baker are leader in this technology.

### **❖ Manufacturing process in Brief**

Ingredients are mixed and conveyed to a twin screw cooker extruder which gelatinizes the starch in cereal. The cooking temperature varies from 250° to 350° Deg. F .for 10-15 minutes. Flavour, colour and vitamins are added at this stage. The cooked cereal is then passed into a forming extruder where the mass is cooled and formed into the pellets. The pellets are conditioned before flaking/ shredding. The flakes are then roasted and required a coating of sugar is applied alongwith vitamins and minerals. This product is then packed and dispatched

### **❖ Product Quality Specifications**

Cornflakes are prepared from dehulled, degermed and cooked corn by flaking partially drying and roasting in the form of crisp flakes of reasonably uniform size and golden brown in colour. It shall be free from dirt, insects, larvae and impurities, any other extraneous matter.

It shall conform to the following standards.

|                             |   |
|-----------------------------|---|
| Moisture                    | Not more than 1(7.5) per cent           |
| Total Ash excluding salt    | Not more than 1.0 percent on dry basis  |
| ASH insoluble in dilute HCl | Not more than 0.1 per cent on dry basis |

Alcoholic acidity (with 90 per shall be equivalent to not more than 2.0 ml. of N. NAOH per 100g Per cent alcohol) of dried substance.

#### ❖ Critical Aspects fro Achieving Product of Better Quality

- Proper preconditioning and premixing of all ingredients play an important role in ensuring high quality level, in final products.
- Maintaining of temperatures in heads of three sections of cooker extruder affect expansion and synchronization of dough and ultimately the product quality.
- Speeds of both the screws of cooker extruders also have effect on quality of final product.
- Selection and proportion of various ingredients in formulation are critical in quality Control.

### 1.6 Project component and cost

Major components of the projects and their costs are described in the table hereunder:

#### 1.7 Land and Building

| PARTICULARS                       | Unit | Qty   | Cost/unit     | Total         |
|-----------------------------------|------|-------|---------------|---------------|
| <b>LAND &amp; BUILDING</b>        |      |       |               | <b>198.75</b> |
| Land                              | SqM  | 4,500 | 250.00        | 11.25         |
| <b>Land Development</b>           |      |       |               |               |
| Land Area                         |      | 4,500 | 500.00        | 22.50         |
| <b>Building</b>                   |      |       |               |               |
| <b>Production Block</b>           |      |       |               |               |
| Buildup Area                      | SqM  | 3,000 | 5,000.00      | 150.00        |
| Contingencies                     |      | 10%   |               | 15.00         |
| <b>PLANT &amp; MACHINERY</b>      |      |       |               | <b>287.50</b> |
| Plant & machinery                 | LS   | 1     | 25,000,000.00 | 250.00        |
| Contingencies                     |      | 15%   |               | 37.50         |
| <b>MISCELLANEOUS FIXED ASSETS</b> |      |       |               | <b>46.00</b>  |
| Misc Assets                       | LS   | 1     | 4,000,000     | 40.00         |
| Contingencies                     |      | 15%   |               | 6.00          |
| <b>PRE-OPERATIVE EXPENSES</b>     |      |       |               | <b>22.78</b>  |
| Establishment                     |      | 1     | 1,298,000     | 12.98         |
| Professional Charges              |      | 1     | 500,000       | 5.00          |
| Security Deposits                 |      | 1     | 480,000       | 4.80          |
| <b>TOTAL</b>                      |      |       |               | <b>555.03</b> |

#### 1.8 Plant and Machinery

The total cost of the plant and machinery is Rs. 287.50 Lakhs. The main plant and machinery required are Twin Screw Cooker Exturder, Forming Extruder, Preconditioner, S.S. Mixer, Conveyer Belt Dryer, Storage Bins, Flavour Applicator, Packing Machinery, etc.

#### 1.9 Building

The main production block will cost around Rs. 165 lakhs.

### 1.10 Miscellaneous Assets

A provision of Rs. 46 lakhs would take care of all the requirements.

