



RAW CASHEW NUT CLEANING AND CALIBRATION SYSTEM

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This system has been designed for the raw cashew nuts cleaning and calibration, conceived to obtain an homogeneous quantity of product of the same grade that can be next processed with the OLTREMARE shelling machines.

The plant is designed in order to load the nuts in bulk and to return them cleaned, bagged and graded according to a nominal size called "C" (see drawing "A specific calibration"), which ranges from 18 to 30 millimetres.

The raw nuts are cleaned from (light and heavy) foreign matters, then are passed through cylinders provided with "pipe" openings which prevent the nuts from spinning round, allow a uniform and homogeneous calibration and finally assure a

limited variability of the nut size within the same grade class.

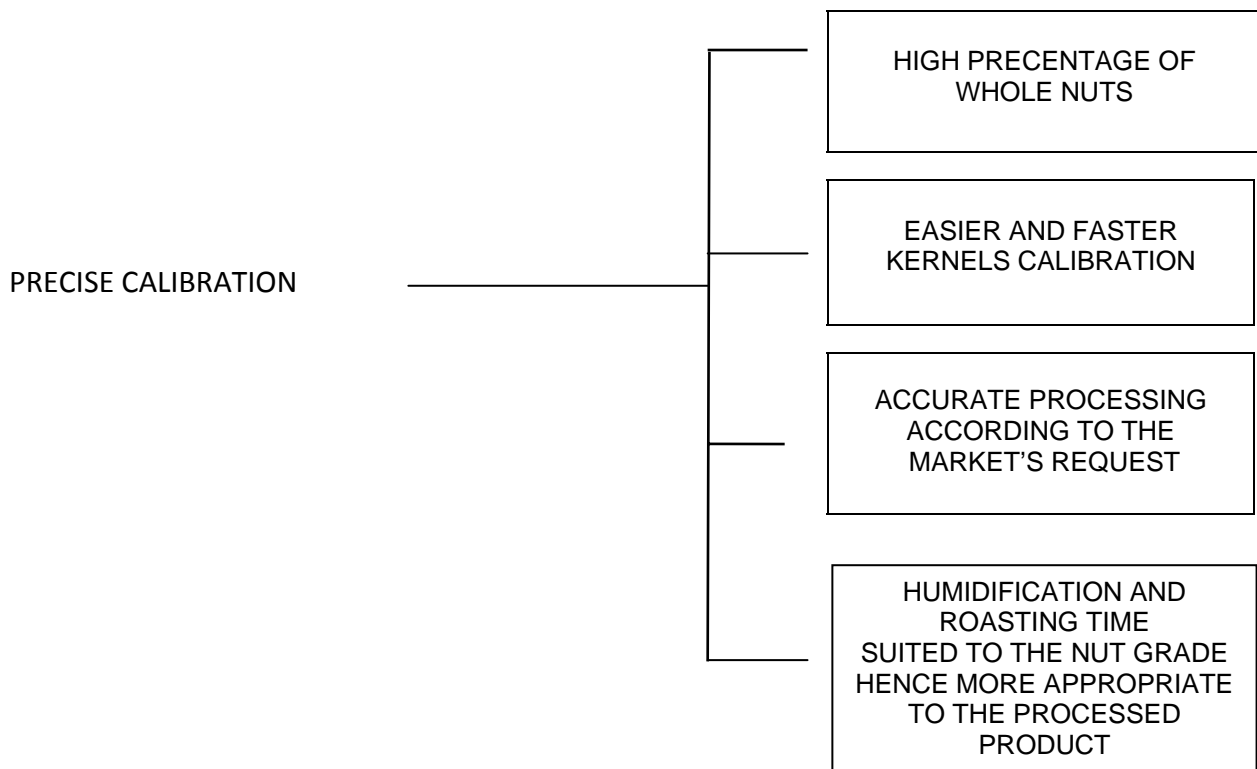
The system allows the product of the same origin to be classified into 8 different classes thanks to cylinders of different size.

Here is the list of the classes: < 18; 18-20; 20-22; 22-24; 24-26; 26-28; 28-30; >30.

