



WHOLE WHEAT FLOUR PESA ATTA

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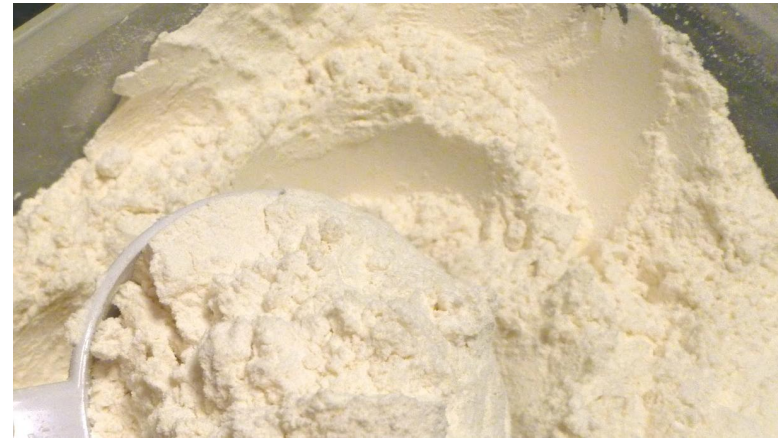
Innovations for a better world.



Atta Process

Indian Atta Flour

- “Whole wheat flour” with 95 – 97% extraction.
- Used for flat bread (Chapatti, Roti, Puri, etc.)
- After rice, flat bread made from Atta is the second staple food in India.
- Traditionally produced on stone mills with low throughput.



India – large market of whole wheat flour (Atta).



Home made Atta Flour



Road side Atta Flour from
stone mills or disk mills



Industrial stone (Chakki) mills

Industrial ATTA flour production in India

Chakki mills in parallel → Premium ATTA

Produced mainly in India and few other countries

Major Players for Premium ATTA in India:
ITC Ltd. (Aashirvaad), Hindustan Lever Ltd (Anapurna), General mills (Pilsbury ATTA)

Roller mill → Normal, Resultant ATTA

Produced in East Asia, Arab countries, India, partly Africa, even Europe
Of minor quality in final product (Chapati)



Market demand

- Atta flour production for staple food in India
- Meeting local eating habits
- **FOOD SAFETY** - flour production
- Industrial process with higher automation degree
- Lower energy consumption compared to stone mills



Innovative Grinding Technology.

Pesa mill is the key grinding components for whole wheat atta process. The typical flour characteristics for flat breads (roti, chapati), such as starch damage and water absorption, can be flexibly controlled.



Atta
Processing.



Innovations for a **better world.**

Atta Process with PesaMill™.
Traditional flat breads made of whole meal flour.

