Elica ASM presents

EUREKA

The sorting edge experience

ASM®
advanced sorting machines
A Company of elica

www.elica-asm.com

ASM – The Italian Optical Sorting Machines from Bologna



For over 30 years, we have specialized in optical sorting, being at the forefront of sorting technology and meeting the highest standards of precision and quality in a wide number of applications

Brief history of ASM

Mr. Giovannini was a young and brilliant engineer when initially got exposed to optical-electronic sorting technologies since the 70's. In the following decades, while working at different companies, he successfully designed new generations of optical sorters, that unceasingly achieved a leap forward in innovation and quality.

He eventually met Mr. Mantovani and **in 2006** they started **a new company called ASM Advanced Sorting Machines**, producing together the first sorters series: the Futura Hybrid.

ASM has presently over 30 years of experience in the sorting technology.

At the beginning of 2015, ASM joined forces with Sesotec to form the Sesotec Group, which is one of the world leaders in the manufacturing of inspection, sorting and separation equipment.





ASM today part of Elica GROUP

In November 2020, ASM has been acquired by ELICA GROUP,
a leading supplier of installations for sunflower dehulling, grain cleaning, seed processing and equipment for handling of bulk materials
and it's now named **Elica ASM Srl**



Product Timeline



1996

RS (CSM company)



2006

Futura Hybrid



2009

Futura



2012

Vision



2014

Labseed



2018

Tigerbelt



2019

Quasar



2020

EUREKA



2021

PowTest

Our Products Portfolio

The MULTIPLE-CHUTES

Quasar series **Vision series**





Available in models from 1 up to 6 chutes
in painted or INOX stainless steel version



Our Products Portfolio

The COMPACT one

EUREKA



The POWDER INSIGHT unit

PowTest



Available in two configurations:

- **on table**
- **integrated cart kit**

EUREKA(*)

The sorting edge experience



(*) '**EUREKA**' (from Greek: **Εύρηκα**) is an interjection used to express **triumph on a discovery**!
It is a transliteration of an exclamation attributed to the ancient Greek mathematician and inventor Archimedes.

EUREKA - Highlights



- ✓ **Compact and Movable** concept with a cutting-edge technology
- ✓ Enhanced resolution and exclusive **color-cloud analysis**
- ✓ **True-shape technology** to differentiate objects and defects by size, shape and texture
- ✓ **Advanced SWIR** infra-red sensor as option
- ✓ Excellent sorting precision with **Sniper ejection logic**
- ✓ **New user-friendly HMI** allows program creation in a few minutes with automatic learning system
- ✓ **Comprehensive network interfaces**, useful for a prompt remote assistance support
- ✓ Reduced operation cost thanks to **optimized design**
- ✓ **Own** future-proof **software** development
- ✓ **Fully designed in Italy**

Model	Width	Depth	Height	Weight
«Trays Kit»	867 mm	1166 mm	1472 mm	320 kg
«Integrated cart kit»	867 mm	1166 mm	1868 mm	350 kg
«Input/Output Kit	867 mm	1166 mm	1545 mm	320 kg

Design elements

Stainless steel input hopper with Up to 3 level sensors can be connected for controlling start&stop and throughput



Pressurized box to protect all the electronic components

Wide-screen HMI (tablet as optional)

Adjustable feet

On table configuration

Pressurized optical boxes, for the highest protection against dust



Opening side allows easy access to ejector nozzles, optical glasses and removable internal output hopper



Rebound collection drawer

Accept collection drawer

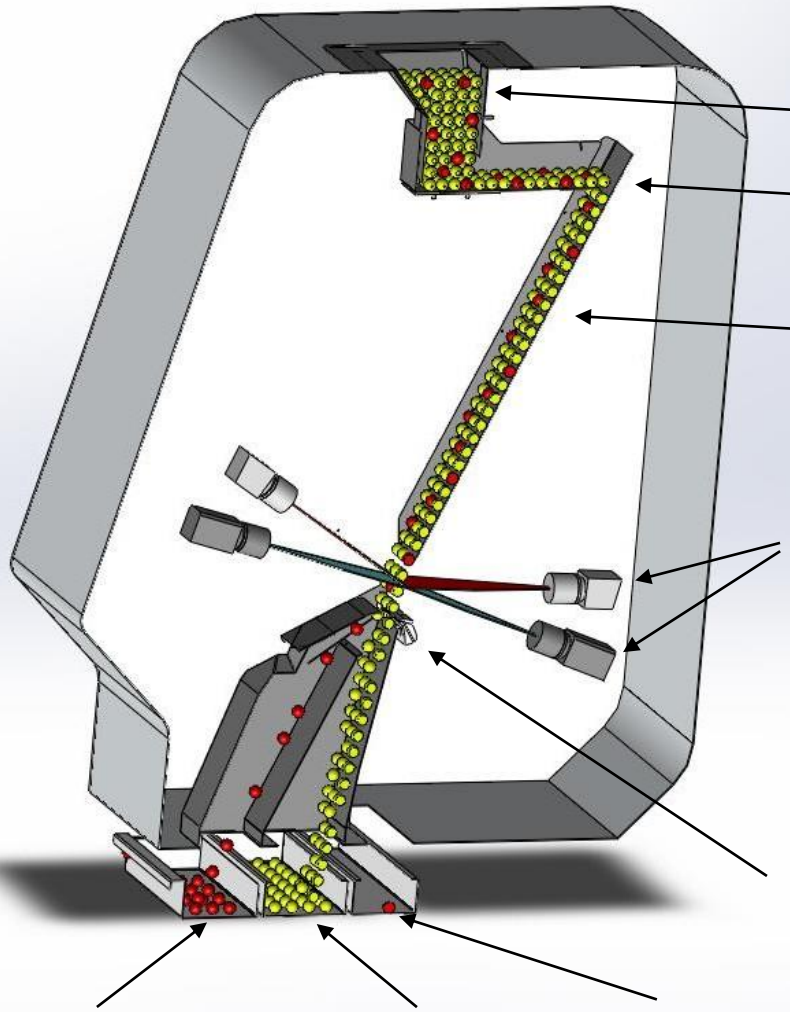
Reject collection drawer

Cart-kit configuration





Working Principle

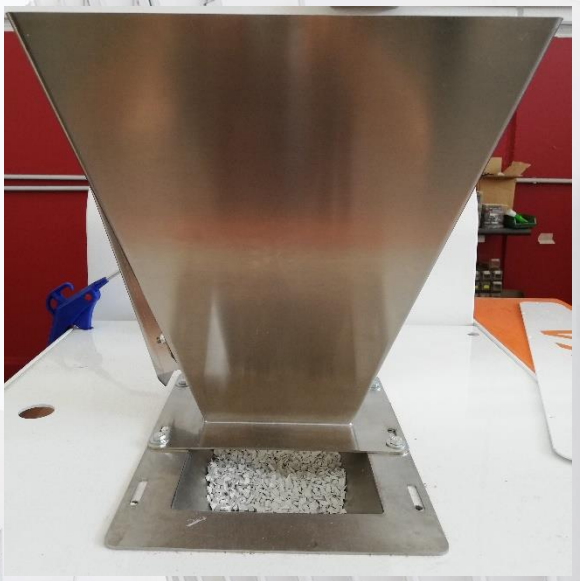


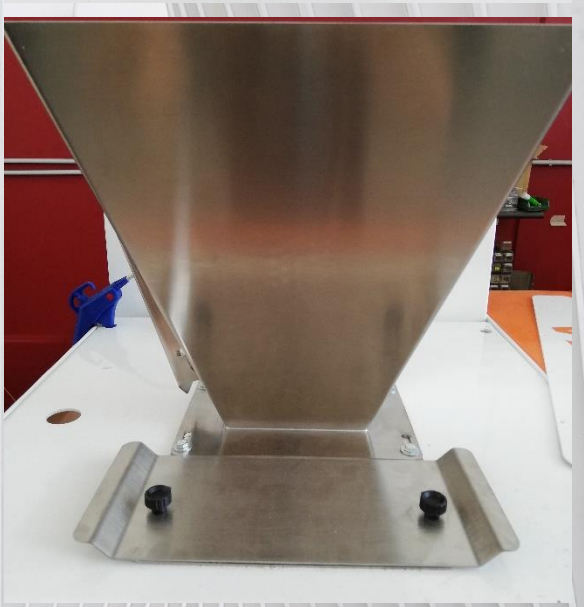
ADDITIONAL COVER for samples feeding

Stainless steel input hopper with up to 3 level sensors can be connected for controlling start&stop and throughput (90° rotated)

