



Cost saving on flour production

IAOM-October 2011-

**M. Molina and M. Jeantot; Area Export
Managers**



True case : West African flour mills 500 MT/day

Main production : artisan bakers flour

- 70% DNS (America) : 490 USD/MT
- 30% French wheat : 350 USD/MT



Flour mills' manager objectives

“To maintain and possibly improve my bakers flour quality while lowering its production cost”



Methodology

1. CHRONOTEC analysis at Eurogerm laboratories : DNS wheat, French wheat, Bakers flour
2. Formulation and trials at Eurogerm of various flour correction formulas
3. Optimization of ratio: DNS/ French wheat/ flour correctors
4. Laboratories trials at mills test bakery
5. Field test at mill's customers (artisan bakers)
6. Progressive introduction of new formula



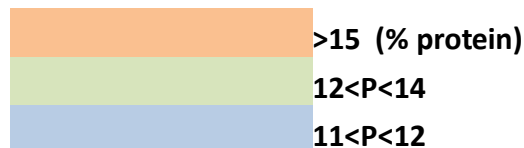
CHRONOTEC

baking test:



Labo analysis vs baking test

Wheat	Origin	Protein (% db)	Hagberg (s)	Hecto. mass (kg/hl)	W	Volume 1 (1h45)	Volume 2 (2h45)	Total score /300	Evaluation
52837 CWRS	Canada	15,5	480	82,3	422	1900	2040	242	Excellent
52247 -NS	US	15,1	401	82,7	389	2080	2420	258	Excellent
52394	Argentina	13,3	484	82	241	1700	1820	226	Good
52556	Argentina	13	366	78,8	226	1700	1760	219	Medium
52960	France	12,3	480	83	264	1820	1940	242	Excellent
53790	France	11,7	480	80,1	212	1930	2000	244	Excellent
52397	France	11,5	410	80,9	215	1800	1860	235	Very good
51957	Argentina	11,3	354	82,5	216	1680	1760	226	Good

