



Proper Cleaning for wheat flour production

iranGrain Conference, October 2024

Whole Wheat Flour

Whole Wheat Flour

Definition

What is the Whole Wheat Flour:

- Flour made from entire wheat kernel *

Components:

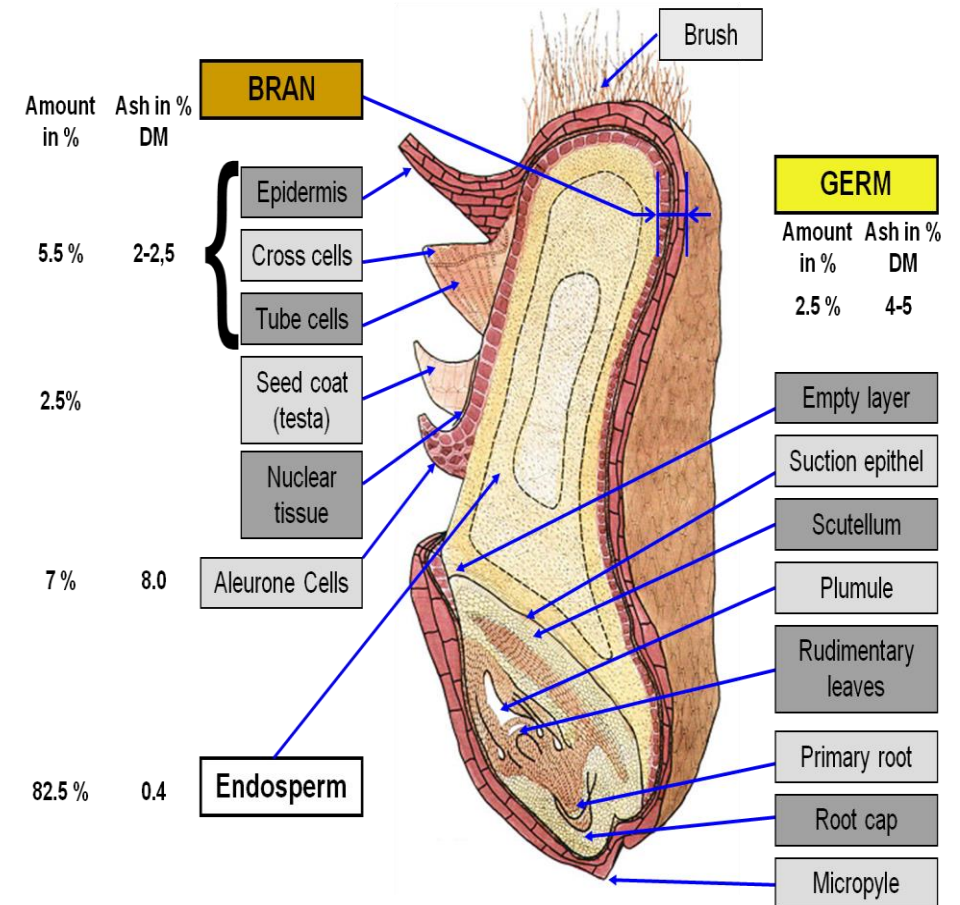
- Bran, Germ, Endosperm

Nutritional benefits:

- High in fiber, Vitamins and minerals, Lower Glycemic index

Any potential drawbacks!?

* Source: U.S. Department of Agriculture (USDA), FoodData Central.



Whole Wheat Flour

Importance of Impurity Removal

Impact on flour quality

May alter the flour's color, flavor, and baking properties

(e.g.: Weed seeds or other grains, Stones or metal fragments)

Food safety considerations

Contaminants that pose health risks to consumers:

(e.g.: Mycotoxins, Pesticide residues, Microbiological contaminants, Physical hazards)