Removable cover for small quantity samples feeding







Leveling caster wheels



N.4 leveling caster wheels

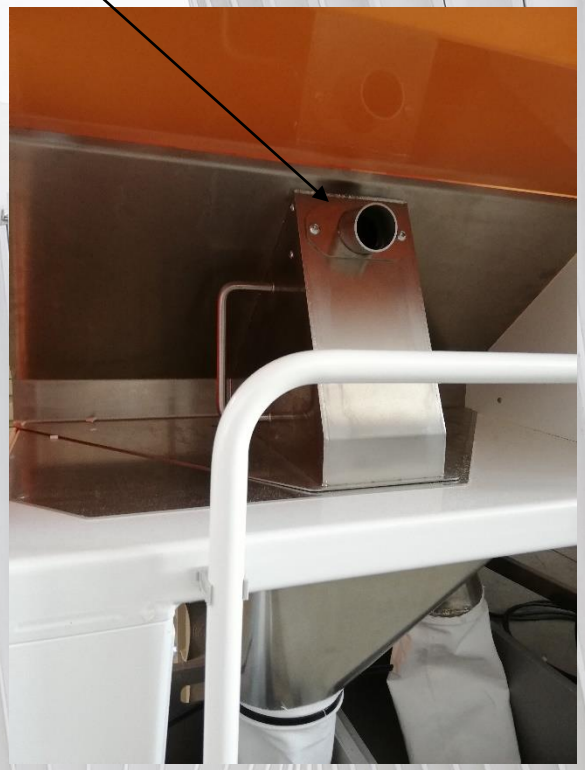


Aspiration connections



N.2 available flanges to connect EUREKA to the aspiration system:

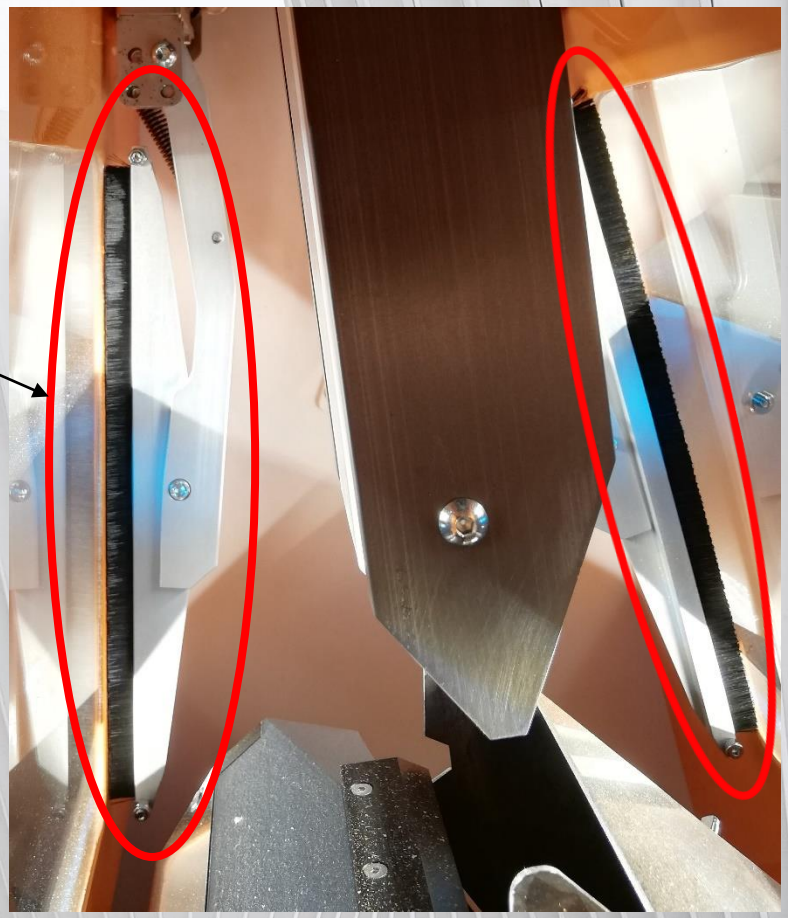
- close to the vibrator plate (as in QUASAR)
- in the outlet hopper



Automatic glasses cleaning system - ON DEMAND



N.2 brushes pneumatically driven



Cooling system - ON DEMAND



In case of high demanding installation, a cooling system, mounted on the back of EUREKA, is available.

This equipment is suggested if the unit works for most of time in environments with room temperature higher than 30 degrees.

Vision system

TRUE COLOR cameras and SWIR sensor

TRUE COLOR cameras and SWIR sensor

TRUE COLOR cameras

- ✓Optical resolution of 0.06mm
- ✓Ultra-fast scan rate
- ✓High-speed data transfer

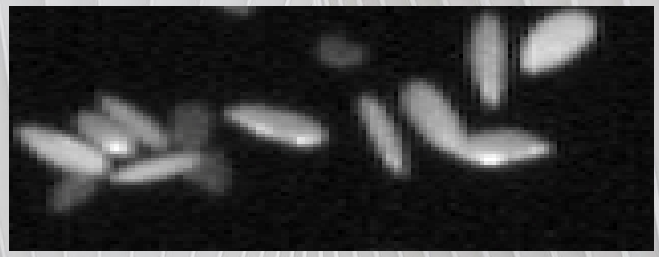


Key benefits:
a camera that can see perfect colors, even if the product is very small (seeds 0,17mm)



SWIR sensor

- ✓Twice the pixel resolution
- ✓New optical box glasses for better infra-red transmission



Key benefits:
the new InGaAs can see FM and EVM with much higher accuracy compared to the older version

Smart Lighting, Increased reliability

Specially designed LED light projectors are:

- Collimated
- Polarized
- High intensity

Key benefits:
EUREKA uses less power,
which in turn means **less heat and longer service life** for both LEDs and electric boards



