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Title: Aligning system for a pick-and-place BGA soldering equipment

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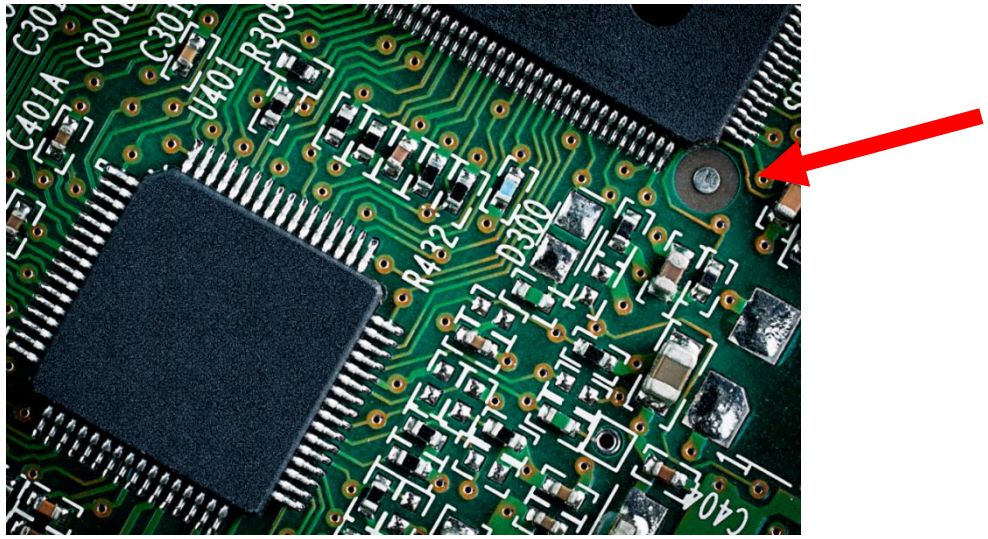
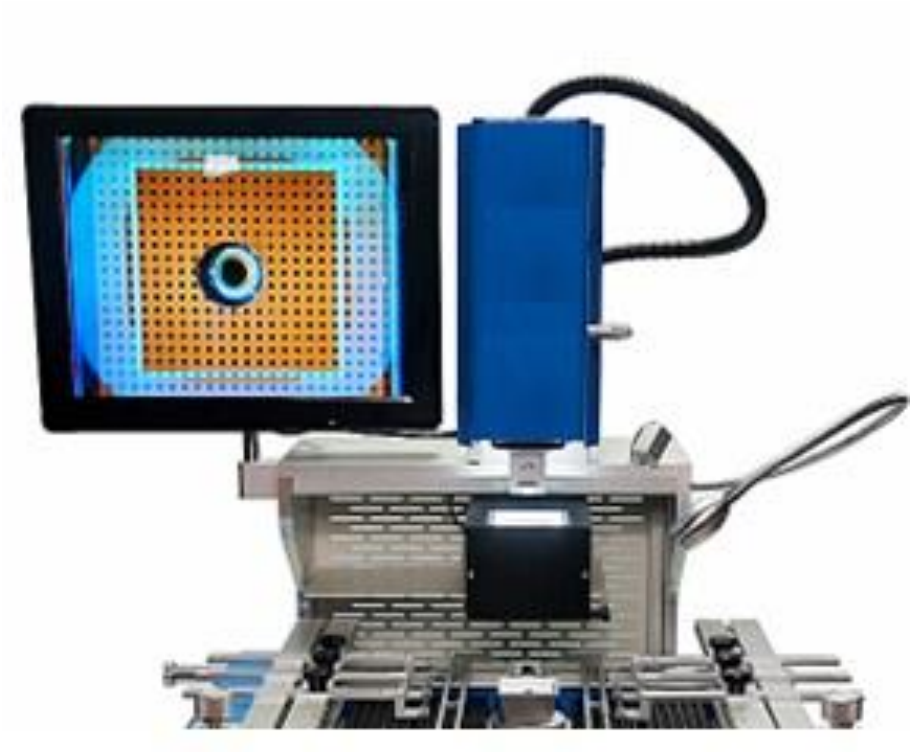
Introduction

