



Internship Offer

Subject: ***Automation of micrometric placement of semiconductors using Piezoelectric stage assisted by vision.***

Period: 3-6 months duration, 2021

Student profile: Last year of Bachelor or ongoing Master

Profile: Automation, micromechanics, mechanics.

Student Allowance: yes.

Company: ismeca europe semiconductors SA (Cohu Holding)
Rue de l'Helvétie 283 CH-2301 La Chaux de Fonds

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Introduction:

Ismecca is a company active since 50 years in the handling of semiconductor devices for test and inspection, nowadays inside the group Cohu. With the evolution of embedded technologies, miniature electronic devices are ubiquitous. Today the production rate of these parts exceeds one million units per day on a single machine. Their size reaches in standard 0.2x0.4x0.15 mm. **Our measurement scale is the micron and the millisecond.**

Facing with this evolution, we invent new solutions to handle these devices in an automated process and improve the placement accuracy using latest state of the art technologies.

Scope:

In collaboration with our engineering department, study the physical integration (CAO) of a piezoelectric stage X,Y,Theta coupled with a high speed vision system. Perform characterization tests in order to determine the overall placement accuracy (statistical on automated cycles) of semiconductors carried by the rotating turret to the Piezo table. Vision systems aside will be used to calibrate the relative position of the piezo stage, in open loop or closed loop control.

Based on a selection of above results in different mode (open loop closed), we will seek internally suitable technologies of Test Contactors (socket/boards) in order to minimize even further the error of the semiconductor placement against contactors (pogo, cantilevers, blades, ...).



Piezo table xyt (left)



Machine vision system (right)

This very exciting exploration work will allow you to use advanced automated machines and exchange with different entities (marketing, engineering: mechatronics, software, vision).

- Automotive
- Industrial
- Solid State Lighting (LED)
- Mobility
- Communications
- MEMS
- Computing
- High Speed Memory



Semiconductor Device



Rotating Turret equipped with 20 or 32 Pickup heads (PUH)



Ismecca Turret Handler

Means:

- Internet, marketing and engineering departments, Handler equipment will be available in our laboratory.
- Supervision by Lab manager, support of Lab team and engineering teams.