Examples of SWIR use



Fusarium disease in Cereals

Examples of SWIR use



Hulled/dehulled cereals

Examples of SWIR use



Cereals in cereals

Examples of SWIR use



Foreign material: plastic, wood, glass, rubber, paper, film

Examples of SWIR use



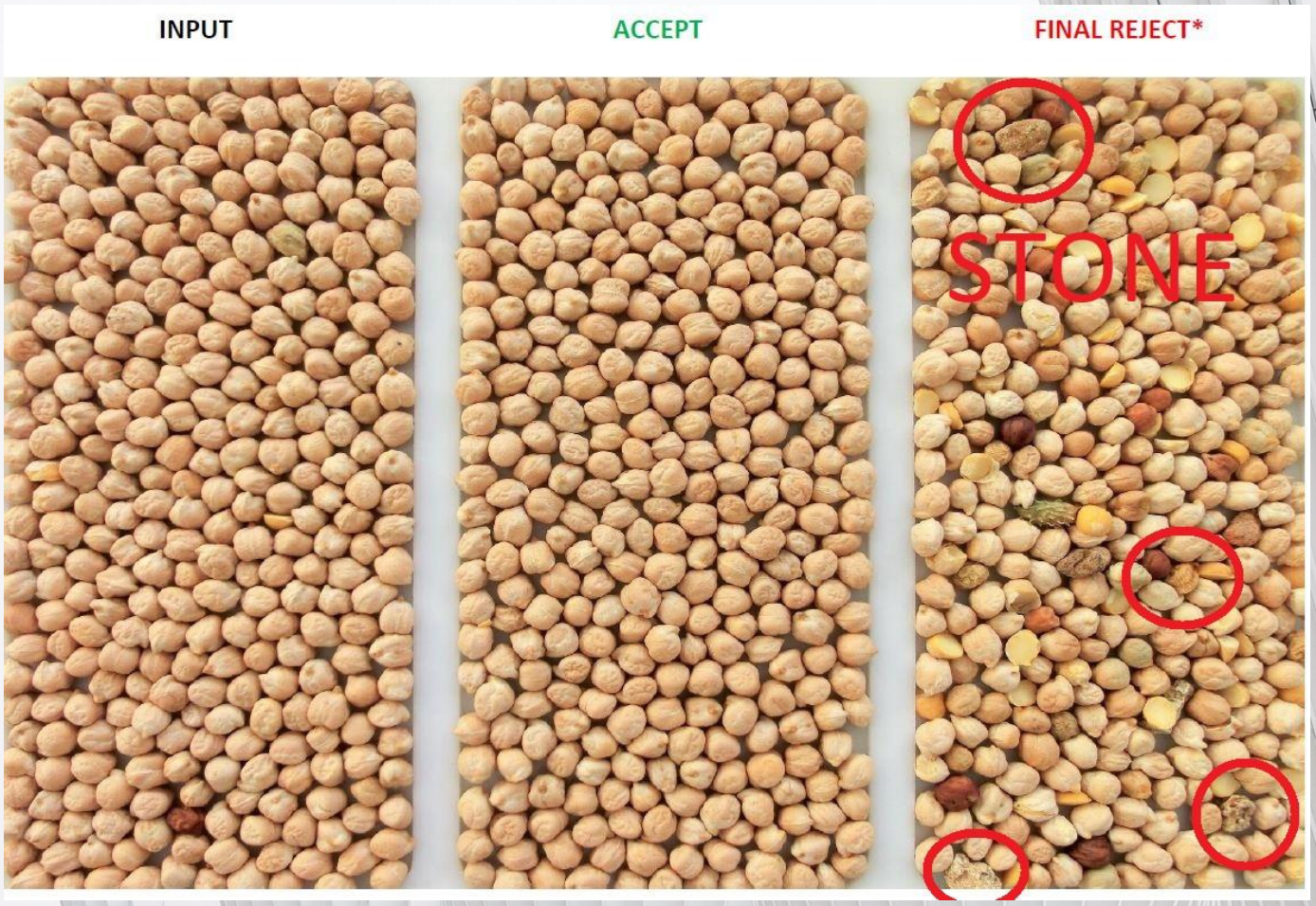
Shells in nuts

Examples of SWIR use



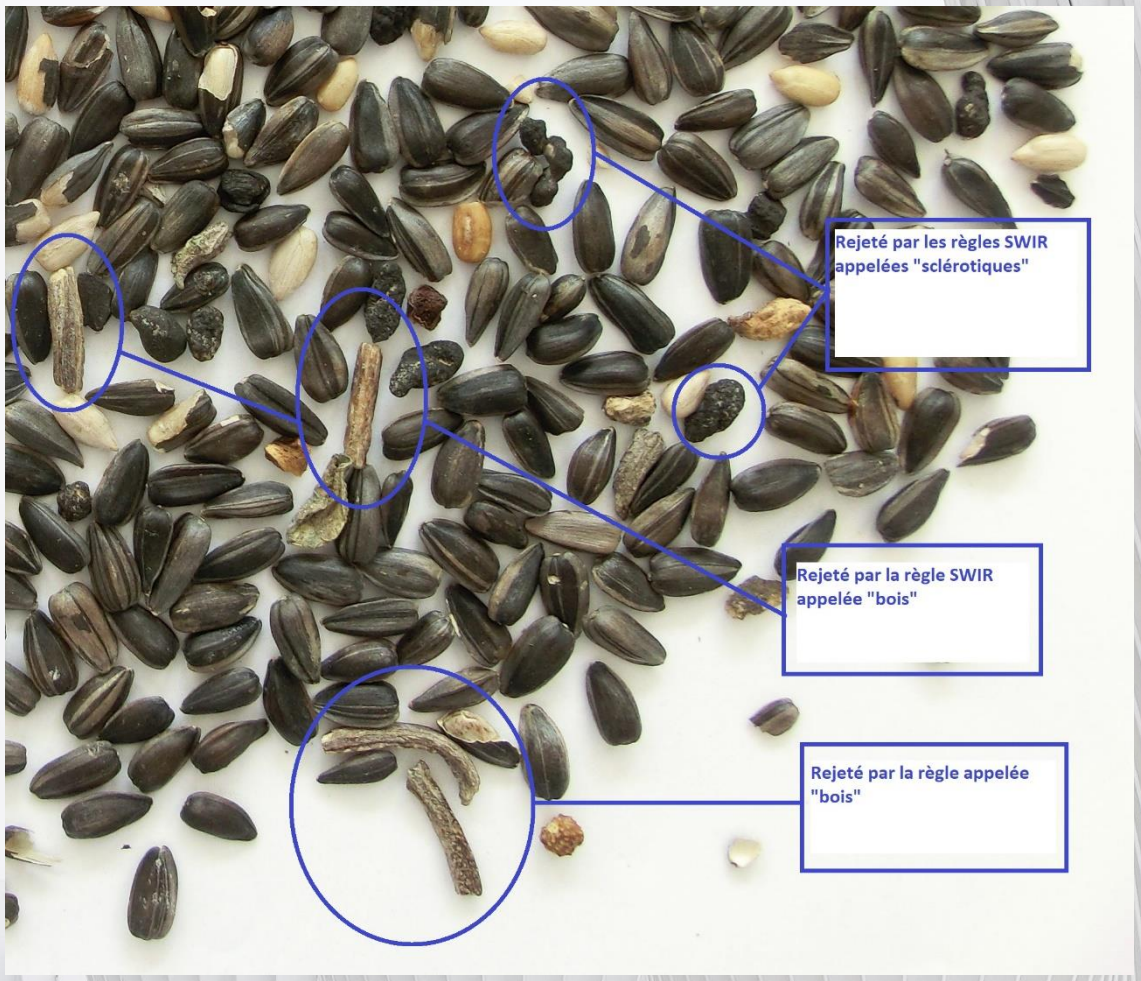
Shells in nuts

Examples of SWIR use



Stones in pulses

Examples of SWIR use

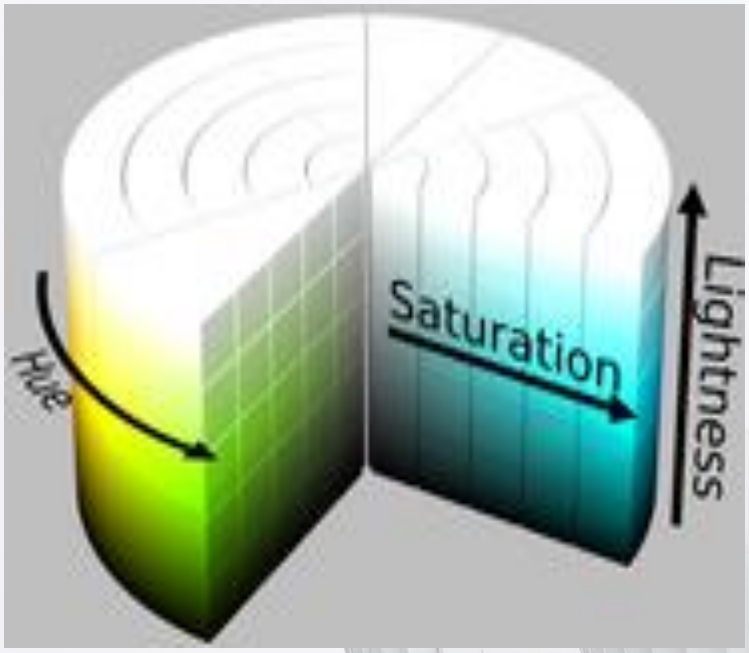


Sclerotic and stick in sunflower

Vision algorithms

HSL and cloud mapping – Shape & kernel analysis

Color cloud mapping - HSL



EUREKA has an extremely sophisticated color mapping system:

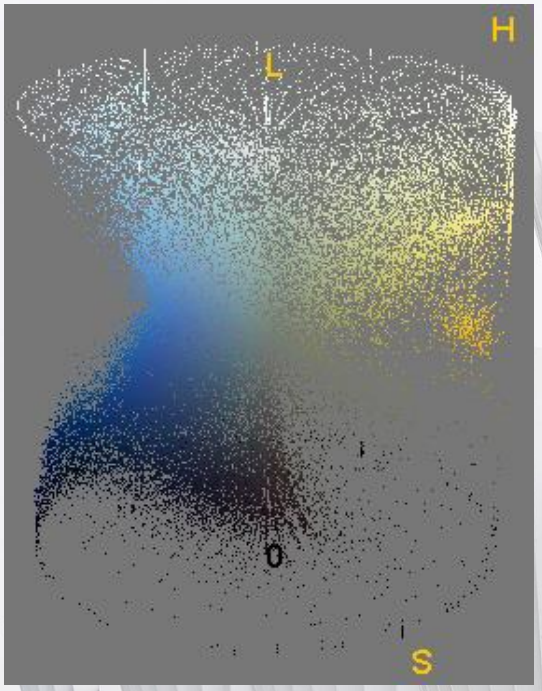
- Works in HSL mode, the most similar to human vision
- 3D color-space mapping is extremely accurate
- Can see minimal color differences in objects with similar colors

