



Your partner in seed analyzing

Stand-alone devices and
custom-tailored complete solutions



OPTOMachines, based in central France, has designed and manufactured for **more than 20 years** optical measuring and control equipment for the agronomic, ceramic and metal industries.

Thanks to a **special combination of skills**, the product ranges for the agronomic industry contains **stand-alone devices** for cleaning, counting, weighing and sorting as well as **customized all-in solutions** for phenotyping, packaging or treatment of seeds.

All devices and solutions are **made in France** in the company's workshop and comply to CE regulation.

Customers all over the world trust the expertise and the quality furnished by OPTOMachines.



mechanics
automation photometry
image processing
optics metrology
robotics



OPTO-Cleaner

Seed cleaner combining mechanical sieving & gravimetric separating

The OPTO-Cleaner was designed in 2016 for the Phénome project in order to equip an laboratory of INRAE (French Nation Institute for Agriculture, Food and Environment).

For obtaining the best possible cleaning results, the cleaning is carried out in **two successive steps** combining two technologies: **mechanical sieving** for pre-cleaning by patented grids and **gravimetric separating** for fine cleaning by an air column. Additionally to the cleaned sample containing the good grains, several categories of residues are sorted depending on size and weight.

All settings are **independently adjustable and infinitely variable**. For mechanical sieving: frequency of vibration & speed of grids, for gravimetric separating: airflow. Best cleaning results are achieved without efforts.

The whole installation is automatically cleaned after each cleaning cycle.

OPTO-Agri

Compact & ergonomic solution for fast TSW & seed analysis

The OPTO-Agri is a compact and practical all-in-one device for TSW calculating and biometry measuring. Fast, accurate and objective results are obtained in less than 5 seconds by the perfect interaction of 3 elements: a **camera with a high resolution** depending on the grain size, a **laboratory balance** by Mettler Toledo and a **software for image processing** with an algorithm developed by OPTOMachines.

Easy to operate and delivering precise and reliable results, the OPTO-Agri exists in 3 versions: Standard, Micro and Super Micro – depending on the seed size.

Pre-programmed **settings for more than 100 different species** assures perfect measuring results. Settings for other species can be provided on demand.





OPTO-Agrimetric Morphometrical seed characterization by image processing

The OPTO-Agrimetric is an all-in-one device for seed characterization for **research purposes**. Each grain can be characterized by a **large number of morphometrical and colometrical parameters** for shape and texture for example. A classification software categorizes the measured grains. The TSW is also calculated. Despite of its high scientific performance, the OPTO-Agrimetric is **easy to handle with a user-friendly HMI** displaying the complex results in a descriptive way in tables and histograms. More than 100 morphometrical parameters are available and the OPTO-Agrimetric can be adapted to any customer needs.

abc-RICE HD Rice analysis by image processing

The abc-RICE HD is a device dedicated to milled or cargo rice by image treatment and is used in research and by rice millers. In about 1 minute, 10-20 g of grains can be analyzed with the following measurements: **broken rate, estimation of pearled and chalky grains, biometry parameters, automatic classification of white rice and cargo**. The abc-RICE HD has a compact design and is easy to manipulate. The integrated high-definition camera guarantees precise and exact results. Each abc-RICE HD is delivered with an audit report comparing the measures made with the measuring results of a French accredited laboratory for rice analyzes.



Optical table Enhanced visual inspection of grains vitreousness and color

The Optical table is a patented, high-performing device for **visualizing the inside of the kernel**. A light source illuminates the kernels without blinding the operator: higher contrast and more comfort without glaring the eyes. The Optical table visualize the following examples:

- Vitreousness of durum wheat for estimating the piebalding
- Detection of tender wheat in durum wheat
- Detection of red or green grains in paddy rice
- Internal cracks on milled rice
- Vitreousness and cracks in corn
- Germs in tomato seeds



Normal view



Optical table

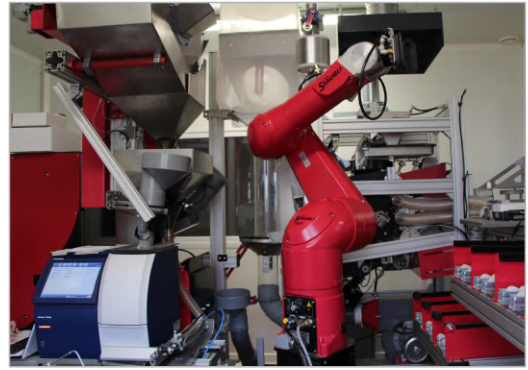
Phenotyping line

Robotized facility for high-speed & high volume phenotyping of cereals

Tailor-made and matching the technical specifications by INRAE (French Nation Institute for Agriculture, Food and Environment), OPTOmachines has developed a **robotized post-harvest phenotyping line** for samples up to 4 kg. Fast, precise and objective measures are the result of a perfect combination of our know-how in agronomics and automation.

After a preparation of the kernels by cleaning and homogenization, the samples are taken through several **high precision and measurement devices**. These devices are controlled remotely and synchronized by a fully automated system with preparation and finalizing equipment: cleaner, homogenizer, bagging machine, labeller.

The **large amount of data generated by the process** is automatically saved and sent to a supervisor for further analysis.



Automated line for seed preparation

Fully automated treatment & packing facility of seed samples for trial stations

The **GEVES** (French official organization for variety evaluation and seed testing) intended to modernize and upgrade its seed preparation workshop. From this workshop, the GEVES ships every year 1500 orders containing 30.000 bags of 19 different species.

The aims of the modernization were:

- **accelerating** the workflow by automation
- **improving** the reliability of order processing
- **protecting** the staff from direct contact with phytosanitary products

Made to measure according to customers specifications, OPTOmachines has developed an automated treatment and packing line receiving quantities up to 250 kg and producing bagged samples of 0,1 – 1,5 kg.

The combination of know-how in the fields of **agronomy, automation, programming** and **mechanics** enabled OPTOmachines to design a fully automated facility synchronizing perfectly measuring, treatment and bagging devices linked to a supervisor.

The most remarkable progress regarding **environmental sustainability combined with cost savings** is the use of peristaltic pumps for seed treatment: the phytosanitary products are used in a completely closed circuit and their excess is redirected into the container and ready for later use. The consumption of these expensive and often noxious products is reduced to a minimum and very few water is used for rinsing.