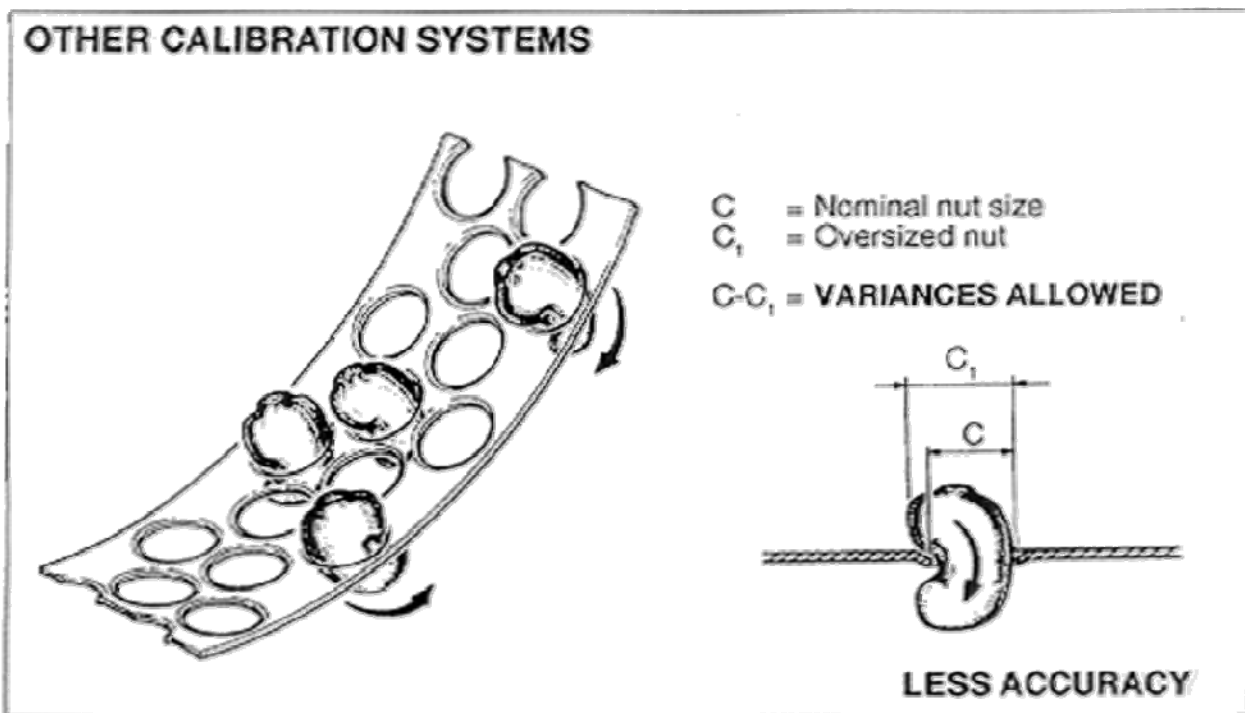
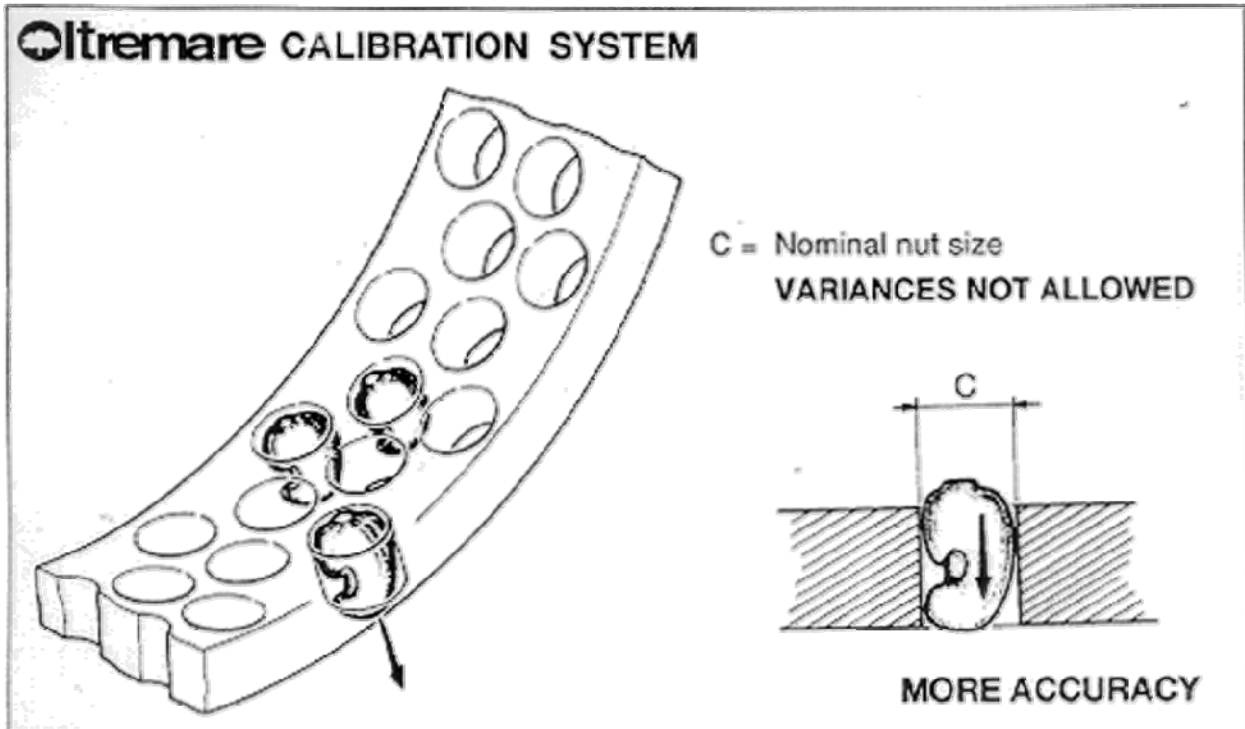
The number of the calibrating cylinders of each class is determined by the distribution of the classes within the same cashew nut "population" and the required hourly capacity as well. **It follows that OLTREMARE system is a modular system able to adjust both to the product to be processed (distribution of the grades within the same cashew nut "population") and to the customer's production requests.**