Legal and regulatory requirements

Whole Wheat Flour

Importance of Impurity Removal

Organic impurities

Examples: weed seeds, insect fragments, plant debris

Inorganic impurities

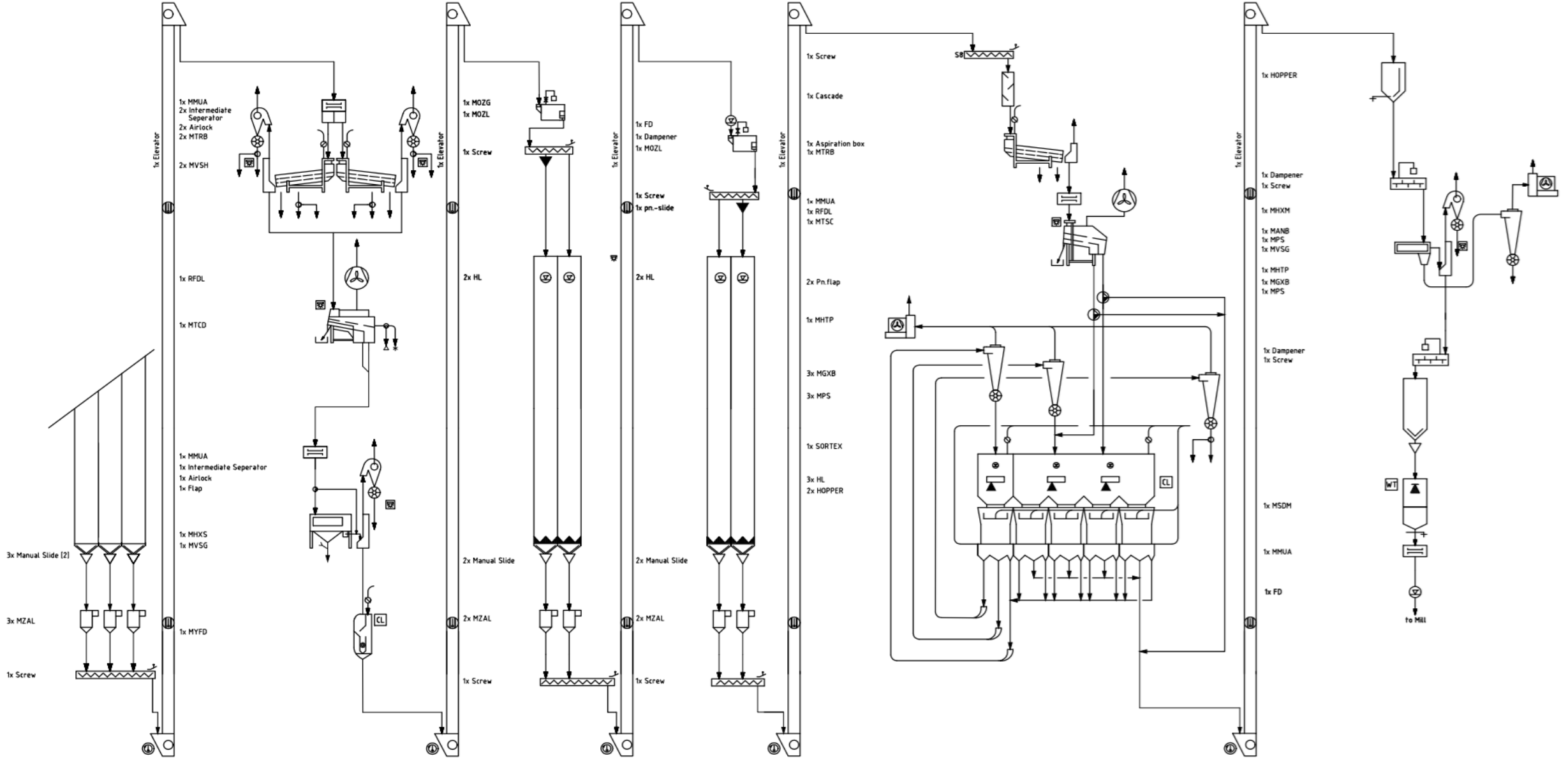
Examples: stones, metal fragments, glass

