



**PETKUS**

# PETKUS Optical Sorters



 **Strong Seed. Healthy Grain.**

# Optical Sorting in a New Definition



## OS P

Boost revenues with AI-powered seed-by-seed sorting and qualification according to use cases.

Page 38



## OS f

With our specially developed  $\mu$  zoom technology and a special ejection technique utilizing extremely precise nozzles, we take fine seed quality to a new level.

Page 22



## OS t

The first optical sorter to utilize unique transmission technology in the broader market of conventional full color and geometry sorting.

Page 6



## OS tt

The same unique features like in the OS t, but twice as much throughput and greater flexibility in sorting modes as efficient solution.

Page 18



## OS X


Greatest full color inspection for corn cobs based on neural network analysis enhanced by geometrical sorting criteria, which provides market-leading husk and off-type cobs sorting in a single pass.

Page 30

**Your seed.  
Our challenge.  
New quality standard.**



# The Best Sorting for each Product



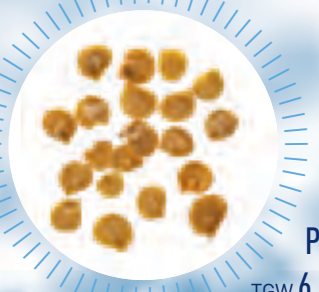
**Lobelia**  
TGW **0.03g**  
per 1000 seeds




**Rocket**  
TGW **2g**  
per 1000 seeds



**Wheat**  
TGW **45-55g**  
per 1000 seeds



**Pepper**  
TGW **6 - 7.5g**  
per 1000 seeds



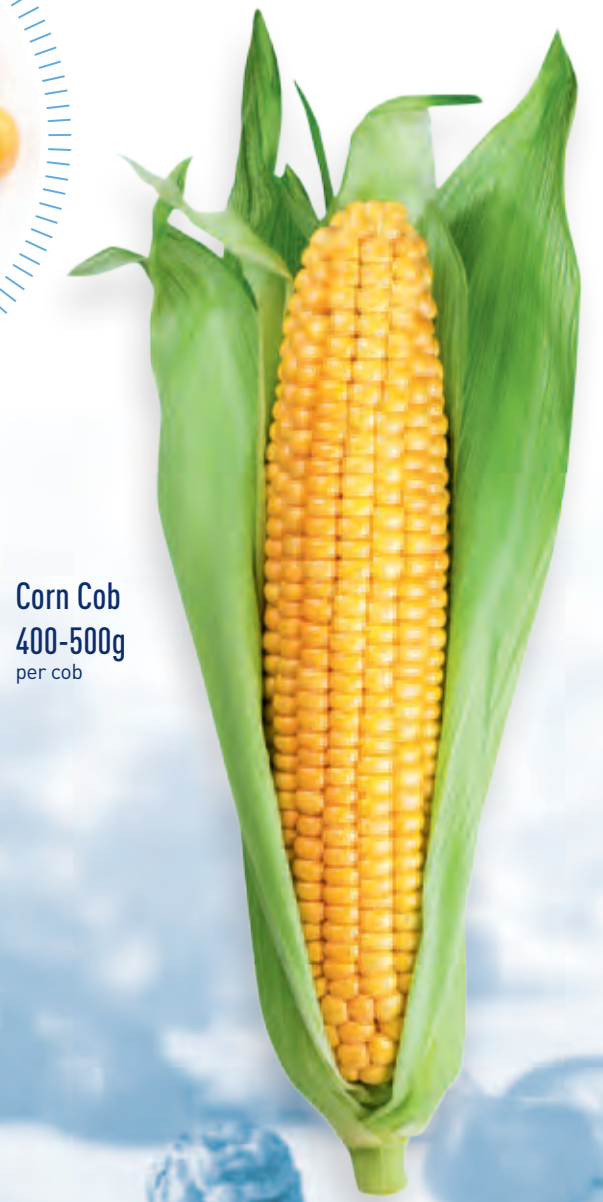
**Linseed**  
TGW **4.5g**  
per 1000 seeds



**Corn**  
TGW **200-450g**  
per 1000 seeds



**Beans**  
TGW **370 - 520g**  
per 1000 seeds



**Corn Cob**  
400-500g  
per cob

**PETKUS Optical Sorters**  
Intelligence by *roeber*



Optical Sorter

OS t *roeber*

**See more than  
you can see**

up to **99%**  
sorting quality in first run

**3x**   
more light intensity

OS t

The PETKUS OptoSelector OS t is the first optical sorter to utilize unique transmission technology in the broader market of conventional full color and geometry sorting. This special light transmission method, based on the translucent features of seeds, expands the scope of application of OS t and ensures unrivaled sorting quality.

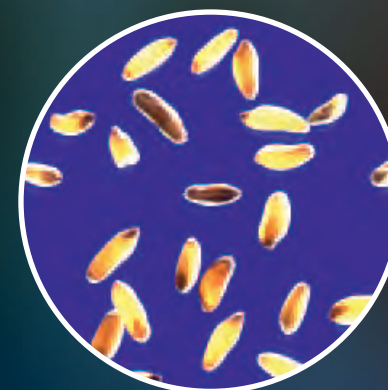




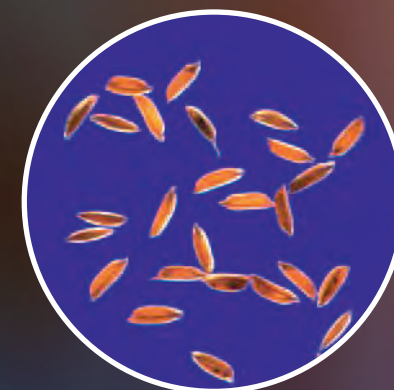
# Transmission

Ability to see beyond the surface

The analysis of translucence and density of the grain enables the detection of corn with germ/no germ, diseased and damaged paddy rice as well as separating soft wheat varieties from durum.



Wheat



Paddy Rice



Sweet Corn



## New ejection system. Nozzels with highest precision.

The detected bad grains are sorted out with high accuracy.



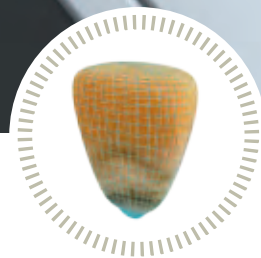
### Transmission

Ability to see beyond the surface



### Infrared

Special NIR wavelength inspection



### Geometry

Detects shape and size of objects



### RGB

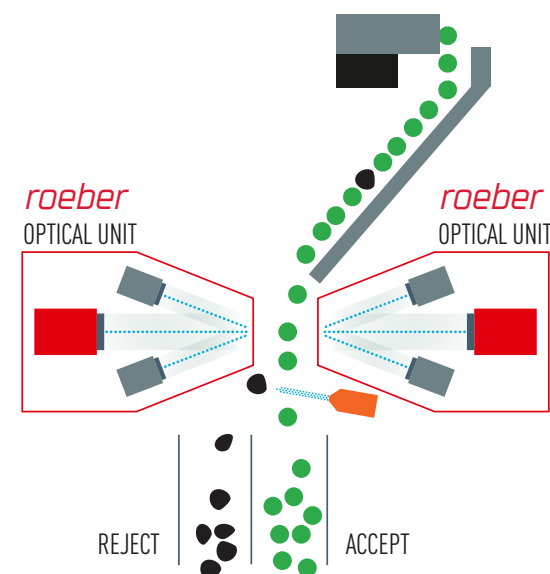
Full color analysis

## How does it work?

Each kernel is recognized and processed individually with high resolution cameras. The properties are assessed according to color, shape and irregularity. Reject material is detected reliably and ejected with high precision.

## High Performance LEDs

The special lighting system is characterized by an intensive, software controlled light source, exact focussing and perfect homogenization across the entire working width.