Key benefits:
unparalleled color accuracy, fully automatic settings

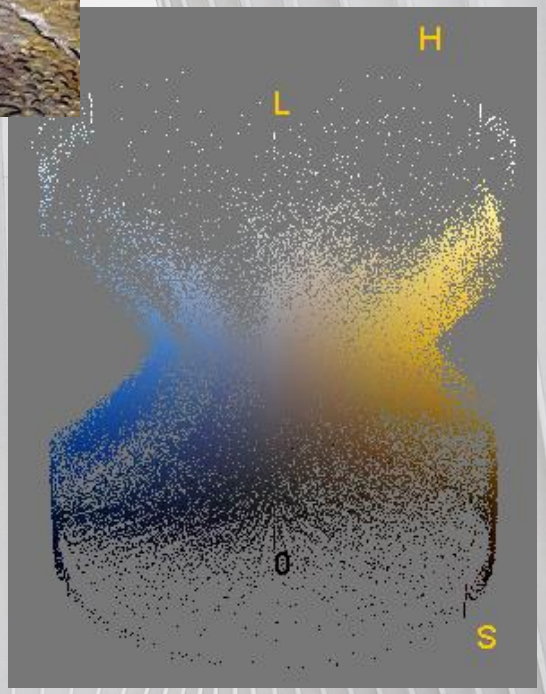
Color cloud mapping







3D color-space mapping is extremely accurate and allows to **map in a clear different way even minimal color differences**



True-Shape & Kernel feature analysis

EUREKA has advanced features that allow it to analyze the shape and texture of an object:

- Width
- Length
- W:L Ratio
- Roundness / Edginess
- Defect size in pixel
- Relative defect size

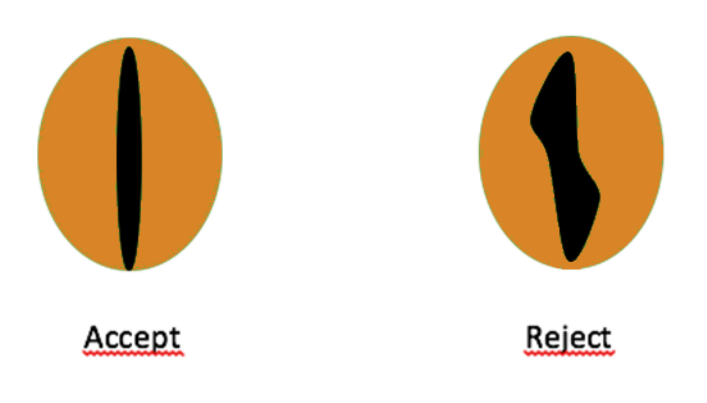


Key benefits:
many new possibilities to differentiate defects from the good material

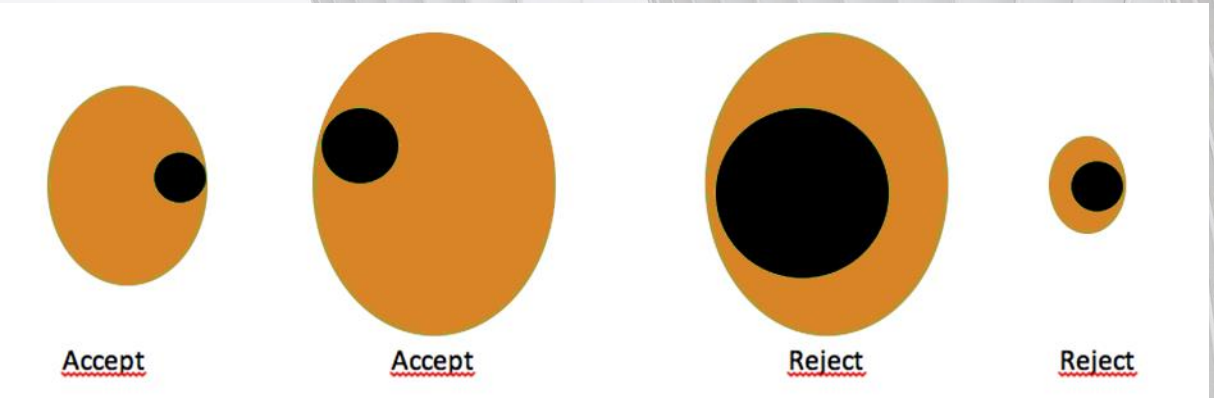
Kernel feature analysis

EUREKA can also see the **shape and size of the defects that are on the object itself,** for example it can:

- See the shape of a color defect on the object:



- See the relative size of the defect compared with the size of the object, e.g. reject when the defect is >30% of the total surface:

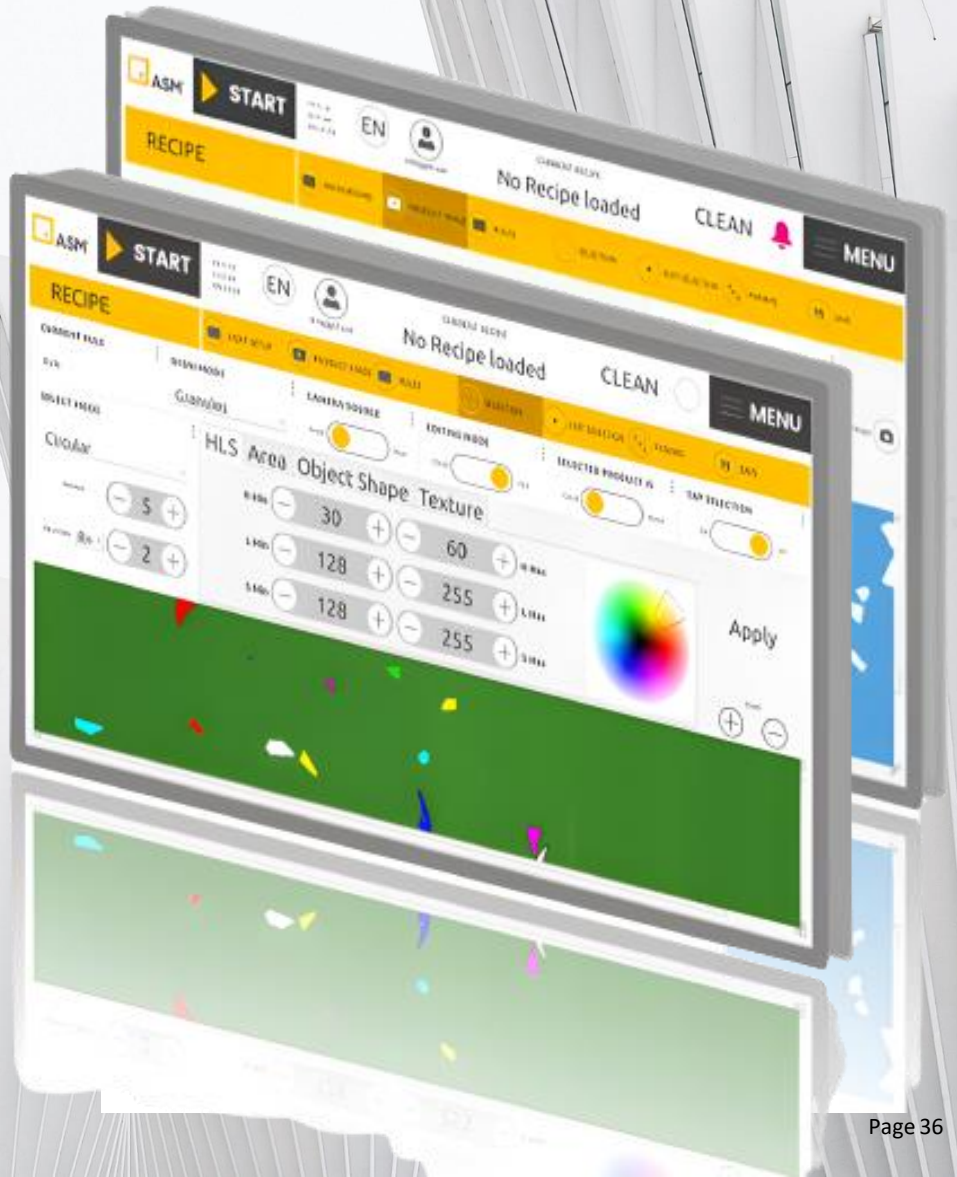


New User Interface, easier to use

The new UI has been designed with simplicity in mind, some key features are:

- Automatic learning system
- Simple controls for basic users
- Instant visual feedback during recipe creation