Microbiological contaminants

Examples: fungi, bacteria

Cleaning Section Concept

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Cleaning Section Concept

Magnetic Separator

Application

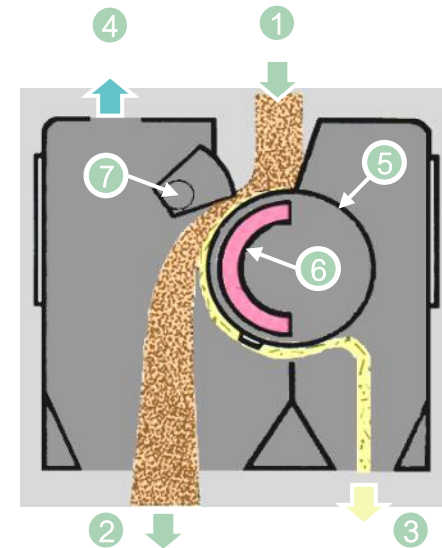
Removal of ferrous impurities

Prevent damage to the machines in downstream process

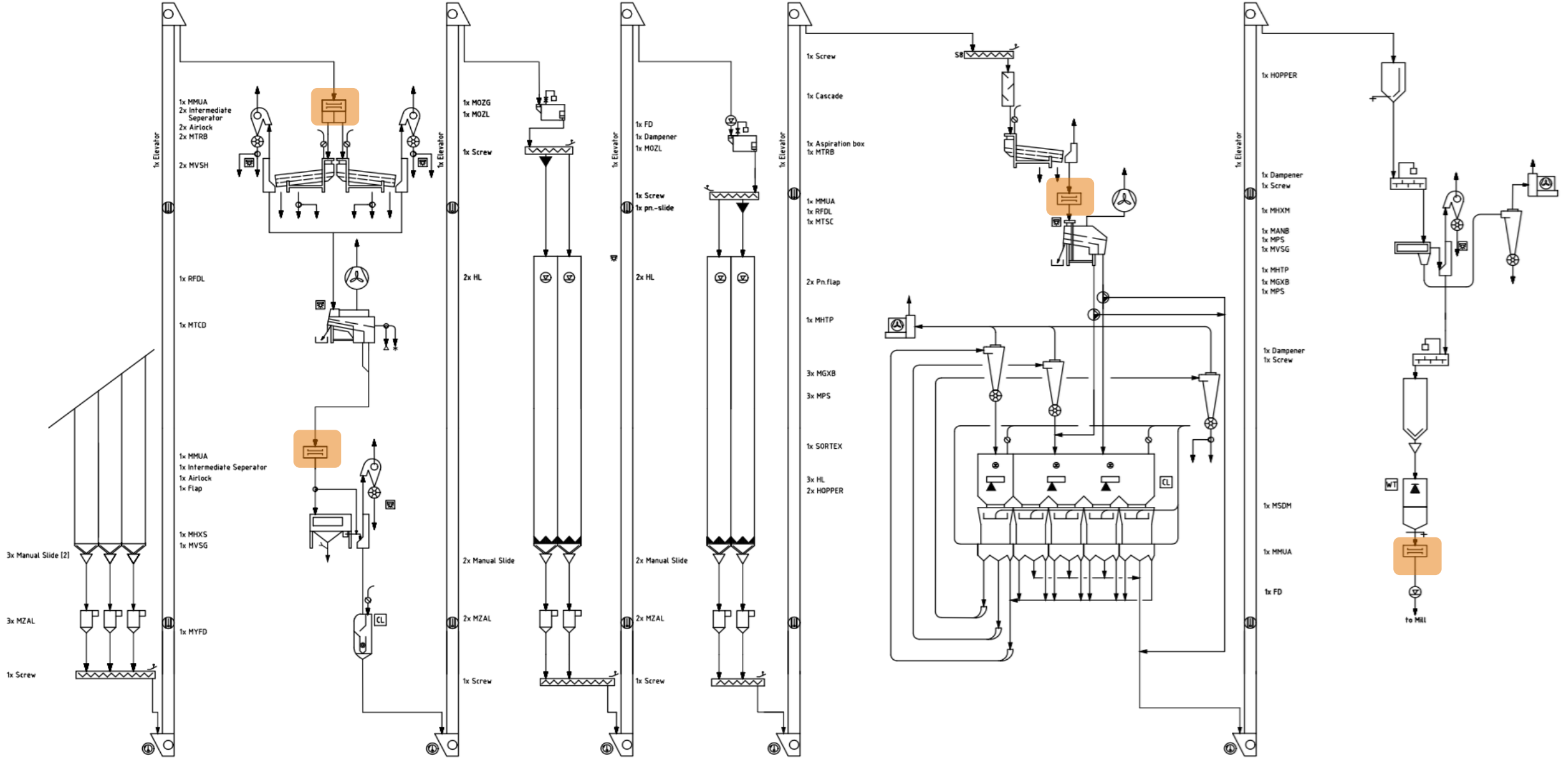
Types

Stationary

Drum



Cleaning Section Concept

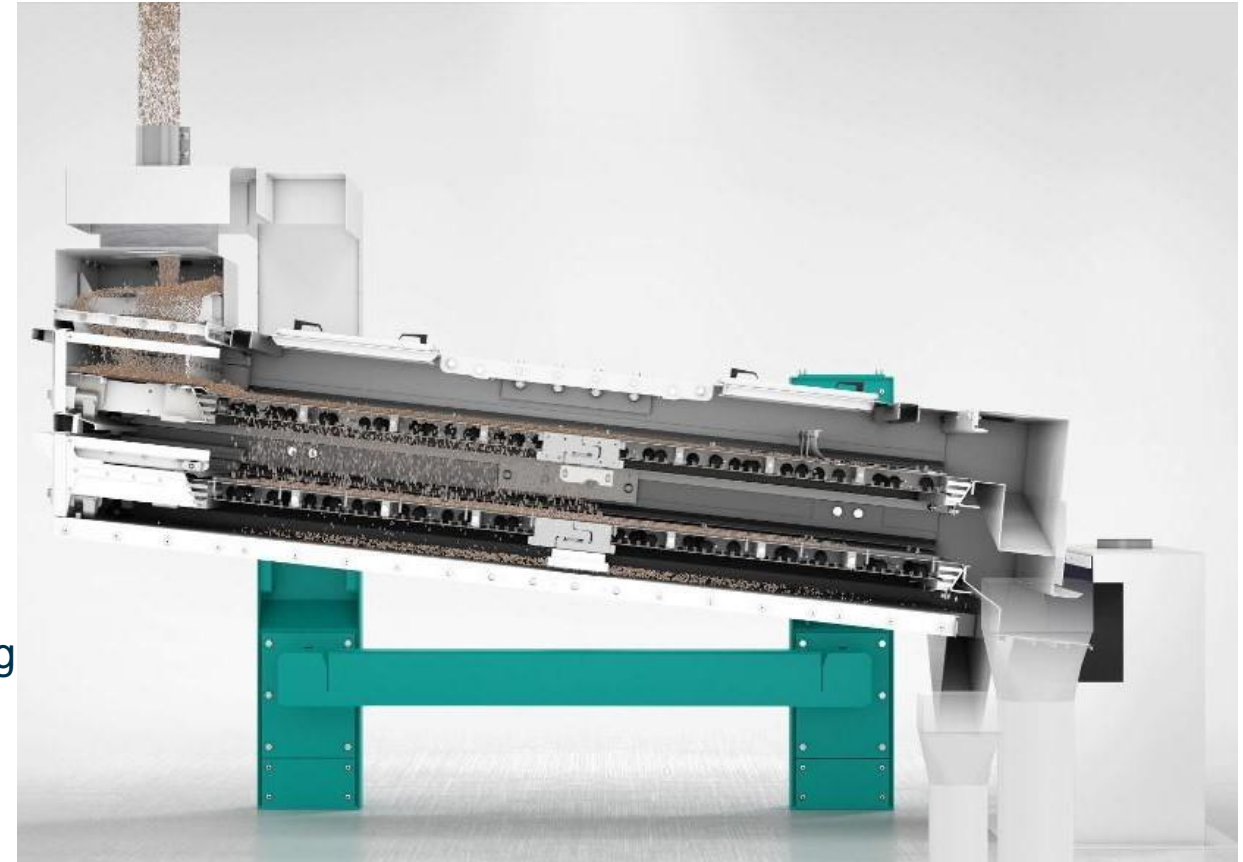


Cleaning Section Concept