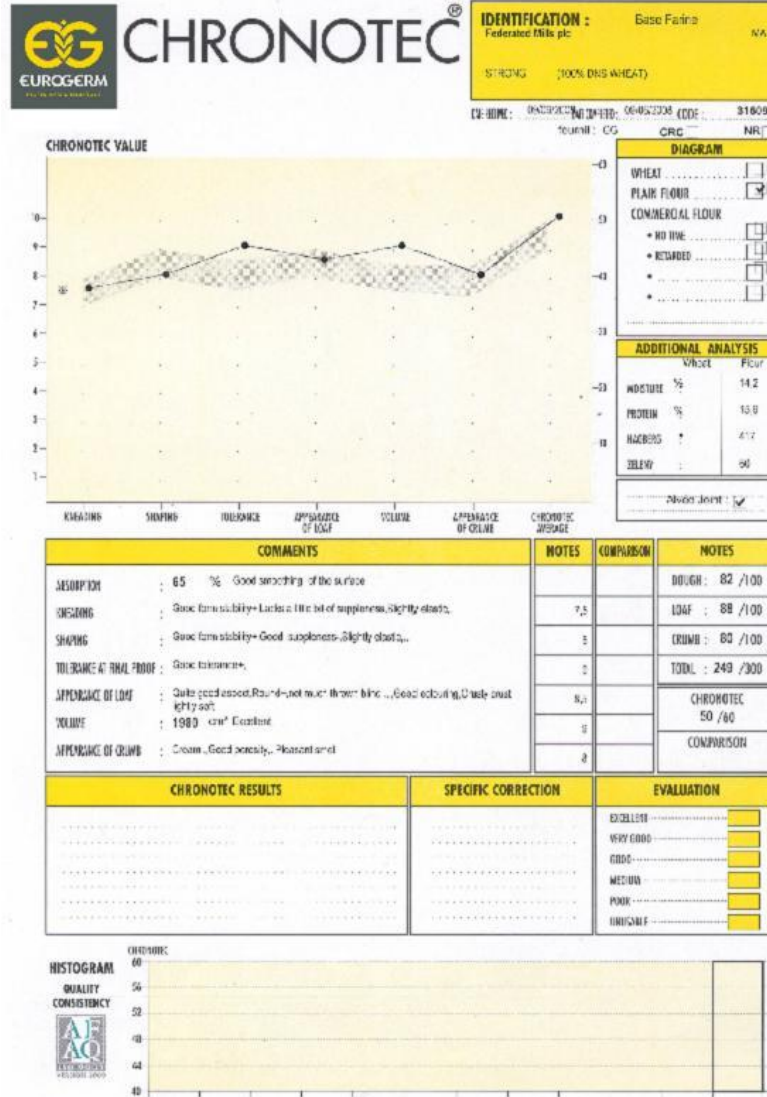




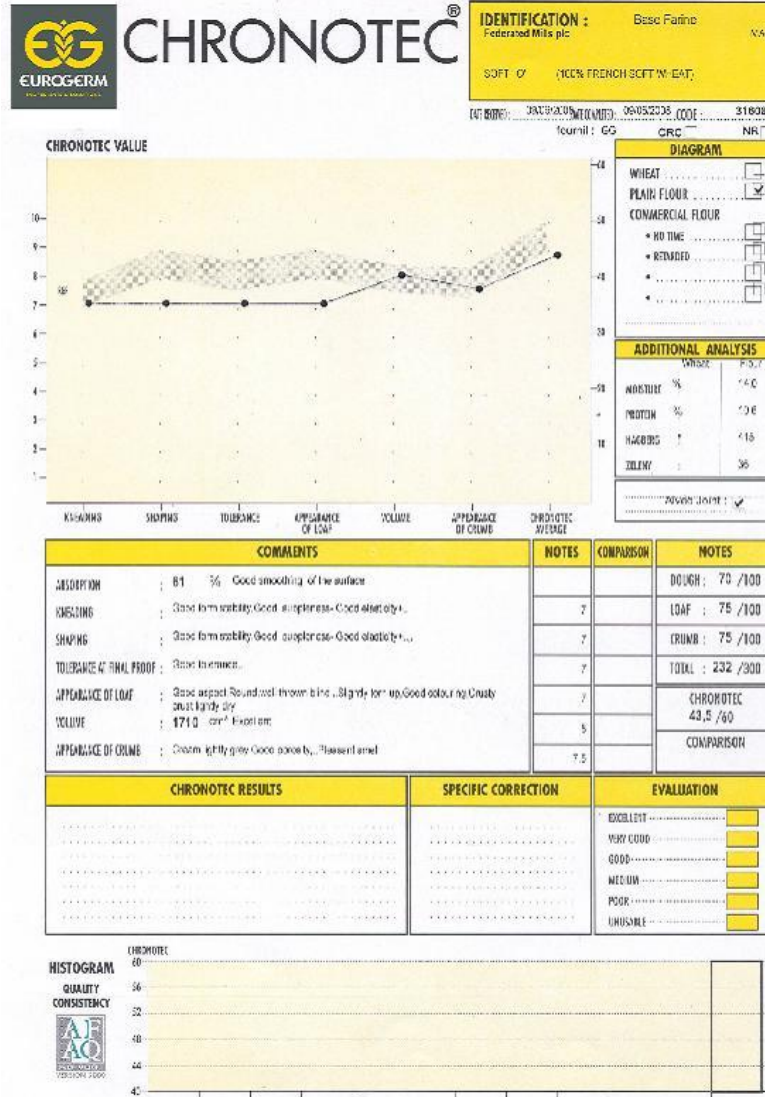
Physical and chemical analysis

	DNS flour	French soft	Bakers flour	Bakers flours EG
Formula	100% DNS	100% French soft	70% DNS +30% French	35% DNS +65% French + corrector EUROGERM
W	355	185	288	280
P/L	0,98	1,27	1,39	1,49
le	64,80%	51,20%	60,60%	57,20%
Protein on flour	16%	11%	14%	13.5%
Falling Number	417 sec	415 sec	407 sec	326 sec
Wet gluten	34,80%	24,10%	30,50%	26,70%
Dry gluten	12,40%	8,40%	11,00%	9,40%
Gluten index	99%	99%	98%	96%
Damaged starch	93,29%	96,61%	93,59%	94,67%
	19 UCD	19,9 UCD	19,8 UCD	22,7 UCD
Ashes	0,63%	0,60%	0,61%	0,61%

