

High impurity
requires accurate
cleaning.

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High impurity requires accurate cleaning.
Requirements for a state of the art grain cleaning.

- Consistent and high quality of the finish products.
- Efficient reduction of harmful substances.
- Fulfillment of legal requirements.
- Optimization of the production costs.



High impurity requires accurate cleaning.

Overview of a Flour Mill.

Grain Silo

Raw Wheat bins

Finished product storage & blending

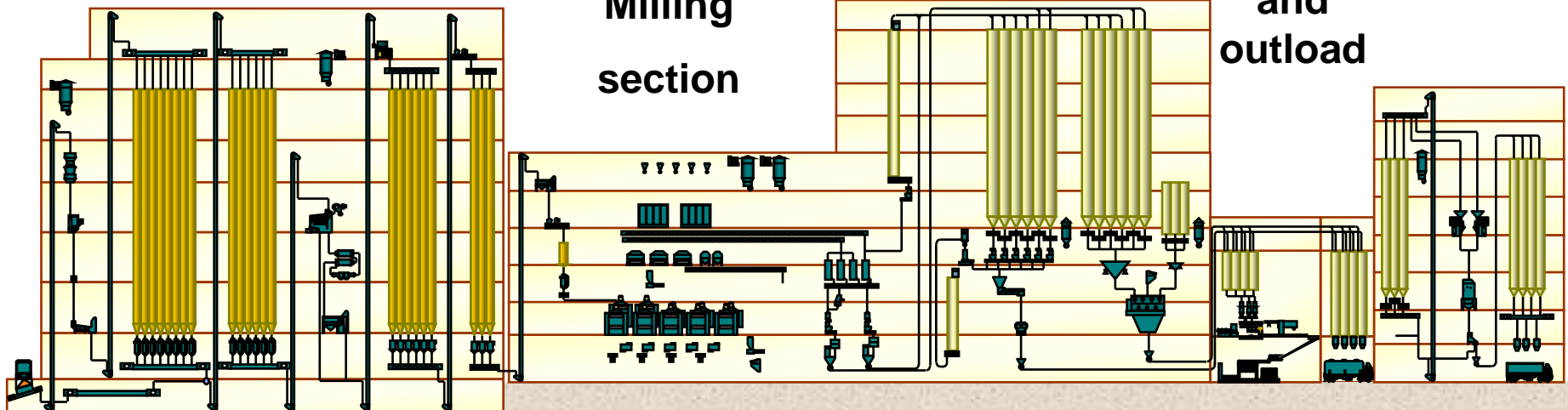
Bran handling

Intake / Pre- Cleaning

Cleaning / Conditioning

Milling section

Flour Packing and outload



Benefit of a
pre-cleaning
process at intake.



High impurity requires accurate cleaning. Benefit of a pre-cleaning process.

Local intake pit aspiration:

- Dust returns to the product flow.
- Traders, terminals; e.g. cooperatives, agricultural trade



Central aspiration:

- Dust does not return to the product flow.
- Processers; e.g. flour mills, food processors



High impurity requires accurate cleaning.
Benefits of an aspirator in the pre-cleaning process.

- Aspirators
 - Reduce risk of dust explosions
 - Less flow problems when large bins get empty.
 - Increasing storage space.

- Fresh air, or air-recirculation aspirators are efficiently removing light impurities.



Air-recirculation aspirator LAIA

High impurity requires accurate cleaning. Pre-cleaner and aspirator.

- Capacity: up to 250 t/h
- Sieving area: up to 48 m²
- Durability & high operational reliability
- Re-use of aspiration air ensures the cost effectiveness of the cleaning process
- Rhino-hyde lining to provide optimum wear and noise protection



