



Sustainability through Multi Products Milling

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Dear Friends,

- It is now more than 50 years that I joined the milling industry, and I have installed till now, more than 880 units and many more are under implementation.
- Over those years, the industry has made remarkable progress.
- Many Indian plants now meet world standards and numerous innovations have been introduced, with more on the way.
- For example, a new mill near Delhi already operates with a shorter dampening time meaning a maximum of 16 hours instead of 36 hours, an online bran drying system and air stabilisation in the mill building. To achieve sustainability through Multi Products Milling, you have to see the milling process in its entirety.
- These innovative concepts will further enhance projects in the Indian flour milling industry.

To start with **What is job of the Milling Company.**

It is:

- To search for customers
- To procure the wheat
- To mill the wheat and produce the right flour
- To store the products

And

- Then distribute them

If you achieve the above parameters, then problem of the mill is solved.

Sustainability in the Flour Mill starts from the Purchase of the Wheat.

Wheat purchasing is crucial for how profitable a mill is. When wheat is received at the mill, these parameters need to be checked.

- Hectolitre Weight
- Moisture
- Gluten
- Refraction
- Colour
- Visible Test
- Odour (alcoholic acidity)

It is a fact that most millers don't use a wheat testing facility
And note, cheap wheat will not improve the quality of flour.

Now, How do we Define Flour Quality

- Actually, there's no single definition for the quality of flour
- It depends on what types of flour do you mill and who are your customers
- Different end products need different flour qualities

That means flour usage dictates its specifications.

- There are three main types of flour:
 - Low protein (6–11%) used for cakes, cookies biscuits and crackers;
 - High protein (10.5–12%) used for bread; and
 - Durum, which is higher in protein and good for semolina pasta and noodles.

The efficiency in milling depends on the **Mill Balance**

A mill is said to be in balance if all the parameters which were determined at the design, planning and installation stages are maintained, keeping in mind also hygiene, grain storage, packing system, lab, fire fighting system etc.

In order to maintain a good mill balance, the following points are to be considered:

- First break feed at constant rate with correct moisture and proper conditioning.
- Break and scratch rolls to be kept in good operational conditions.
- Scalping and grading equipment should be in sound order.
- The Purifier must be checked to ensure correct operational settings.
- Reduction rolls must be checked at regular interval for correct grind and even distribution of feed over the roll length.
- The covers of the plansifters must be checked.
- Dust filters sleeves must be kept clean

A mill should be regarded as a complete machine which can be adjusted as required

It is to be noted that most of the mills are not maintaining an updated mill balance diagram.

Now let us talk about implementing **Multi Products Milling**

Multi products milling is possible if the mill performance is good. That means a maximum amount of flour of the correct specifications is produced in the most efficient and profitable way. It covers all the aspects of the milling process from wheat buying to delivery of the final products.

Key aspects for this include:

The **Wheat selection**: The right blend of wheat varieties to meet the desired specifications for different end products has to be chosen

Further, the **Milling efficiency**: It means optimising the machinery and the process flow to separate effectively the wheat kernel components. That is endosperm, bran, germ with minimal energy consumption

Next is **quality control**: Vigorous testing at various stages has to be implemented to ensure each product stream meets its unique quality standards that means, ash content, protein levels, and particle size.

Then **Yield optimisation**: It involves striking a balance between producing high-value flours like Maida and other co-products to maximise overall profitability

And last **Logistics**: Which is the efficient handling, storage, and distribution of the multiple final products to meet diverse customer demands

In order to facilitate **Multi Products Milling**, our company has developed a Milling Flow Diagram. On the base of this, various combinations of products can be achieved, with minor modifications to suit the industry requirements.

The following chart shows the products which can be produced in different combinations.

Product	Extraction Rate	Specifications
Maida (M ₁)	38 – 40%	Ash < 0.55%. (Bakery Maida)
Maida (M ₂)	15%	Ash Maximum 0.80%. (Biscuit Maida)
Chaap Maida	2.5%	High Gluten Maida
Ply Maida	2 – 5%	From DBR and last Reduction, High Ash contents, Dull in colour
Suji	5 – 6%	
Rawa	2%	
Tandoori Atta	2%	
Mill Atta	5 - 7%	Can be used in Biscuit Maida
Coarse Bran	10 – 12%	
Fine Bran	10%	
Deluxe Bran	4%	Pollard is dirtier than Atta and Whiter than bran. From last Reduction

From M₁ we can produce (up to 20%) Super Fine Maida with 0.4% Ash.

The next chart shows the **Extraction Combinations which are demanded by the Industry**

The combination of products below can be achieved by simple wheat blends as required.

For Example:

S. No	Extraction Combination	Remarks
1	Biscuit + Bran	Low HL Weight, low protein (10 – 10.5), Maximum Bran 22%
2	Biscuit + Suji + Bran	Blend 30% low protein, Maximum Bran 21%
3	Biscuit + Atta + Bran	Low HL Weight, low protein, Maximum Bran 20%
4	Biscuit + Atta + Suji + Bran	Blend 30% low protein, Maximum Bran 22%
5	Bakery + Biscuit + Suji + Bran	Blend 20% Kota wheat, high protein, maximum Bran 24%
6	Bakery + Cracker + Suji + Bran	Blend 50% Kota wheat, high protein, maximum Bran 24%
7	Atta + Bran	Wheat blend as in S. No.1 , Grooving and Flow Diagram amend
8	Bakery + Bran	Blend 40% Kota wheat, high protein, maximum Bran 25%
9	Cracker + Bran	Blend 70% Kota wheat, high protein, maximum Bran 24%
10	Bakery + Wafer + Bran	No Blend, Dhara Wheat, Maximum Bran 24%
11	Any Other combination	Blending of High and Low Gluten Wheat

The assumption is that in India, the total consumption of Maida flour is 21 to 22 Million Tons / year. Out of this, 1/3, approximately 7.5 Million Tons / year goes to Institutions.

The rest to local bakers, halwais, restaurants, the snack industry and households. Multi Products Milling will enable the millers to fulfil the different requirements of these diverse consumers as per their specifications and with this he will increase the profitability of his mill.

Thanking You