Pick-and-place system for a BGA semiconductor soldering machine

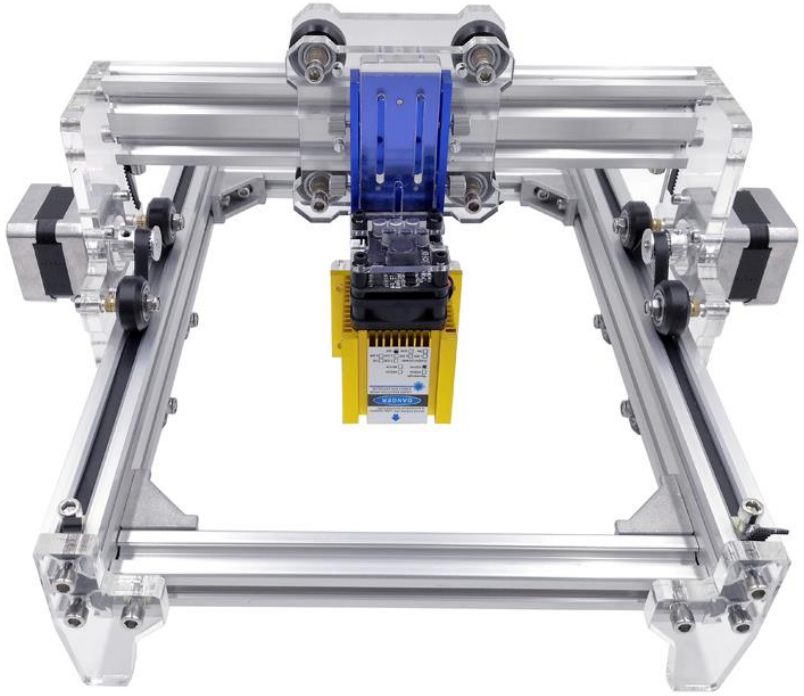


Reference spot for aligning system

Introduction



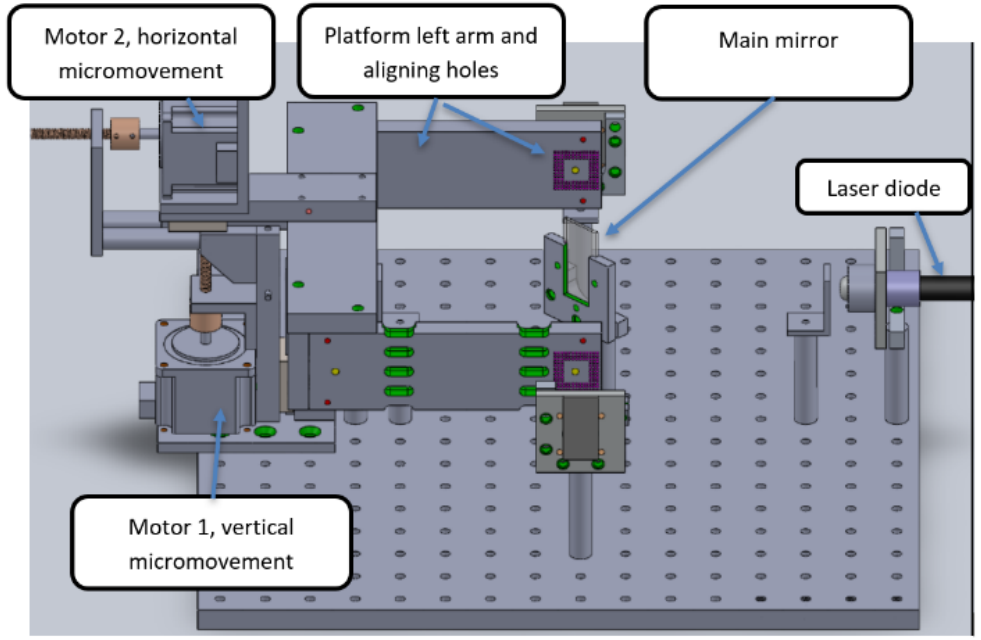
An image recognition and position equipment