Pre-Cleaner LAAB / TAS



Raw material



Coarse impurities



Low-density material

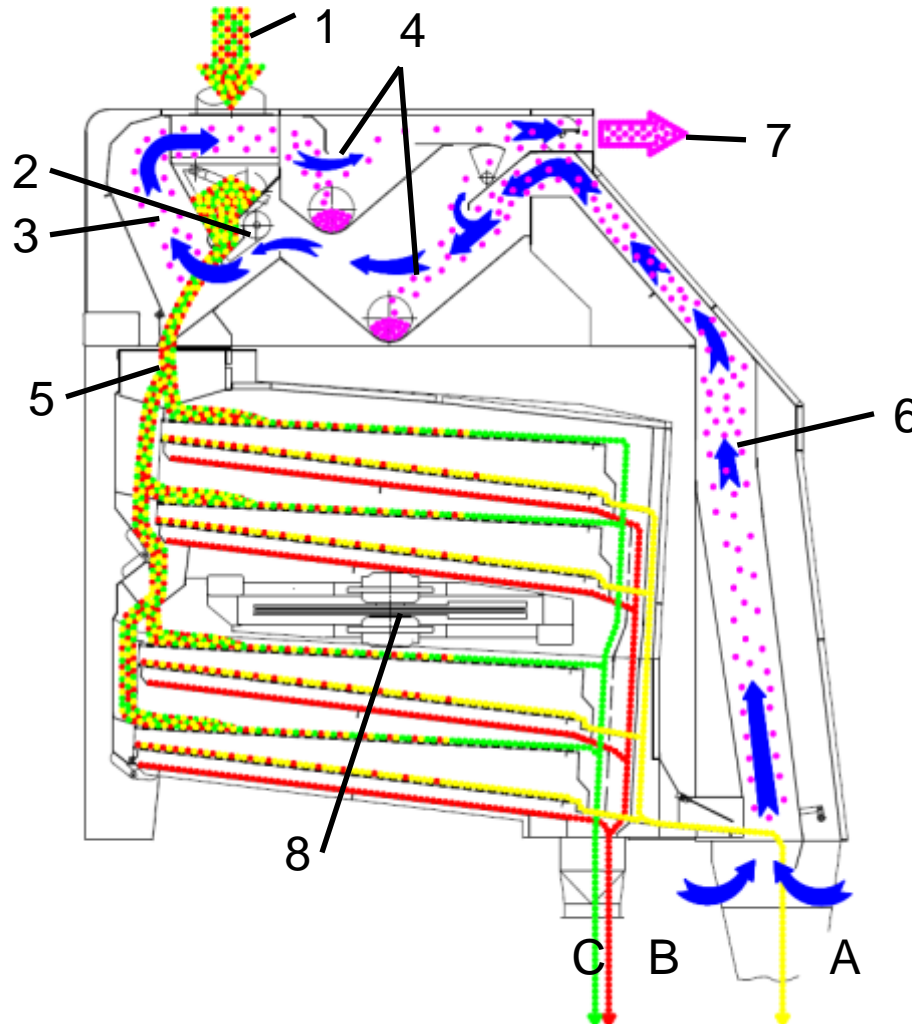


Fine impurities



Clean product

High impurity requires accurate cleaning. Pre-cleaner and aspirator.



- 1 Product inlet
- 2 Distribution flap
- 3 Inlet aspiration
- 4 Expansion chambers with discharge screws
- 5 Product distribution onto sieves
- 6 Outlet aspiration
- 7 Exhaust air
- 8 Screen box drive

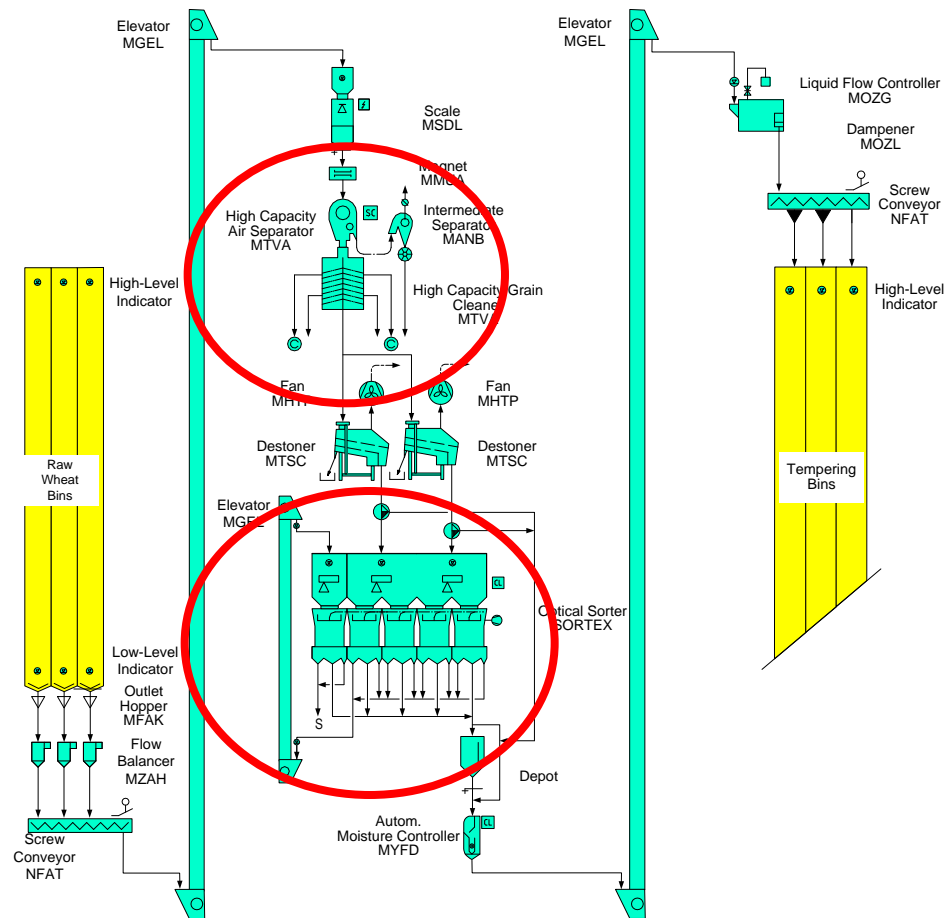
- A 1. grade
- B 2. grade
- C Coarse particles

