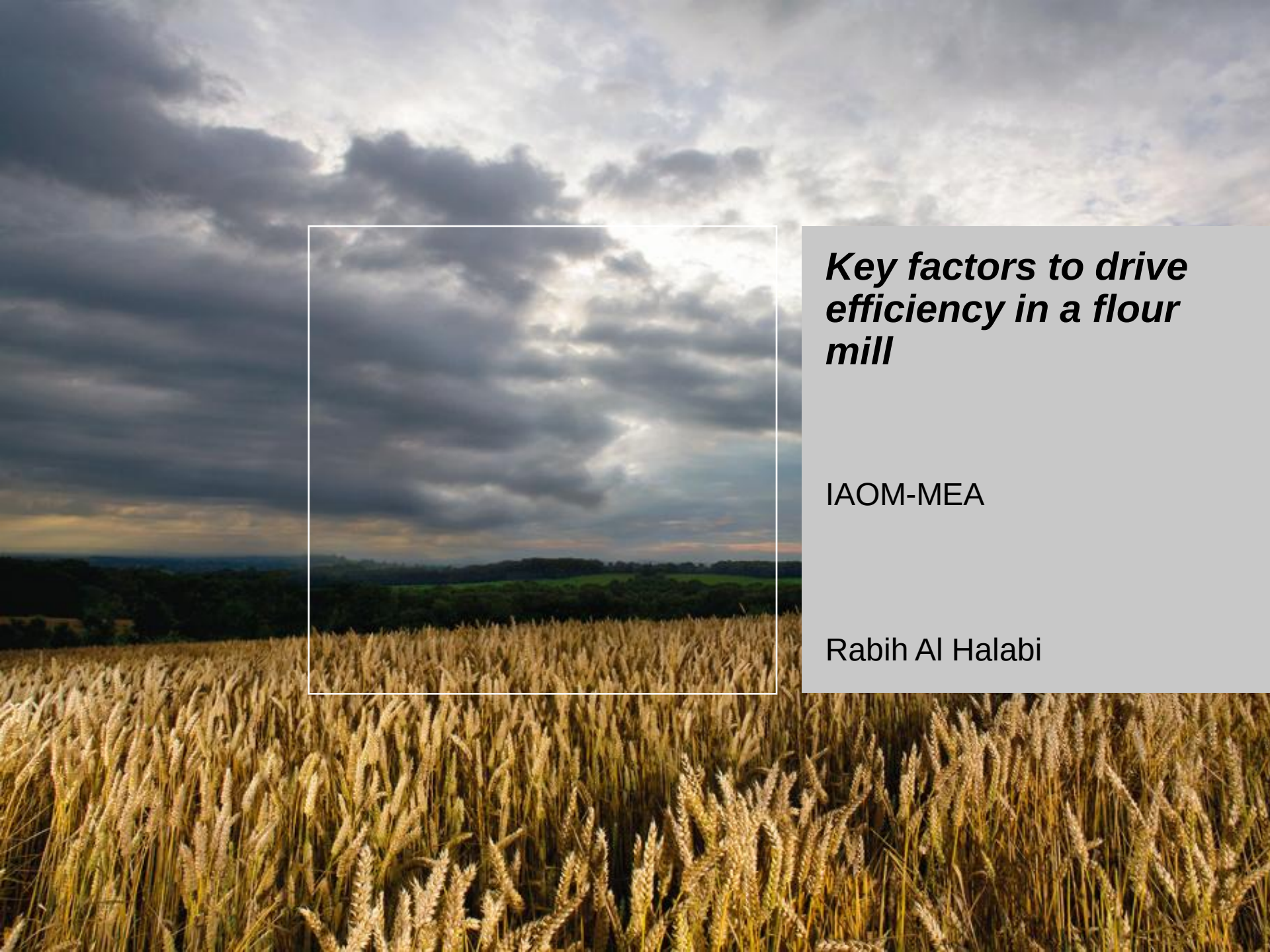


Key factors to drive efficiency in a flour mill

IAOM-MEA

Rabih Al Halabi

Agenda.