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SPECIFIC CALIBRATION SYSTEM PERFORMANCES



A SPECIFIC CALIBRATION



C = NOMINAL NUT SIZE

PLANT DESCRIPTION

The plant is composed of:

- a) Raw cashew nuts cleaning machines
- b) Sustaining trestle
- c) Product screw conveyors
- d) Bag holders and connection piping
- e) Calibrating cylinders
- f) Elevators
- g) Nut extraction device
- h) Gear motors
- i) Electric control panel with PLC

Raw cashew nuts cleaning machines

The cleaning machines are composed of hole cylinders provided with mixing reels, vibrating sieves and aspiration hood connected to a decantation cyclone.

Air flow and vibration adjustment

it is possible to adjust both the aspiration hood opening and the vibration oscillating arms. This allows to optimize the foreign matters and empty nuts light fraction aspiration and the elimination as well of the heavy foreign matters such as stones, earth etc.

Calibrating cylinders

The honeycomb calibrating cylinders have the inner diameter of 460 mm or 700 mm and the length of 2500 mm or 3000 mm. The honeycomb is made of medium viscosity Polyoxymethylene with glass balls assuring the size stability. The material is moulded by injection.

Nut processing capacity ranges from 600 kg/h up to 1200 kg/h for each single cylinder.

Cylinders' rotation is powered by 0.55 KW or 1 KW gear motors.

The elevators and the loading/unloading screw conveyors are equipped with 0.75 KW to 1.5 KW gear motors.