1st Cleaning Line



High impurity requires accurate cleaning.

State of the art grain cleaning concepts with large sieve surface and optical sorting.



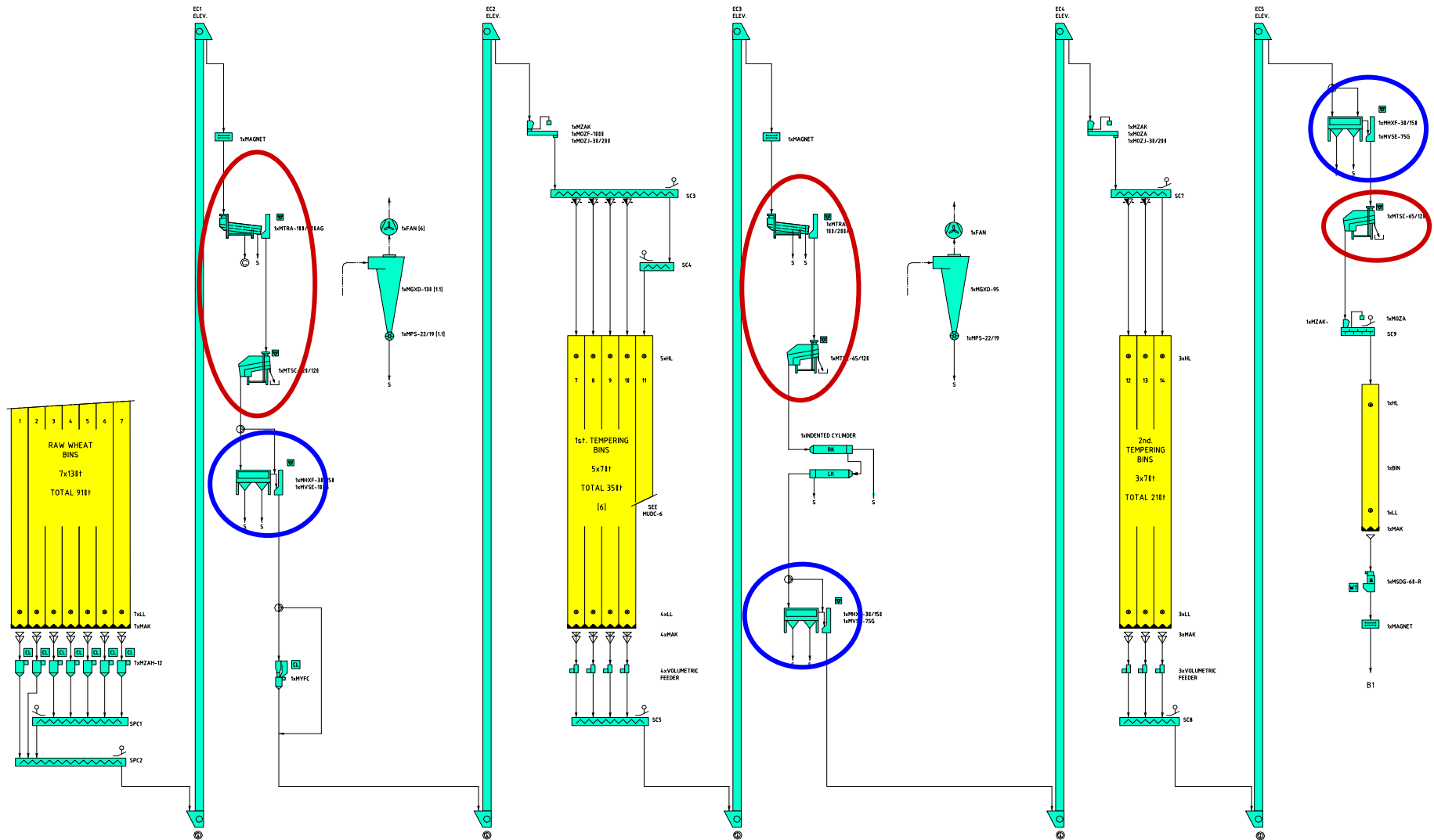
Vega-Cleaner

- Concept with high performance and accurate sorting.
- Separation of light-, coarse- and fine impurities.
- Separation of Soya beans, Maize, etc. possible.

Sortex

- Optical sorting of the whole product flow.

High impurity requires accurate cleaning.