## Intelligent TeachNsort

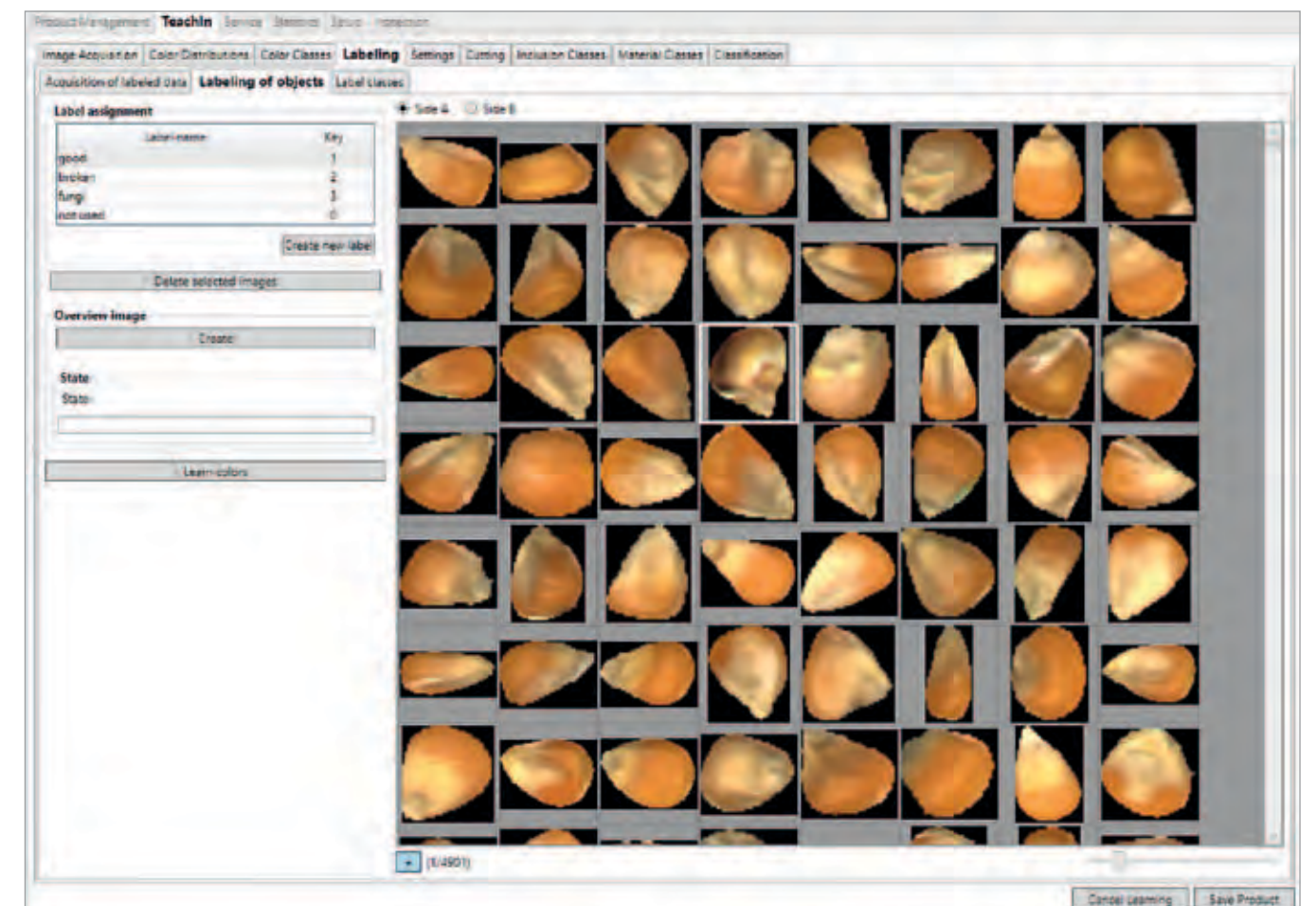
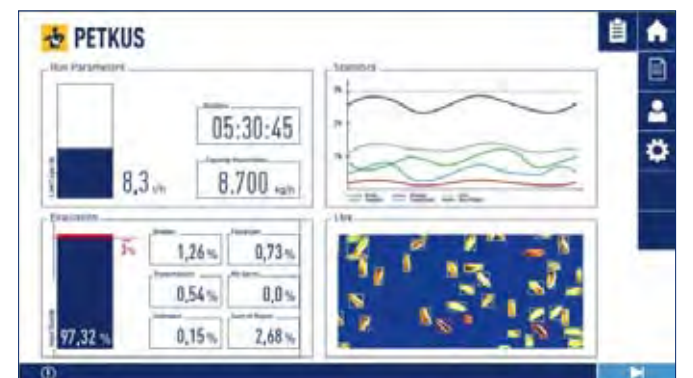
The operator only decides which images are good and which are bad. Then the machine takes it over. While the OS t is active in production, the next product can be prepared offline at the office PC.

## Automated data recording

The live product data tracking guarantees a continuous online inspection of the product quality and sorting parameters.

## Human Machine Interface

Detailed information about colour content and geometric characteristics of objects is easily accessible and is displayed quickly and clearly.



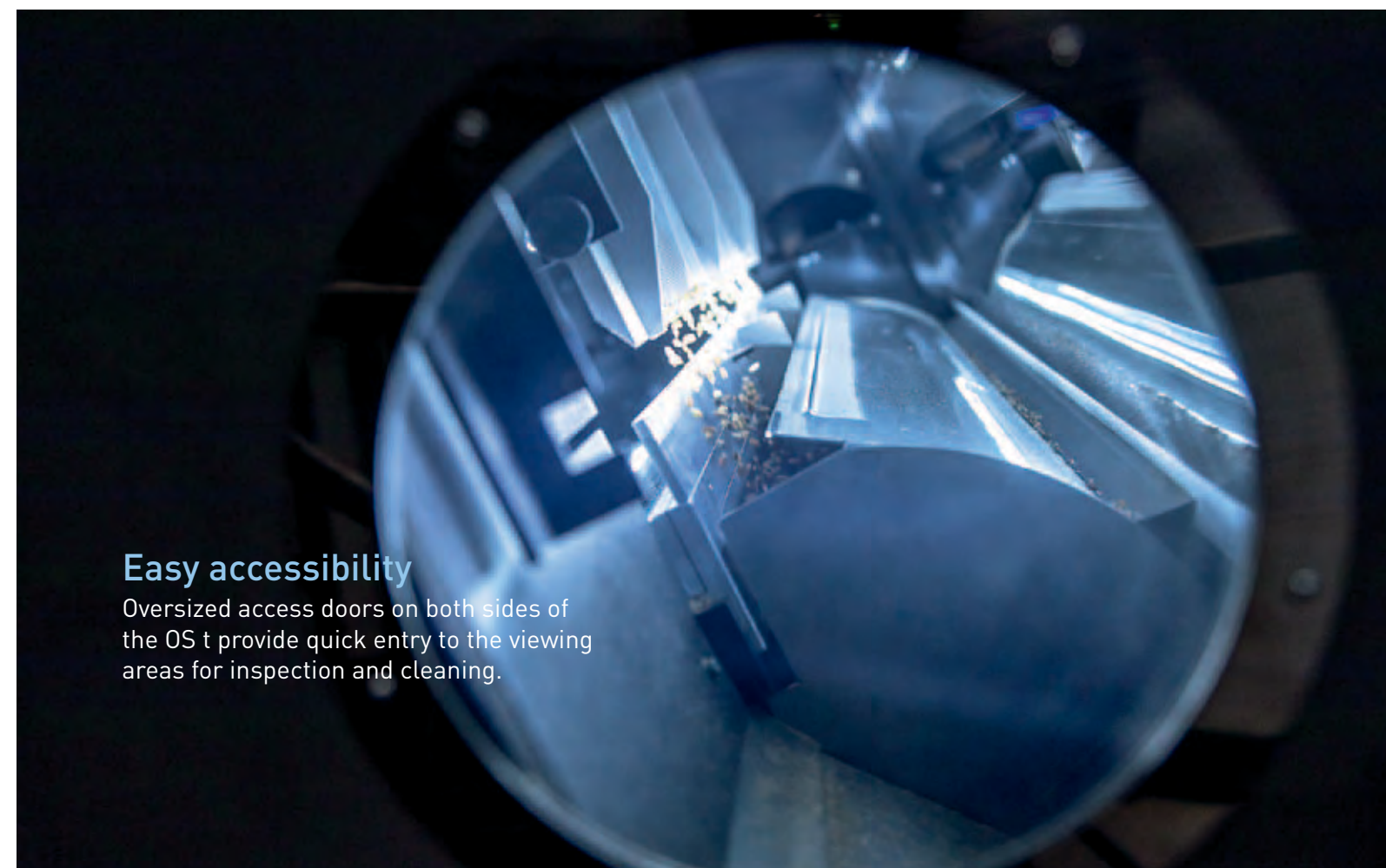




## Reliable Software and Remote Support

The OS t software guarantees the highest level of ongoing dependability. The Windows based software platform makes connection to corporate networks easy.