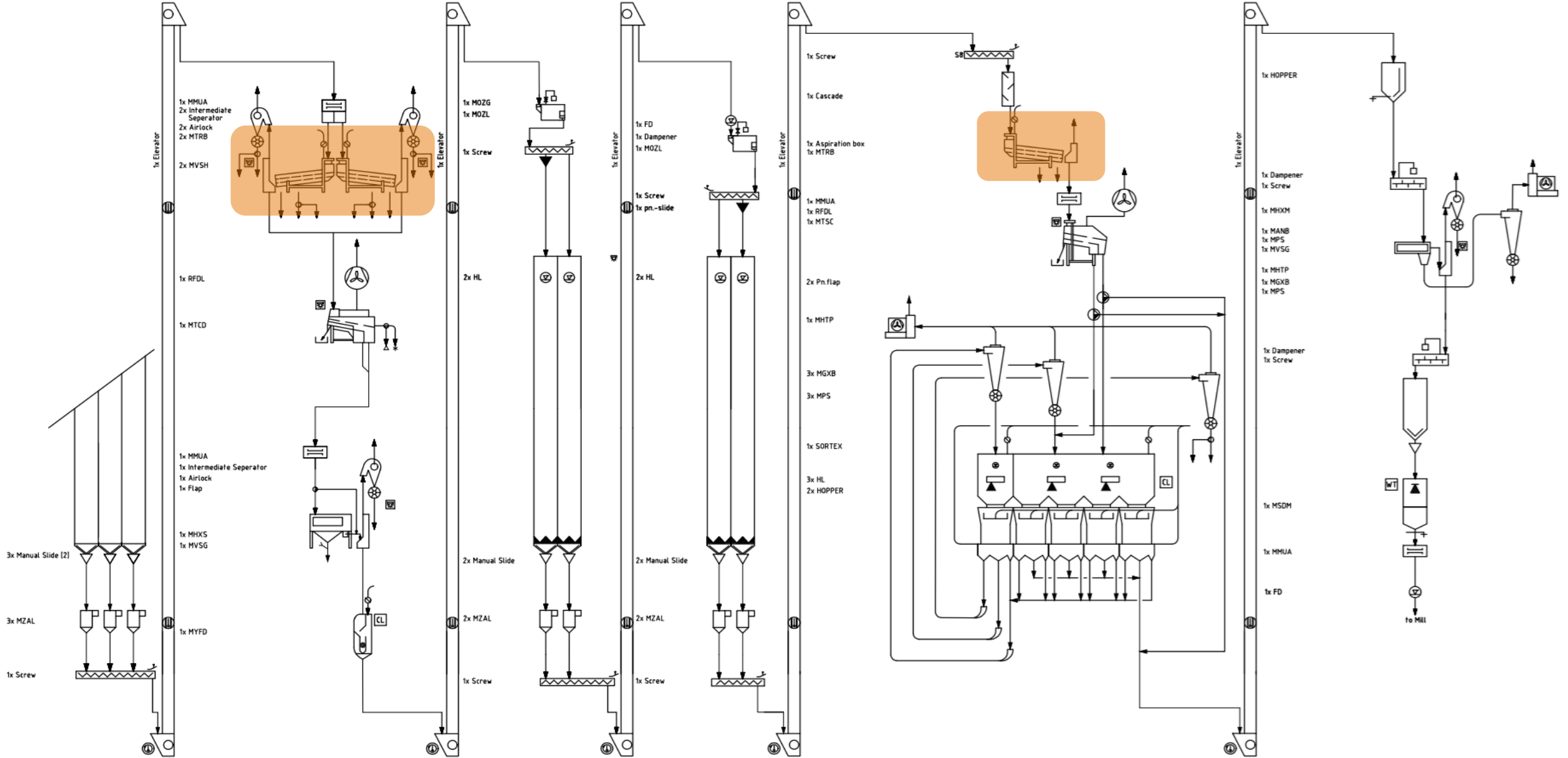
Separator Classifier

Separation based on product size

- The product stream gets evenly distributed across the top sieve, while the sieve box assembly moves back and forth
- Coarse particles get transported off, while fine particles and the desired product fall onto the next sieve
- On the second sieve deck, the fine particles fall down again and get disposed, while the overs (main product) are leaving the machine and might be fed to the attached aspiration channel