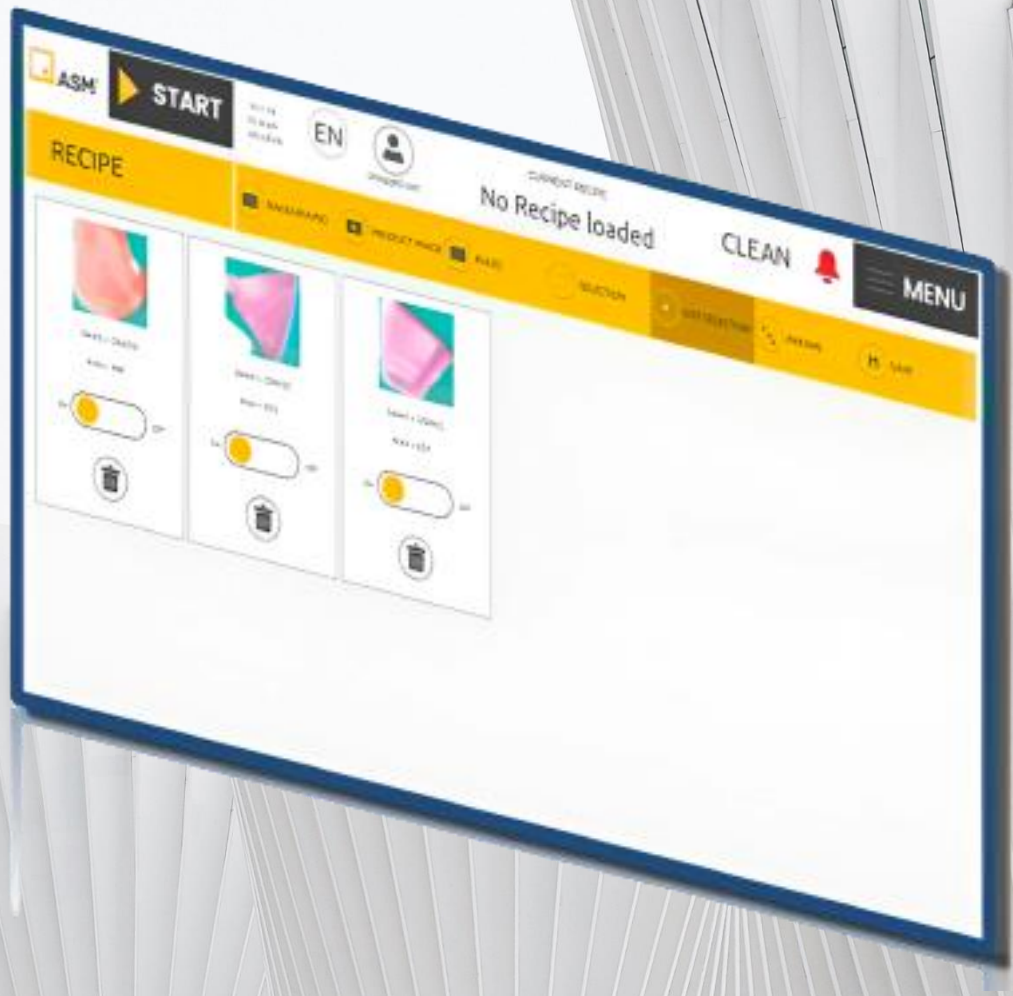
Key benefits:
reduced training time and increased productivity



Tap to Sort: create a recipe in a few minutes

- The machine takes a picture of the product as it falls
- The user can then tap with his/her finger the defects to be removed
- **EUREKA** does the rest, by dynamically creating the correct sorting parameters in order to achieve the best sorting results

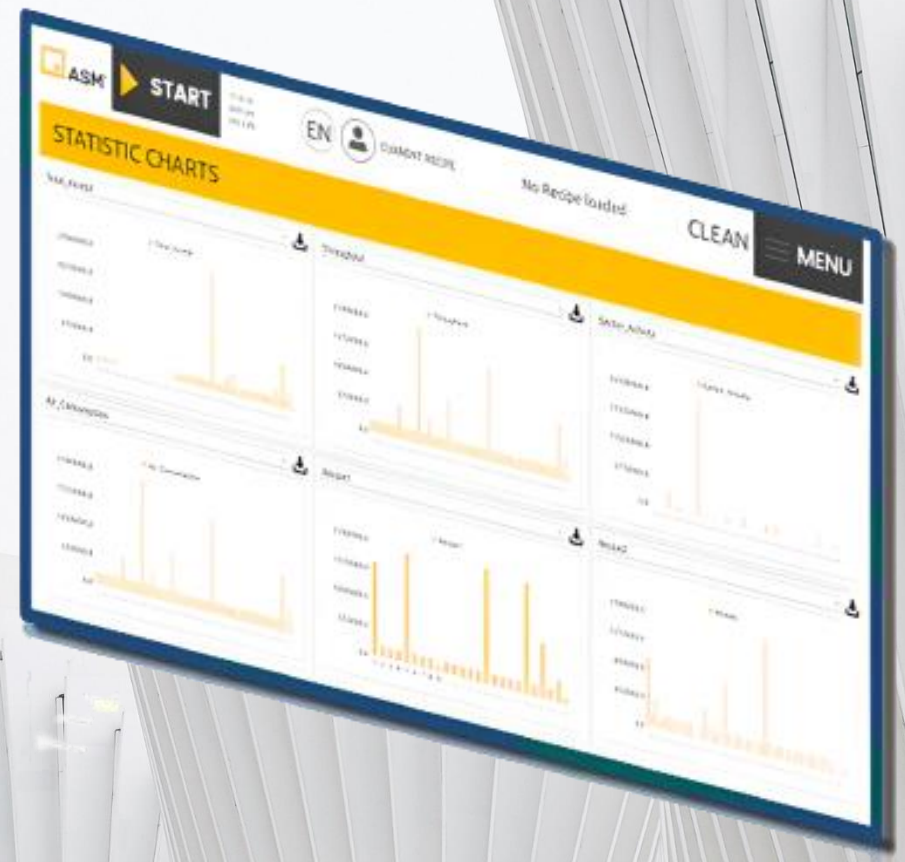
Key benefits:
reduced need for technical support.



Advanced statistics

Thanks to the new software the machine can show and record advanced statistics.

- Export statistic directly to USB stick
- Statistics for each defect type
- Excel compatible

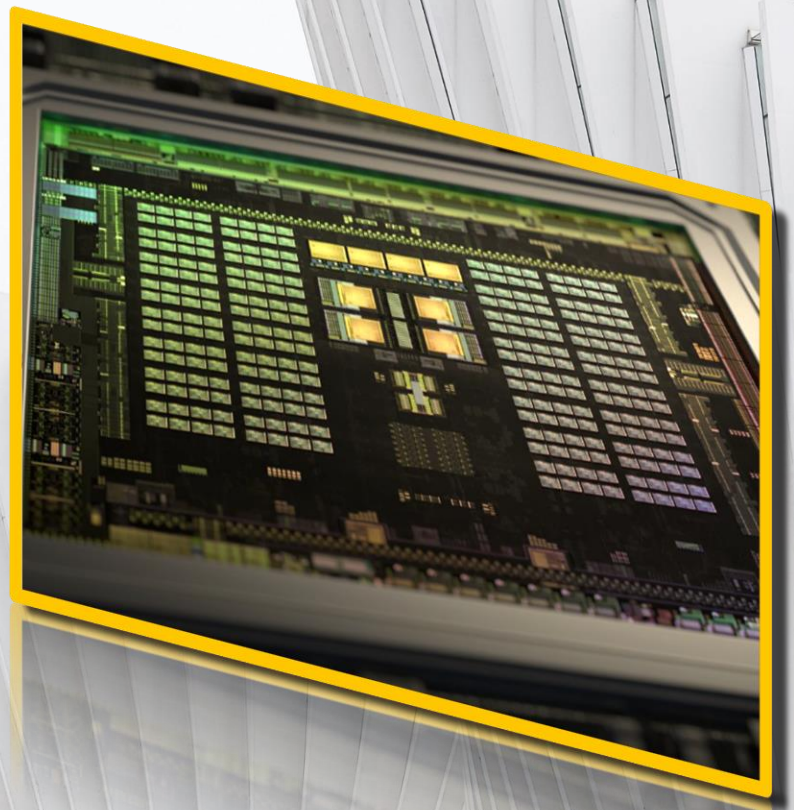


Key benefits:
EUREKA can be useful in highlighting trends in incoming product purity and help to better manage the production line

