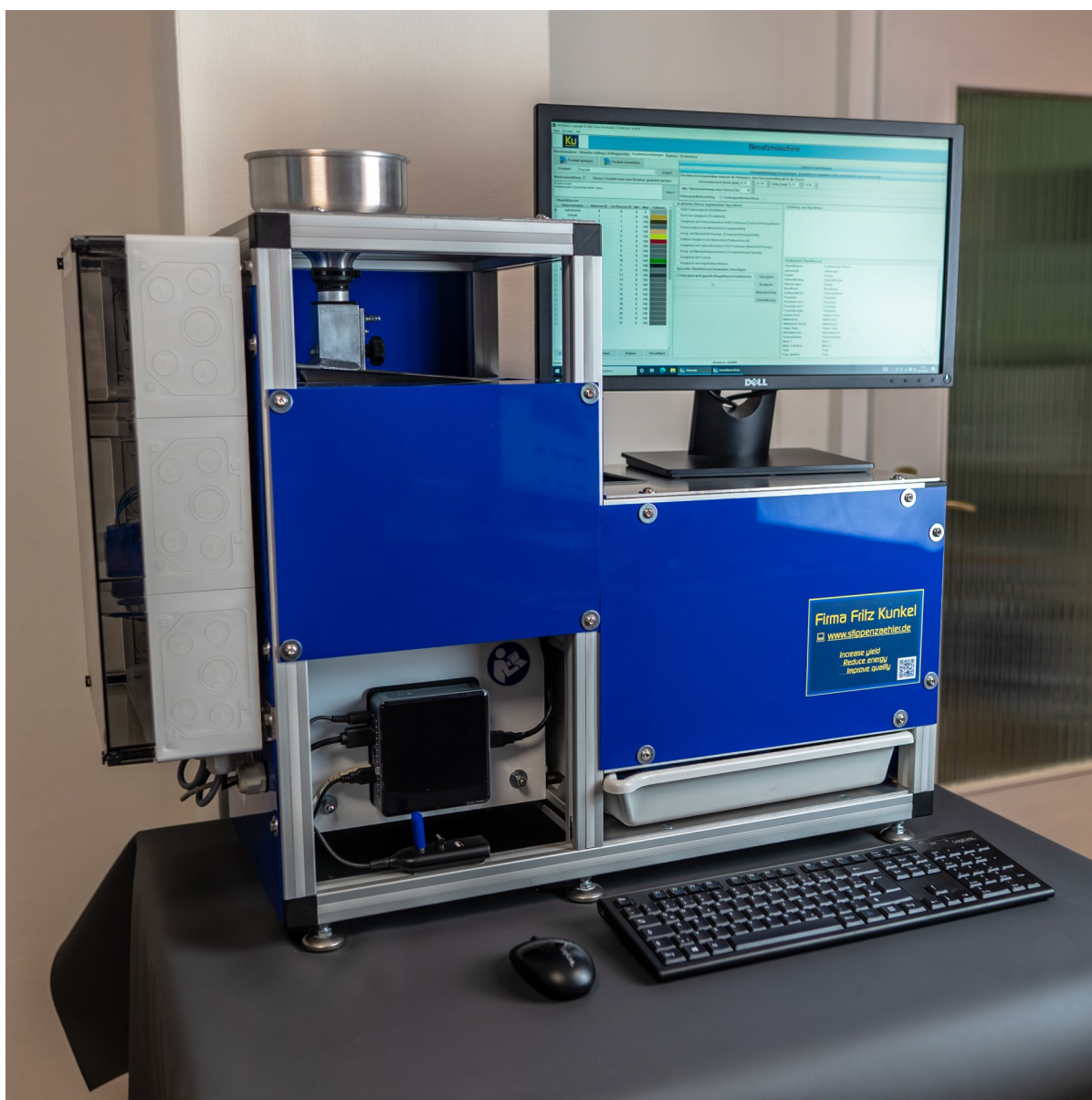


OKS-Grain assessment machine

Fully automatic optical analysis for all types of grain



The grain analysis system („Besatzmaschine“) from Kunkel Systems is a fully automatic, digital system for quickly assessing the composition of grain and other natural products in the raw materials reception.