1 Making the best out of wheat

2 High flour yield

3 Cost in operation

Agenda.

1 Making the best of the Wheat

2 High Flour Yield

3 Cost in Operation

Quality starts with the raw material.

- Wheat is a natural product with quality fluctuations
- Wheat contains impurities
- Wheat comes in different varieties

How can we get the best out of wheat?

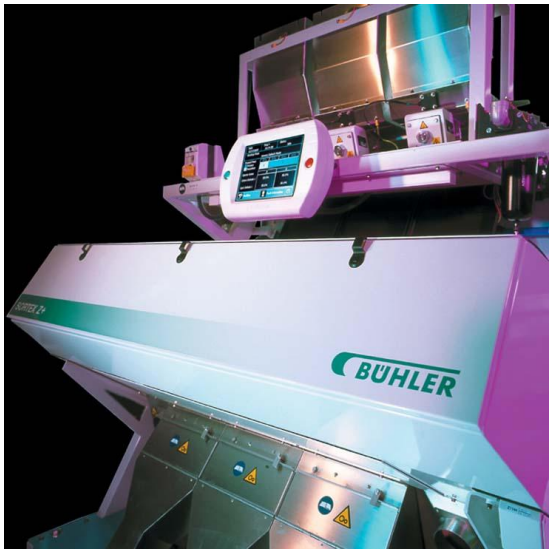
Accurate cleaning of wheat.

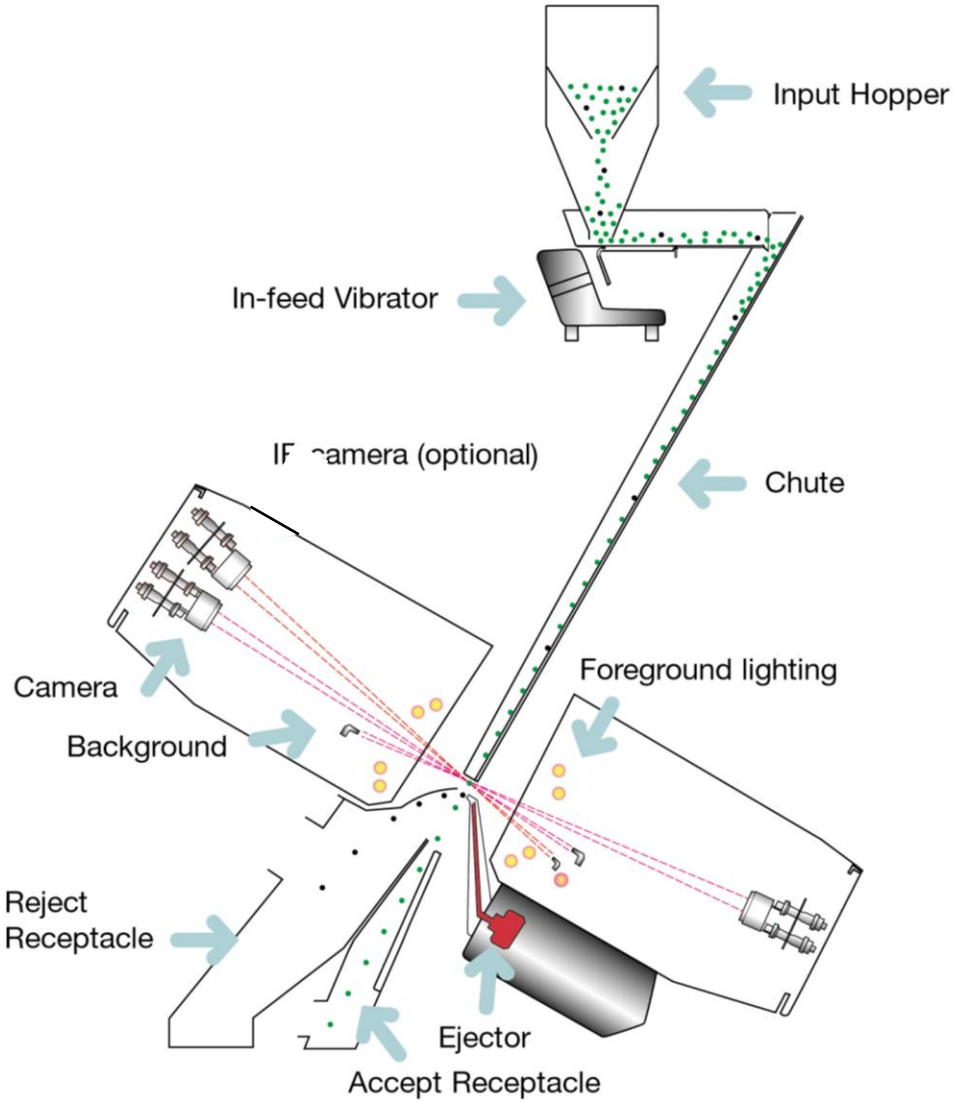
SORTEX A Optical Sorter.

