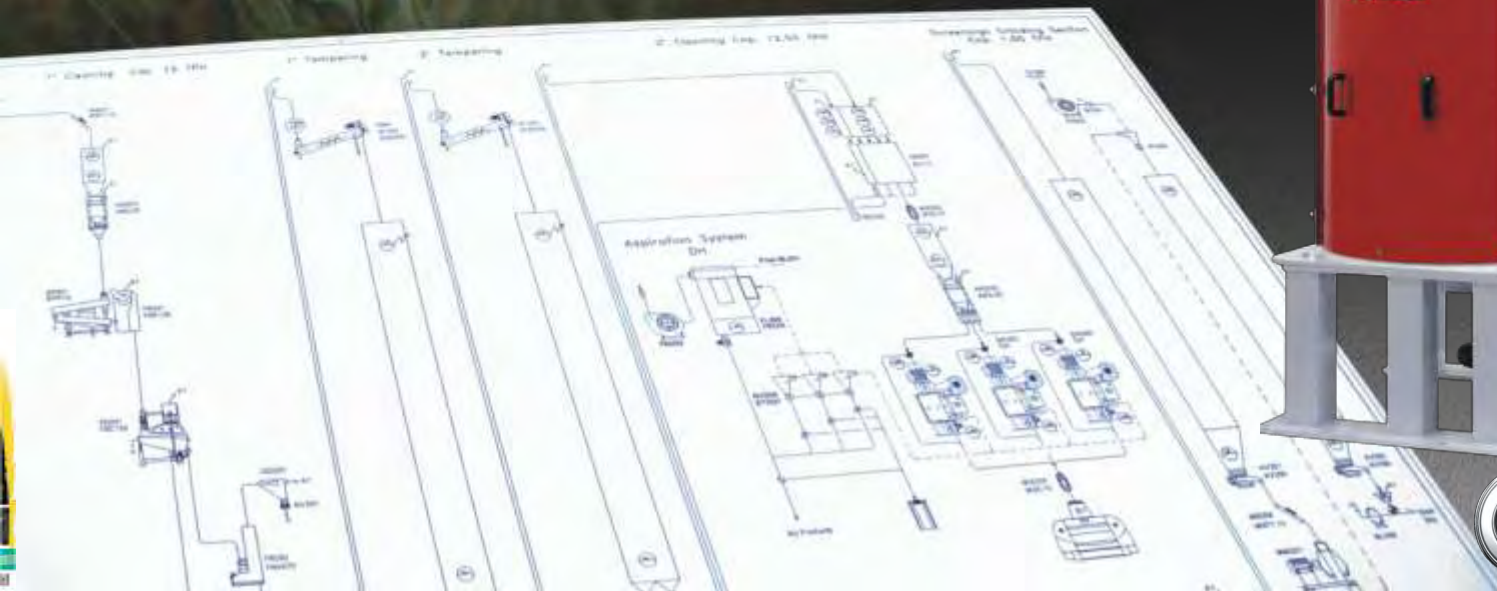


OCRIM

PERFORMANCE & ENERGY WITH THE
OCRIM TYPE D A DE-BRANIER



OCRIM

Mill in Northern Italy

Plant Characteristics:

- Roll surface= 12.83mm
- Sifting surface= 0.699 m²

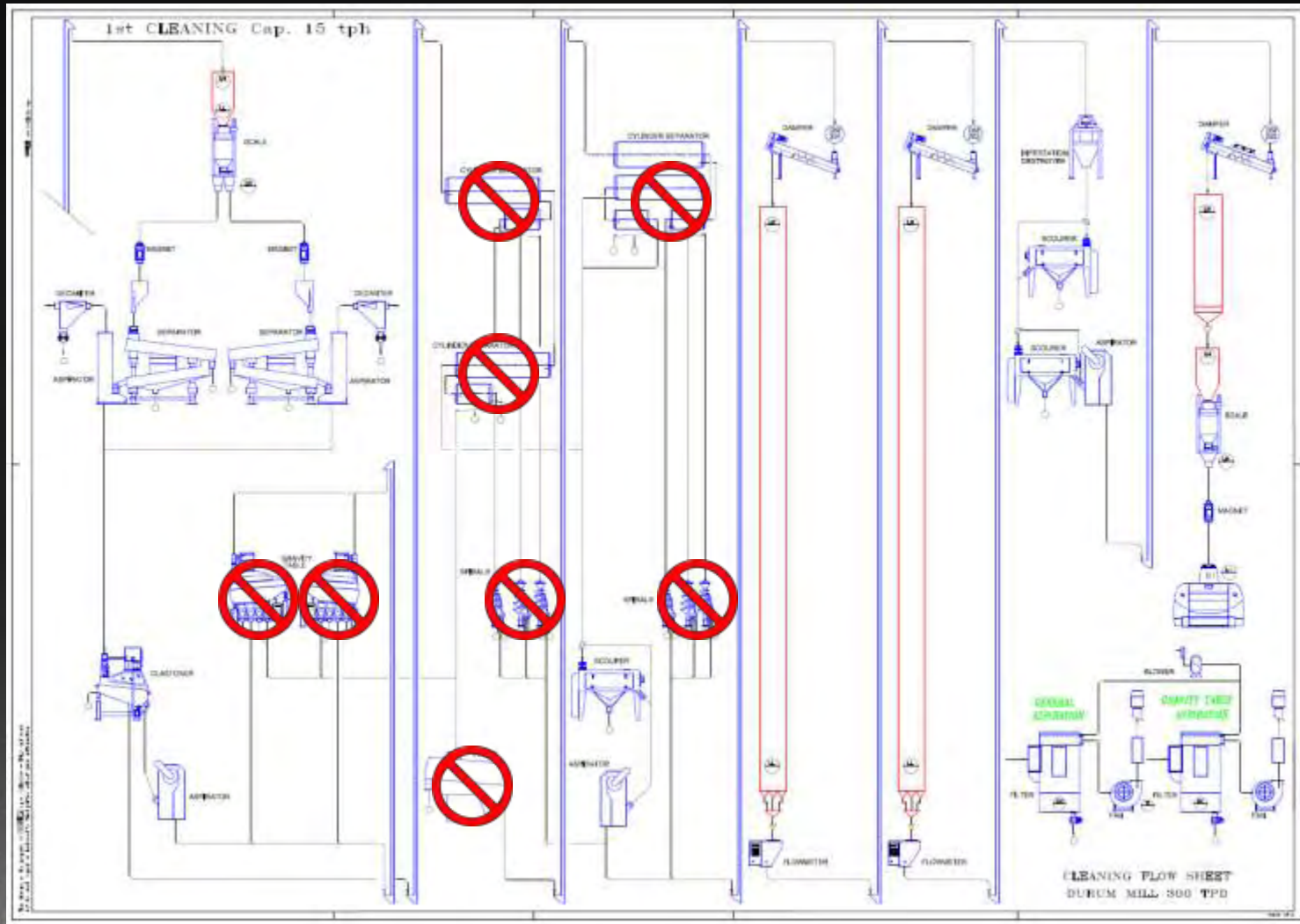
Wheat Characteristics:

- Ash: 1,90%
- Bulk Density: 80 Kg/hl
- H₂O: 11%
- Non vitreous kernels: 30 to 35%