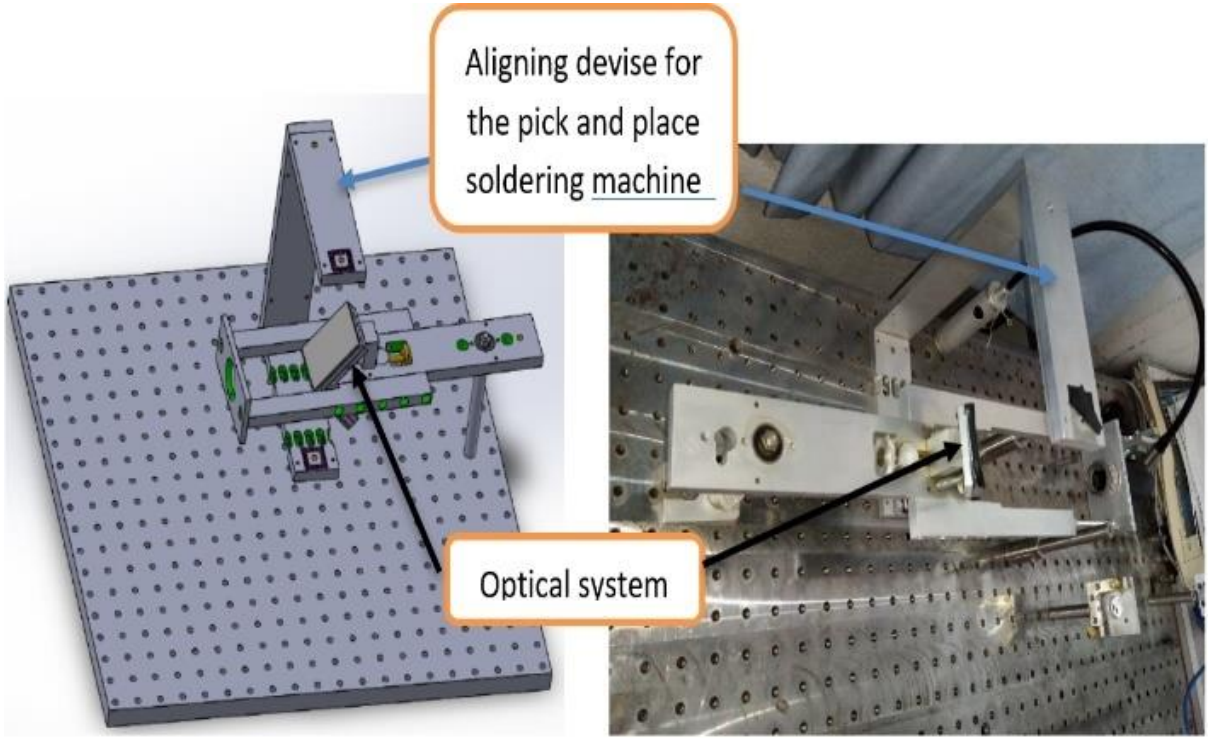
An XY-table

Methodology

Backgrown system

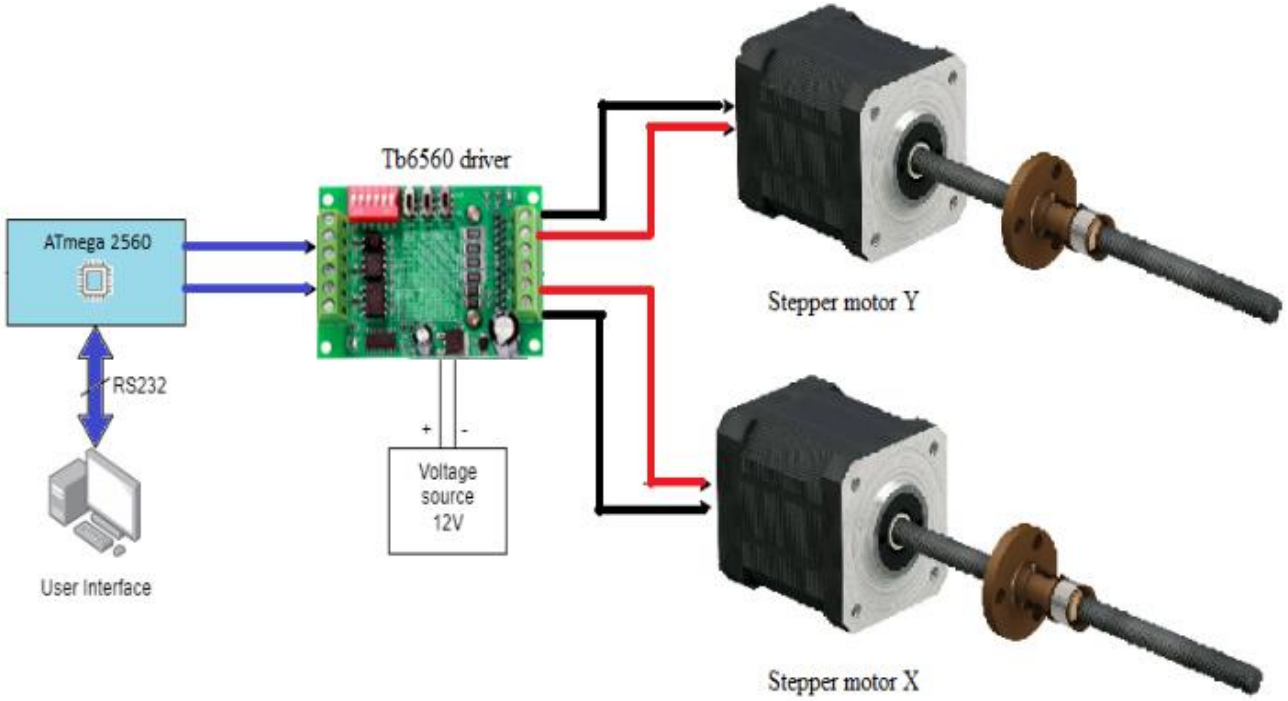


First part of the platform

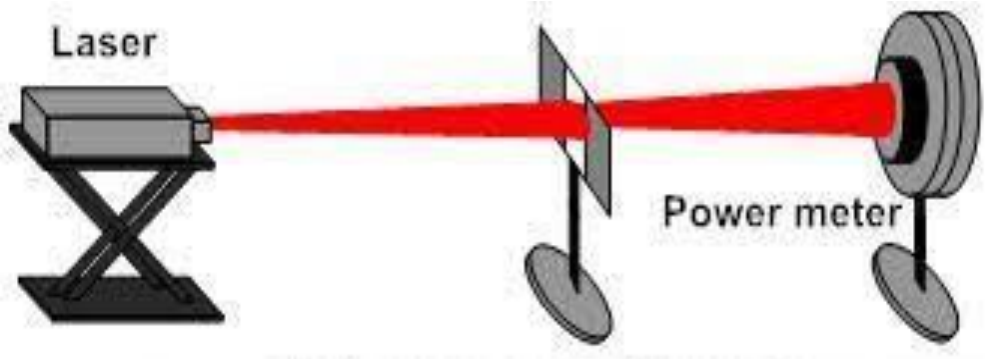


Second part of the platform

Methodology



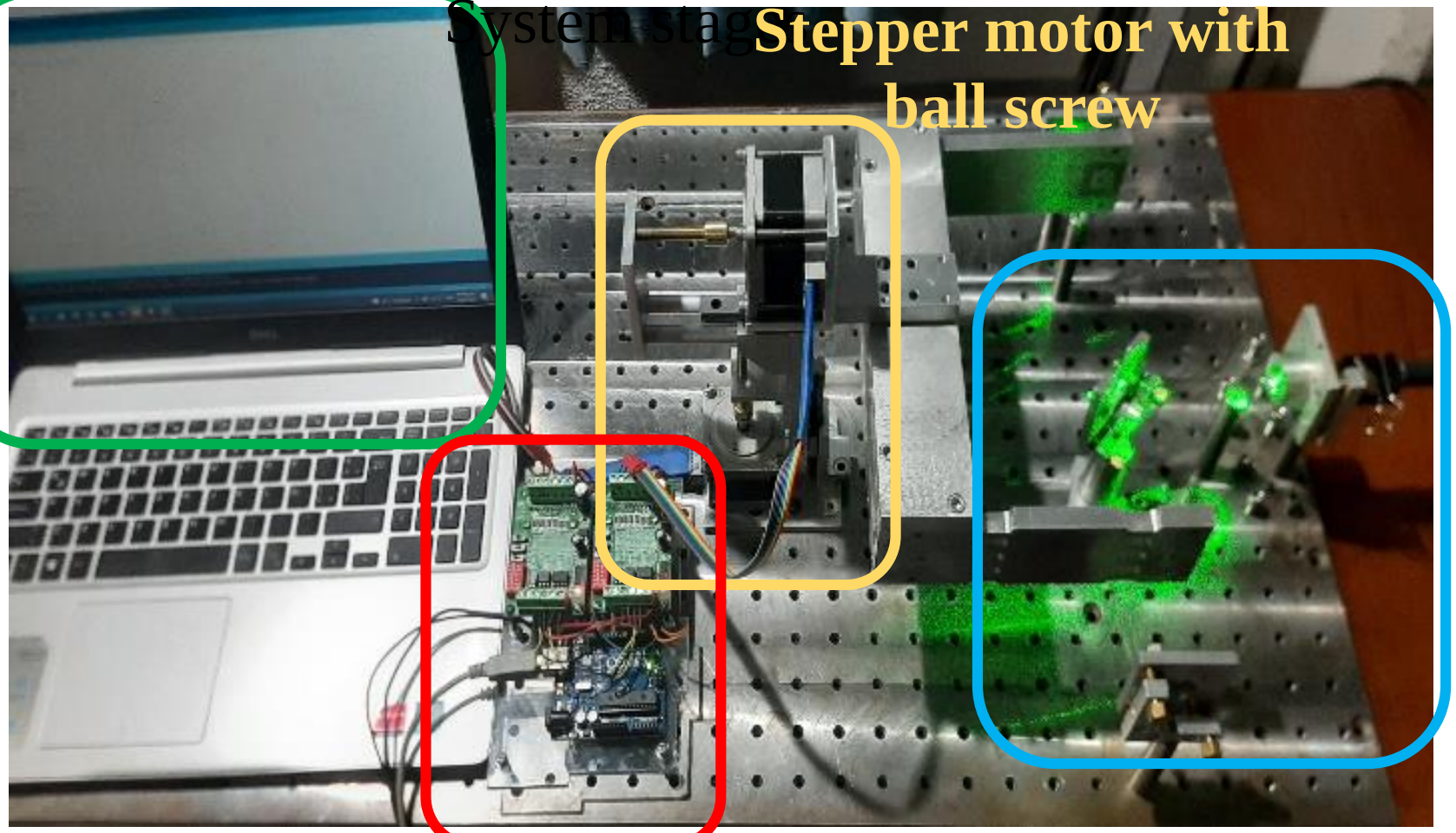
System control for stepper motors to move the aligning devise



Laser beam sensor to measure the laser power when alignment is accomplished

Results

System Interface on a computer



Stepper motor Control drivers connected to the maind board

Laser beam and mirrors to align the pick-and-place system

Results

The system shows a high accuracy when moving, since micrometric screw were used to move each axe and motors are configurated to turn in half steps.

Displacement of 0.01 mm were measured during its aligning test.

A new design of aligning is presented for Pick-and-Place machines and other systems, where alignment is required

Conclusions

The system shows:

- A high accuracy aligning system is achieved by using a laser beam
- the advantage of easily being reconfigured and updated at low cost

Due to the system performance:

- Micromovements are ensured and performed thanks to the micrometric screw
- A Michelson-Morley interferometer was developed and manufactured

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