Concept for wheat cleaning with high amount of stones and sand.



High impurity requires accurate cleaning.

Removal of impurities and light product.



Raw grain



Coarse impurities

Maize
Soya beans
Sunflower kernels



Option: grain classification



Large grain Medium grain small grain



Light product

Dust
Spelt
Shriveled kernels



Fine impurities

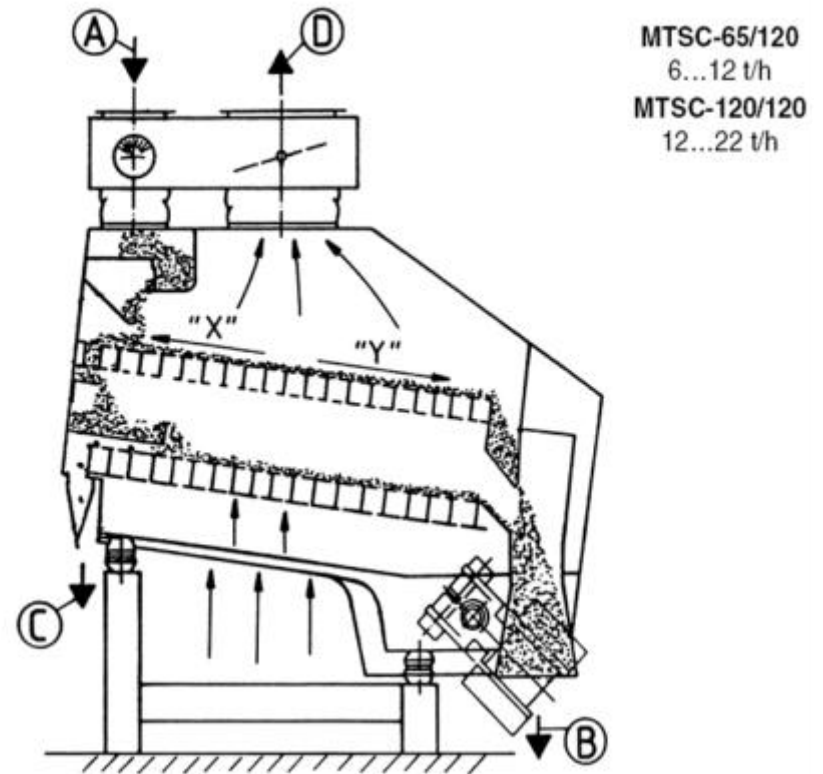
Sand
Weed seeds

High impurity requires accurate cleaning. De-stoner.