- Higher sorting efficiency
- Increased capacity up to 32 t/h
- Consistent sorting performance
- Higher sorting yield
- Integration in plant automation and conformity with ATEX and UL-CSA

Setting new brenchmark in optical sorting.

SORTEX A Optical Sorter.



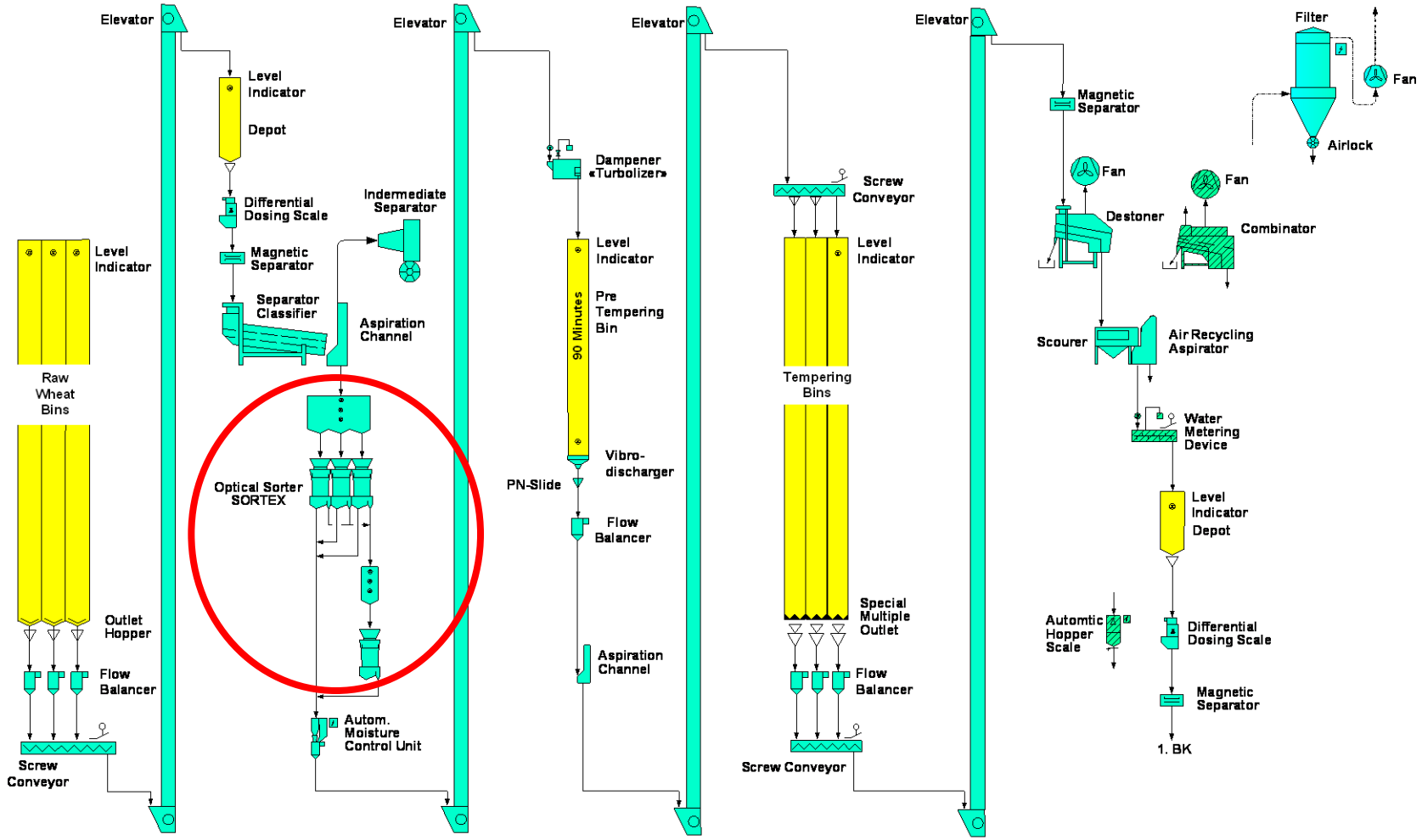


Dark sort defects.

- deseased grain
- foreign seeds
- spot coloured defects
- foreign grains (e.g. oats)
- immature grain

Light sort defects.

Flow sheet with colour sorter SORTEX with pre-tempering bin.



SORTEX Business Case Investment Costs.

Return on Investment.

Optical Sorting vs. Conventional Mechanical Sorting

based on European Wheat, Cleaning Cap. 12 t/h

	Conventional Mechanical Sorting	Innovative Optical Sorting	Benefits Opitcal Sorting
Wheat before cleaning (t/y)	80,000 t	80,000 t	
Screenings	2.5%	1.7%	Accurate classification 0.8%
Wheat after cleaning	78,000 t	78,640 t	640 t more wheat
Savings of wheat per year with optical sorting			640 t x $ 185 t = **$ 118,400**

SORTEX Optical Sorter.

Agenda.

1 Making the best of the Wheat

2 High Flour Yield

3 Cost in Operation

Premium Flour Flow.

