

Applied Milling Systems

**INTRODUCING NUTRIMILL
TECHNOLOGY**



www.appliedmillingsystems.com

Applied Milling Systems, Inc.

GOLFETTO SANGATI
Flour Milling & Grain Handling *Pavan Group*



Houston, Texas

INTRODUCING NUTRIMILL TECHNOLOGY



The SuperBrix NutriMill is a newly designed bran purification machine, which uses the combination of an abrasive action (with emery segments) and friction (between bran particles) in a vertical milling chamber in order to extract residual flour and aleurone from the bran particles. This offers considerable improvement in efficiency compared to the impact action of traditional horizontal bran finishers.



INTRODUCING NUTRIMILL TECHNOLOGY



NutriMill
SBN-1 Series

BENEFITS

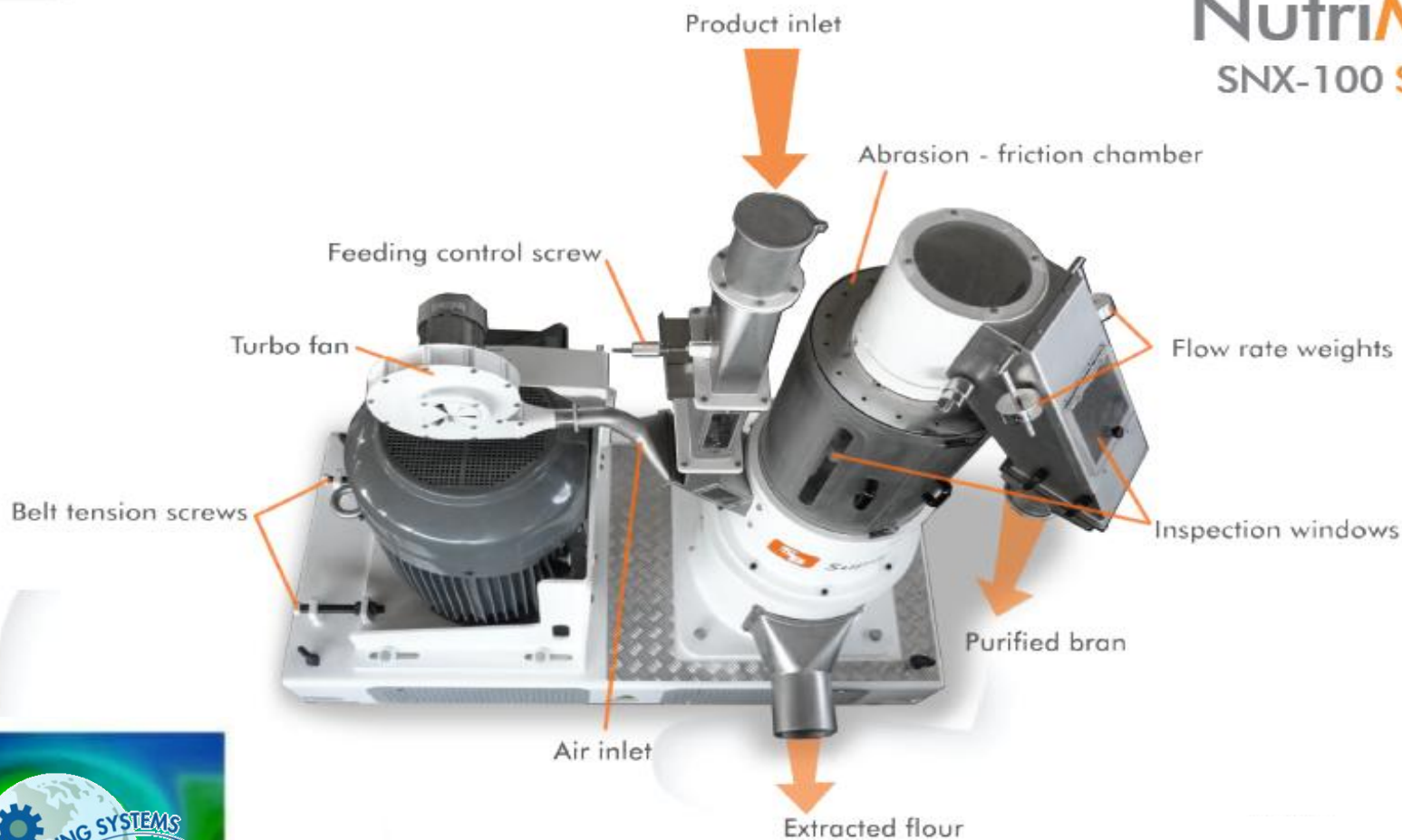
- ALEURONE – ENRICHED FLOURS
- SHORTENED MILL FLOW
- INCREASED TOTAL MILLING YIELD