Chapati



Roti



Puri



**Gurassah /
Sudan**



Innovations in Atta Milling

Hygienic Atta for good health

Top sanitation

Energy saving

Flexibility in Atta quality

Low maintenance demand

Homogeneous and consistent product

Space saving

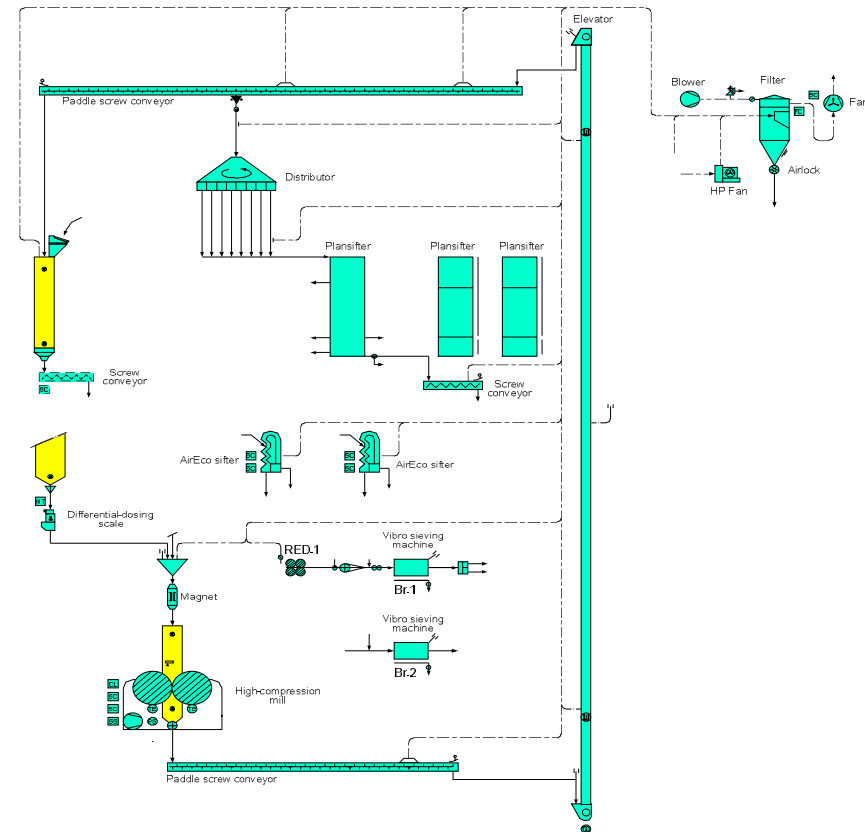
Less down time while power cuts

No stones shavings in Atta