Working principle

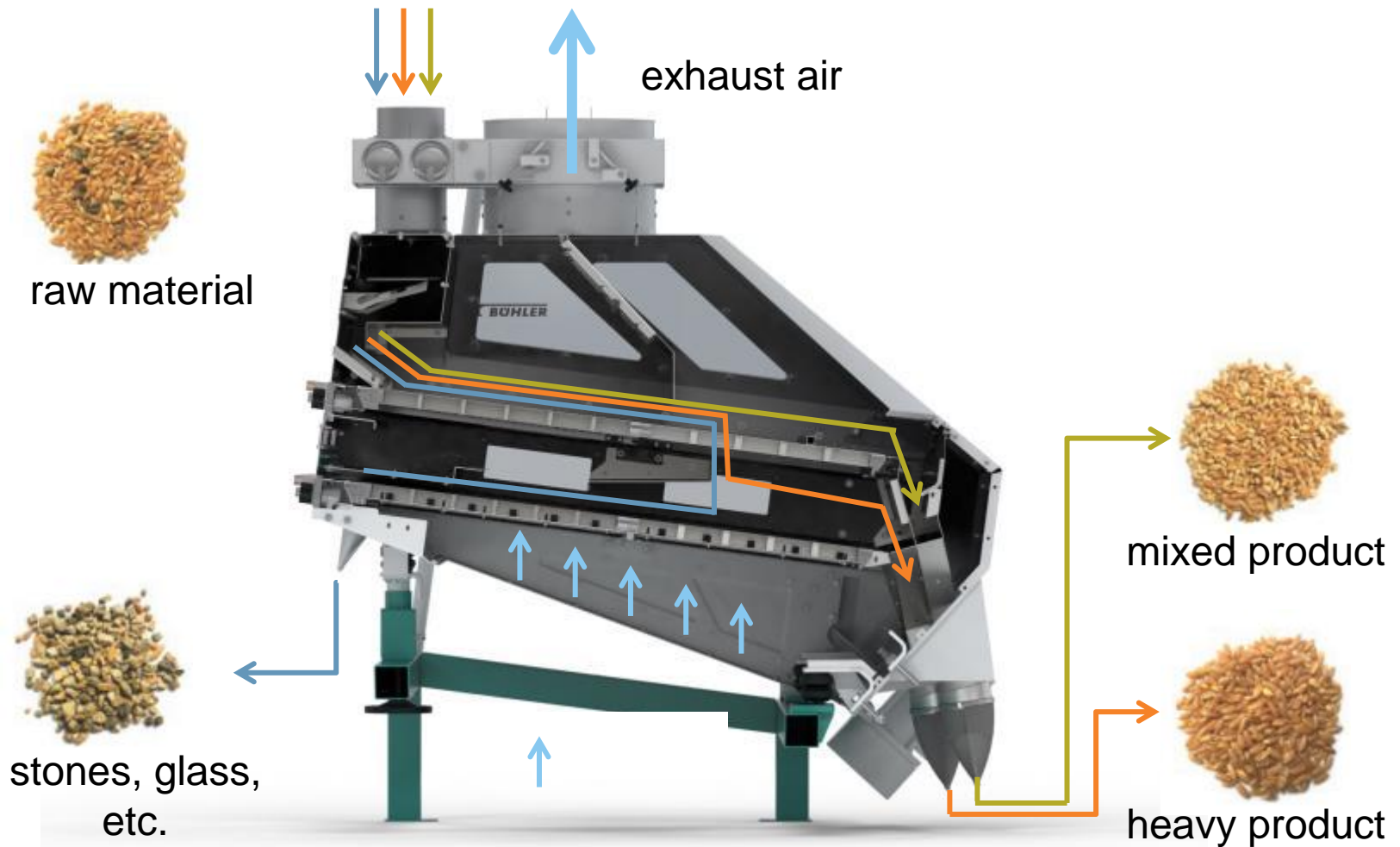
Specific weight – gravity separation



For the removal of

- stones and
- heavy particles (metal / glass)

High impurity requires accurate cleaning.
Combi-stoner / Functions: Two machines in one.

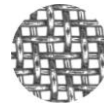


Air Recycling Separator



High impurity requires accurate cleaning.

Air recycling separator.



SW:0.5mm

Filter drum

Aspiration

Aspiration

Frequency control



Air back to machine

Air from machine

Light impurities

Precise
classification of
grain.



***High impurity requires accurate cleaning.
Precise removal of all discolored particles.***



High impurity requires accurate cleaning.

Optical Sorter SORTEX.