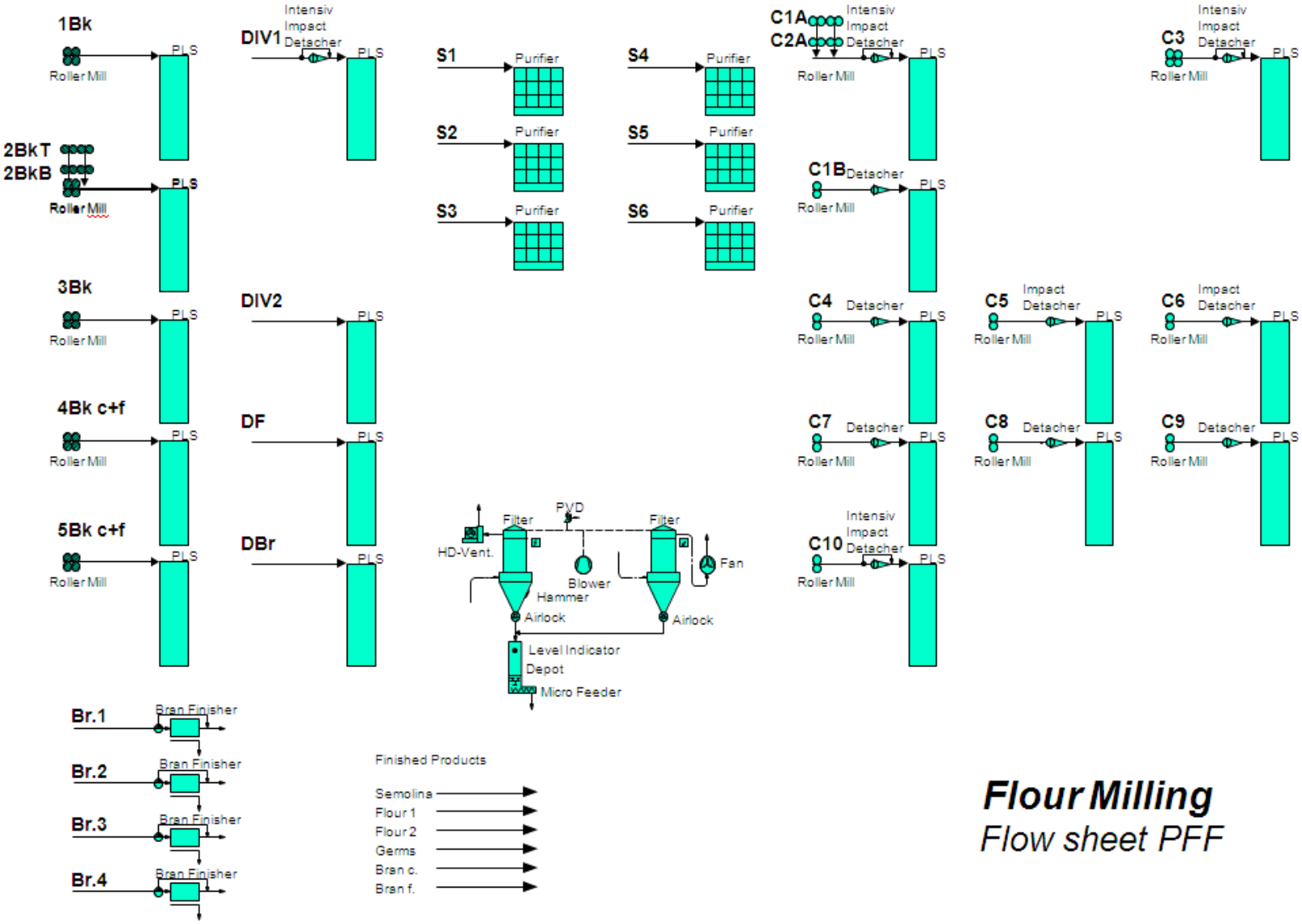
Benefits

- Higher extraction on low ash flour
- Adjustment of starch damage to achieve target water absorption
- Maximum total flour yield

Solution