INTRODUCING NUTRIMILL TECHNOLOGY



NutriMill
SNX-100 Series



THE WHEAT KERNEL

FLOUR

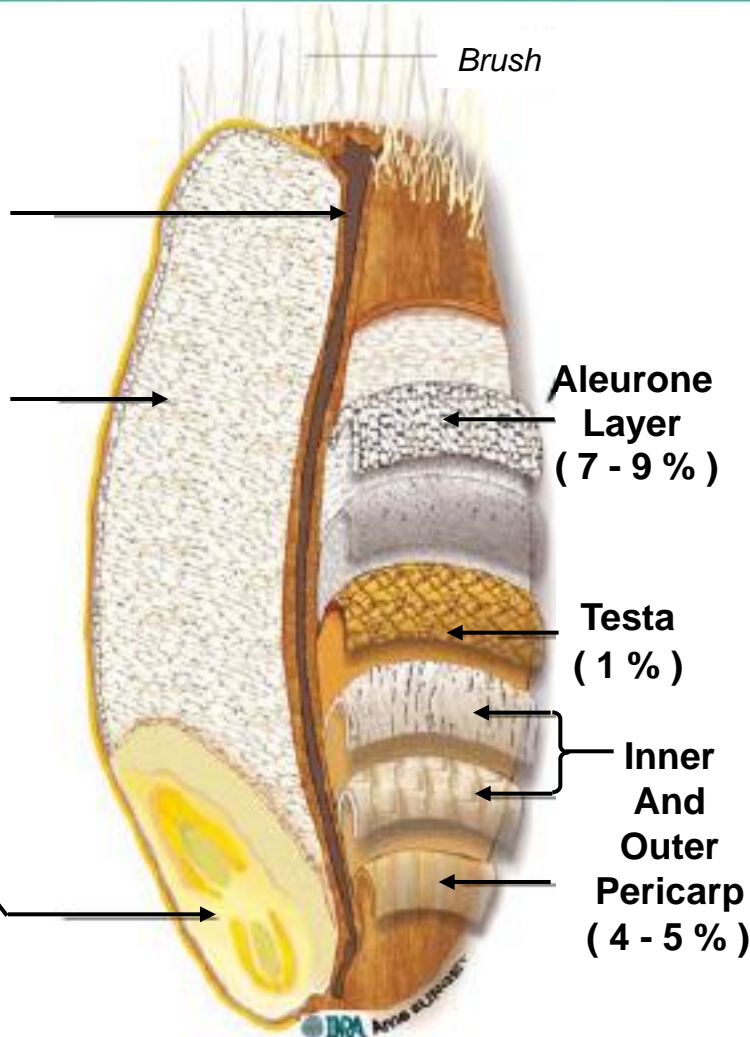
- Starch
- Proteins

GERM

- Lipids
- Antioxidants
- Vitamin E
- B Vitamins
- Minerals
- Plant Sterols
- Enzymes

Starchy Endosperm (80 - 84 %)

Embryo (Germ) (3 %)



Aleurone Layer (7 - 9 %)

Testa (1 %)

Inner And Outer Pericarp (4 - 5 %)

- Soluble and Insoluble Dietary Fiber (Xylans, β -Glucans)

- Antioxidants (Phenolic Acids)

- Vitamin E

- B Vitamins

- Minerals

- Phytic Acid

- Enzymes

- Alkylresorcinols

- Insoluble Dietary Fiber (Xylans, Cellulose, Lignin)

- Antioxidants Bound to Cell Walls (Phenolic Acids)