Logic: a new Optical Processing Architecture

- The electronic architecture of **EUREKA** is a giant leap forward and has nothing in common with the previous models
- The processing is done by powerful GPUs (graphics processing units) that are **thousands of times faster than previous processors**

Key benefits:
the system can be upgraded indefinitely into the future, adding more advanced features as they become available



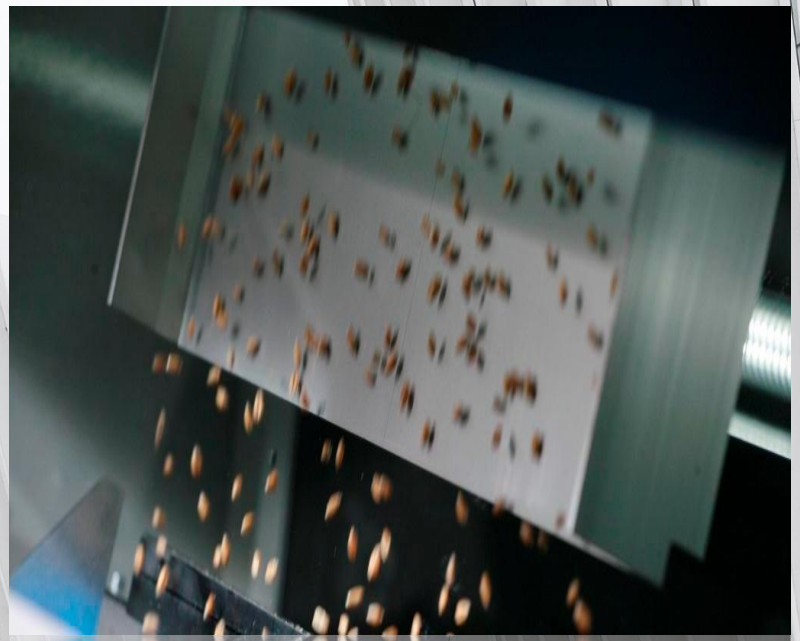
Pneumatic system

Sniper ejector algorithm

Intelligent compact unit

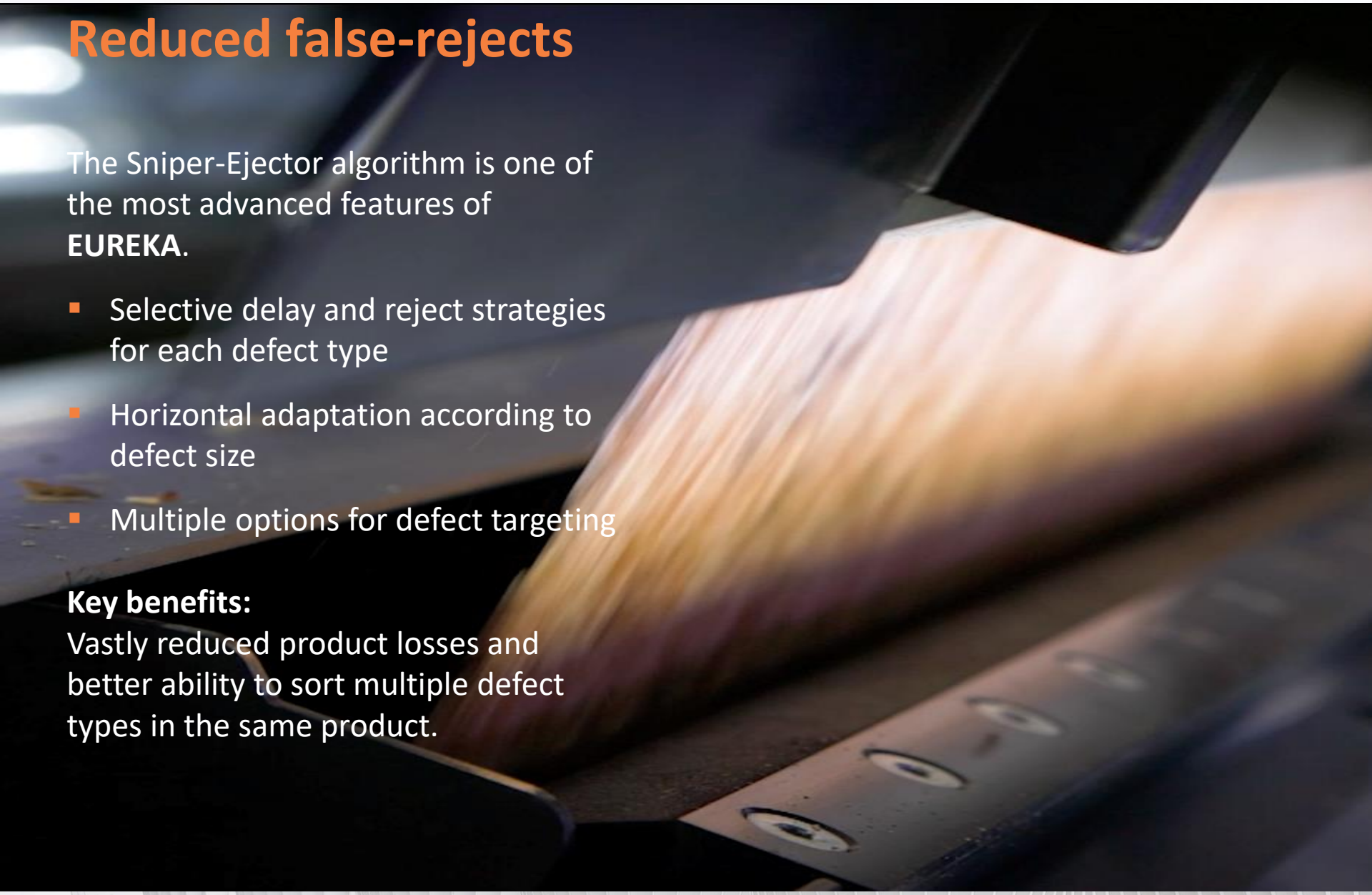
EUREKA has a narrow chute, 90mm wide, that allows the user to sort as slowly as needed in order to be able to adjust the settings with small samples and avoid product losses

36 high-speed ejectors per chute, one ejector every 2.5 mm, this ensures maximum precision on small samples, where product loss need to be minimal



Key benefits:
suitable for Laboratory use and analysis

Reduced false-rejects



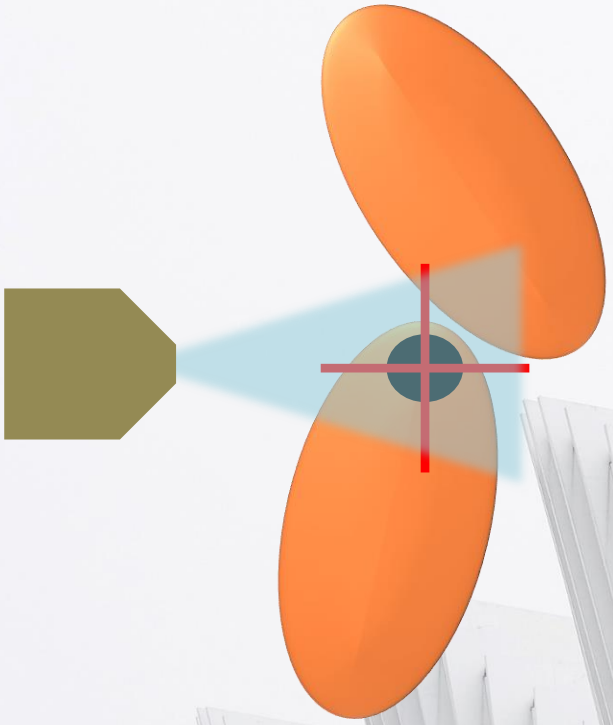
The Sniper-Ejector algorithm is one of the most advanced features of **EUREKA**.

- Selective delay and reject strategies for each defect type
- Horizontal adaptation according to defect size
- Multiple options for defect targeting

Key benefits:
Vastly reduced product losses and better ability to sort multiple defect types in the same product.