Cleaning Section Concept



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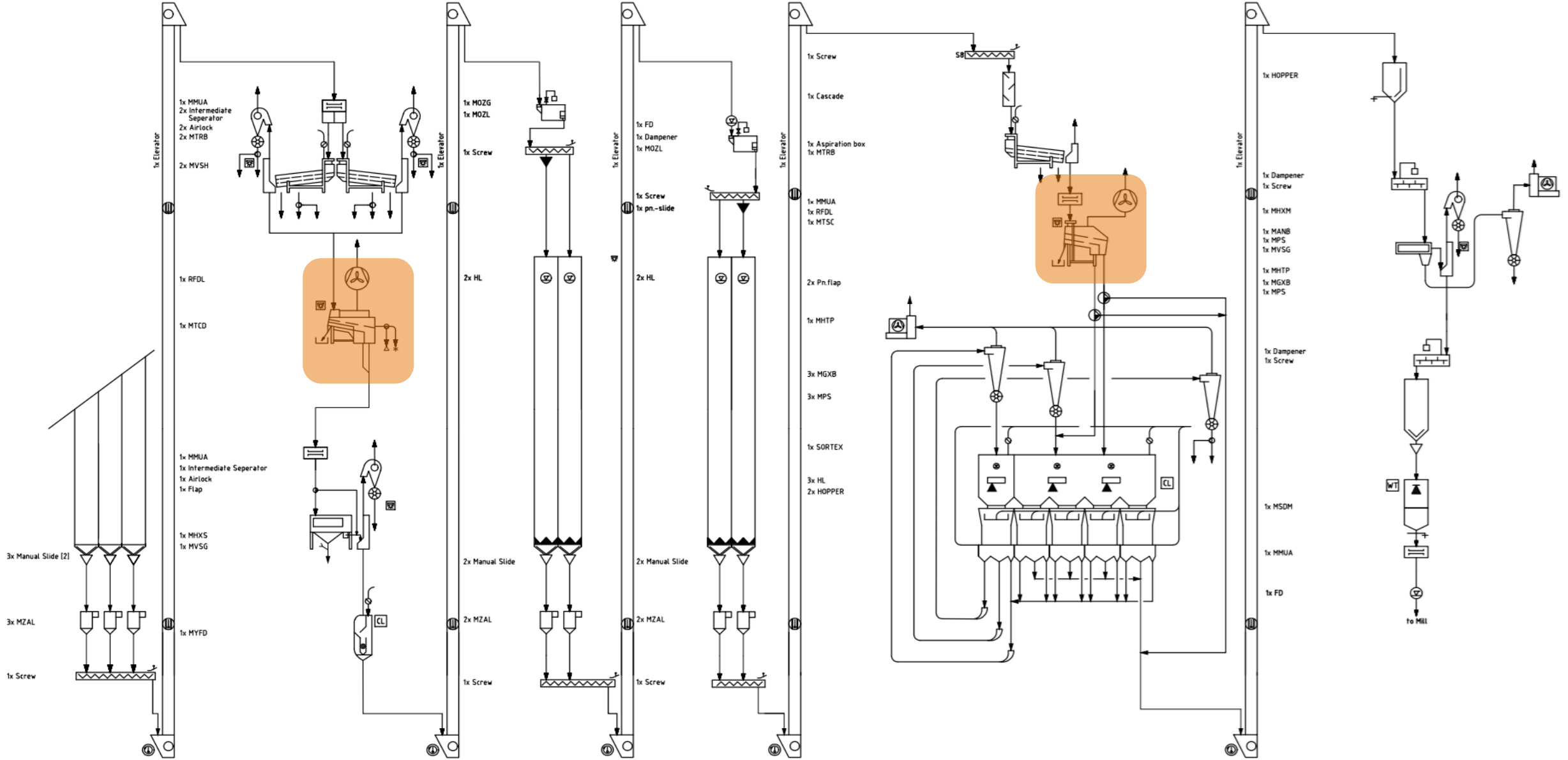
Destoner / Combinator

Separation according to density

- The product stream is evenly distributed across the pre-separation screen, where it is stratified by the oscillating motion of the screen and the air flowing through the product from bottom to top
- While the lighter particles float at the top, the heavy particles settle to the bottom of the product stream, where they are flowing upward
- The heavy particles are fed to the final separation zone of the bottom screen, where their separation is accomplished by a countercurrent of air
- The stone-free product floats on cushions of air toward the product outlet