Dark defects



Foreign grain + seeds



Ergot



Discoloured grains

Light defects



Ligth Braid
Spelt, Straw

Foreign material, unhealthy wheat



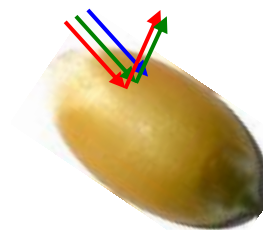
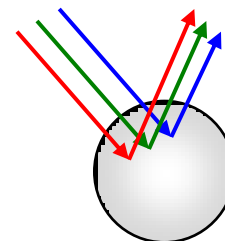
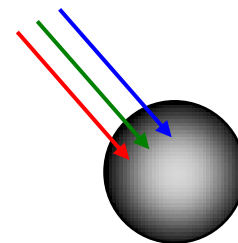
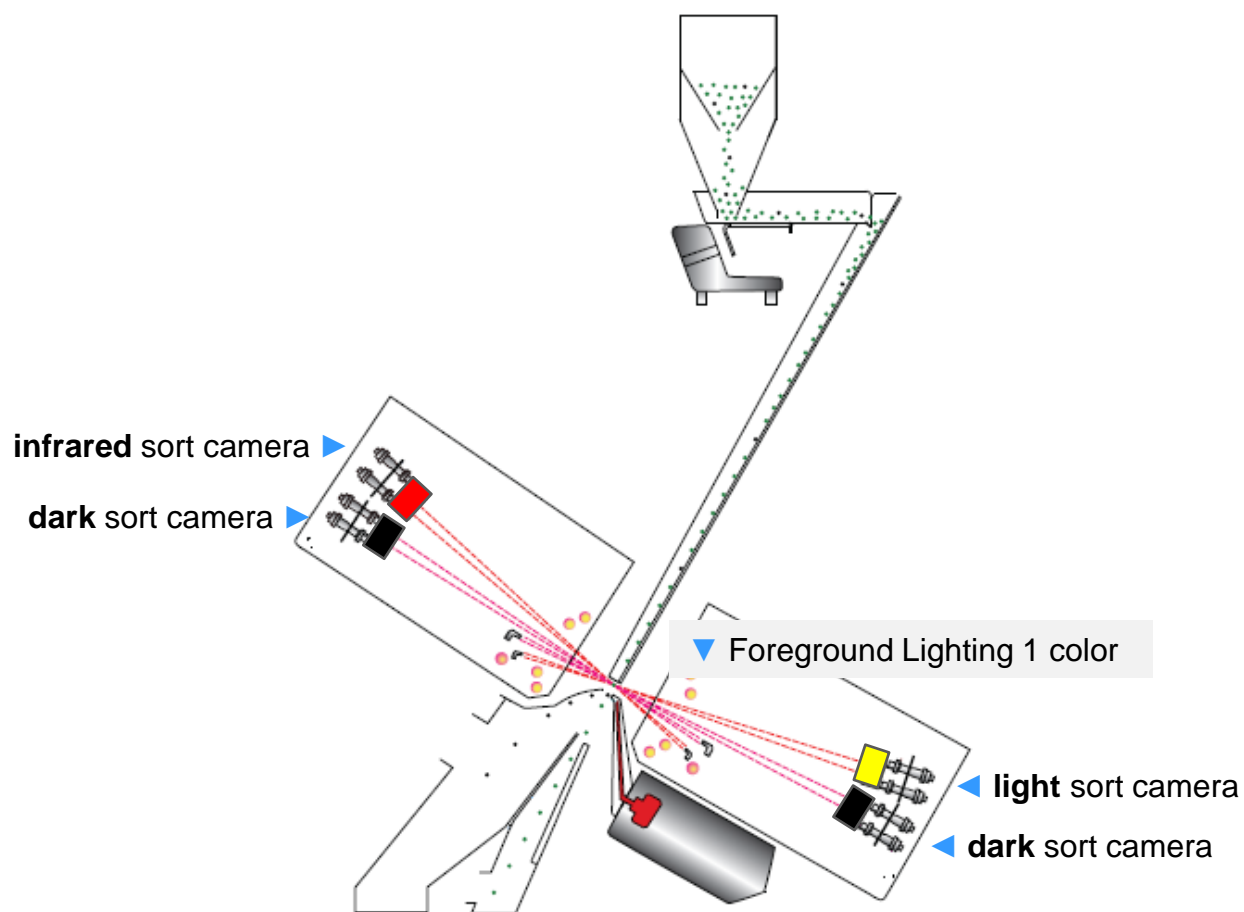
Semi-transparent
Stones, Glas, Plastics



Mycotoxin damaged
Diseased kernels

High impurity requires accurate cleaning.