"Besatz" are unwanted components in the grain, such as foreign grain, ergot, weed seeds, soil, stones, metal, broken, slender grains or grains damaged by fungi and pests. The laboratory system offers a very fast analysis, it is also space-saving in design and easy to use. For example, soft wheat, durum wheat, barley, rye or spelt can be analysed.



OKS-Grain assessment machine

Save time and money.



Time-consuming manual counting is no longer necessary!

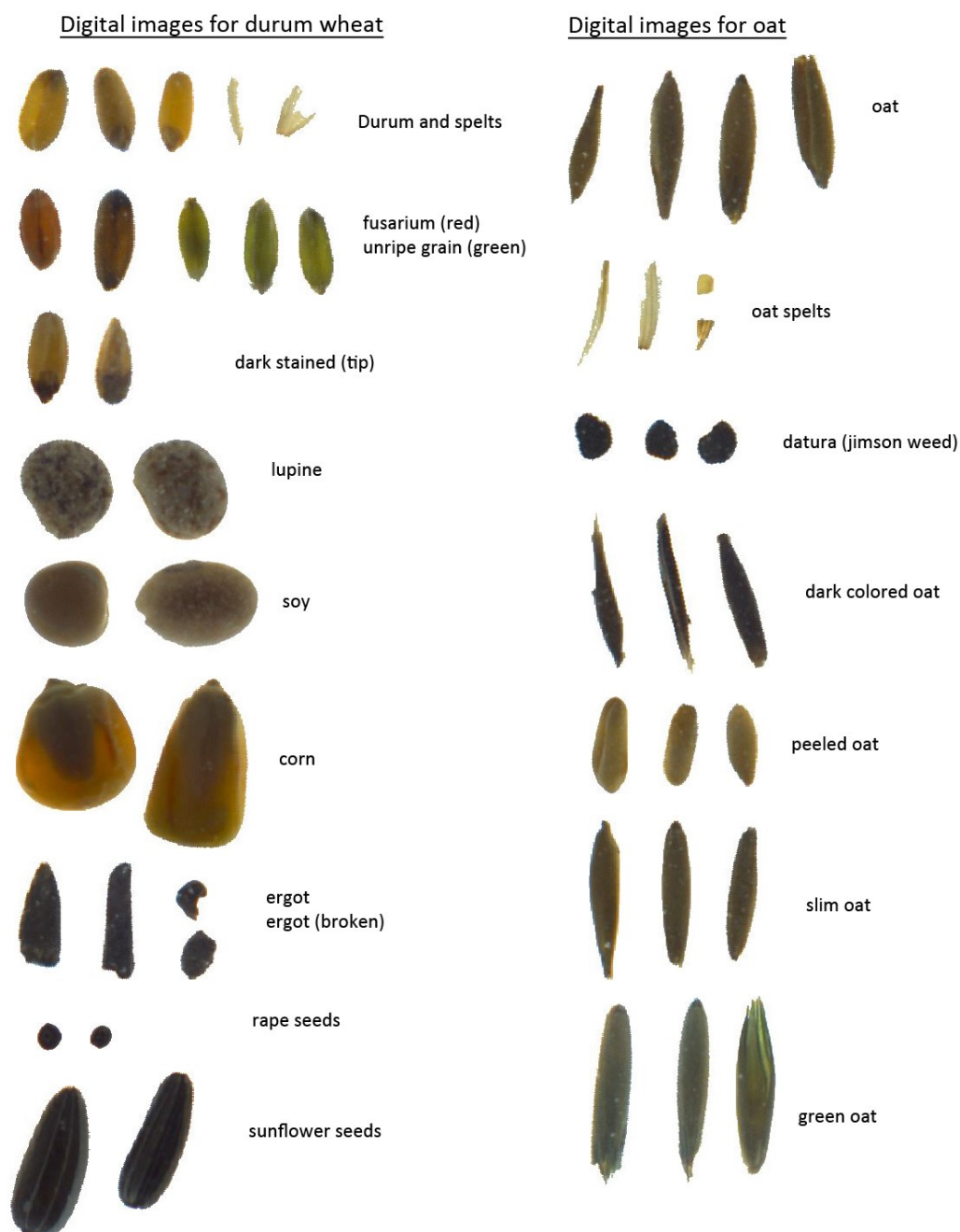
Save time and money and speed up your operations.