Adjustment of the nuts flow speed

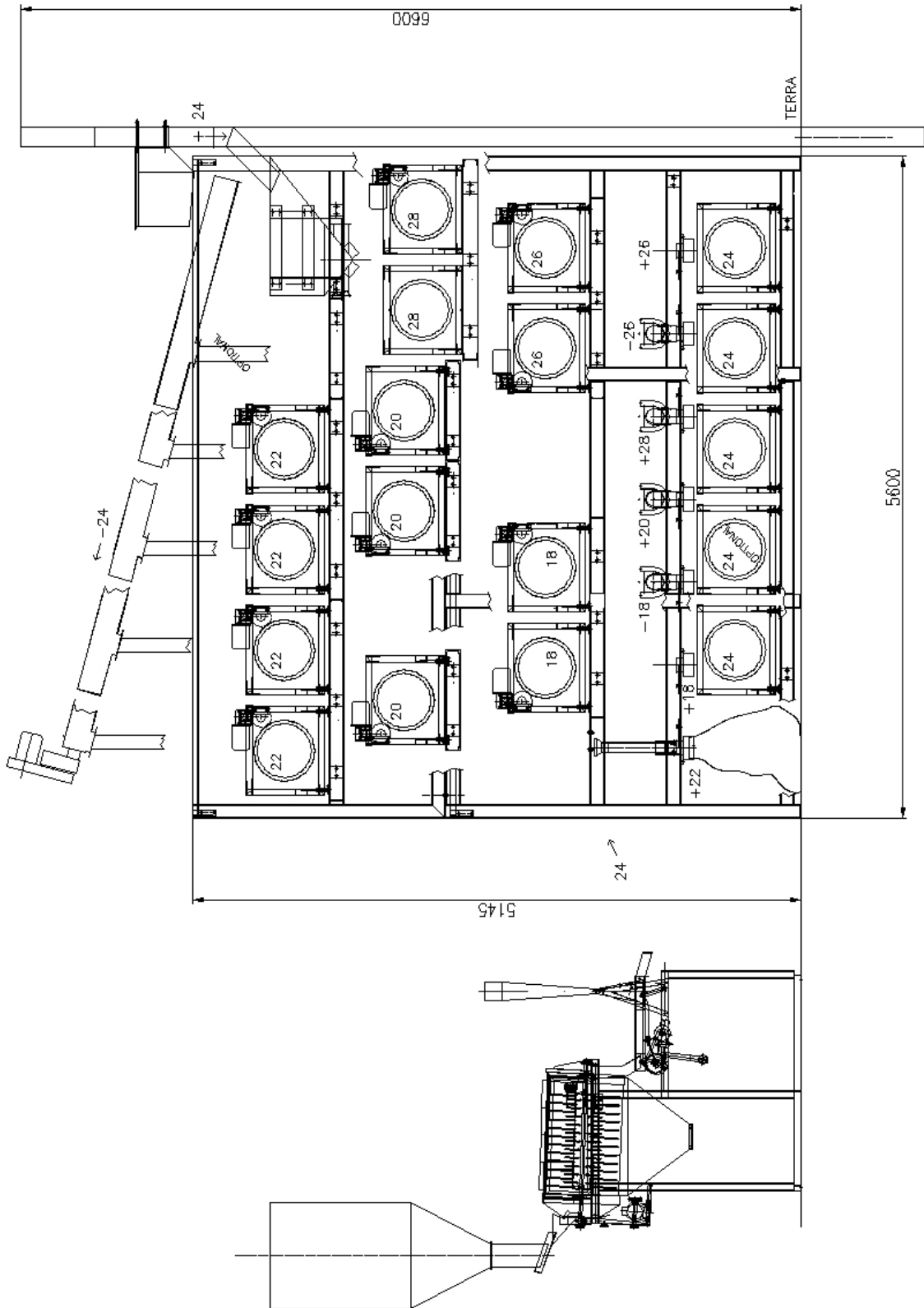
It is possible to adjust (increase/decrease) the nuts feeding speed inside each cylinder, by increasing or decreasing the horizontal axis inclination.