- 3-step break system on 1st and 2nd break
- Specific grading system
- Balanced roll length of C- Passages

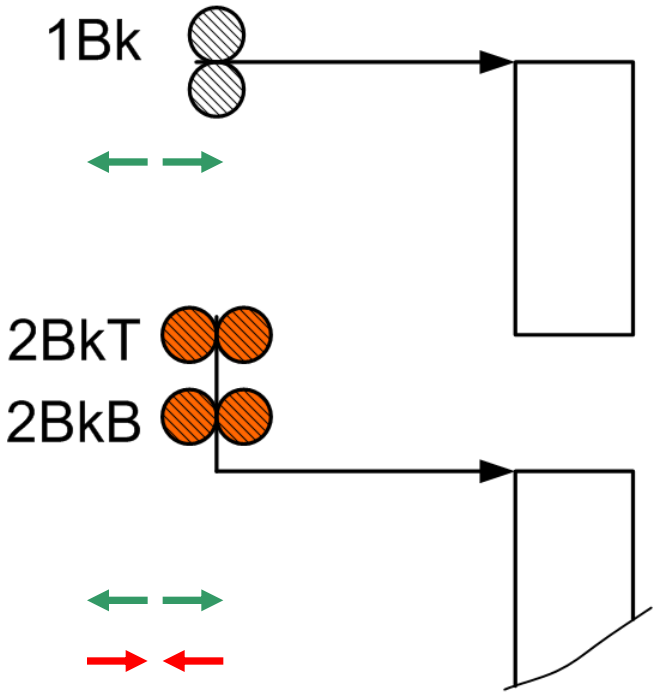
Flour quality in Premium Flour Flow.