We offer clients remote support via internet as an additional tool to boost reliability, machine set up and development.



## Easy accessibility

Oversized access doors on both sides of the OS t provide quick entry to the viewing areas for inspection and cleaning.



## Keeping an eye on product quality

Easy to access sampling points are provided in both the good and rejected material outlets at the front of the machine.



Results



Input



Accept

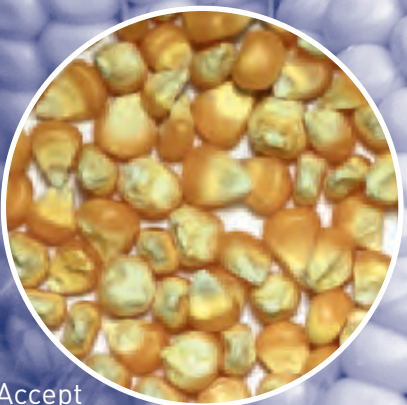


Reject

SOYBEAN



Input



Accept



Reject

CORN



Input



Accept



Reject

SUGAR BEET



Input



Accept



Reject

COFFEE



Input



Accept



Reject

COTTON



Input



Accept



Reject

SUNFLOWER



Developed and made in Germany

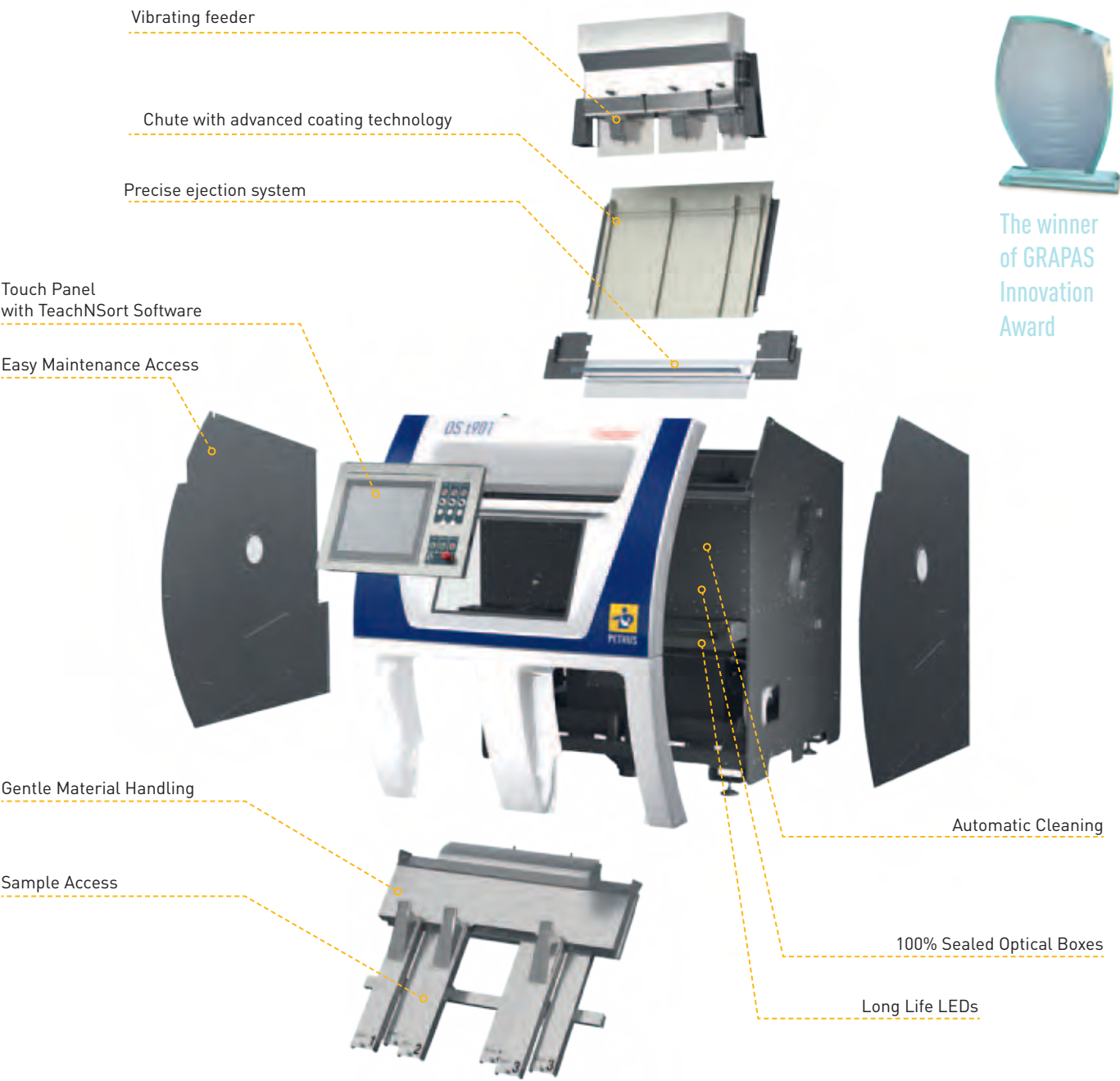
From inlet to outlet the OS t has been designed to minimize the risk of damage to the material being processed.

Innovation developed, designed  
and manufactured in Germany

OS t



The winner of GRAPAS Innovation Award



Technical Data		OS t
Length	(mm)	1 855
Width	(mm)	1 630
Height	(mm)	2 290
Weight	(kg)	1 250
Dust aspiration	(m³/h)	2 100*
Power supply	230 V ~, 50 Hz, single phase	
Compressed air	min. 2.5 m³ per min.* at 6 bar	
*Estimate – depends on contamination levels.		Descriptions and measurements are approximate. We reserve the right to implement technical changes.



## Double sorting – double win



The new PETKUS OptoSelector OS tt is a double sorting width optical sorter and combines all the functions of the OS t, but achieves twice as much throughput and greater flexibility in sorting modes as an efficient solution with compact footprint, compared to two separate machines.

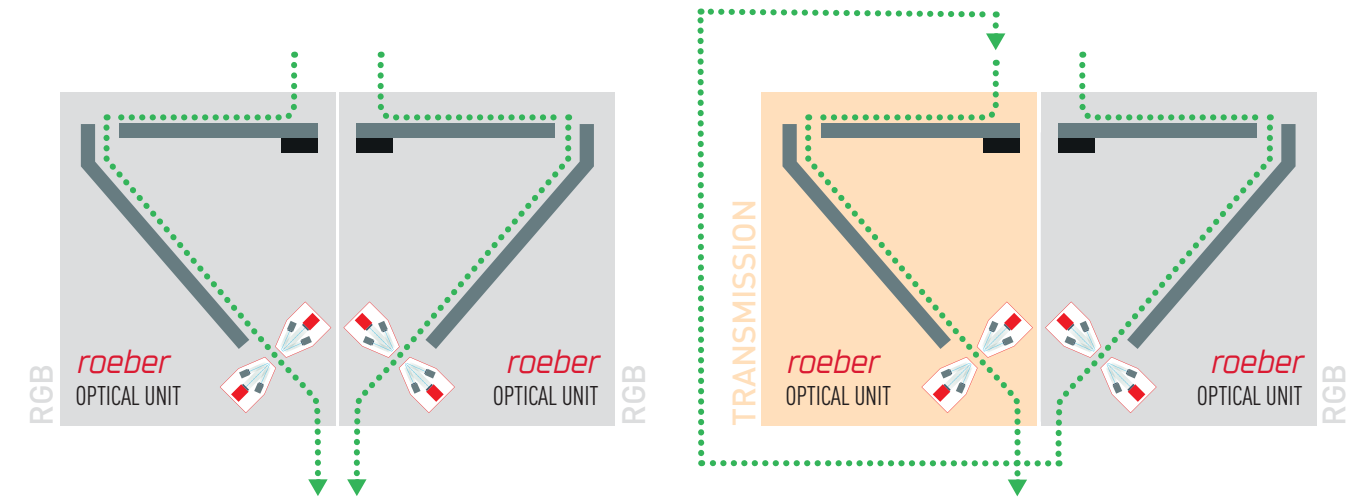
PETKUS OptoSelector OS tt sets a new standard for optical sorting at highest throughput in demanding markets such as seed processing and food processing!