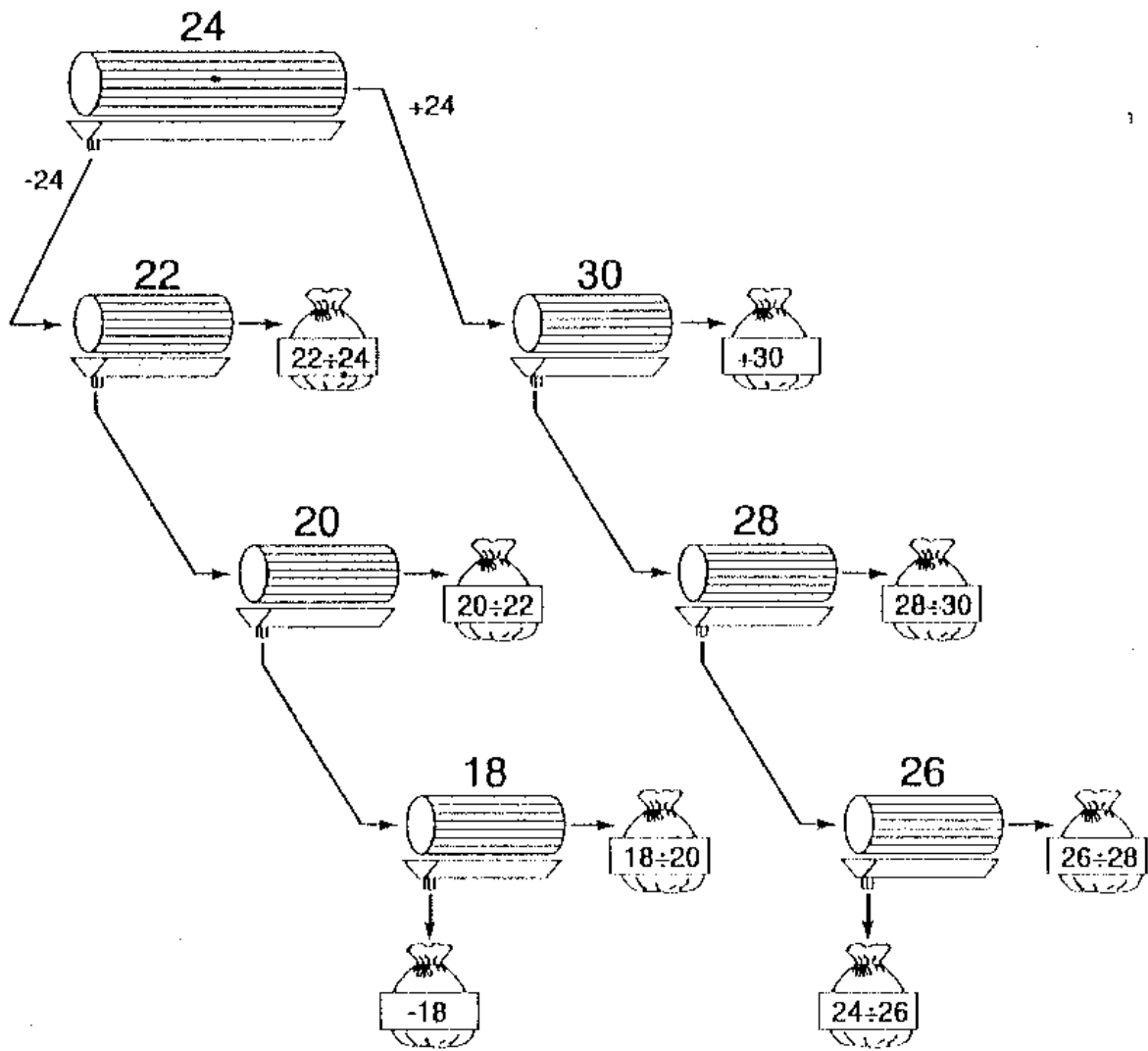
On the feeding side, each cylinder (whether single or double) is provided with a pair of feet whose pivot is positioned on the cylinder' sustaining trestle.

Acting on screw nut and lock nut, it is possible to raise and drop the cylinder ends, thus changing the inclination and the capacity accordingly.

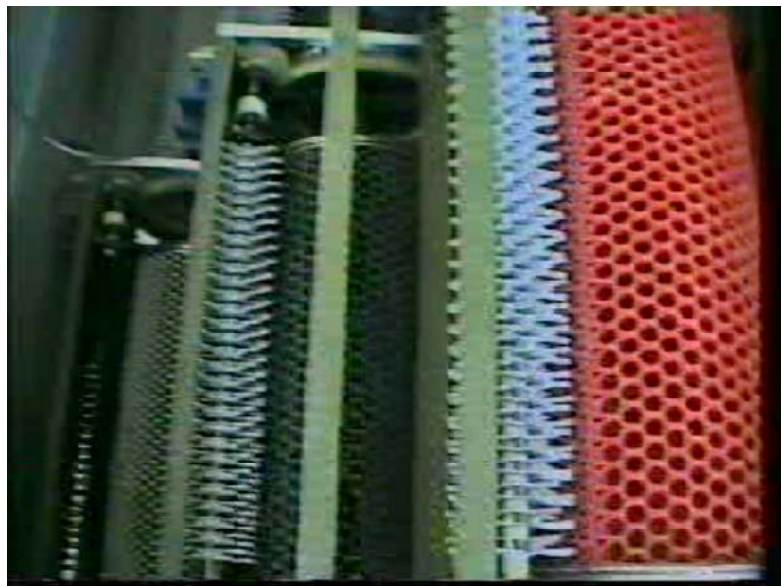
The cashew nut cleaning and calibration system herewith described is custom-made. It is composed of a series of machines whose combination leads to the required result. It is not a standard machine but rather a plant especially studied according to special needs. Since the plant design and manufacture is in progress, the information and data reported above are to be considered indicative and therefore subject to variation without notice, whereas the plant operational characteristics remain the same as per contract technical specifications.