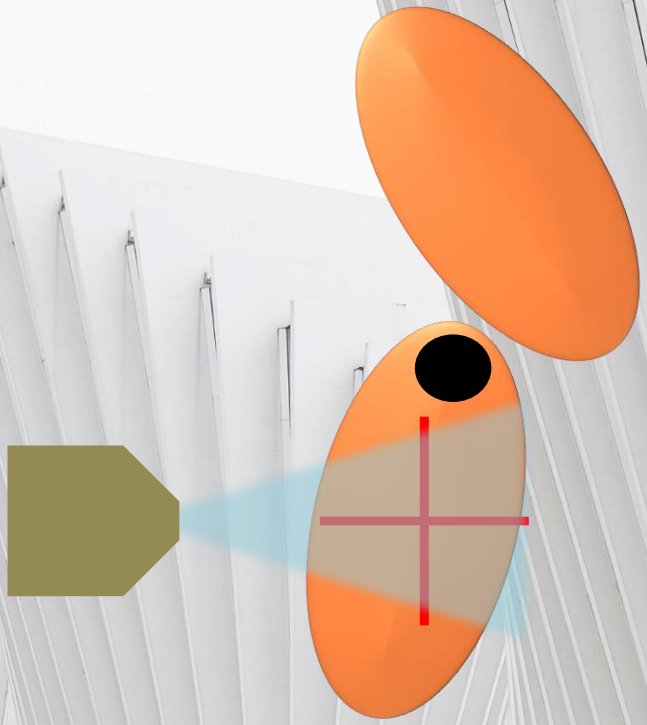
Sniper ejector algorithm

One of the options of this algorithm allows the machine to always shoot at the center of gravity of the object, this is very important in reducing false-rejects.



Target defect center

High risk of rejecting nearby accept material

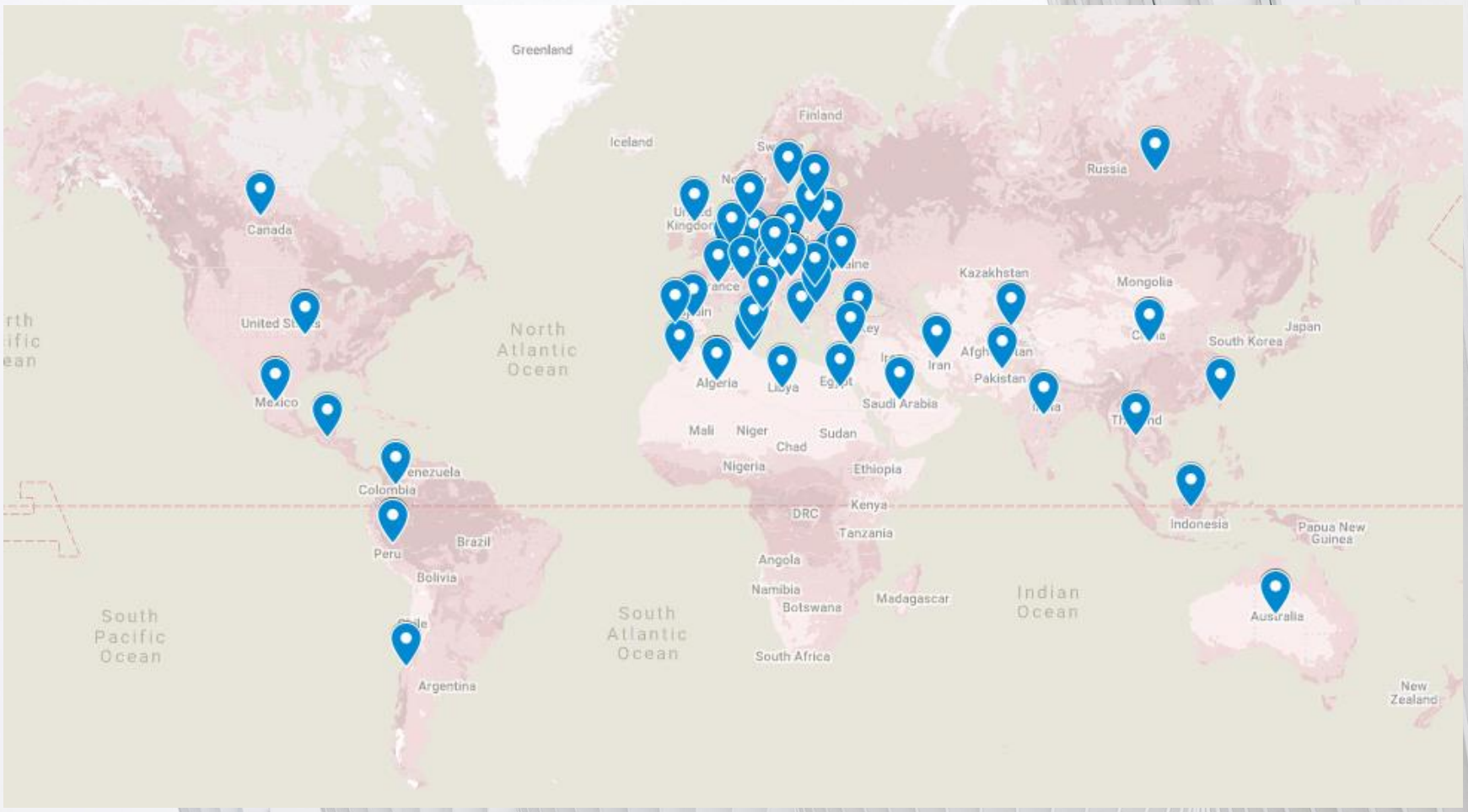


Target object center

The risk of rejecting nearby material is minimized

References and installations

ASM installations worldwide



From local producers to large corporations our sorters are working in more than 60 countries!

References and installations
(abstract)

Customer	Country	Sorter	Product Sort
Lycée du Valentin	France	EUREKA TC	Cereal and Pulses Seeds
HM Clause	France	EUREKA TC	Flower Seeds
KWS	Germany	EUREKA TC+SW	Cereal and Pulses Seeds
Lvchuangyuan	China	N.6 EUREKA TC	Transparent Pellets
Ilvo	Belgium	EUREKA TC	Cereal and Pulses Seeds
Agritec	Czech Republic	EUREKA TC+SSW	Poppy seed
Reiter Seed Processing	Germany	EUREKA TC+SW	Cereal and Pulses Seeds

A selection of SEEDS Test Reports

DURUM WHEAT

ASM advanced sorting machines
A Company of elica

MODELLO:	Eureka + NIR
PRODOTTO:	Durum wheat - "Heraklion"
TEST N° :	69-2020
DATA:	14/02/2020