Cleaning Section Concept



Cleaning Section Concept

Scourer / Peeler

Friction of

- Grain against screen



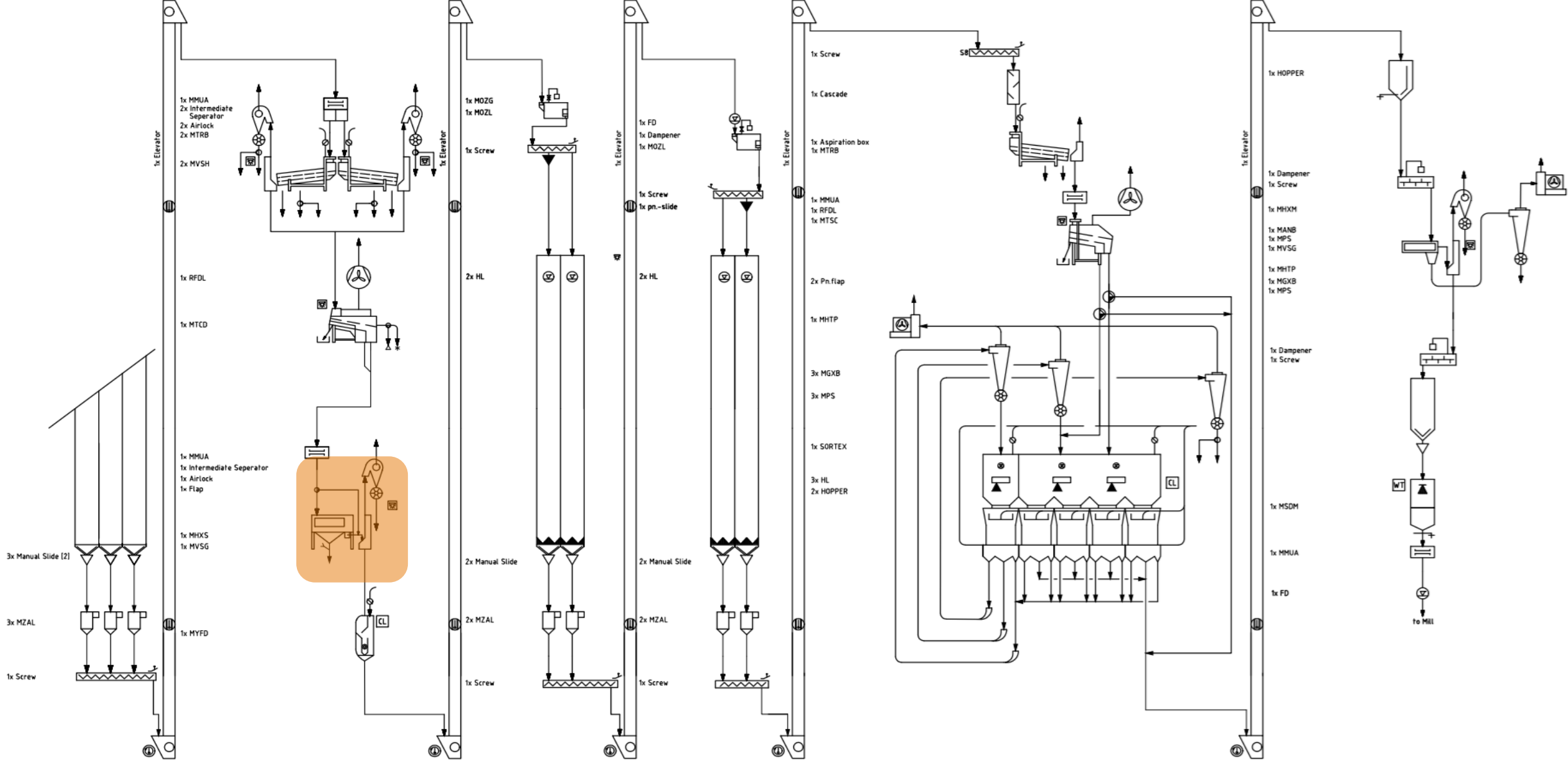
- Grain against rotor segments



- Grain against grain



Cleaning Section Concept

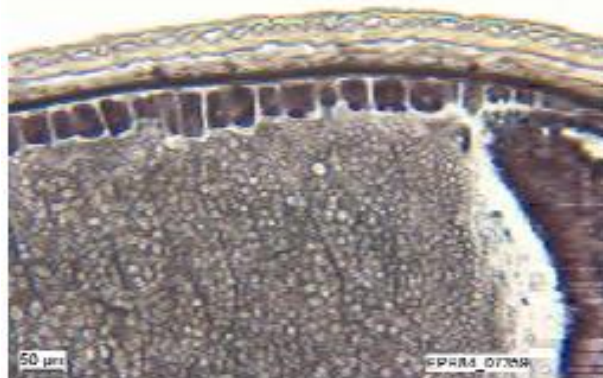


Cleaning Section Concept