DNS wheat

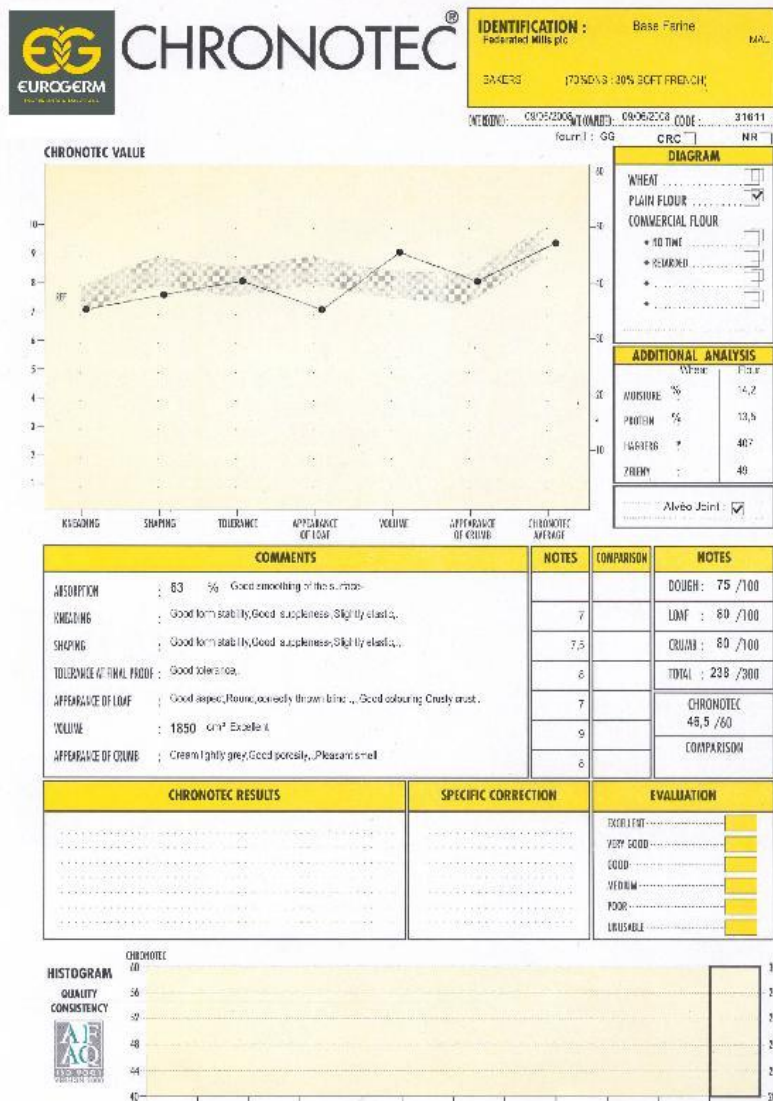


French wheat



Bakers flour

70% DNS / 30% French wheat



Bakers flours EG

35% DNS / 65% French wheat

+ milling corrector Eurogerm

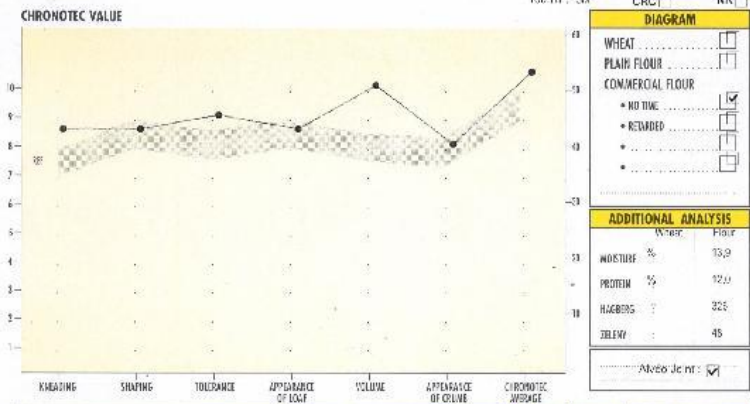


CHRONOTEC®

IDENTIFICATION : Farine Commerciale M4L
Federated Mills plc

SAMPLE : C - FANCY FLOUR (35% DNS 65% French) M7H
GERM X A AND B

ENERGIE : 1010233 **NUMERO :** 121402008 **CODE :** 34847
Form : SM **CRC :** **NR :**



COMMENTS	NOTES	COMPARISON	NOTES
ABSORPTION : 65 % Good smoothing of the surface			DOUGH : 87 /100
KNEADING : Very good form stability.Lacks a little bit of extensibility	5,6		LOAF : 93 /100
SHAPING : Very good form stability.Lacks a little bit of extensibility	5,6		CRUMB : 80 /100
TOLERANCE AT FINAL PROOF : Very good tolerance	8		TOTAL : 259 /300
APPEARANCE OF LOAF : Good aspect,Round,correctly brown tint,Good coloring,On dry crust	3,5		CHRONOTEC 52,5 /60
VOLUME : 2100 cm³ Very good	10		COMPARISON
APPEARANCE OF CRUMB : slightly yellow,Good consistency,Flakes are small	5		

CHRONOTEC RESULTS	SPECIFIC CORRECTION	EVALUATION
.....	EXCELLENT <input type="checkbox"/>
.....	VERY GOOD <input type="checkbox"/>
.....	GOOD <input type="checkbox"/>
.....	MEDIUM <input type="checkbox"/>
.....	POOR <input type="checkbox"/>
.....	UNUSABLE <input type="checkbox"/>





Baking test : Chronotec