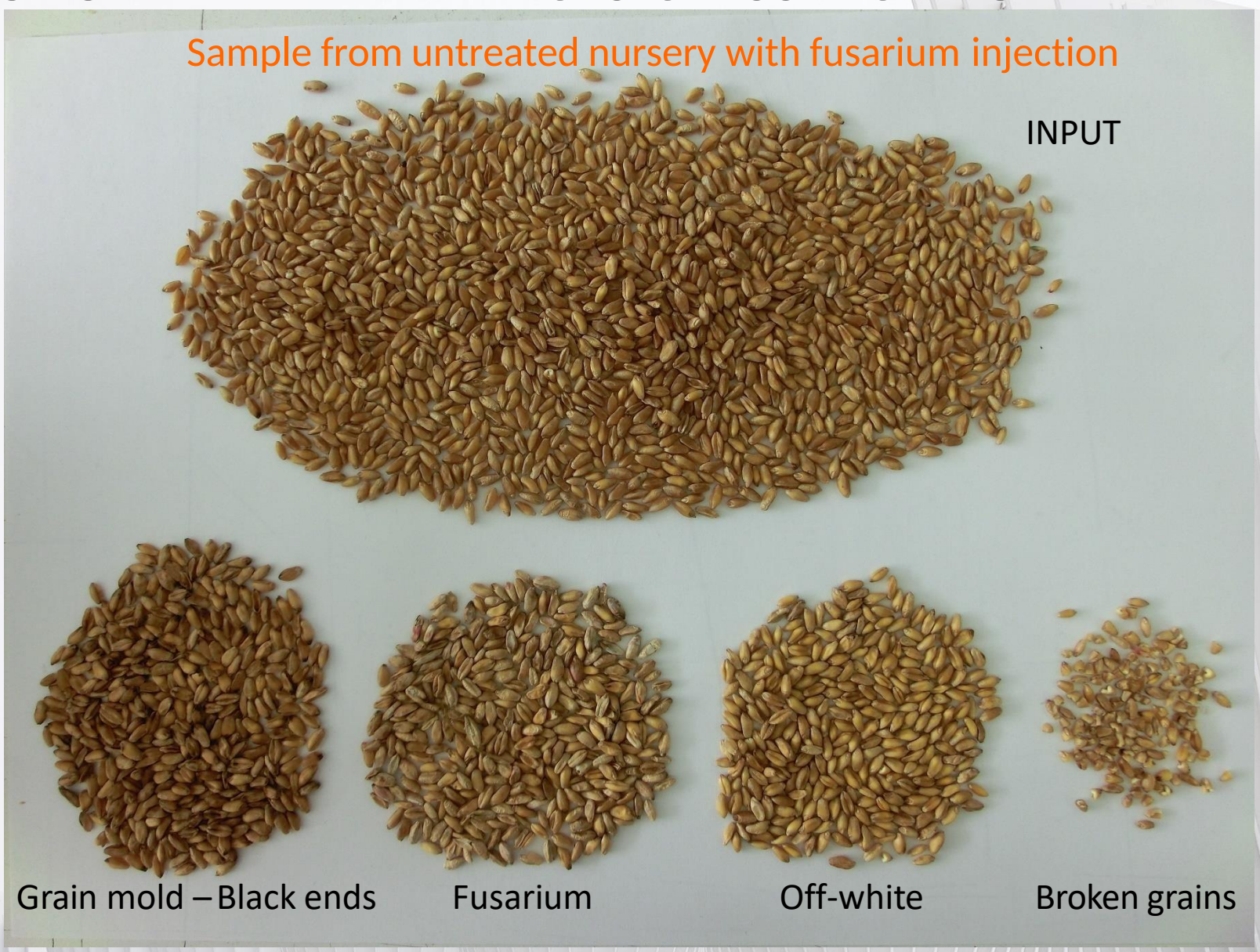
INPUT ACCEPT REJECT



SORTING RESULT

INPUT		ACCEPT		REJECT
Capacity Kg/h chute	% Input Contamination	% Accept as % of Throughput	% Accept Purity	% Reject as % of Throughput
50	11	51	99	49

DURUM WHEAT– DEFECTS CLASSIFICATION



WHEAT

ASM advanced sorting machines A Company of elica

MODEL:	Eureka + SW
PRODUCT:	Wheat
TEST N° :	109-2021 D
DATE:	28/12/2021

INPUT ACCEPT REJECT



SORTING RESULT

INPUT		ACCEPT		REJECT
Capacity Kg/h chute	% Input Contamination	% Accept as % of Throughput	% Accept Purity	% Reject as % of Throughput
250	3,45	95,4	99,7	4,6

MAIZE

ASM advanced sorting machines
A Company of cimbria

MODEL:	Eureka
PRODUCT:	Maize
TEST N° :	93-2020
DATE:	17/04/2020

INPUT	ACCEPT	REJECT



SORTING RESULT

INPUT		ACCEPT		REJECT
Capacity Kg/h chute	% Input Contamination	% Accept as % of Throughput	% Accept Purity	% Reject as % of Throughput
50	4,8	93,4	99,43	6,6

BARLEY

ASM advanced sorting machines A Company of elica

MODEL:	Eureka + SW
PRODUCT:	Barley
TEST N° :	8-2022
DATE:	03/02/2022

INPUT ACCEPT REJECT



SORTING RESULT

INPUT		ACCEPT		REJECT
Capacity Kg/h chute	% Input Contamination	% Accept as % of Throughput	% Accept Purity	% Reject as % of Throughput
200	0,1	99,76	99,999	0,24

SOYBEANS

ASM advanced sorting machines

MODEL:	Eureka
PRODUCT:	Soybeans
TEST N° :	34-2021
DATE:	10/05/2021

INPUT | ACCEPT | FINAL REJECT*



SORTING RESULT

INPUT		ACCEPT		FINAL REJECT*
Capacity Kg/h chute	% Input Contamination	% Accept as % of Throughput	% Accept Quality	% Reject as % of Throughput
500	17,7	61,25	98,75	20,94

REUSABLE PRODUCT AS INPUT*
% Accept as % of Throughput
17,81

* AFTER RE-SORT

YELLOW FLAX

ASM advanced sorting machines A Company of elica

MODEL:	Eureka
PRODUCT:	Yellow flax
TEST N° :	92-2021
DATE:	24/11/2021

INPUT | ACCEPT | REJECT



SORTING RESULT

INPUT		ACCEPT		REJECT
Capacity Kg/h chute	% Input Contamination	% Accept as % of Throughput	% Accept Purity	% Reject as % of Throughput
20	1,1	97,2	99,99	2,8

HEMP SEEDS

ASM advanced sorting machines
A Company of elica

MODEL:	Eureka
PRODUCT:	Hemp seeds
TEST N° :	40-2021
DATE:	11/05/2021

INPUT | ACCEPT | REJECT



SORTING RESULT

INPUT		ACCEPT		FINAL REJECT*
Capacity Kg/h chute	% Input Contamination	% Accept as % of Throughput	% Accept Quality	% Reject as % of Throughput
300	2,5	91,67	99,9	3,01

ALFALFA

ASM® advanced sorting machines A Company of elica

MODEL:	Eureka + SW
PRODUCT:	Alfalfa
TEST N° :	103-2021
DATE:	10/12/2021

INPUT | FINAL ACCEPT* | 1st REJECT | 2nd REJECT



SORTING EXAMPLE

INPUT		FINAL ACCEPT*		1st REJECT	2nd REJECT
Capacity Kg/h chute	% Input Contamination	% Accept as % of Throughput	% Accept Quality	% Reject as % of Throughput	% Reject as % of Throughput
50	7,35	66,02	99,3	18,9	15,08

* AFTER RE-SORT

TOMATO SEEDS

ASM advanced sorting machines

MODEL:	Eureka
PRODUCT:	Tomato seeds
TEST N° :	163-2020 B
DATE:	07/08/2020

INPUT | ACCEPT | FINAL REJECT*



SORTING RESULT

INPUT		ACCEPT		FINAL REJECT*
Capacity Kg/h chute	% Input Contamination	% Accept as % of Throughput	% Accept Quality	% Reject as % of Throughput
25	4	88,6	99,92	4,26

REUSABLE PRODUCT AS INPUT*
% Accept as % of Throughput
7,14

* AFTER RE-SORT

ASM Customer Service

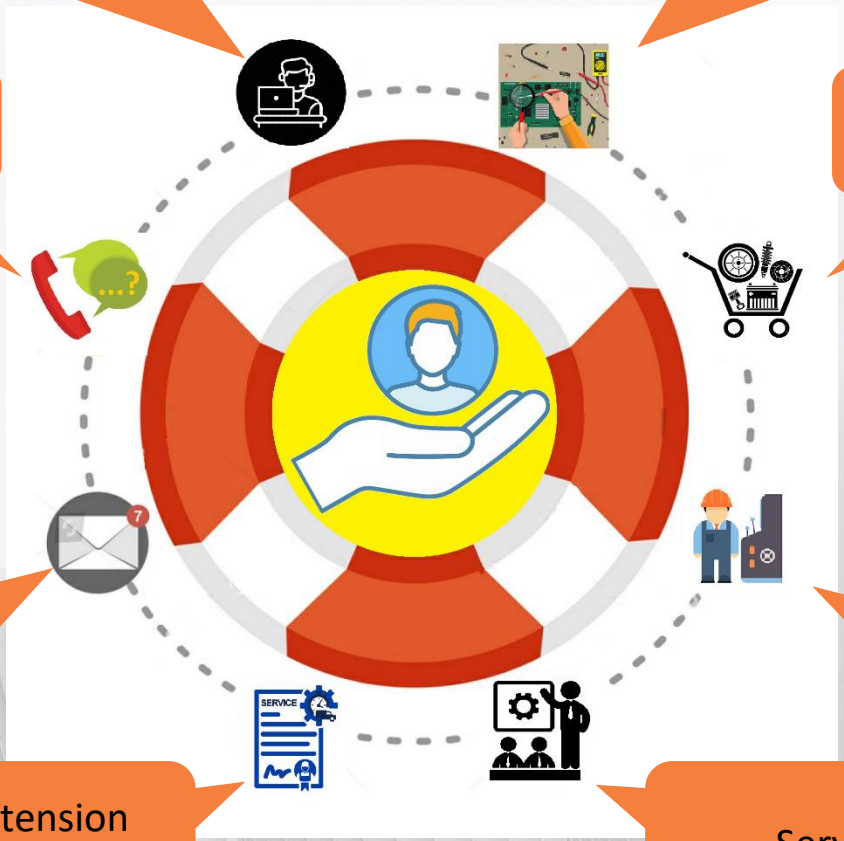
Customer at the centre of our Service

Remote assistance via internet

Repairing and reconditioning

Hotline

Upgrade kit and spare parts



Prompt support by email

Qualified engineers and timely intervention

- Warranty Extension
- Maintenance Contract

Service Training

Thanks for your attention



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