Flour Milling

Flow sheet PFF

Solution: 8-Rollermill for 2Bk passage.



- The proposed 3-step break system for retrieval of semolina 1st quality allows:
  - Lower break release on 1Bk – usage mainly for coarse semolina production
  - Compensation with higher break release on 2Bk with higher semolina extraction

- Result:

  The semolina quality on 1Bk as well as 2Bk will be improved resulting in overall improved milling performance

Bühler plant impression.

Agenda.

1 Making the best of the Wheat

2 High Flour Yield

3 Cost in Operation

Cost structure of a flour mill.

Example of a European flour mill.

Raw material 75 - 82 %

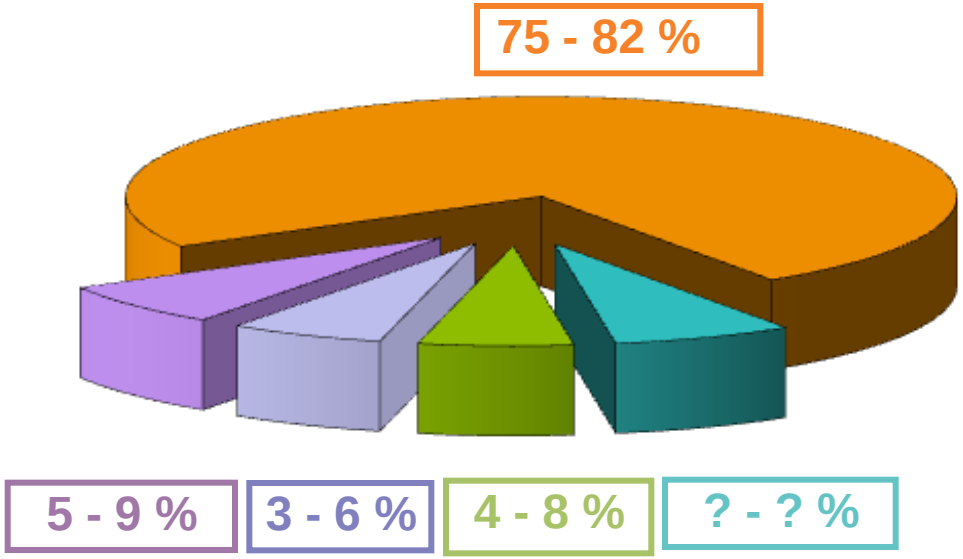
high flour yield

Production:	**5 - 9 %**
Energy	3 - 4 %
Staff	2 - 4 %
Maintenance	~1 %

Distribution:	**3 - 6 %**
Packing	~1 %
Transportation	~2 %
Staff	~2 %
Marketing	~1 %