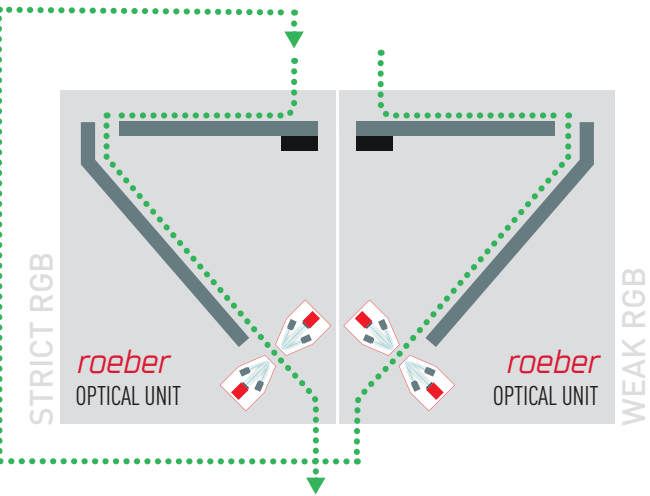


How does it work?

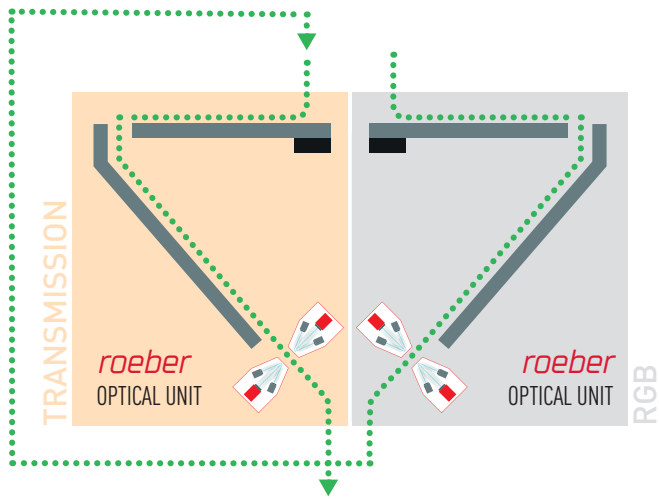
Same POTENTIAL and CAPACITY like OS t but **SAVING 50%** of the price of the second machine.



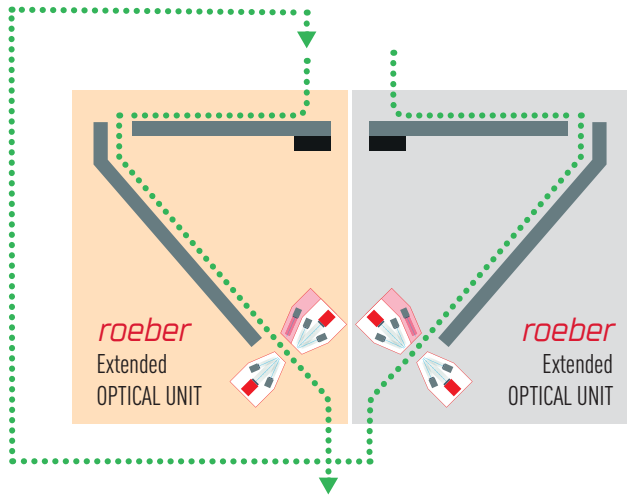
**PARALLEL**  
+ parallel product flows  
+ same RGB settings  
+ double capacity



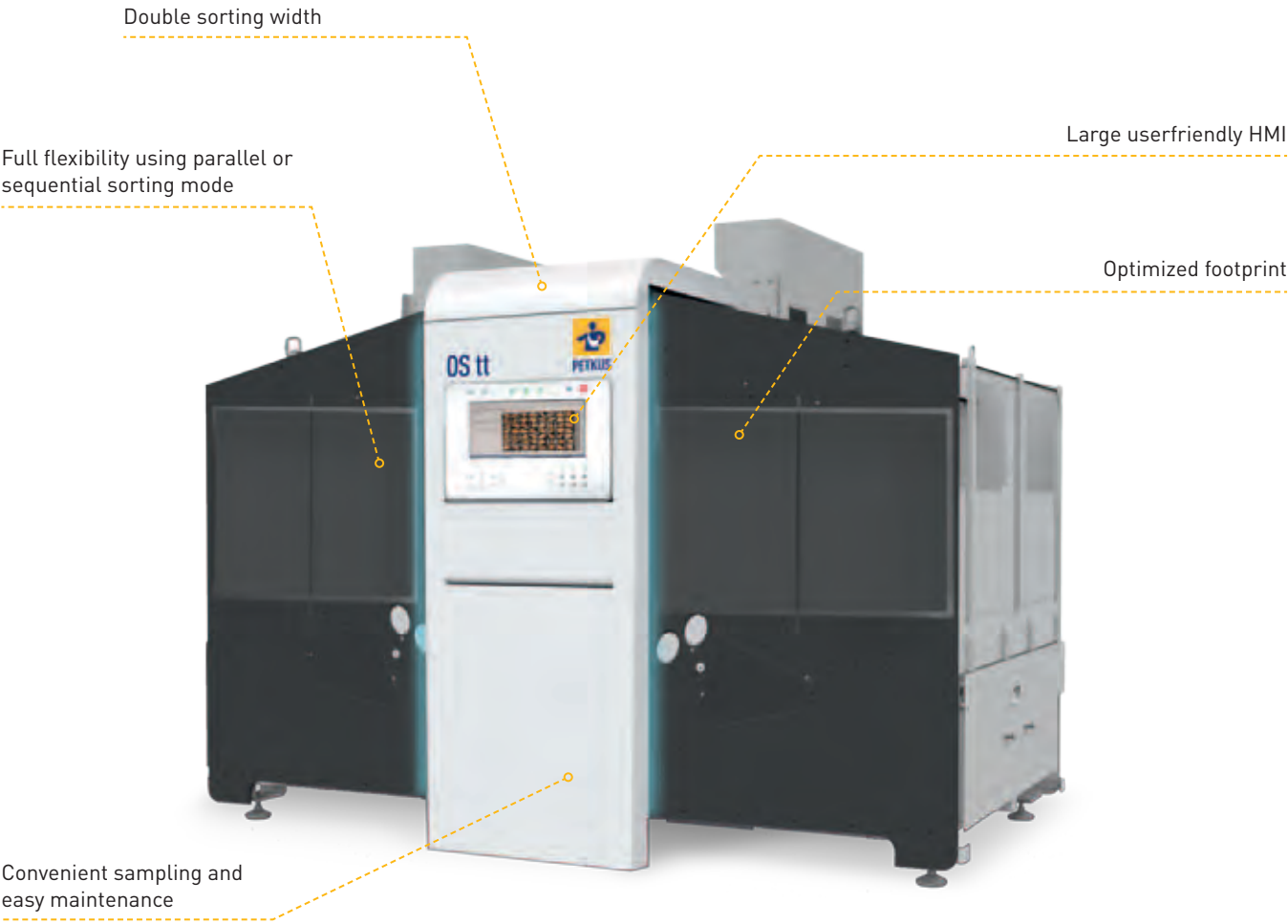
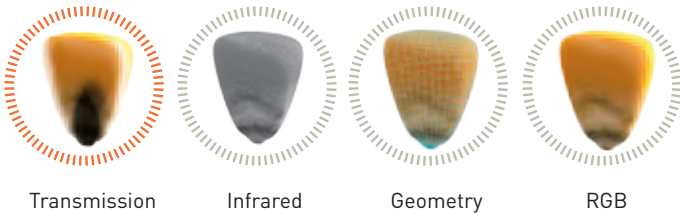
**SEQUENTIAL**  
+ sequential product flows  
+ different RGB settings  
+ optimized capacity



**SEQUENTIAL**  
+ sequential product flows  
+ different features applied  
+ optimized quality



**ALL INCLUSIVE**  
+ double capacity in parallel mode  
+ optimized quality and capacity in sequential mode  
+ all feature combinations possible (RGB, Geometry, Transmission, Infrared)



The OS tt owns identical features like OS t

Technical Data		OS tt
Length	(mm)	1 855
Width	(mm)	3 050
Height	(mm)	2 290
Weight	(kg)	2 250
Dust aspiration	(m³/h)	4 200*
Power supply	230 V ~, 50 Hz, single phase	
Compressed air	min. 5.0 m³ per min.* at 6 bar	
*Estimate – depends on contamination levels.		Descriptions and measurements are approximate. We reserve the right to implement technical changes.