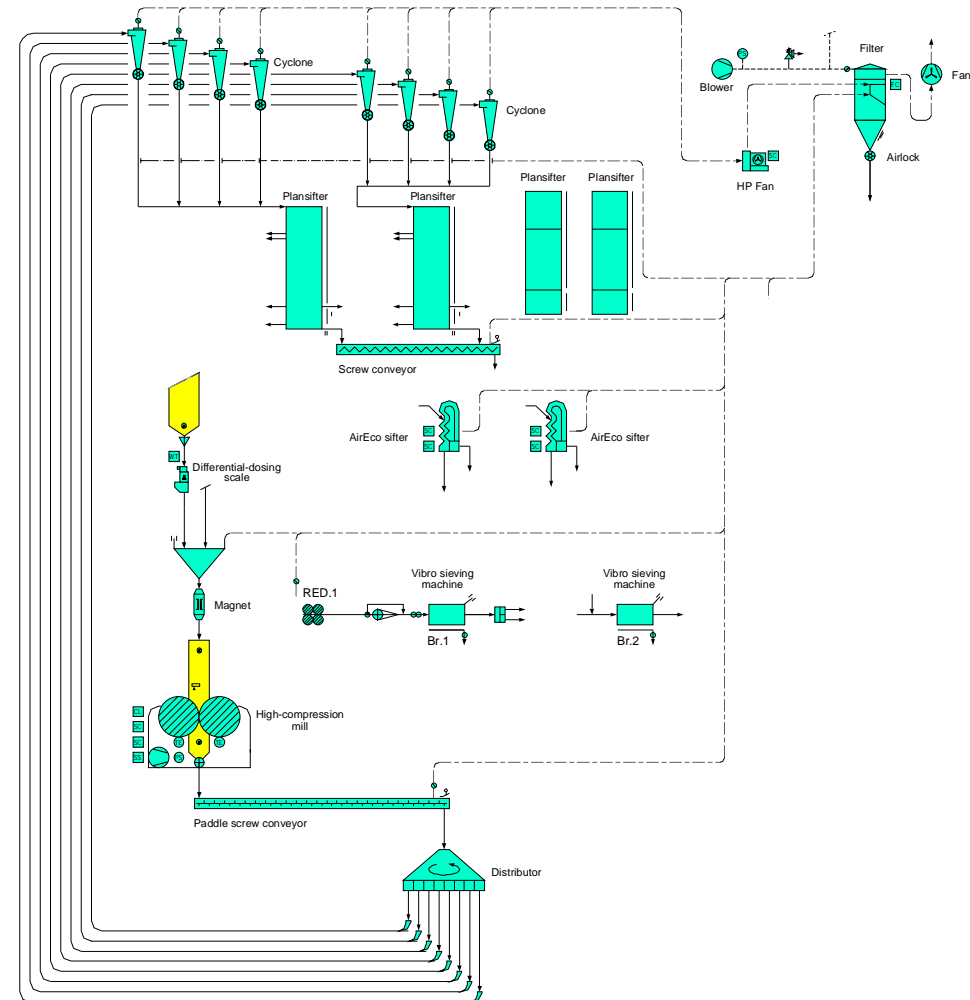
Process function

- Re-circulation process (4 - 5 times). Important to reach certain temperature and specific degree of starch damage
- Regulated wheat input
- Atta flour is separated in plansifter & bran finisher
- Bran is removed by AirEco sifters and bran finishers
- Roller mill supports grinding and increases flexibility of process



