

Phenotyping line



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



The French research project *Phénome* aims to equip the scientific community with devices and methods for characterizing genotypes of different species linked to several climate change scenarios.

As part of this project, OPTOmachines was chosen by INRA (French National Institute for Agricultural Research) to design and develop a robotized phenotyping line for common and durum wheat and corn treating a high volume of data.

Challenge

The post-harvest phenotyping of kernels consists of identifying physical and visible characteristics and describing the outward appearance with measured data.

Such a process on a large scale is not efficient and traceable without automated data collection and analysis.

Our solution

Tailor-made and matching the technical specifications by INRA, 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.

Functioning

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.



Technical data & dimensions

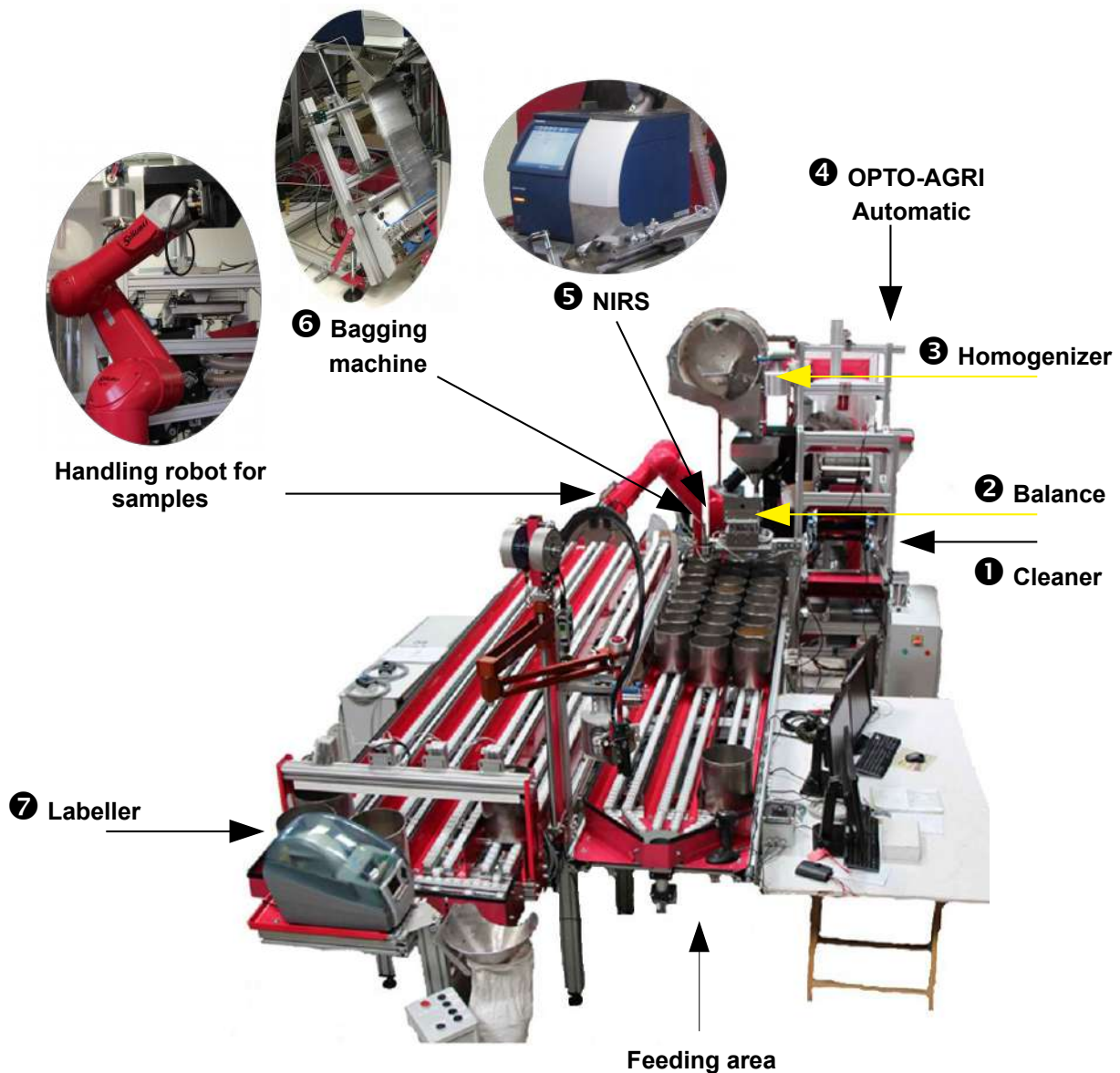
- Generated data: 2 To / day
- Size of samples: max. 4 kg
- Cycle time: 3 min, 20 samples / hour
- Usable time: 50 samples, 2h30
- Height: 2,7 m / width: 2,6 m / length: 6,6 m

Process

- 1 Cleaning of the samples
- 2 Weighing of the samples
- 3 Homogenisation before measures
- 4 OPTO-AGRI Automatic
- 5 NIRS – infrared analysis
- 6 Bagging machine
- 7 Labelling

Mesures

- 4 OPTO-AGRI Automatic:
 - Thousand Seed Weight
 - Morphometry: length, width, surface, circularity ...
 - Colorimetry
- 5 NIRS – infrared analysis :
 - Specific weight
 - Moisture
 - Gluten, zeleny, proteins ...



The French company OPTOmachines is a renowned specialist for optical measuring and analysing equipment to the agronomy industry. The portfolio contains standard devices for weighing, counting, classifying applications but also complete custom-made lines for phenotyping, packaging and treatment, etc. OPTOmachines supplies the seed industry leaders, prestigious research institutes and independent laboratories.