BRAN

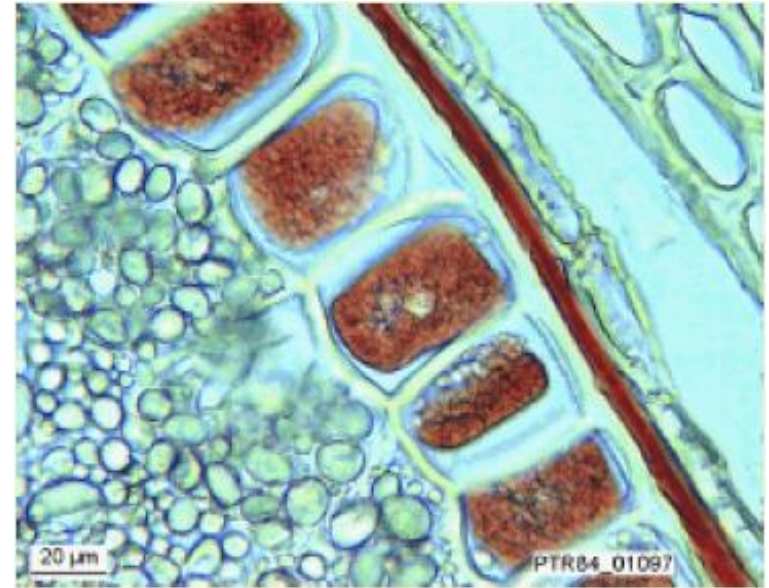


A Kernel of Wheat Consists of a Heterogeneous Structure with Bio-Active Compounds Unevenly Distributed Within its Different Physical Components

THE ALEURONE LAYER

The aleurone layer makes up 7-9% of the wheat kernel and 45-50% of coarse bran. It is particularly high in bioactive components such as dietary fiber, with the main constituents being arabinoxylans. Besides the high fiber content, aleurone is high in protein, minerals (concentrated to a degree of 80% in the aleurone cells), vitamins and phenolics, and strong in vitro-antioxidant activity. It is hypothesised that wheat aleurone may be the major active layer of whole wheat and wheat bran.

(1) Buri, R.C., von Reding, W., Gavin, M.H. (2004). Description and Characterisation of Wheat Aleurone. Cereal Foods World, Vol. 49, No. 5, 274-281.



Dietary fiber comes from the portion of plants that is not digested by enzymes in the intestinal tract.



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THE HEALTH BENEFITS OF THE ALEURONE LAYER

Whole Grains May Prevent Disease

Scientists believe the nutrients in whole grains may have a powerful preventative effect in reducing the risk of heart disease, high cholesterol, certain cancers and many other diseases.



Whole Grains Sustain Energy

Whole grains have a low 'glycemic index' (GI), which helps keep blood sugar levels more stable for sustained energy throughout the day.



Whole Grains May Help Control Weight

Whole grain carbohydrates are digested more slowly than other carbohydrates, and are thought to reduce hunger, helping you eat less.



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BENEFITS

- **ALEURONE – ENRICHED FLOURS**
- **SHORTENED MILL FLOW**
- **INCREASED TOTAL MILLING YIELD**



ALEURONE-ENRICHED FLOURS

Whole Grain Fiber Content and Nutritional Attributes with White Flour Appeal

Products made using our NutriMill technology combine the nutritional benefits of whole wheat flour with the sensory qualities (taste, soft texture, high volume, and light color) associated with white flour products.



WHOLE GRAIN FIBER CONTENT – WHITE FLOUR APPEAL



Harina Ultralite Ahora todos a comer pan!

Mejor sabor, mayor suavidad,
más saludable.



Usos:

Harina funcional para la elaboración de panes en todas sus variedades, pizzas, hojaldres, congelados, galletería.

Características del Producto:

ULTRALITE, es la nueva harina de trigo fortificada que contiene hasta 5 veces más fibra que las harinas de panificación tradicional, evitando así adicionar salvado de trigo a la mezcla, pero conservando los beneficios del mismo. Su alto contenido en fibra ayuda a regular el sistema digestivo, combinado con el contenido de proteínas, minerales y vitaminas de fuerte actividad antioxidante. Gracias a su fibra soluble permite tener un bajo índice glicémico, el cual regula los niveles de azúcar ayudando a mantener los niveles energéticos requeridos durante el día.