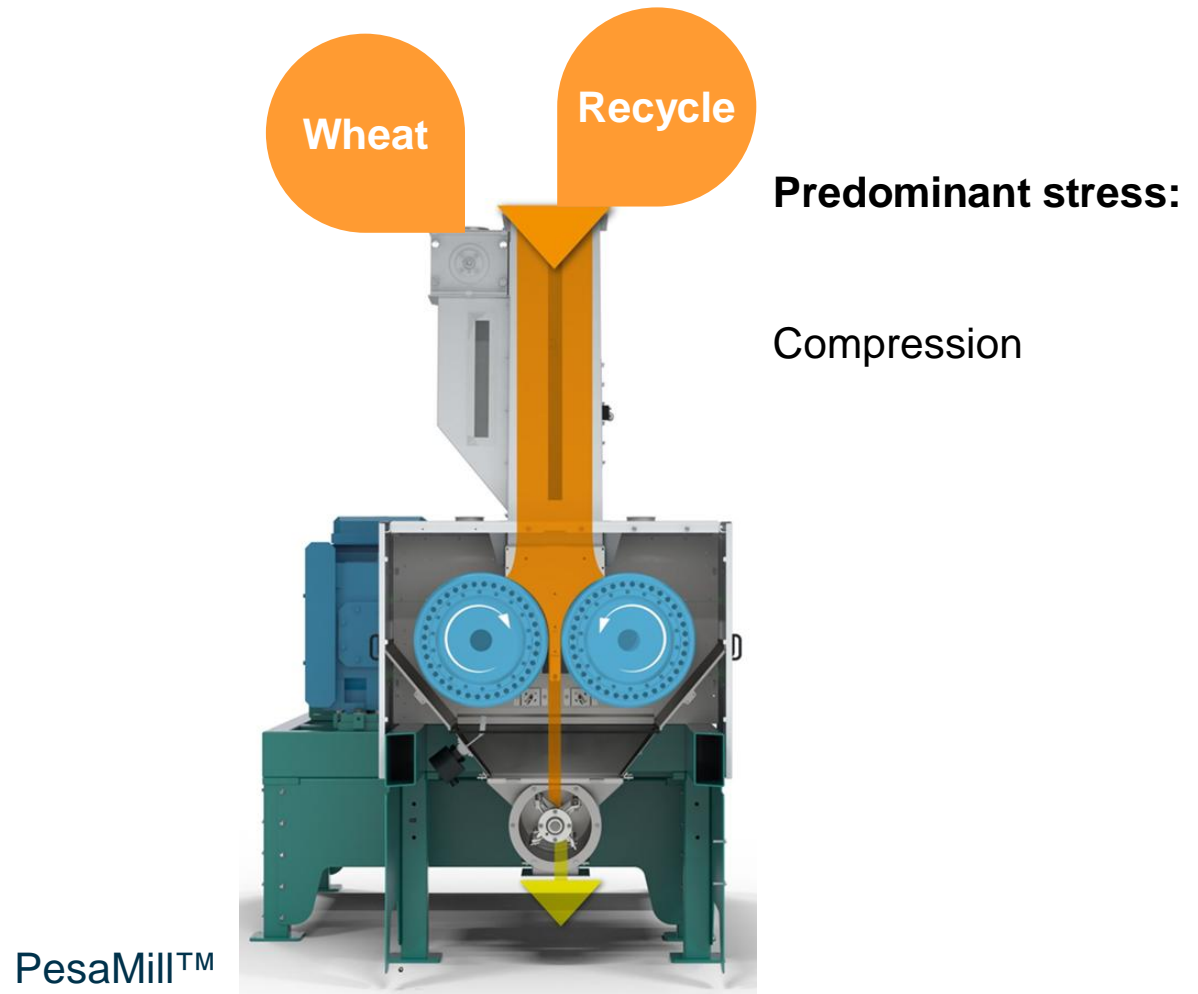
Pneumatic Variant

- Another forward leap in the process..
- For high hygiene standards
- Better sieving efficiency



Pesa-Mill™ MDGA – the heart of the process

- Recirculation process: Reduction of the particle size is achieved in multiple cycles
- Simultaneous grinding of wheat and intermediate products
- MDGA-400 A - 150t/24h Atta
- MDGA-200 A - 65t/24h Atta



AirEco Sifter MTZA

- Separates product into two fractions of different density
- Gives flexibility in regulating final yield
- Low energy consumption compared to purifiers due to air recycling system
- Specifically designed for the Atta Process and the CombiMill Process
- AirEco Sifters do not replace purifiers. It is not possible to produce clean semolina.



Quality parameters of whole wheat flour for flat bread.

Quality parameters

- Granulation
- Starch damage
- Higher water absorption
- Moisture content, elasticity
- Long shelf life
- Hygiene, food safety

Organoleptic parameters

- Smell
- Taste
- Texture/ appearance of flat bread



Quality figures for Indian Atta flour.

Results from Bühler Atta process with PesaMill™.

Requirement:

Process parameter	min.	max.
Damaged starch AACC [%]	16	20
Water absorption [%]	75	79

Result:

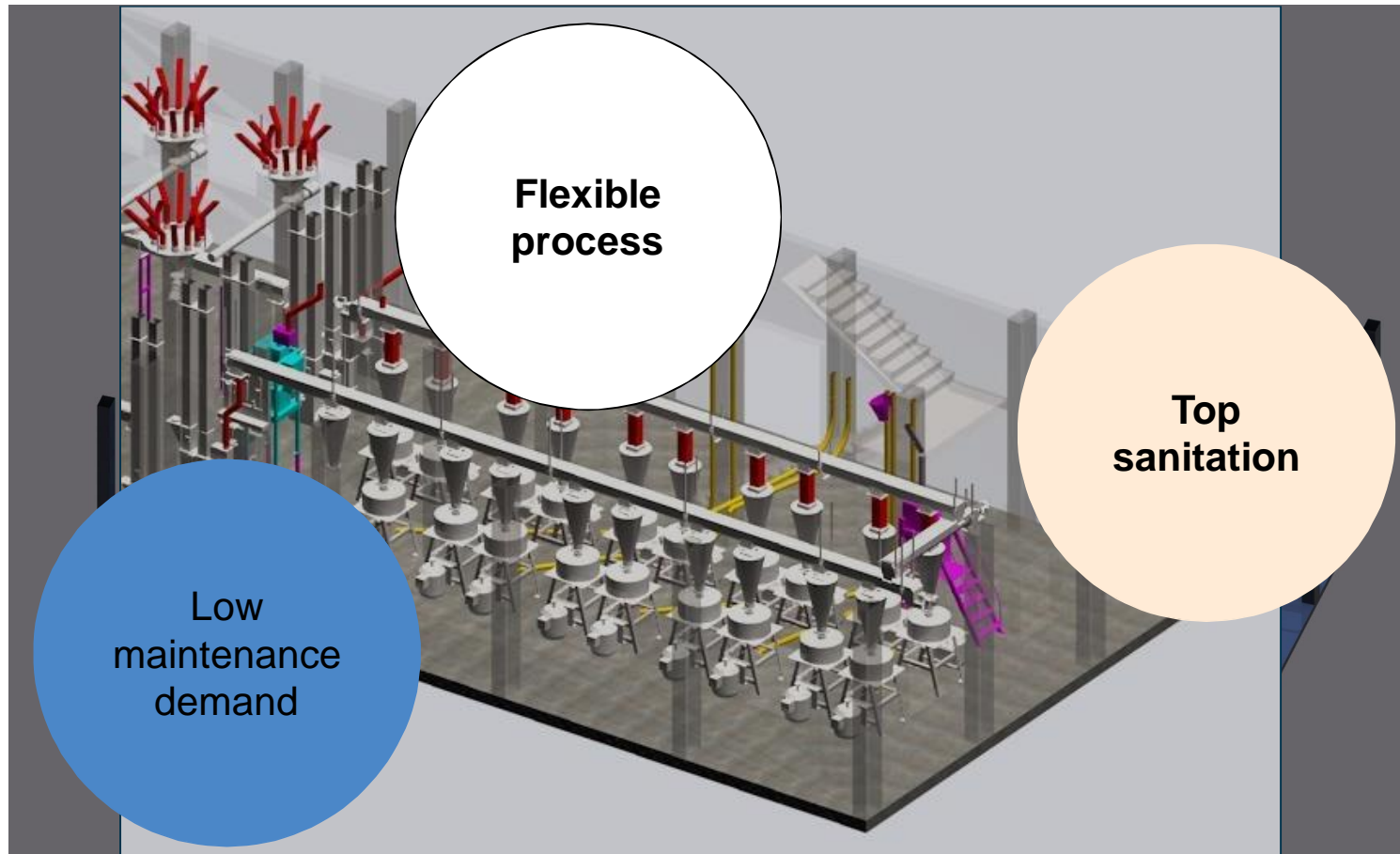
Process parameter	min.	max.
Starch Damage AACC [%]	15	20
Water uptake [%] dry base	70	80
End moisture[%]	9	10.5
Temperature [°C] in Process	50	67
Granulation	50% - 65% <118µm	
Extraction [%]	93	96

Customer benefits compared to Chakki mills

- Same flour quality as Chakki mills
- Energy saving → up to 10%
- Higher yield → up to 1 – 1.5%
- High sanitation → stone-less grinding system allows high end product quality
- Low maintenance
→ no redressing of stones needed
- Reliable operation
→ consistent end product quality
- Lesser foot-print of the plant



One Pesa Mill replace 20 Chakki Mills.