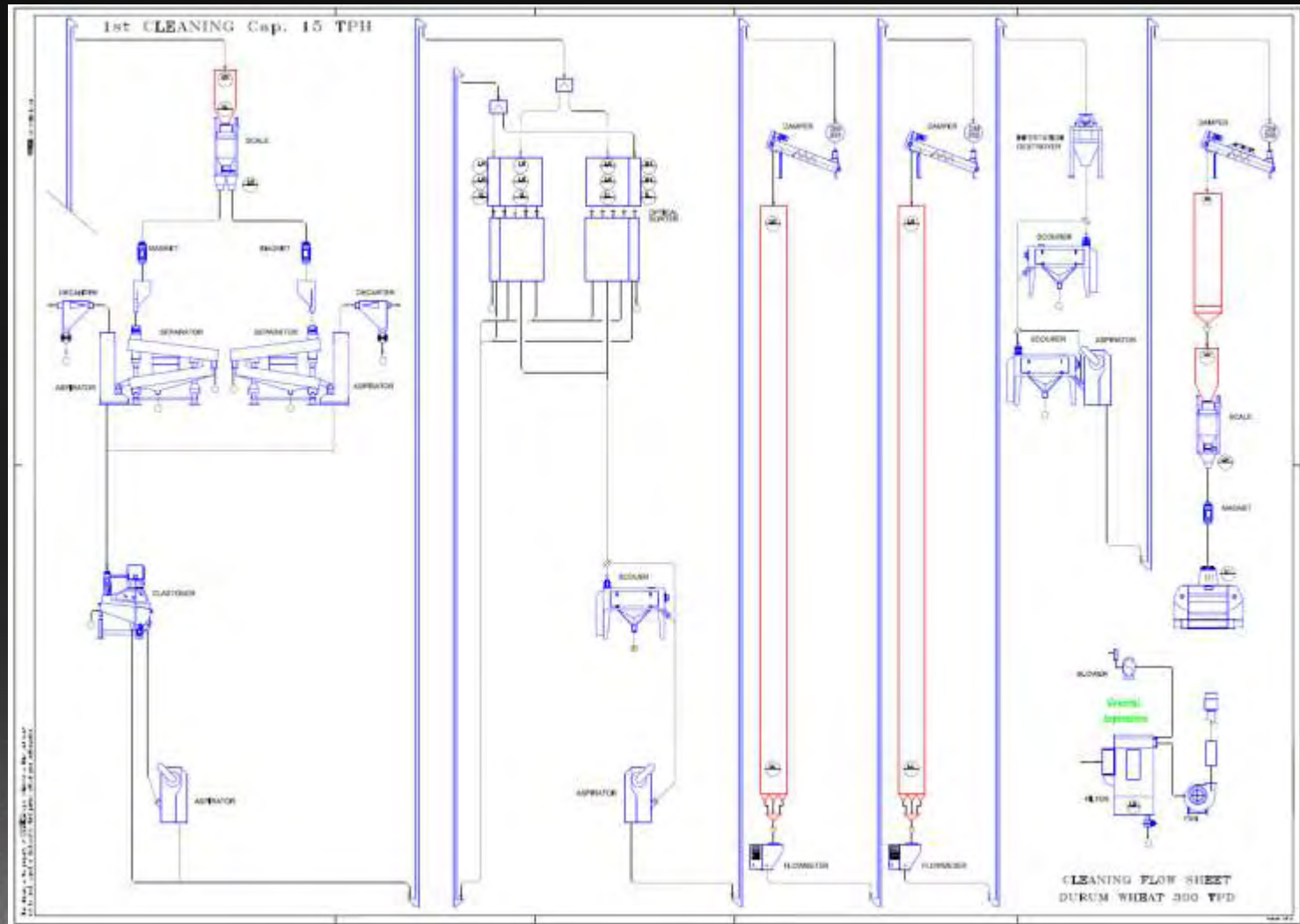
Original Cleaning Flow

Capacity 300 TPD



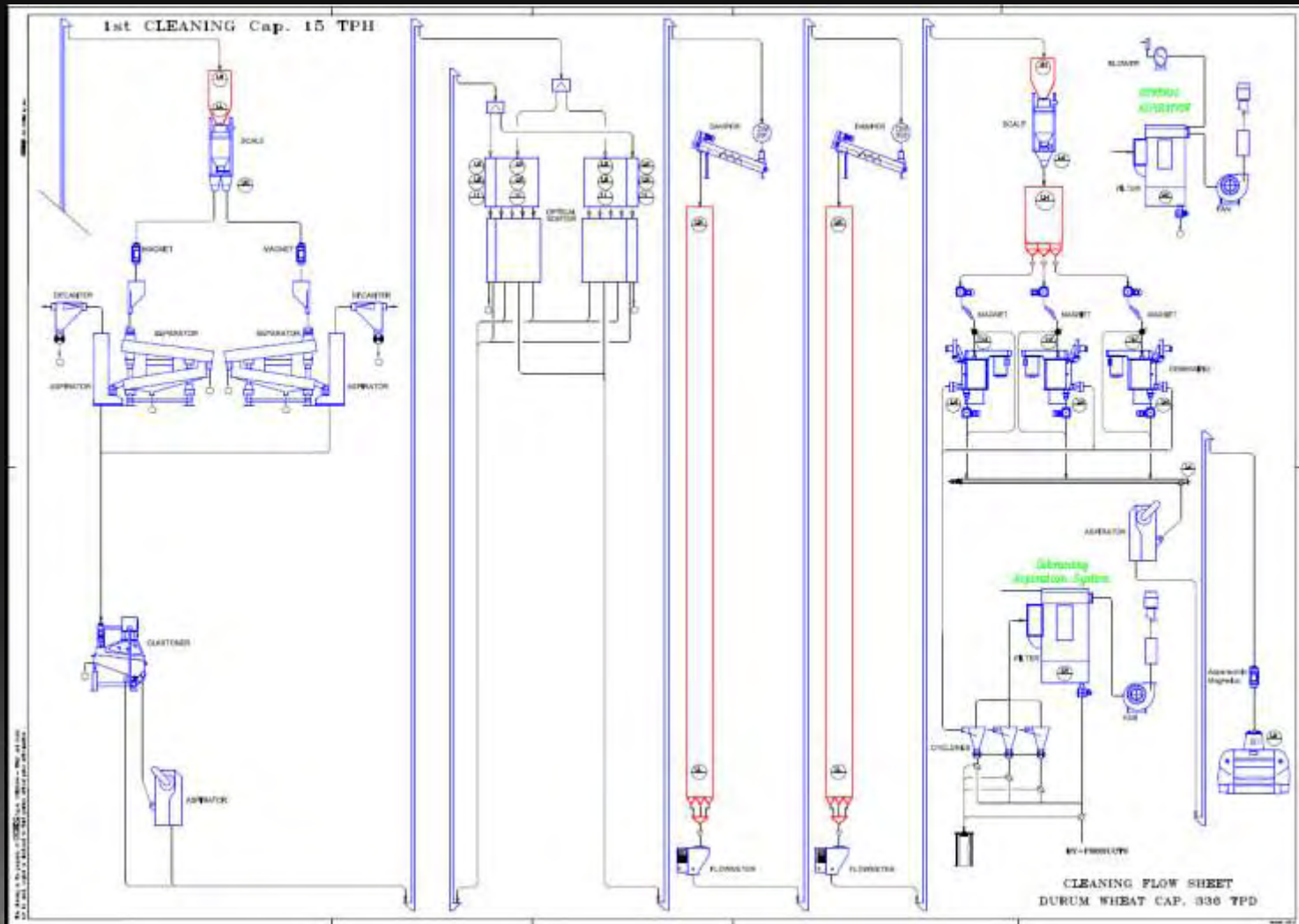
Modified Cleaning Flow

with Color Sorting added - Capacity 300 TPD



Modified Flow

With Color Sorting AND De-branining added – Capacity 336 TPD



De-branner type DHA

DHA De-branner key features:



De-branner type DHA

DHA De-branner key features:

- Feed distributor
- Slotted stainless steel metal screen (slot dimensions 1 x 20mm)



De-branner type DHA

DHA De-branner key features:

- Feed distributor
- Slotted stainless steel metal screen (slot dimensions 1 x 20mm)
- Six cylindrical abrasion wheels
- One beveled abrasion wheel to facilitate product entry
- Four externally adjustable restrictors to adjust product thickness



De-branner type DHA

DHA De-branner key features:

- Feed distributor
- Slotted stainless steel metal screen (slot dimensions 1 x 20mm)
- Six cylindrical abrasion wheels
- One beveled abrasion wheel to facilitate product entry
- Four externally adjustable restrictors to adjust product thickness
- Forced air to clean screen
- The machine uses a 55 kw motor



De-branner type DHA

% of De-branning proportional to:

- Length of time the wheat spends in the machine.
- Length of time is managed by means of a PLC.
- Product discharge managed by varying the RPM of the chamber discharge airlock.



Installation Time Table

Type of Modification

Duration

1) De-branning System Installation tasks:

Civil Work	5 Days
De-branning system installation	12 Days
Electrical Installation	8 Days

2) Start-up:

De-branning line integration into the mill flow	4 days
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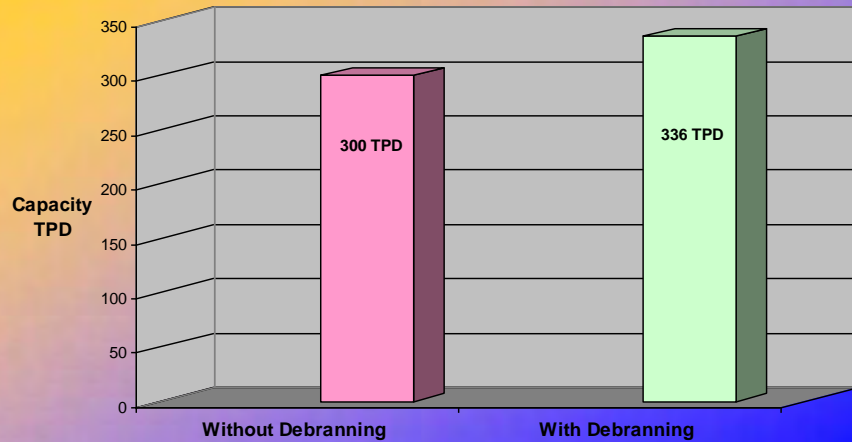
3) Adjustments to the mill flow

Replacement of sifter cloths	1 day
Modification to purifier cloths	1 day
Modification to finish product destination	2 days

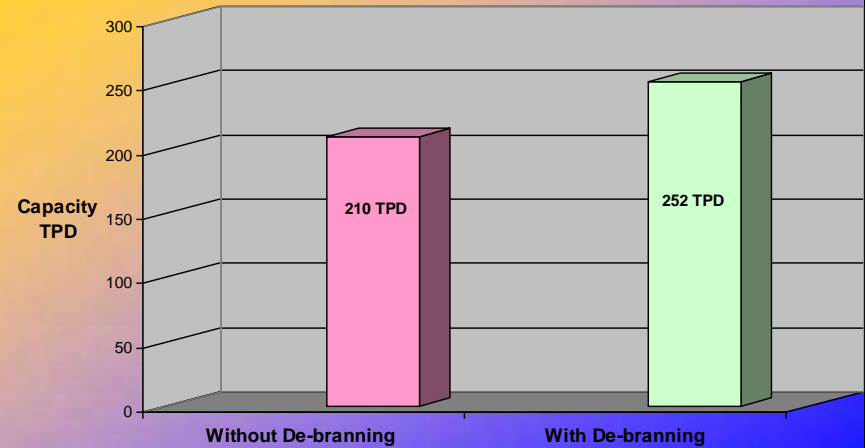


Capacity Increase

1st Break Capacity Increase



Semolina Production Increase



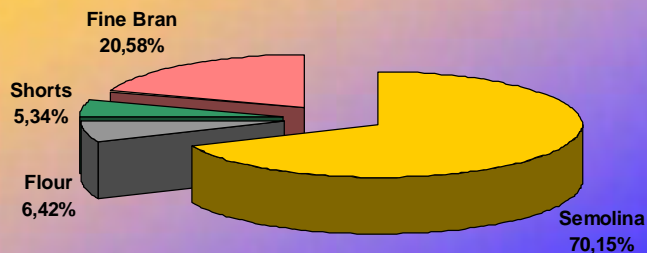
Summary of achievements:

- 12% capacity increase to B1, from 300 T/DAY to 336 T/DAY
- 20% semolina production increase, from 210 T/DAY to 252 T/DAY

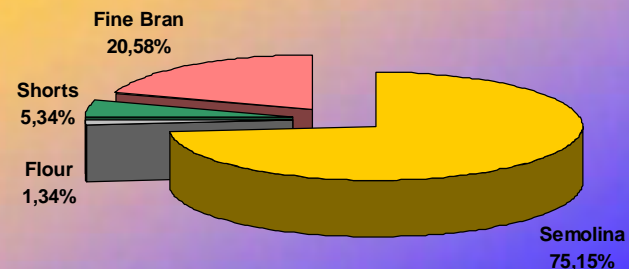


Extraction shown by Product with and without De-branning

Without De-branning



With De-branning

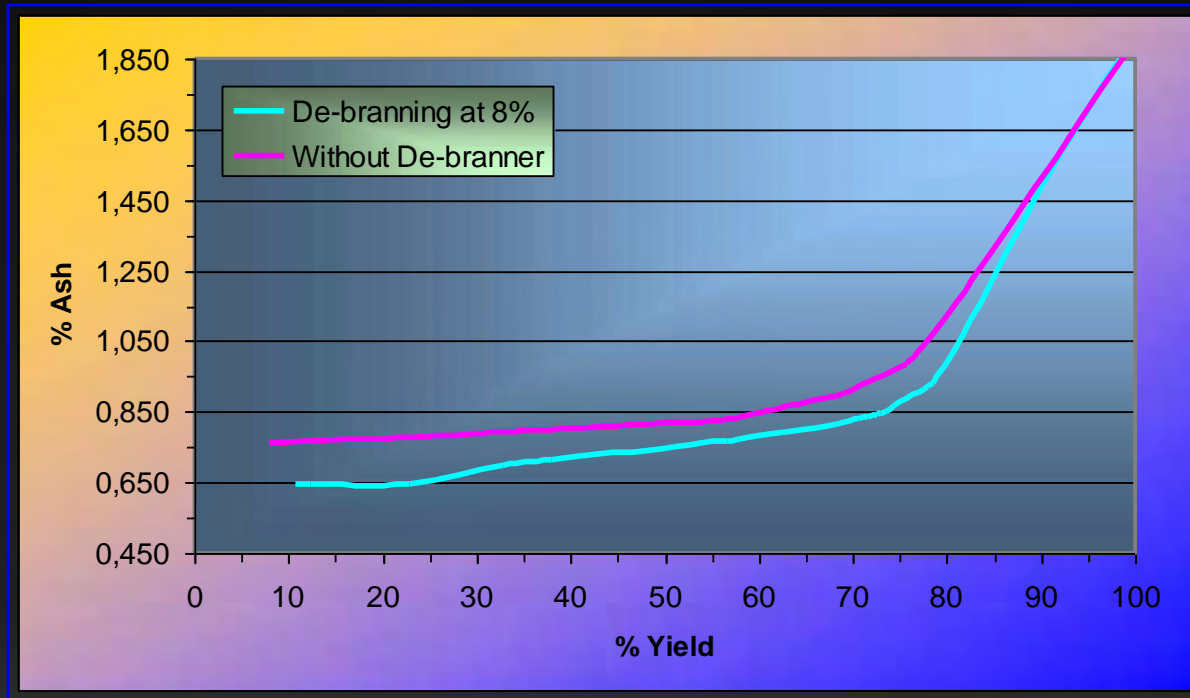


Summary of achievements:

- 12% capacity increase to B1, from 300 T/DAY to 336 T/DAY
- 20% semolina production increase, from 210 T/DAY to 252 T/DAY



Ash Curve before and after De-Branning

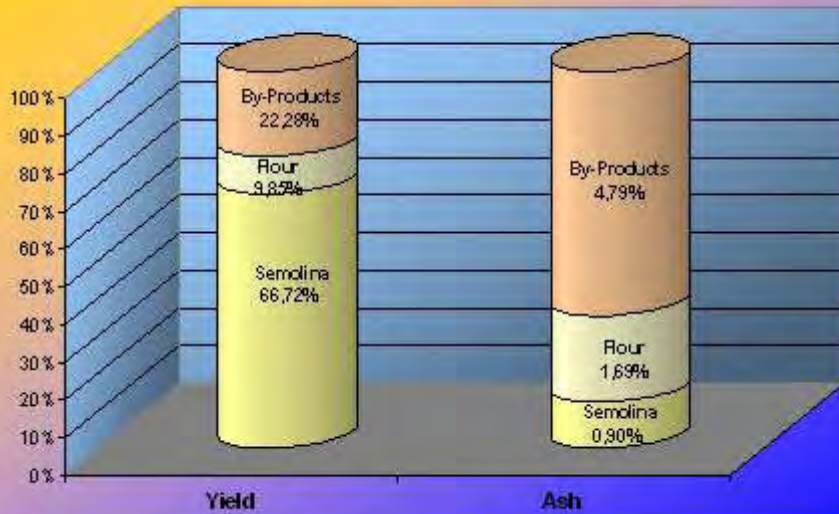


Summary of achievements:

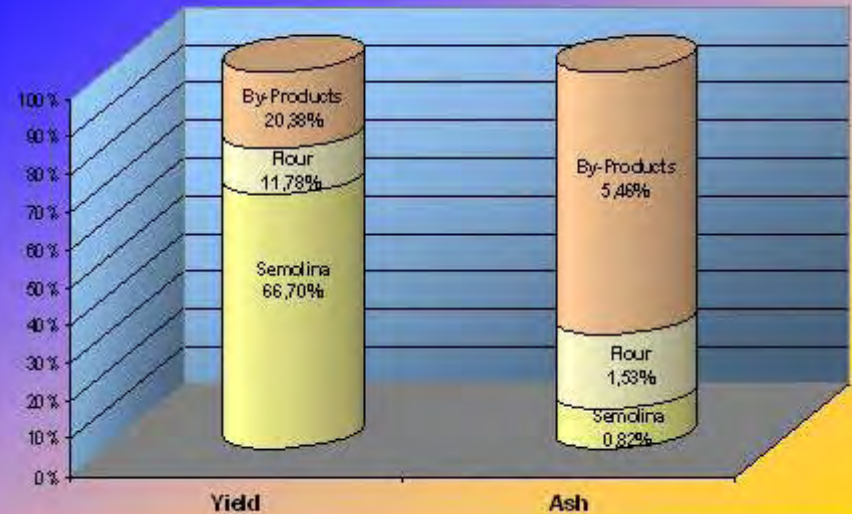
- Increase in extraction from 70,15% to 75,31% on equal ash terms at 0,91 d.b.
- The lowest ash value in the mill shifts from 0,762% (d.b.) to 0,644% (d.b.)

Ash Comparison by Product

Without De-Branning



With De-Branning

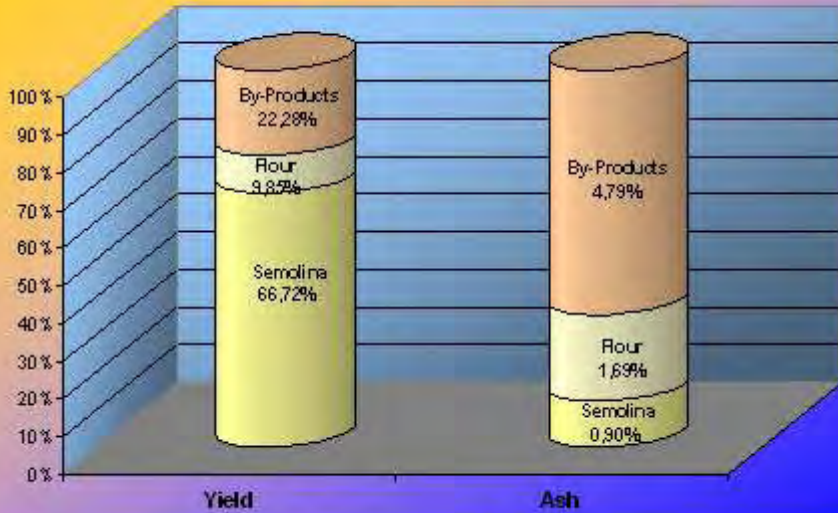


	<u>Without De-Branning</u>		<u>With De-Branning</u>		Difference in Ash
	Yield	Ash	Yield	Ash	
Semolina	66,72%	0,90%	66,70%	0,82%	8,83%