Prepare las mejores recetas con Harina Ultralite



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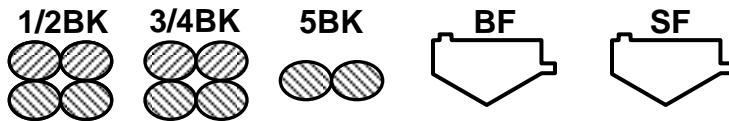
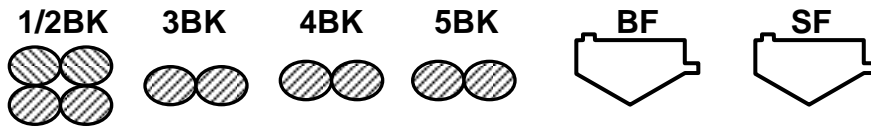
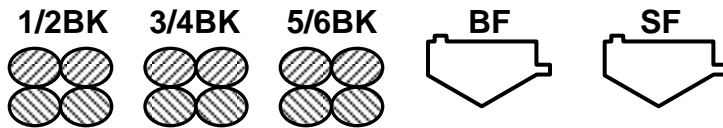
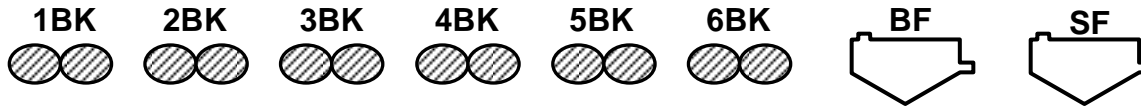
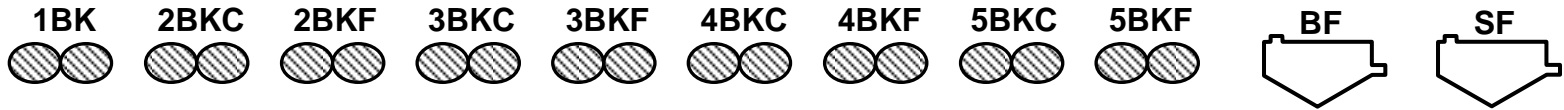


BENEFITS

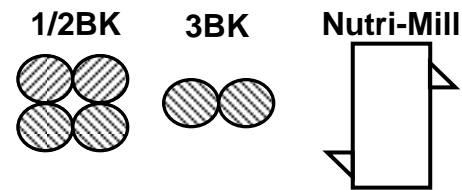
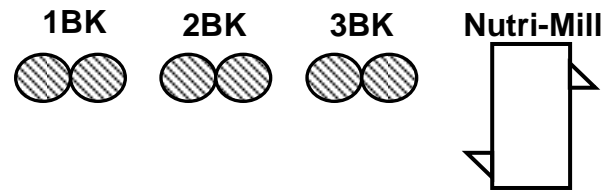
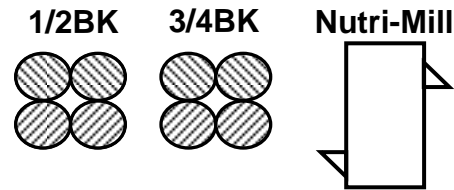
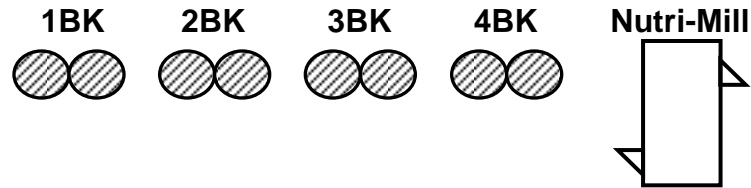
- ALEURONE – ENRICHED FLOURS
- **SHORTENED MILL FLOW**
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EXAMPLES OF CONVENTIONAL BREAK SYSTEMS



EXAMPLES OF BREAK SYSTEMS UTILIZING NUTRIMILL



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- ALEURONE – ENRICHED FLOURS
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- **INCREASED TOTAL MILLING YIELD**



INCREASED TOTAL YIELD



The operation of the NutriMill increases total yield by targeting the extraction of residual flour and the light-colored, nutrient-rich aleurone layer rather than simply disintegrating the entire bran coat.