	DNS flour	French soft	Bakers flour	Bakers flour EG
Formula	100% DNS	100% French soft	70% DNS +30% French soft	35% DNS +65% French soft + corrector EUROGERM
Water Absorption	65%	61%	63%	65%
Scoring on tolerance/10	9	7	8	9
Scoring on volume/10	9	8	9	10
Total scoring/ 60	50	43,5	46,5	52,5
Volume	1980 cc	1710 cc	1850 cc	2100 cc



Products composition and price

Product	Composition	Price EXW in Euros/kg
Germix A	Alpha amylases, hemicellulase, glucose oxydase, transglutaminase ascorbic acid	2.80
Germix B	L cystein, guar gum, gluten	2.60
Manito	long fiber vital wheat gluten	1,2 *
Maltogerm	enzymatic malted wheat flour	0,8 *

* Subject to variation



Cost comparison in USD

Formula	100% DNS	100% french soft	70% DNS + 30%French	35% DNS +65% French + corrector EUROGERM
Cost of flour per MT	490	350	448	399
Germix A : 0,2%	0	0	0	8
Germix B : 0,2%	0	0	0	7
Manito : 0,7%	0	0	0	12.8
Maltogerm 0,15%	0	0	0	1,70
Total	490	350	448	429
Cost difference per MT	+42	-98	0	-19

Conclusion

- **Cost saving** : -19 USD/MT flour
Mills capacity 500 MT/day → 390 T/d flour
Saving per day : 7 410 USD
Saving per year : 2 500 000 USD
- Plus**
- Better flour quality => better bread quality
 - Better flour consistency => happy bakers
 - Better wheat purchase flexibility => happy miller
- => Better market share**

Thank you for your attention