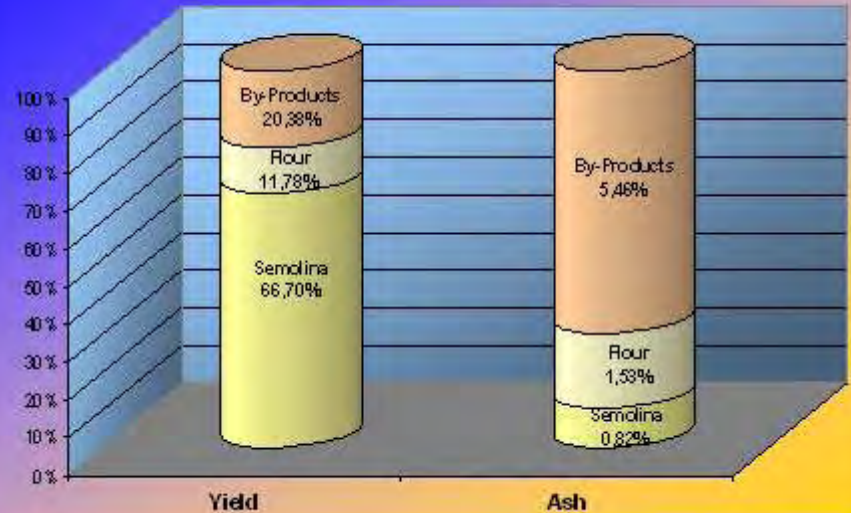


Ash Comparison by Product

Without De-Branning



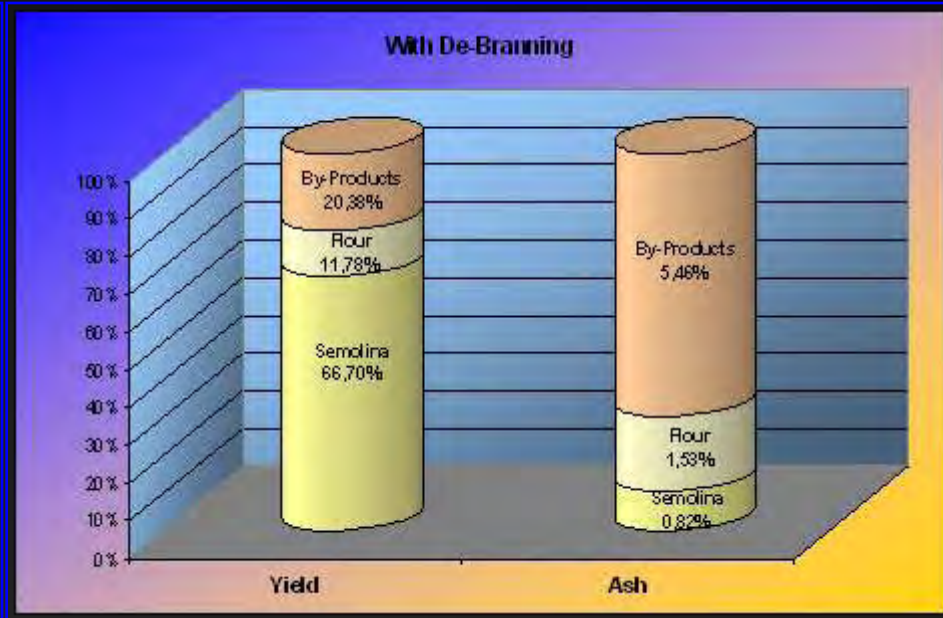
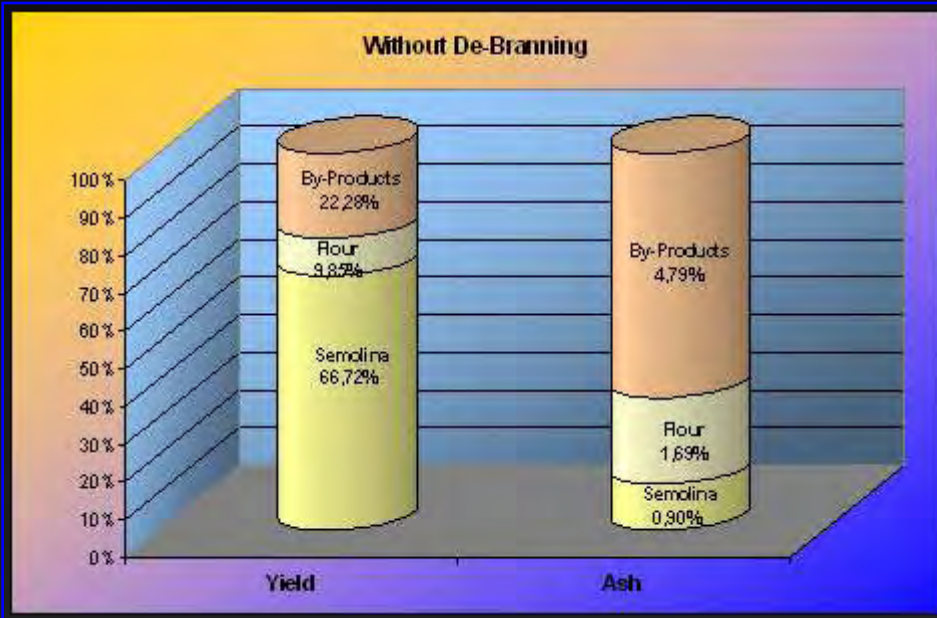
With De-Branning



	<u>Without De-Branning</u>		<u>With De-Branning</u>		Difference in Ash
	Yield	Ash	Yield	Ash	
Flour	9,85%	1,697%	11,78%	1,53%	10,84%