Capital cost:	**4 - 8 %**
Amortization	~4 %
Interest	~4 %

Profit ? - ? %



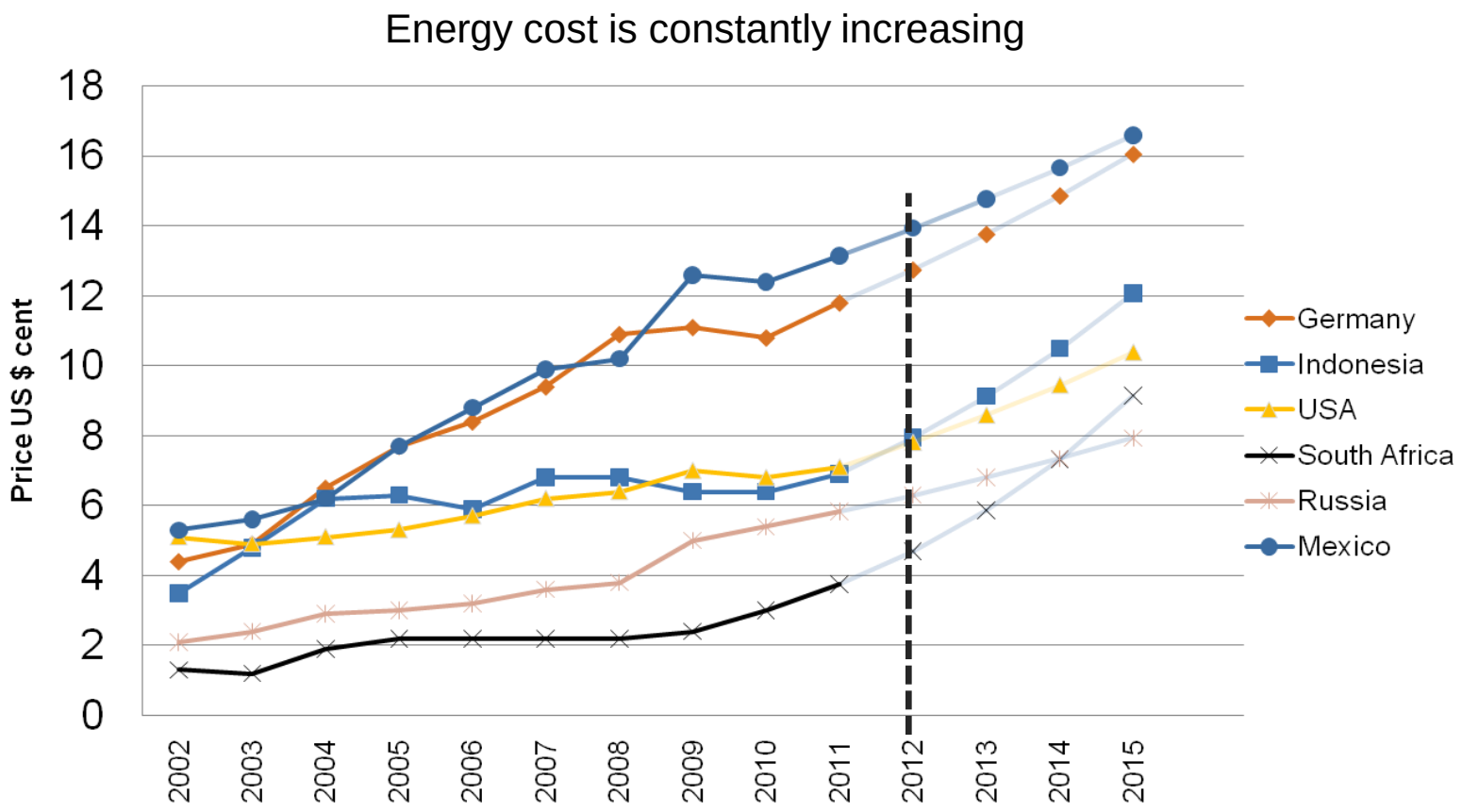
Cost in operation.
Energy Saving.

Optimum energy efficiency.

- Reduction of running costs
- Environmentally friendly production
- Sustainable production
- Profound advise
- Excellent implementation