Optical Sorter

OS f *roeber*

# The Challenger for Fine Seed

**μzoom**  
technology



2000 x



Rocket Seed

OS f

The optical sorter OS f allows to clean small seeds at highest quality level where nowadays standard color sorters fail. The OS f is exclusively developed for fine seeds and exceeds the existing limits of sorting quality.

With our specially developed  $\mu$  zoom technology and a special ejection technique utilizing very small, extremely precise nozzles, we take fine seed quality to a new level.



OS f3.0

OS f1.6



Results



CHAMOMILE



ROCKET



GREY POPPY



LAVENDER



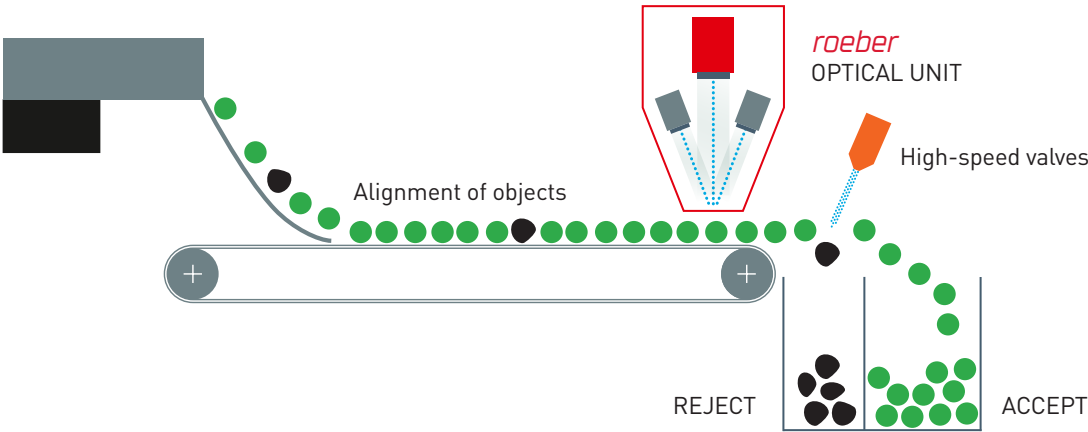
CHIA



CORN FLOWER



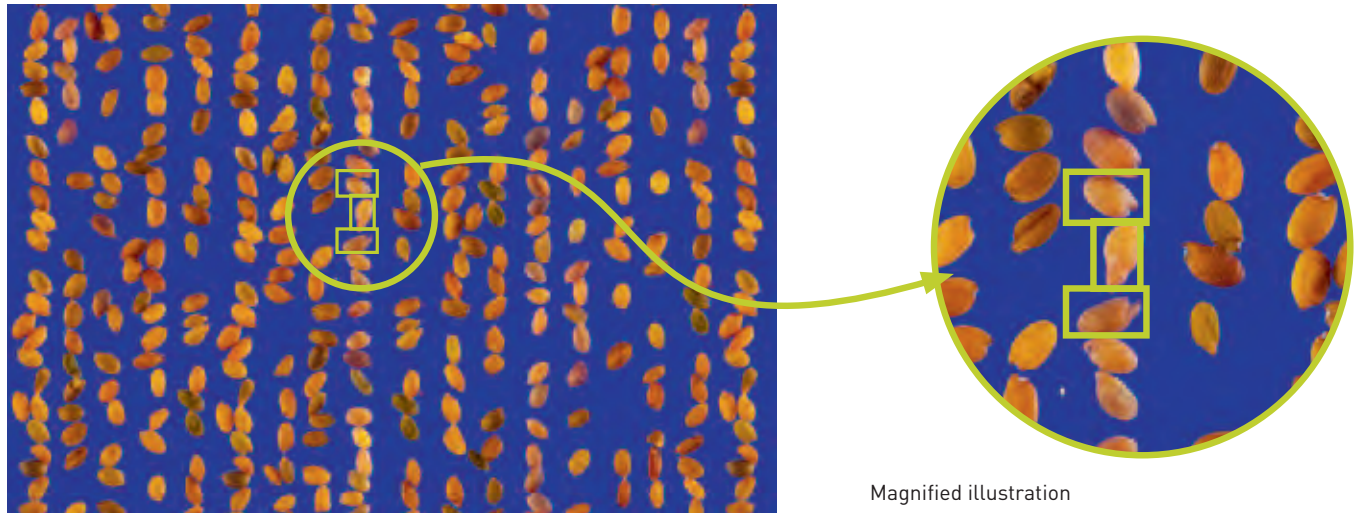
# Working Principle



# OS f roeber

- + Full color inspection
- + Shape detection
- + Sophisticated object splitting
- + Kernel by kernel analysis
- + Machine learning; manual & mixed-mode teach-in
- + On the fly capacity measurement
- + Adaptable background color

# TeachNSort Software



Technical Data		OS f1.6	OS f3.0
Length	mm	1 767	1 767
Width	mm	820	820
Height	mm	1 931	1 931
Sorting Width	mm	160	300
Power consumption	kVA	0.9	1.4
Power supply	230 V AC, 50 Hz		
Compressed air	min. 0.15 m³ / min.* und 2.5 bar		
* Estimate - depends on contamination levels			



