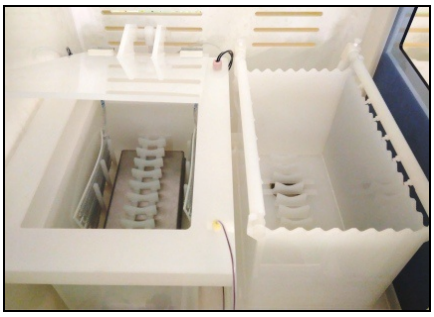
# Ingot Cleaning Line

46200

## Description of the equipment:

The automatic equipment is used to etch and clean monocrystalline silicon ingots in the semiconductors manufacturing. Individual ingots of cylindrical shape are placed in a basket on the incoming conveyor belt. Having the cover of the incoming conveyor belt been closed, the working cycle takes place automatically. A bi-axial manipulator moves the basket with the ingot gradually into operating and rinse baths according to the selected working formula. The equipment comprises 4 baths placed in two sections which are separated one from another by means of partitions which are closed automatically. Before the working cycle is finished, ingots are dried with circulation of warm filtered air in a dryer and they are placed on the exit conveyor belt.



The operator manages and controls the process on the touch panel HMI on the console above the entry and exit of ingots. The working area of the equipment is covered with sufficiently large transparent covers which make it possible to supervise the entire course of the procedure.

## Specifications:

- The bath 1 is designed for washing with warm demineralized water with a detergent, the bath has a heating with regulation and an ultrasonic module for higher efficiency of washing. The volume of the bath is 45 litres.
- The bath 2 is a rinse bath with bottom filling through a perforated bottom and with showers alongside the lateral walls of the bath.
- The bath 3 is an etching bath made from chemically resistant PVDF. It is filled with a mixture of nitric and hydrofluoric acids (HNO3 + HF). It is equipped with a bottom filling, dosing of HF by means of a precise dosing pump and with an independent cooling in order to observe the operating temperature.
- The bath 4 is a rinse bath, its construction is similar to that of the bath 2.
- The drier is a stainless steel version with forced air circulation, HEPA filtration and temperature regulation of the drying air.
- The equipment has a fixed connection to distribution pipelines of chemical media, discharge piping and controlled exhaust of air and meets all requirements for the operation in clean rooms for the manufacture of semiconductors.
- The control is carried our by means of the industrial PLC system Unitronics V1210 with a touch screen and with a graphic monitor of the process.

## Basic technical data:

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| Length: | 2,060 mm |
| Width: | 3,120 mm |
| Height: | 2,650 mm |
| Weight: | 970 kg |

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