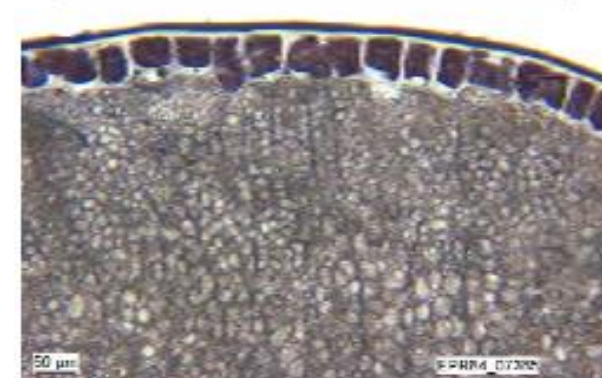
Scourer / Peeler



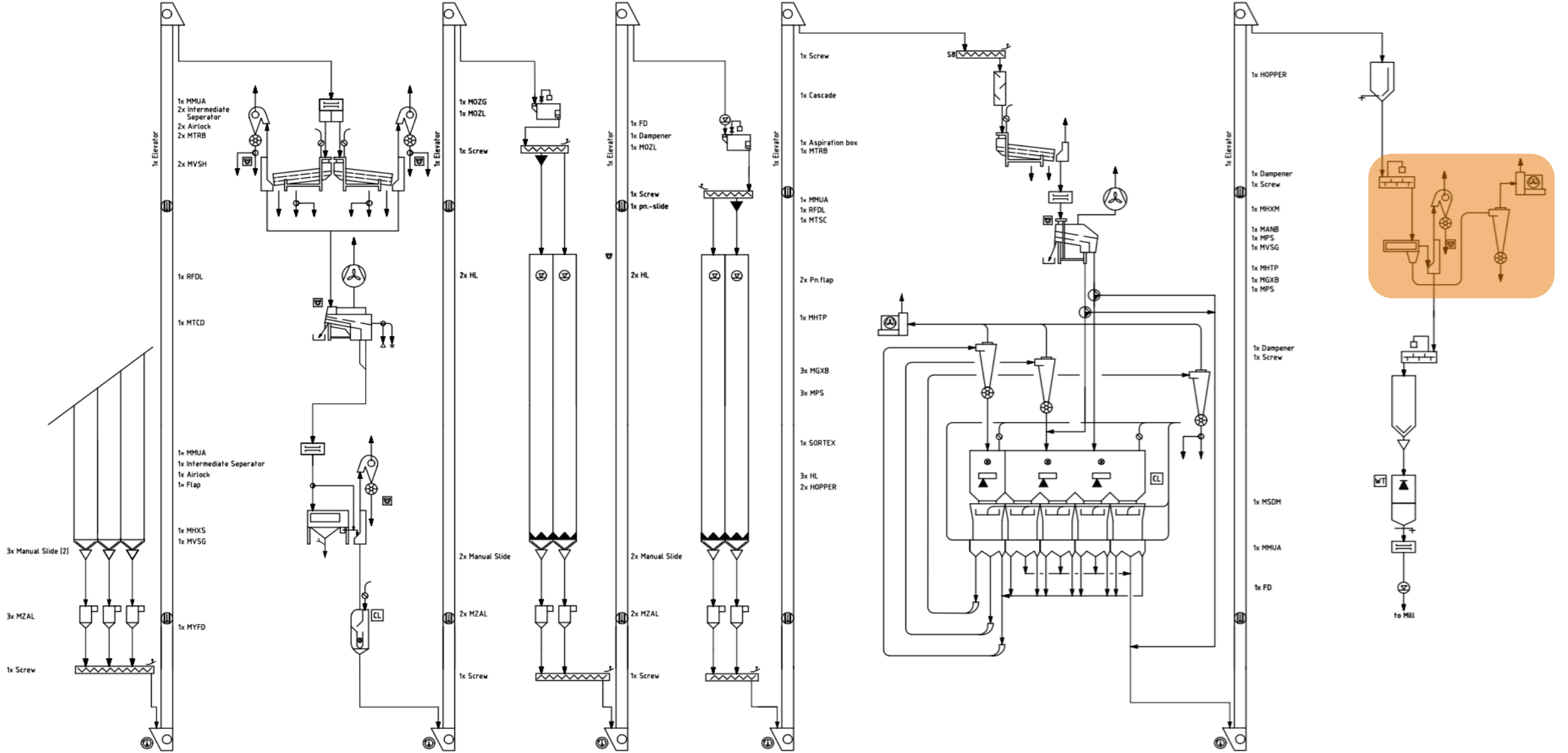
Before Lite Peeler



After Lite Peeler



Cleaning Section Concept

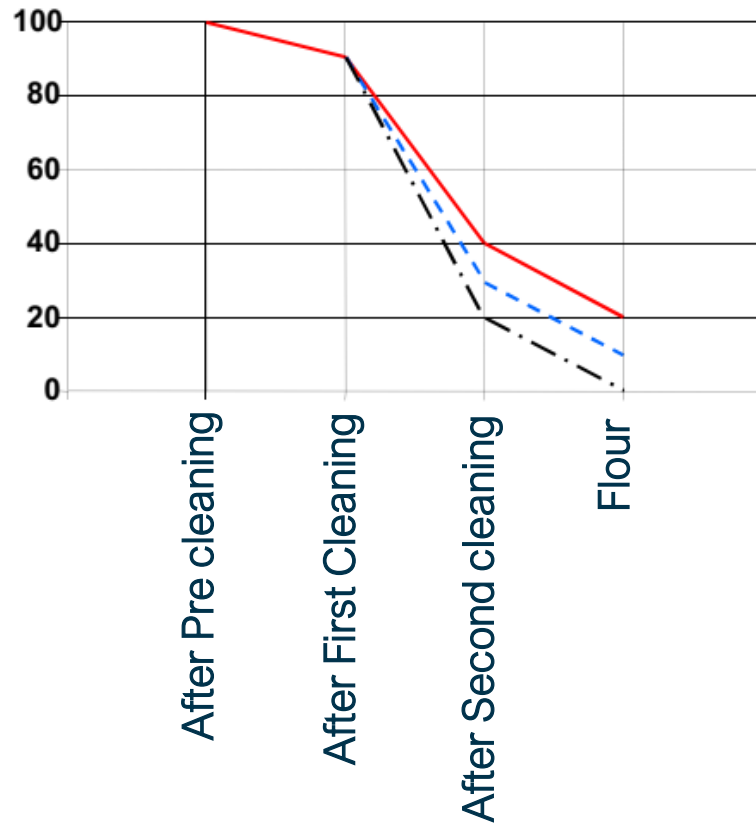


Cleaning Section Concept

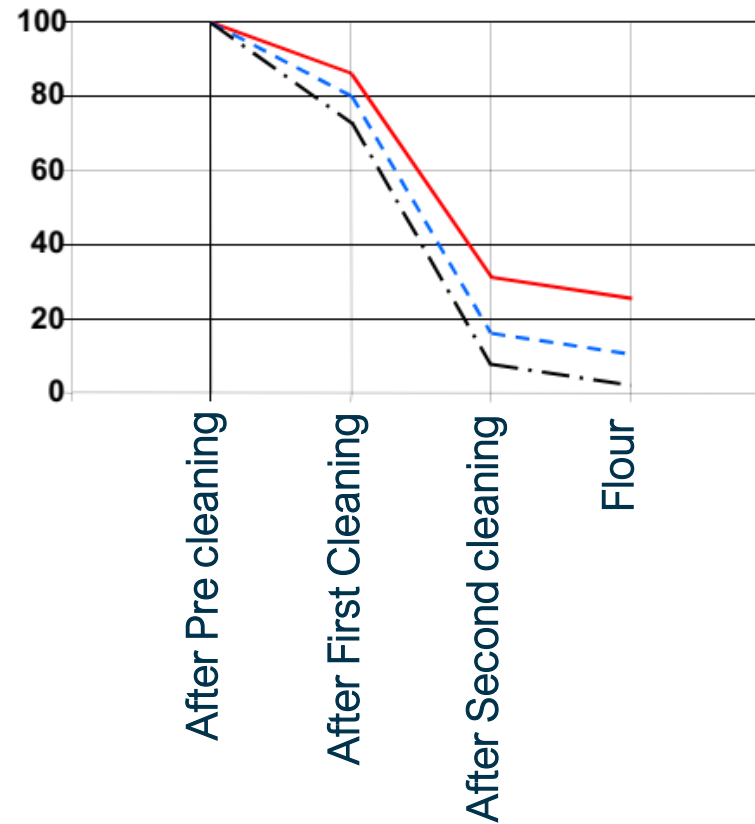