# OS Analyzer *roeber*

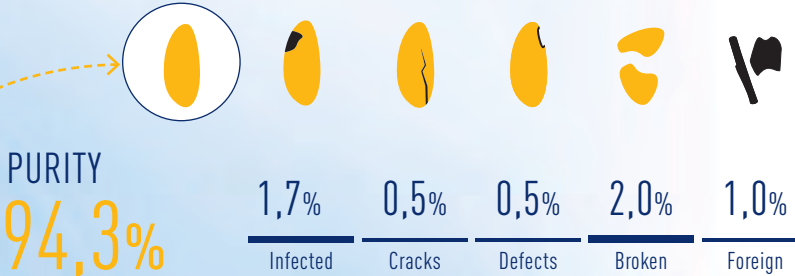


OS f

Fast sampling inspection for  
all kind of seeds



Data Report





Optical Sorter

OS X *roeber*

Think ahead



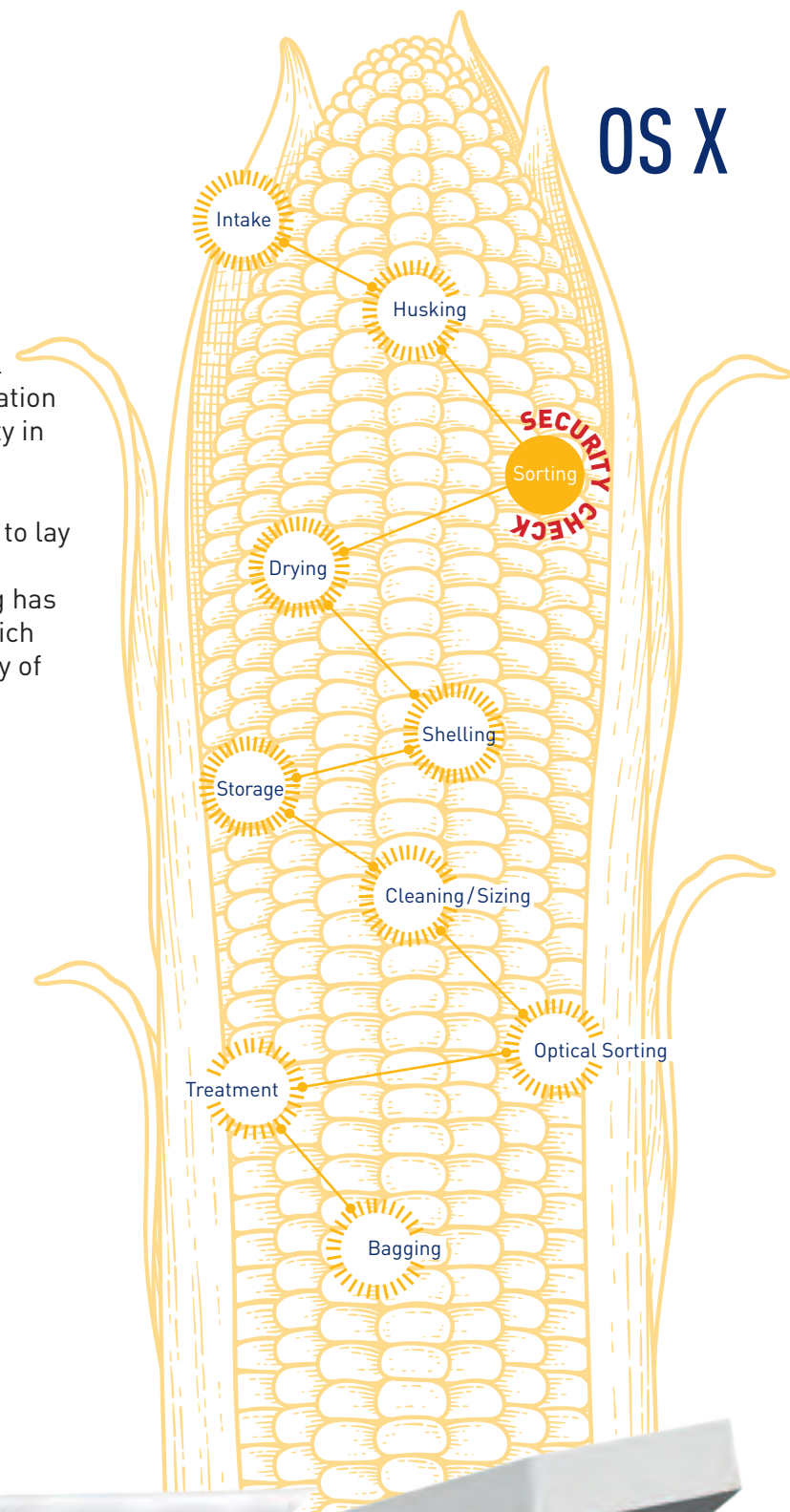
more than **94%**  
sorting accuracy

**75%** reduction  
of labour force

OS X

The OptoSelector OS X is an advanced optical sorter specifically developed for the classification of seed corn cobs and has become a necessity in the husking process.

With the security check by our OS X, we seek to lay the foundation for the whole value chain. The analysis of the cobs at the very beginning has an impact on the entire processing chain, which positively affects the efficiency and the quality of the end product.







Good corn cobs



Off-type



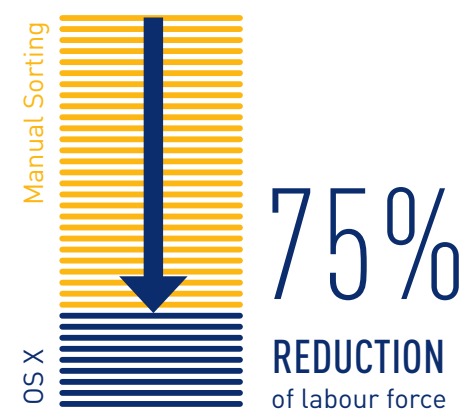
Rehusk

## Agricultural workforce decreases 1% per year

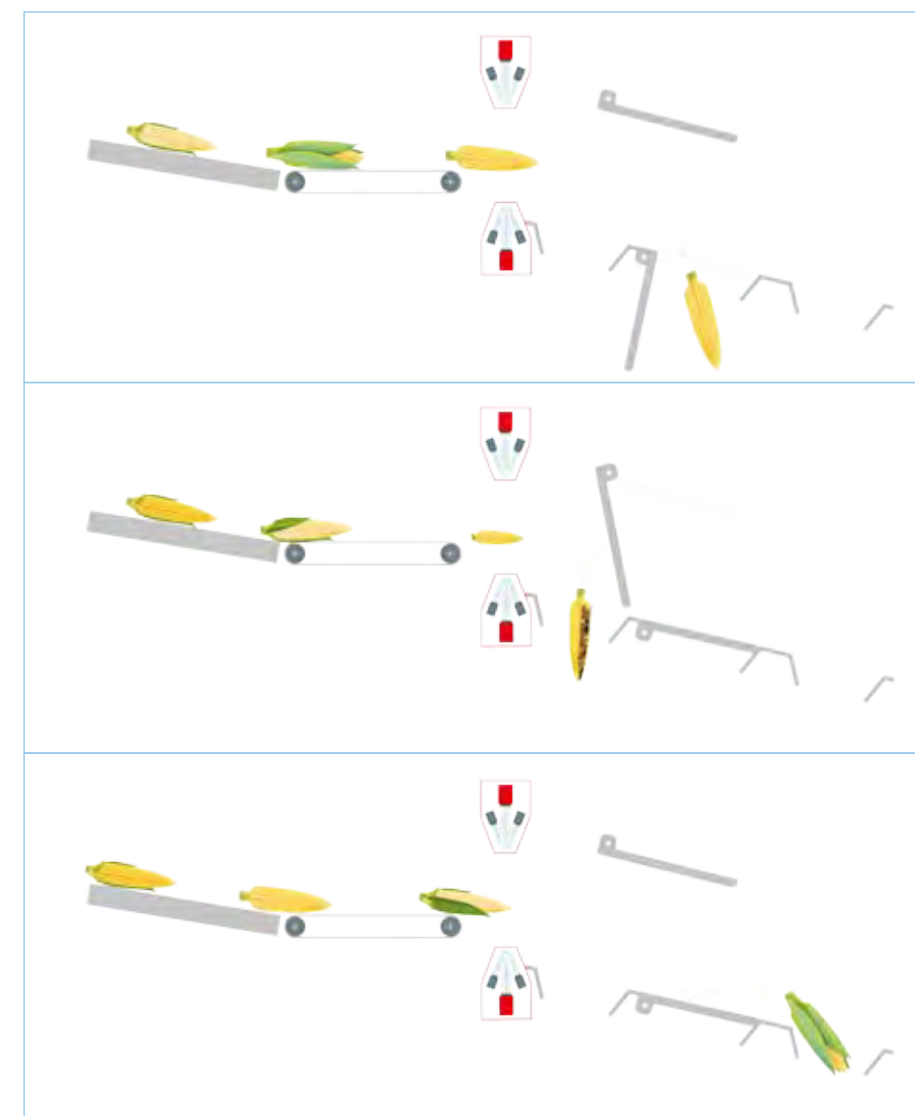
Recruiting personnel for manual sorting becomes increasingly difficult and expensive. Up to one million seasonal workers are hired each year in the EU.

The Covid pandemic had unforeseen consequences:

- + closed borders
- + higher hygiene standards
- + even greater labor shortages
- + higher costs