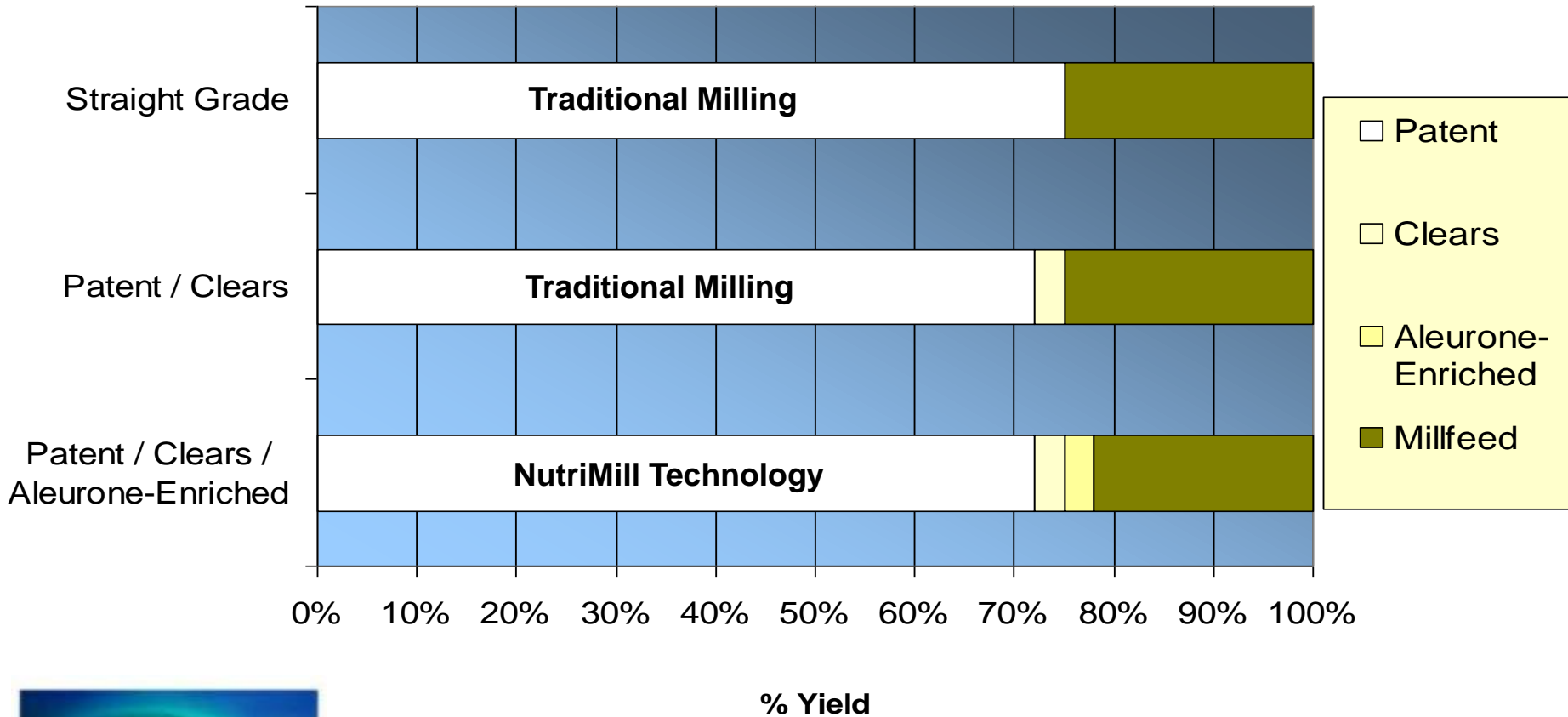
Flour yield may be increased while increasing nutritional attributes and maintaining flour functionality.

Straight-grade flour yields may be increased where ash specifications permit, or the aleurone-enriched stream may be blended with other mill streams, therefore increasing total yield.



EXAMPLE OF YIELD IMPACT UTILIZING THE NUTRIMILL

Flour Mill Products



EXAMPLE OF FINANCIAL IMPACT IMPLEMENTING THE NUTRIMILL

TRADITIONAL TECHNOLOGY

Variables:			Price / Metric Ton (USD)		Revenues / Metric Ton				
1000	Wheat Kilograms	➔		➔					
75%	Flour Extraction		750		Flour Kilograms	\$450.00	75%	x	\$450 = \$337.50
20%	Bran Extraction		200		Bran Kilograms	\$70.56	20%	x	\$71 = \$14.20
5%	Shorts Extraction		50		Shorts Kilograms	\$76.29	5%	x	\$76 = <u>\$3.80</u>
100%								<u>\$355.50</u>	

NUTRIMILL TECHNOLOGY

Variables:			Price / Metric Ton (USD)		Revenues / Metric Ton				
1000	Wheat Kilograms	➔		➔					
76.5%	Flour Extraction		765		Flour Kilograms	\$450.00	76.5%	x	\$450 = \$344.25
17.0%	Bran Extraction		1700		Bran Kilograms	\$70.56	17.0%	x	\$71 = \$12.07
6.5%	Shorts Extraction		65		Shorts Kilograms	\$76.29	6.5%	x	\$76 = <u>\$4.94</u>
100%								<u>\$359.26</u>	

FINANCIAL IMPACT — 250TPD MILL — 350 Days per Year

MONTHLY DIFFERENCE = \$ 27,416.67

ANNUAL DIFFERENCE = \$ 329,000.00



Pricing Source: USDA Economic Research Service

SPECIAL THANKS TO.....



Thank You !

Norris Bond

President - Applied Milling Systems