In the harvest season, things have to be done quickly, endless queues of trucks are waiting to be unloaded. The staff in the laboratory is already busy with their daily work, who should then take care of the exact grain quality analysis? But if low graded goods are accepted, you give away cash that is then lost through cleaning and yield losses.



OKS-Grain assessment machine

Highly precise - thanks to the latest technology and software



All the on-site personnel need to do is place a sample into the hopper on the top and then click "Start Order". The amount of this sample is at the discretion of the lab or quality control, but a minimum of 100 grams should be used.

Larger quantities are also possible, the hopper can be refilled during an order or the machine is switched to "online operation".

After the start of the order, the "Besatz"-machine takes over the conveying of the grain, the image acquisition and the assessment fully automatically and independently. When the order is finished, the different classes are displayed as a percentage and the measuring process ends automatically.

OKS-Grain assessment machine

Fast and automatic raw material analysis



Benefits for the plant

- ⇒ It is not necessary to weigh an exact amount of the sample beforehand, and there is no need to weigh it afterwards
- ⇒ The customer **immediately** receives a number and percentage of the grain/ contaminants classes
- ⇒ Samples can be taken much more frequently than in the classic way, which improves the informative value of the grain analysis
- ⇒ Frequent spot checks mean more readings in less time! This is a great time advantage compared to counting by hand, especially during the harvest season.
- ⇒ A very objective and neutral analysis thanks to digital measurement technology, which makes it easier to compare the individual analyses
- ⇒ Order creation and traceability (customer certificate)



OKS-Grain assessment machine

Versatile like nature and flexible like humans



Analyze a large number of different types of grain with the grain assessment machine and benefit from the complete, modern variety of equipment of a digital machine!

Possible products are e.g. :

- soft wheat
- durum wheat
- rye
- barley
- oat
- spelt wheat
- coffee beans
- sunflower seeds
- beans
- nuts

And many more!

These types of „Besatz“ can be found:

- fusarium
- ergot
- dark stains
- foreign grains, e.g. soya, maize, lupine, rapeseed, datura, mustard
- slim or broken grain
- husks, stones, earth
- bug bites
- mealiness / glassiness
- distribution of size and shape
- distribution or composition of color

OKS-Grain assessment machine

Easy to use and easy to learn

Configurable on customer request

Numerous setting options and detection methods such as size comparison, RGB color comparison, histogram comparison or pattern image comparison allow for an optimally adapted optical grain analysis for your plant.

Kornklasse anlegen oder ändern

Kornklassenname **Mutterkorn** Bildquelle ...
 Kamerabilder
 Musterbilder - Datenbank
 Kontrollbilder.. \ImagePath\
 Beispielbilder.. \ExamplePictures\
 Min. [%] 0 Max. [%] 100 Gewicht [g] 0 Füllfarbe
 Werkzeug Kein Punkt Rechteck **Lasso** Toleranz 10