## Innovative Quick Flap System

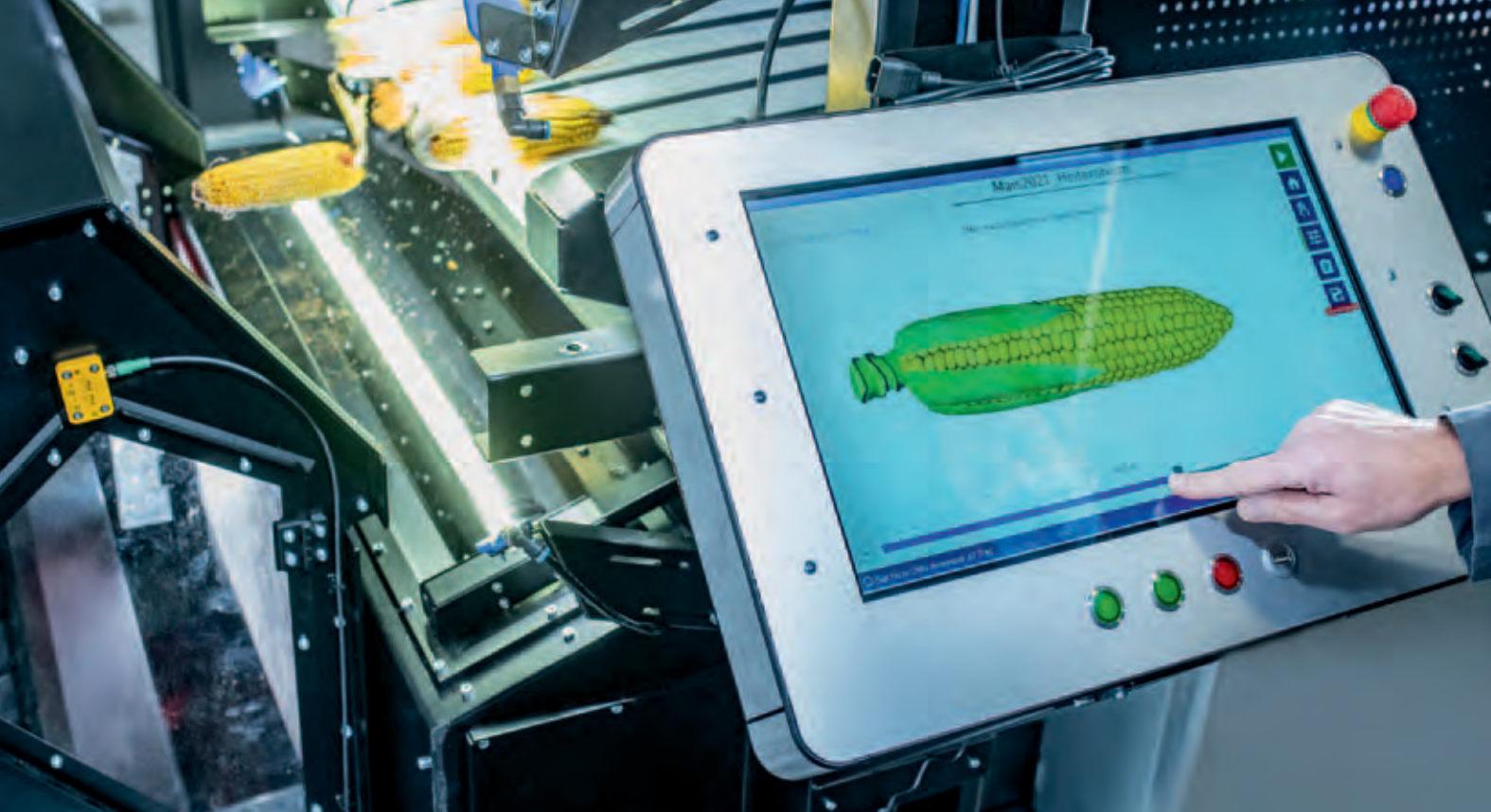


1|  
Sorting good ear corn

2|  
Sorting off-type ear corn

3|  
Sorting ear corn with husks





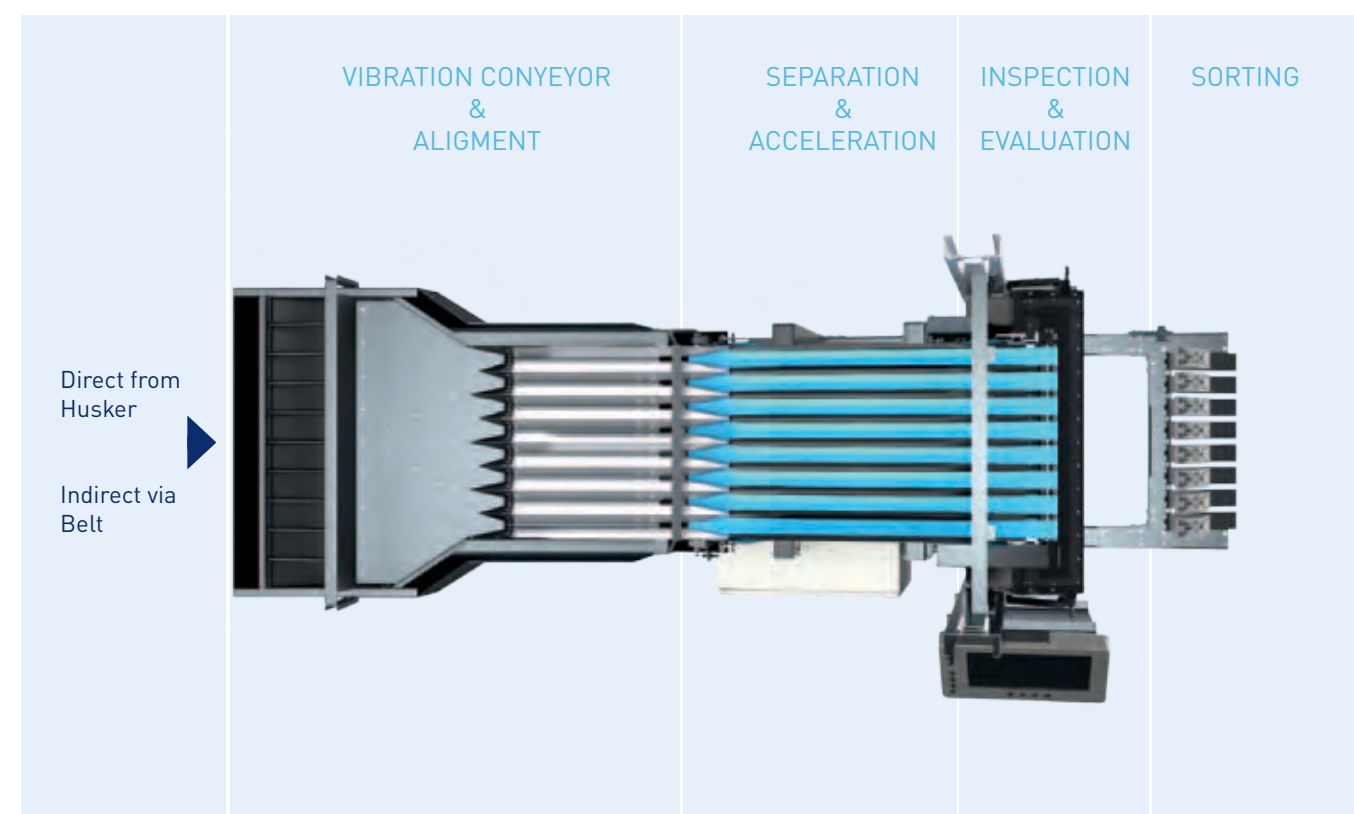
## High Speed Inspection

- + Full color two side inspection
- + Classification supported by geometrical analysis
- + Detection of color changes caused by mold and fungal infestation

## Intuitive, userfriendly HMI

The extra large 22" touch screen is intuitive to use. Labelling and teaching is very easy. The dashboard shows sorting statistics.

## Design



# OS X

Vibration Feeder  
+ good separation

Special alignment lanes  
+ optimized material guidance

Ejection unit  
+ material friendly  
+ gentle handling

High End Optic Boxes  
+ Excellent RGB cameras  
+ Specially bright LED

### Technical Data

### OS X

Length	(mm)	4600
Width	(mm)	1820
Height	(mm)	2050
Weight	(kg)	2400
Power	(kWh)	4
Infeed width	(mm)	1200
No. of lanes		8
Air	(l/min)	ca. 60 - 250 at 6 bar**
Capacity	(t/h)	up to 16
	(objects/min)	up to 1600*

\* depends on size and weight of cobs

\*\* min at 10% outtake and low back ground cleaning, max at 30% outtake and high back ground cleaning  
Descriptions and measurements are approximate. We reserve the right to implement technical changes.



Easily managing your sorting characteristics

Criteria for rejected products are defined through our intuitive teach-in software. This features industry leading simplicity for set up and programming.

Definition of all decisive parameters

- + Percentage of husk
- + Percentage of mold
- + Percentage of bare cobs



20 % OF HUSKS



40 % OF HUSKS



30 % OF MOLD



COB SIZE RANGE (Diameter and length)

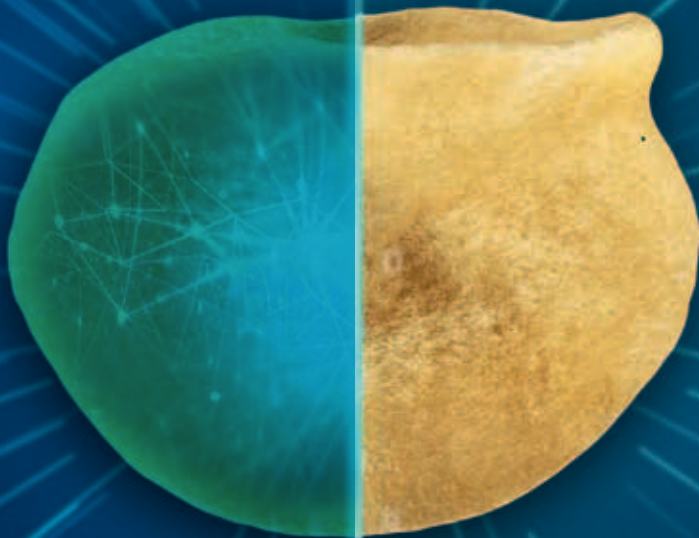




Optical Sorter

OS P

# A new vision for the food industry



real time results

Upgrade New Germination  
and Usable Plant Standard

to **95%**

OS P

The OS P is the world's first AI-powered seed sorter and enables seed producers to sort seeds by genetic purity, germination, usable plant health, as well as customized use cases, in addition to physical parameters like color, shape and size. Boost your revenues with genosorting by genetic.