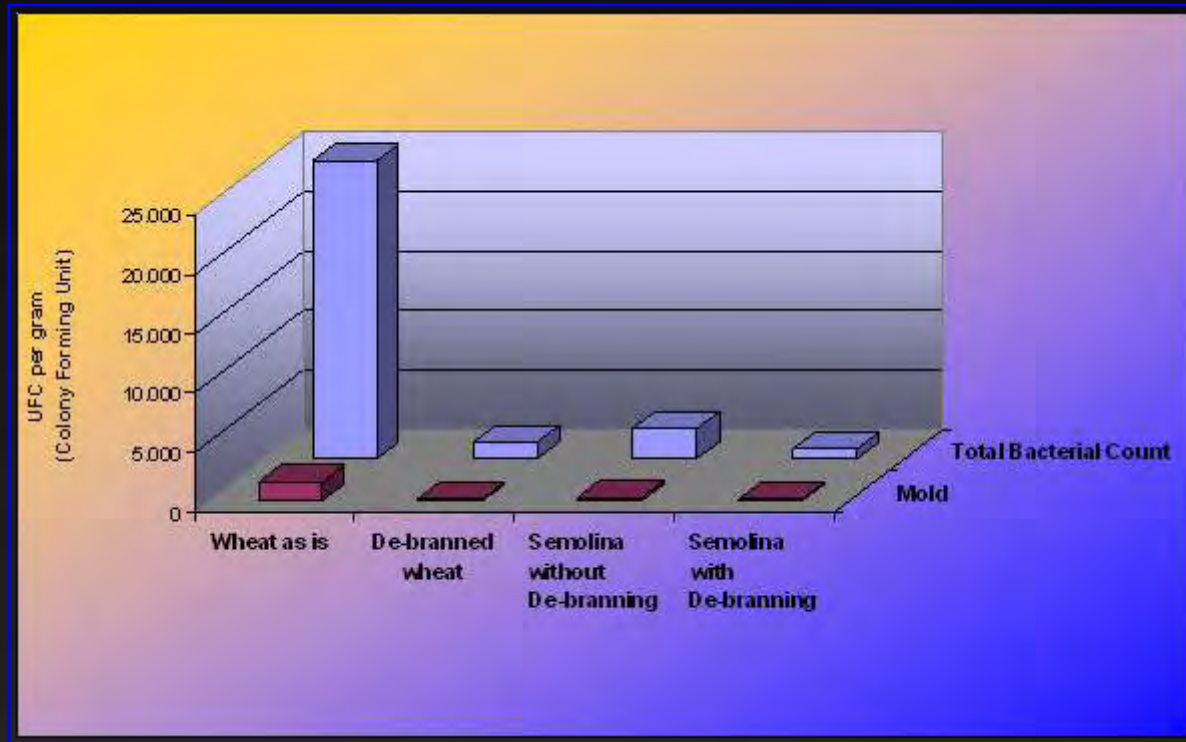
Ash Comparison by Product



	<u>Without De-Branning</u>		<u>With De-Branning</u>		Difference in Ash
	Yield	Ash	Yield	Ash	
By-Products	22,28%	4,79%	20,37%	5,46%	



Bacterial Count



Summary of achievements:

- With the introduction of the De-branner the bacterial count of the wheat went from 25,000 UFC to 1,400 UFC. The wheat mold count decreased from 1,500 UFC to 120 UFC
- Consequently, the total bacterial count of semolina decreased from 2500 UFC to 800 UFC. Mold count of the semolina has gone from 250 UFC to 100



Key Data Variables	Price in Euro/Ton		Price US\$/Ton (exchange rate Euro 1 = US\$ 1,3605)	
Durum Price	165.00	Euro/Ton		\$224.48 US\$/Ton
Semolina Price	240.00	Euro/Ton		\$326.52 US\$/Ton
Flour	134.00	Euro/Ton		\$182.31 US\$/Ton
Shorts	100.00	Euro/Ton		\$136.05 US\$/Ton
Fine Bran	87.00	Euro/Ton		\$118.36 US\$/Ton
Power	0.09	Euro/KWH		\$0.12 US\$/KW
Working Days	300			

Original Process (without De-branning)				With De-branning			
	TPD	Unit Price	Totals/year		TPD	Unit Price	Totals/year
Revenue							
Semolina	210.45	\$326.52	\$20,614,840.20		252.51	\$326.52	\$24,734,281.82
Flour	19.26	\$182.31	\$1,053,369.85		4.50	\$182.31	\$246,245.71
Shorts	16.02	\$136.05	\$653,856.30		17.94	\$136.05	\$732,319.06
Fine Bran	61.74	\$118.36	\$2,192,328.75		69.15	\$118.36	\$2,455,408.20
Total Revenue			\$24,514,395.09				\$28,168,254.79
Costs							
Durum	300.00	\$224.48	\$20,203,425.00		336	\$224.48	\$22,627,836.00
Additional Operating Costs							\$104,303,55
Additional Maintenance Costs							\$34,012.50
Total Costs			\$20,203,425.00				\$22,766,152.05
Revenue less Costs			\$4,310,970.09				\$5,402,102.74
Economic Benefit/year							\$1,091,132.65



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Super Milling RM

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Debranner DHA



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