LAY OUT
(example)





Standard configuration



Cylinders and extractors
(Detail)

DIFFERENCES BETWEEN THE OLTREMARE SYSTEM AND OTHER SYSTEMS

Oltremare system

- Continuous integrated cleaning-calibrating system;
- Cleaning of light/heavy foreign matters and empty nuts electronically controlled by inverter; removes the stalk;
- Calibration with surface thickness according to nuts height (see drawing);
- Nut releasing system from each single hole (each single passage, in a specific position, each single hole is unlocked if the nut is stuck into the hole);
- Use of lighter and more resistant material which allows to reduce the power of the engines;
- Different processing concept: nut separation at about half of the distribution of the nuts in input and independent processing of each fraction;
- Use of electric control panel with synoptic and integrated with PLC for the control of the main functions.

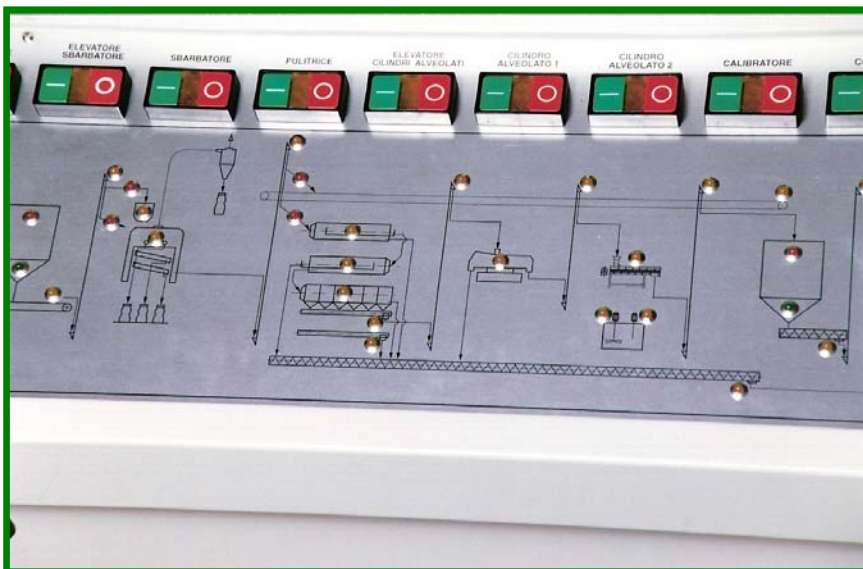
Other systems

- The systems are not integrated;
- Badly separate both fractions, do not separate the empty nuts and do not remove the stalk;
- Calibration has a surface limited thickness that does not change according to nuts height;
- Have got rolls operating on various holes but not getting into the holes, which turns out to be often an unsuccessful operation;
- Do not provide this characteristic, since calibrate from the smallest to the biggest nut in sequence;
- Not available.

ADVANTAGES OF THE OLTREMARE SYSTEM

- Fully automatic system that reduces labour in comparison with the solutions available on the market and helps the operation control thanks to synoptic and PLC use.
- More uniform and precise calibration granted by the different processing concept and the adopted manufacturing solutions.
- More safety for the plant users and respect to the processing: utmost protection and least down time periods.
- Less space requirement in comparison with same capacity.
- Less energy consumption in comparison with same capacity.
- Low maintenance costs.
- Thanks to the uniformity and precision of the classification, the processing steps after the cleaning and calibration such as humidification, roasting, shelling, kernel drying and grading are facilitated in comparison with the current system.

Electric control panel
with synoptic table



Electric control panel (detail)