Dark- / Light- / Infrared Sort

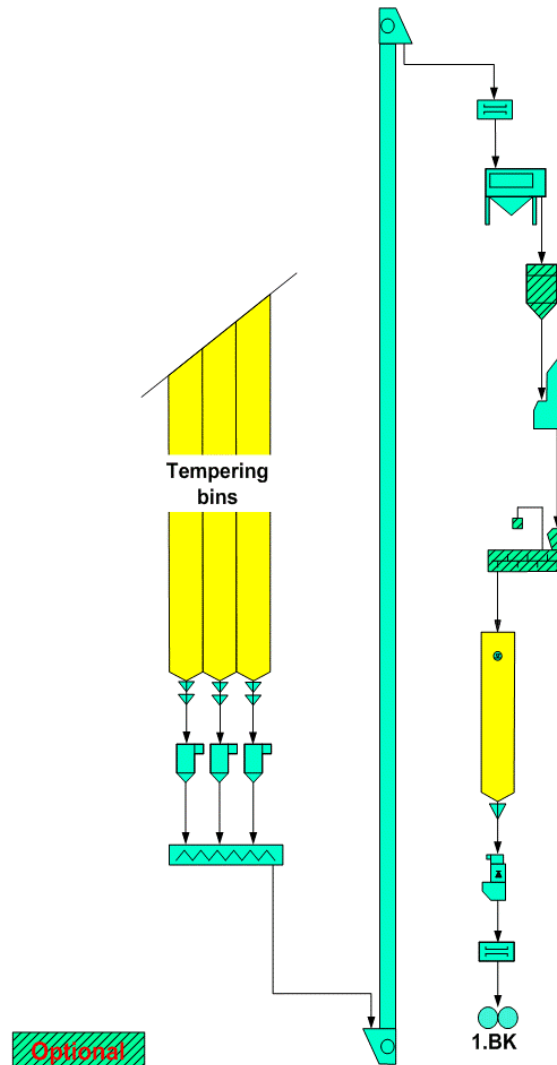


High impurity requires accurate cleaning.

2nd Cleaning line

Equipment installed:

- Magnet
- Dry scourer
- Grain sterilator (optional)
- Aspiration channel
- B1 dampening (optional)
- 1st break bin
- 1st break scale



High impurity requires accurate cleaning. Scourer.



Working principle

Friction of

1. Grain against screen
2. Grain against rotor segments
3. Grain against grain



Important:

Aspiration channel after
scourer for removal of
remaining dust

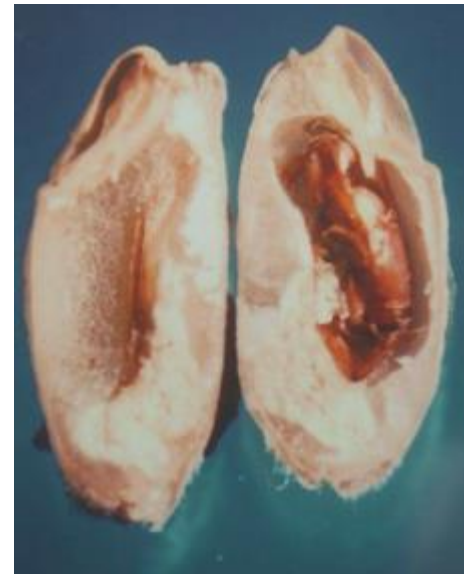
High impurity requires accurate cleaning.

Grain Sterilator.