### 1.11 Preliminary & Pre-operative Expenses

A provision of Rs. 22.78 lakhs would take care of pre-production expenses like establishment, professional charges, security deposits etc.

### 1.12 Working capital assessment

| ITEMS                                    | Year 1       | Year 3       | Year 5       |
|--|--------------|--------------|--------------|
| STOCK OF RAW MATERIAL & PACKING MATERIAL | 4.95         | 9.90         | 9.90         |
| SUNDRY DEBTORS                           | 39.60        | 79.20        | 79.20        |
| <b>TOTAL</b>                             | <b>44.55</b> | <b>89.10</b> | <b>89.10</b> |
| <b>MARGIN</b>                            | 11.14        | 22.28        | 22.28        |
| <b>MPBF</b>                              | 33.41        | 66.83        | 66.83        |
| <b>INTEREST ON WC</b>                    | 3.68         | 7.35         | 7.35         |

### 1.13 Means of finance

|  |     |        |        |               |
|--|-----|--------|--------|---------------|
| <b>EQUITY CAPITAL</b>                    |     |        | 41.17% | <b>233.08</b> |
| <b>MOFPI SUBSIDY</b>                     | 25% | 50.00  | 8.83%  | <b>50.00</b>  |
| <b>TERM LOAN</b>                         |     |        |        |               |
| FINANANCIAL INSTITUTIONS                 |     | 10.00% | 50.00% | <b>283.08</b> |
| <i>-Payable half yearly Installments</i> | 10  | 28.30  |        |               |
| <b>TOTAL</b>                             |     |        | 100%   | <b>566.17</b> |

### 1.14 Cash flow statement

| PARTICULARS                    | Year 1        | Year 3        | Year 5        | Year 7        |
|--------------------------------|---------------|---------------|---------------|---------------|
| <b>SOURCES OF FUNDS</b>        |               |               |               |               |
| EQUITY CAPITAL                 | -             | -             | -             | -             |
| SUBSIDY                        |               |               |               |               |
| NET PROFIT                     | 28.76         | 135.01        | 129.78        | 122.99        |
| (INTEREST ADDED BACK)          |               |               |               |               |
| DEPRECIATION                   | 39.04         | 39.04         | 39.04         | 39.04         |
| PRELIMINARY EXP.W/O            | 3.25          | 3.25          | 3.25          | 3.25          |
| INCREASE IN TERM LOAN          | -             | -             | -             | -             |
| INCREASE IN BANK BORROWINGS-WC | 33.41         | 20.05         | -             | -             |
| <b>TOTAL</b>                   | <b>104.47</b> | <b>197.35</b> | <b>172.07</b> | <b>165.29</b> |

### 1.15 Projected balance sheet

| PARTICULARS        | Year 1        | Year 3        | Year 5        | Year 7        |
|--------------------|---------------|---------------|---------------|---------------|
| <b>LIABILITIES</b> |               |               |               |               |
| EQUITY CAPITAL     | 233.08        | 233.08        | 233.08        | 233.08        |
| RESERVES & SURPLUS | 46.78         | 194.54        | 421.06        | 652.56        |
| TERM LOAN          | 254.78        | 141.58        | 28.38         | 0.00          |
| BANK BORROWINGS-WC | <b>33.41</b>  | <b>66.83</b>  | <b>66.83</b>  | 66.83         |
| <b>TOTAL</b>       | <b>568.06</b> | <b>636.03</b> | <b>749.36</b> | <b>952.47</b> |

### 1.16 Projected profit and loss account

| Particulars | Year 1 | Year 3 | Year 5 | Year 7 |
|-------------|--------|--------|--------|--------|
| INCOME      | 264.00 | 528.00 | 528.00 | 528.00 |

|                   |        |        |        |        |
|-------------------|--------|--------|--------|--------|
| EXPENDITURE       | 192.95 | 350.70 | 355.93 | 362.71 |
| VARIABLE          | 125.14 | 240.50 | 240.50 | 244.09 |
| FIXED             | 67.80  | 110.19 | 115.42 | 118.62 |
| GROSS PROFIT      | 71.05  | 177.30 | 172.07 | 165.29 |
| PROFIT BEFORE TAX | (3.22) | 109.25 | 115.34 | 115.64 |
| RETAINED PROFIT   | (3.22) | 109.25 | 115.34 | 115.64 |