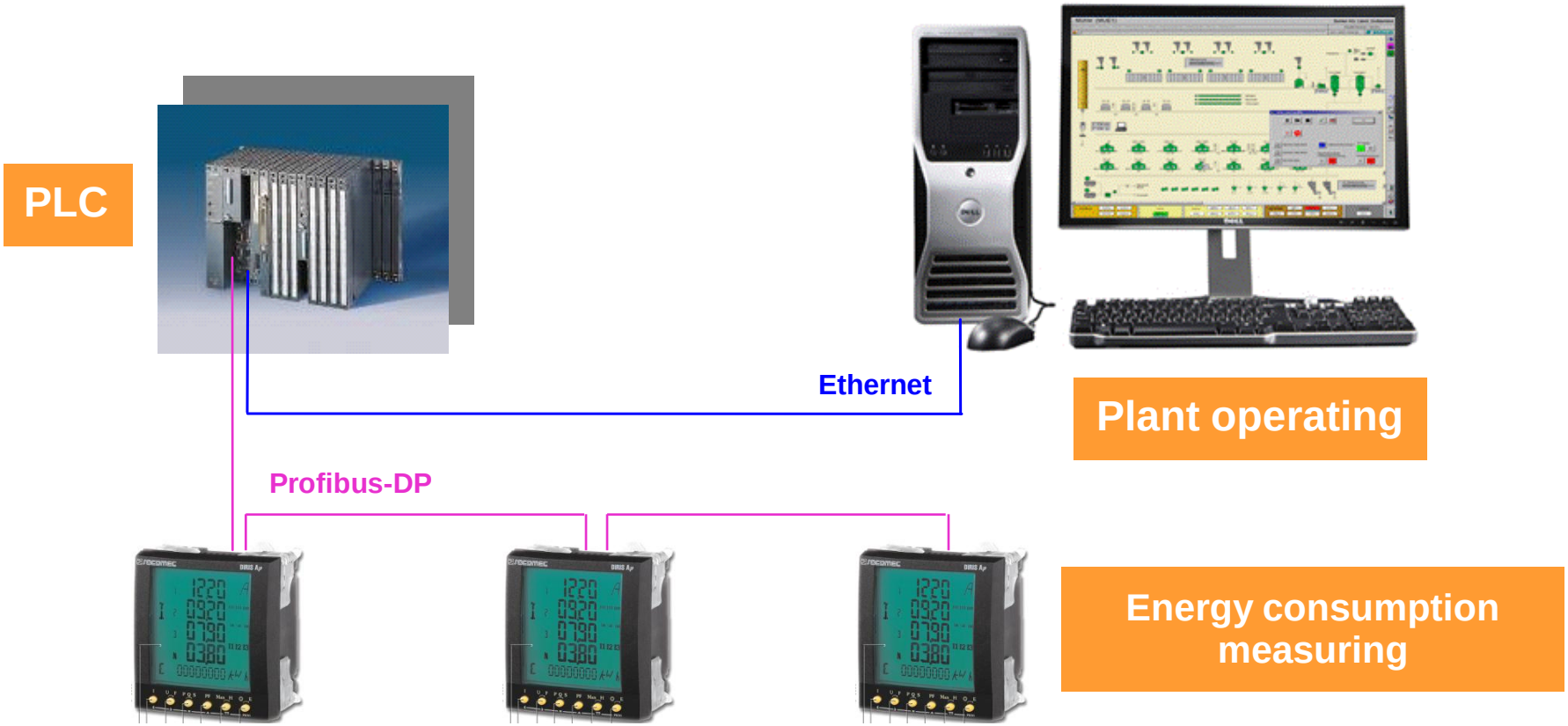
Cost in operation.

Energy Management.



WinCoS. Energy Management.

Monitoring of energy consumption.



Load controlled Drive Systems.

Energy savings on high pressure fans.

- Avoiding starter peak
- Setting to optimal fan characteristic

High pressure fan with frequency converter

Bühler plant impression.

Training and Education.

Bühler Services.

			
Training Center Bühler Uzwil / Switzerland	Swiss Milling School	Bakery Innovation Center	Bühler International
Courses in:	Degree programm:	Courses in:	Training Center in:
-Mechanical Maintenance -Electrical Maintenance -Milling Technology I & II -Expert Milling -Milling for Executives	-Milling Technologist SMS Broad education in milling science, technology and operation	-Baking Technology -From Wheat to Bread	-Bühler Switzerland -Bühler South Africa -Bühler China -Bühler India -Bühler USA

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