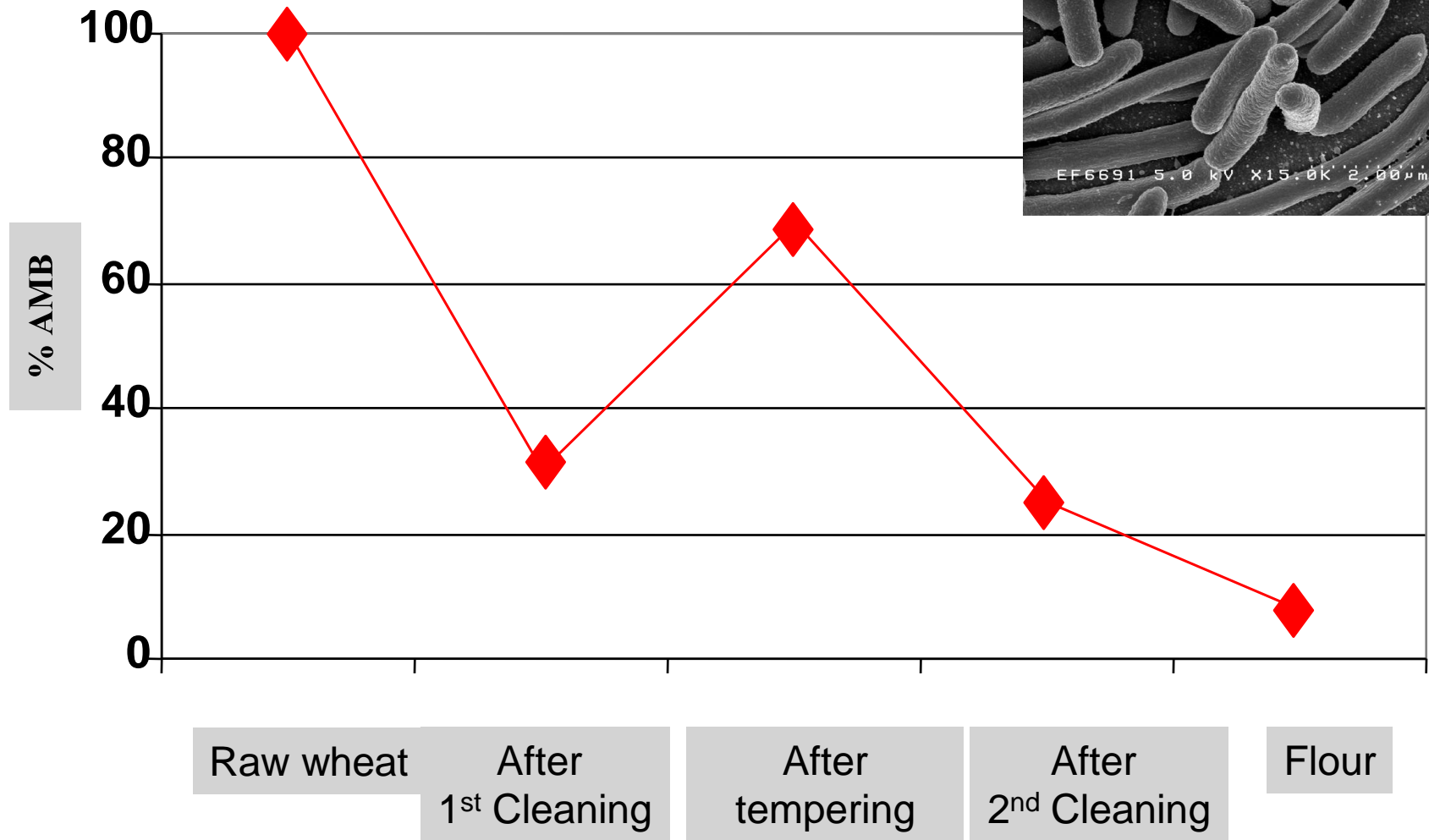
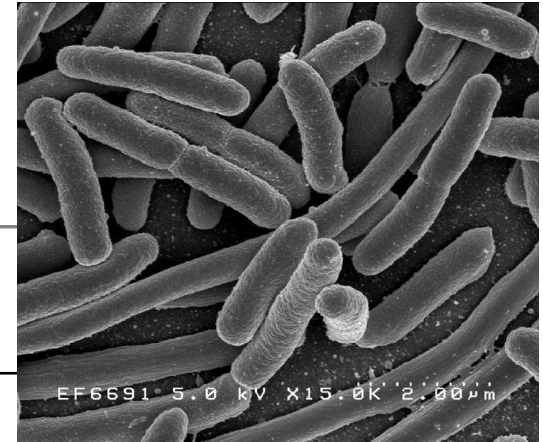


Grain Sterilator

- Grain sterilator for Insect reduction in the Mill
- Breaks open kernels that contain insects and are thus structurally weakened
- Improvement of Filth Test



***High impurity requires accurate cleaning.
Reduction of bacteria count.***



High impurity requires accurate cleaning.

Summary.

- Accurate cleaning starts at the intake.
- Concept of Cleaning Line needs to be adapted to the raw wheat used and the finish products produced.
- Reduction of harmful substances / Fulfillment of legal requirements.
- High efficient cleaning line is enhancing the food safety.





One step ahead.

 **BÜHLER**