Einstellungen zur Klassenerkennung Musterbilder - Datenbank

Vergleich mit RGB-Farbvorkommen

Testbild Vergleichsbild

Endfarbe

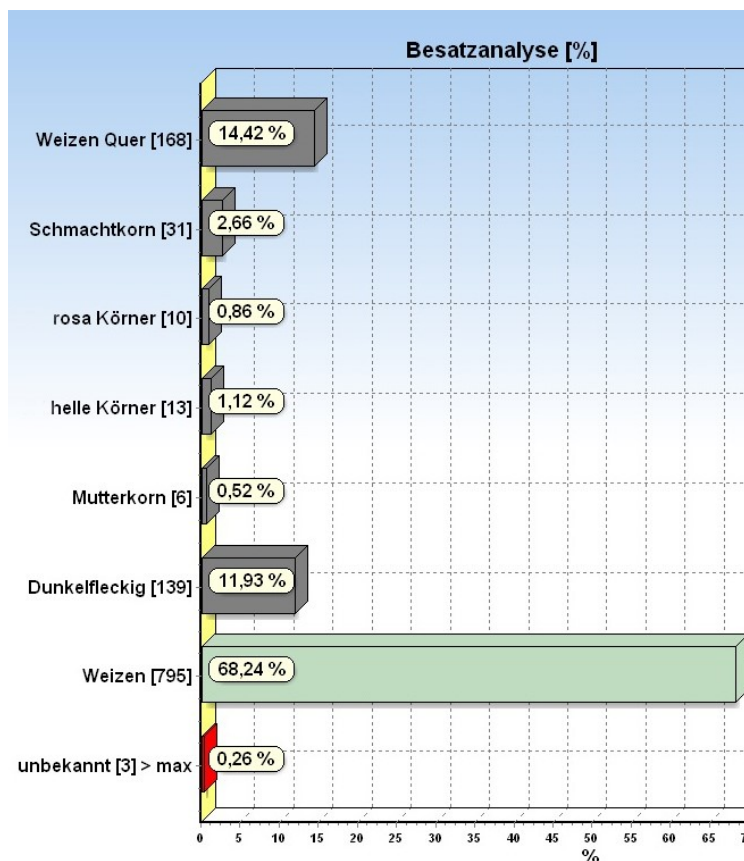
Berechnung: 85,18 % wenn >= 80 oder <= 100 dann: Ergebnis = 100%

Fehler farblich markieren (nur bei Vergleich mit Farbvorkommen - RGB und HSV)

Erkennungsmethode ...
 RGB Farbvergleich
 Größen-vergleich
 Vergleich mit RGB-Farbvorkommen
 Pixel-vergleich mit Musterbild
 Vergleich mit Musterbild-Histogramm
 Pattern Vergleich mit Musterbild
 Vergleich mit Farbvorkommen im HSV-Bereich
 Vergleich mit Musterbildparametern
 Vergleich mit Formen

Vergleich mit Farbvorkommen

Übereinstimmung
100 %



Once the device has been set up, the measuring process for 100 grams of wheat takes about one minute and can be repeated as often as you like with a new sample.

This enables quick and accurate measurements of large batches of wheat.

The results are available immediately and can be printed out with the job display or exported to other programs. Factory settings allow the predefined analysis without deviations.

OKS-Grain assessment machine

Technical data

Dimensions	Width: ca. 850 mm Height: ca. 685 mm Depth: ca. 300 mm
Weight	approx. 25 kg, to be transported by two people
Power supply	230 V
Power consumption	ca. 300 watt
Analysis duration	ca. 1 minute per 100 gram
Sampling rate	ca. 80 objects per second (camera+software)
Measuring throughput	approx. 80-90% of a sample is captured by the camera recording
Measuring type	Real-time assessment, continuous percentage measurement
Measuring parameters	Size comparison, RGB color comparison, histogram comparison, RGB and HSV color occurrence, pattern match, pixel comparison, roundness
Number of searching classes	Unlimited, freely adjustable according to customer requirements
Software	OKS Besatz 2.0
PC	NUC 7 Home, ultra-compact PC, pre-installed software
Lighting	COB surface LED, approx. 50 watts
Camera	12bit USB 3.0 industry camera
Monitor	HDMI FullHD resolution 1920x1080 pixel

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