AI powered by 



## Seed lots performance guarantee

- + Germination and Usable Plant always over 90%
- + Vigor uniformity
- + Physical purity (size, color, shape)
- + Special use cases

## Optimize production

- + Reduce seed production volumes – allow to produce less
- + Improve seed production planning – better predictability and forecasting

## Maximize profitability

- + Make “zero value” batches sellable by sorting out the nonqualified seeds
- + Seed grading by quality

## Inventory optimization

- + Allows decrease inventory levels

## Customized reports

- + Precise seed lot structural and morphological details



**85%** usable plant after:

T- screening > Gravity table > Liquid separator > Priming



**94%** usable plant after:

AI powered by **SeedX**

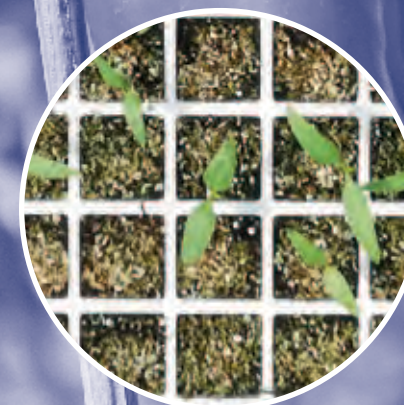
**Precise** < 1% Mechanical failures

**Predictable** Accurate prediction of results and proportional waste

**Multi Functional** Train the algorithm Sort Seeds Create fractions by quality

**AI Learning algorithm** Results keep improving

OS P



**Initial germination** **45%**

After Seed-X sorting, out of 100 seed with 45% germination you will get:

Option

- A: 47 seeds with 90% germination
- B: 46 seeds with 92% germination
- C: 27 seeds with 95% germination
- D: any other selection

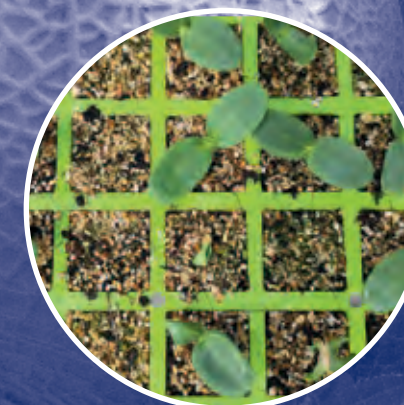


**Initial germination** **86%**

After Seed-X sorting, out of 100 seed with 86% germination you will get:

Option

- A: 90 seeds with 90% germination
- B: 77 seeds with 93% germination
- C: 46 seeds with 95% germination
- D: any other selection



**Initial germination** **77%**

After Seed-X sorting, out of 100 seed with 77% germination you will get:

Option

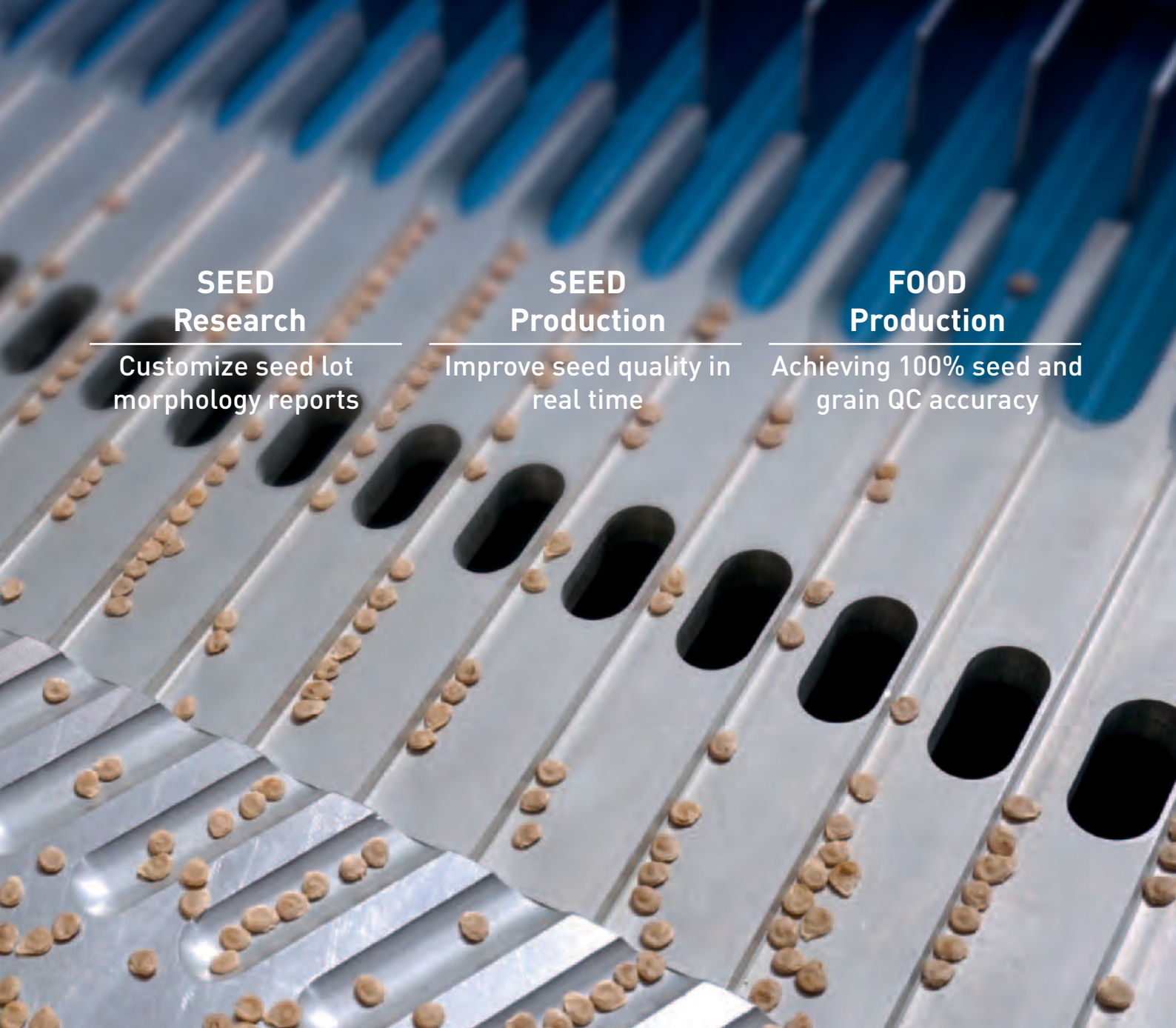
- A: 50 seeds with 90% germination
- B: any other selection

PEPPER

TOMATO

MELON





**SEED  
Research**

Customize seed lot  
morphology reports

**SEED  
Production**

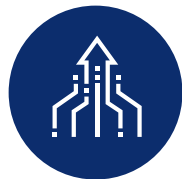
Improve seed quality in  
real time

**FOOD  
Production**

Achieving 100% seed and  
grain QC accuracy



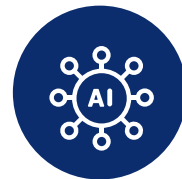
Sort by use  
case



Upgrade zero value  
batches



Seed-by-seed sorting



Proprietary classification  
algorithms



Real-time results



Cost effective



Non destructive

**OS P**



Technical Data		OS P
Length	(mm)	1 988
Width	(mm)	1 184
Height	(mm)	1 470
Weight	(kg)	627
Power supply	(V)	220 ± 5%
Power consumption	(kWh)	< 1.0
Required air pressure	(bars)	> 6
Air flow	(l/min)	200
Internet access	(Mbps)	100

Descriptions and measurements are approximate. We reserve the right to implement technical changes.





**Strong Seed. Healthy Grain.**

**PETKUS Technologie GmbH**

Roeberstr. 8 | 99848 Wutha-Farnroda | Germany

☎ +49 3 69 21-98 0 | [info@petkus.com](mailto:info@petkus.com)

[www.petkus.com](http://www.petkus.com)