### 1.17 Key indicators

|  |               |
|--|---------------|
| NET PRESENT VALUE at current Inflation (Rs.in lakhs) | <b>694.61</b> |
| INTERNAL RATE OF RETURN %                            | <b>22.67</b>  |
| AVERAGE DSCR   | <b>2.44</b>   |
| BREAK EVEN POINT %                                   | <b>59.27</b>  |
| PAY BACK PERIOD ( YEARS)                             | <b>4.58</b>   |

### 1.18 Manpower Requirement

| PARTICULARS                            | NO. |
|--|-----|
| <b>SUPERVISORY STAFF</b>               |     |
| MANAGER                                | 1   |
| MANAGER MARKETING                      | 1   |
| PROCUREMENT & MARKETING EXECUTIVES     | 2   |
| ACCOUNTANT, ADMN OFFICER, STORE KEEPER | 3   |
| <b>WORKERS</b>                         |     |
| PLANT OPERATORS                        | 2   |
| MAINT SUPERVISOR                       | 1   |
| HELPERS                                | 8   |

### 1.19 Assumptions

|  |                           |        |        |
|--|---------------------------|--------|--------|
| <b>Project &amp; Financing</b>           |                           |        |        |
| Contingencies on Building                |                           |        | 10%    |
| Contingencies on Equipment               |                           |        | 15%    |
| Term Loan                                |                           |        | 50%    |
| Rate of Interest on Term Loan            |                           |        | 10%    |
| Subsidy Considered                       | Subject to ceiling        |        | 25%    |
| Expected time of Installation            |                           | Months | 10     |
| Moratorium                               |                           | Months | 6      |
| <b>CAPACITY</b>                          |                           |        |        |
| Rated Capacity Per Annum                 | 80% of Installed capacity | TPA    | 1200   |
| Number of Operational Days               | DAYS                      |        | 330    |
| Working Hours Per day                    | Hrs                       |        | 14     |
| <b>CAPACITY UTILIZATION</b>              |                           |        |        |
| Year I                                   |                           |        | 50%    |
| Year II                                  |                           |        | 70%    |
| Year III                                 |                           |        | 100%   |
| <b>SALES PRICE</b>                       |                           |        |        |
| W S Price                                |                           |        | 44000  |
| <b>OTHER EXPENSE</b>                     |                           |        |        |
| Commission                               |                           |        | 10.0%  |
| Marketing Expenses                       |                           |        | 2.5%   |
| <b>POWER</b>                             |                           |        |        |
| Connected Load                           | HP                        |        | 120    |
| <b>DEPRICIATION AS PER COMPANY'S ACT</b> |                           |        |        |
| BUILDING                                 |                           |        | 3.34%  |
| PLANT & MACHINERY                        |                           |        | 10.34% |
| MISC. FIXED ASSETS                       |                           |        | 7.07%  |
| LAND & SITE DEVELOPMENT                  |                           |        | 1.63%  |

| <b>MAINTENANCE</b>      |       |
|-------------------------|-------|
| BUILDING                | 1.00% |
| PLANT & MACHINERY       | 3.00% |
| MISC. FIXED ASSETS      | 2.00% |
| LAND & SITE DEVELOPMENT | 1.00% |

## 1.20 Sources of technology

### Imported Machinery Suppliers

- Wenger International Inc. – USA
- APV Baker – UK
- Buhler AG – Switzerland

### Indigenous Machinery Suppliers

Fabdecon Engineers,  
138, Damji Shamji Ind. Complex,  
Off Mahakali Caves Rd., Andheri (E)  
Mumbai – 400 093

**The actual cost of projects may deviate on change of any of the assumptions.**