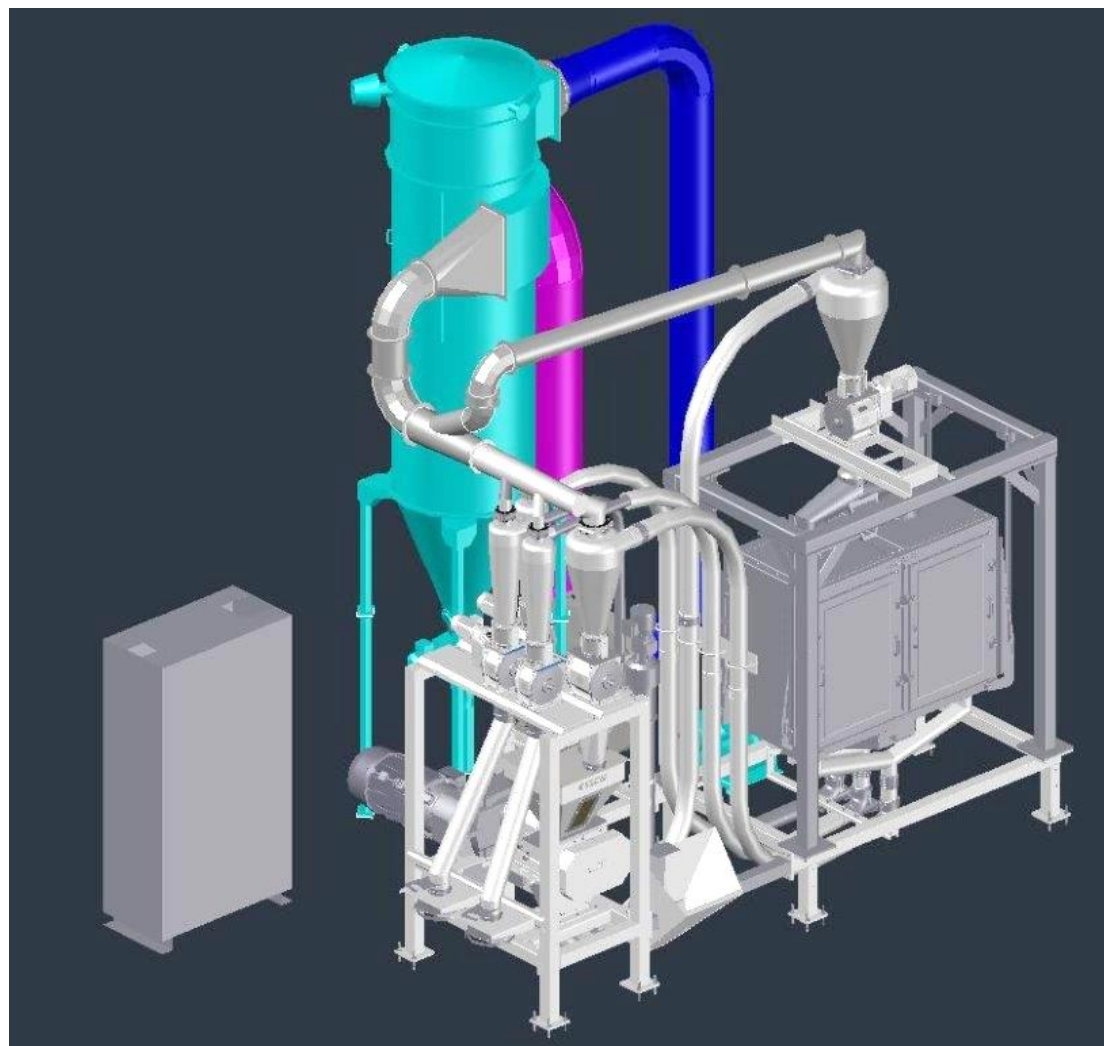


AIPesa

Specifications

Details	Specifications
Footprint (L x B x H)	5.2 x 4 x 6 m
Installed power	70 kW
Capacity	750 Kg per hr
Power consumption	72-75 kW per ton

Buhler Scope	Customer Scope
1. Feeding Module	Cleaned Wheat
2. Grinding Module	Incoming power cable up to panel
3. Sifting Module	Exhaust duct from fan
4. Filter Module	
5. Pneumatics Module	
6. Control Panel Module	



PesaMill™ Reference Plants.

Proven technology.



High Extraction Flour and Whole Wheat ATTA Flour

- Option to produce conventional flour or Whole wheat Flour in the same line.
- Better plant utilization.
- Higher yield in conventional flour up to 85%+ with 0.9% ash (suitable for Biscuit, Brown bread, Arabic bread flour & Aqua feed etc.)
- High Quality ATTA flour (i.e. Roti, Chapatti, Puri etc.)
- High sanitation → stone-less grinding system allows high end product quality
- Reliable operation
→ consistent end product quality
- Lesser foot-print of the plant





Hygienic Atta for good health and happiness!!

 **BÜHLER**