How a cleaning section affect hygienic production

Traditional Cleaning section ———
Utilizing Scourer MHXS - - - -
Utilizing Peeler MHXM -

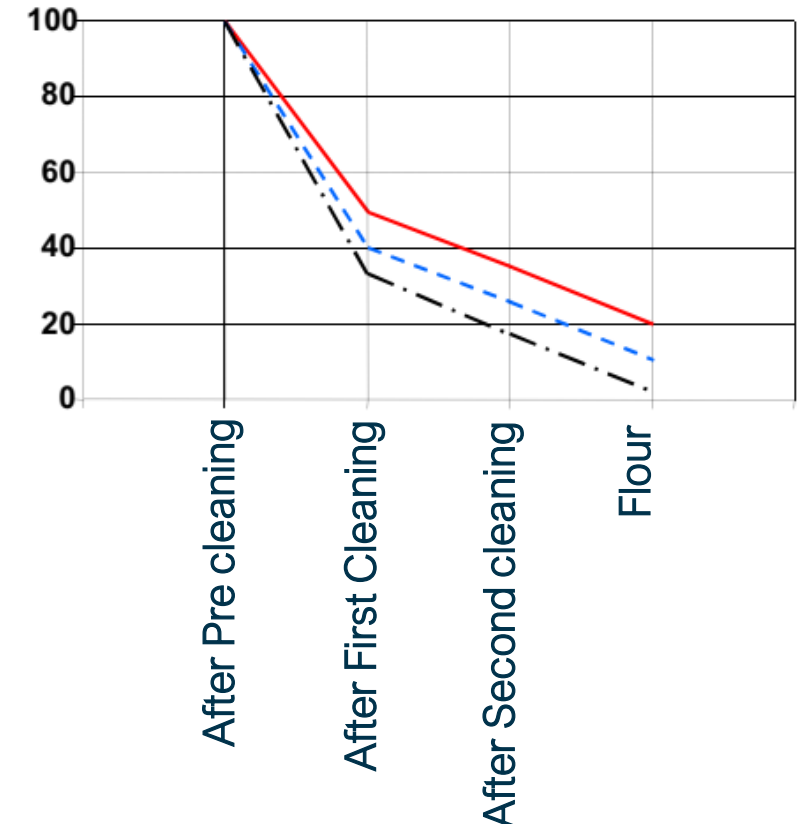
Heavy Metals



Pests and insects residue



Microbial contamination





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