3D LASER PROCESSING
Worldwide innovation in laser processing

Automation & process expertise

Thanks to an extensive experience in the process automation such as assembly, soldering, welding or gluing, Unitechnologies has developed a range of platforms dedicated to the 3D laser process automation such as selective polishing and micro-welding.

sylas® automated laser platforms

Unitechnologies provides industrial platforms for 3D laser processes in industries such as medical devices, automotive, watchmaking and microelectronics.

The sylas® product range offers three types of base kinematics equipped with: A) a highly rigid design delta robot B) a rotary indexing table or C) a numerical double shuttle module. These configurations are described below:

A) The sylas® platform equipped with a delta robot consists of a laser source, a configurable optical circuit, a scanner with 2 or 3 axes and a 5-axis parallel robot with two numerical rotations. The system is controlled via a numerical controller allowing to pilot and synchronize very precisely the 5 axes of the robot and the 2 or 3 axes of the scanner. With this configuration, the machine can be standalone or fully integrated into an automatic production line.

B) The sylas® platform is also proposed as an automatic standalone cell with a rotary indexing table with 4, 6 or 8 positions which transfers the parts e.g. to be loaded/unloaded, assembled, welded or inspected from station to station.

C) Finally, the sylas® platform may also consist of a numerical double shuttle module, which presents the parts to be processed in front of a fiber laser or scanner. This solution offers the possibility to use the cell manually without loss of cycle time.

All the parts are polished or welded in a mobile and protected environment thanks to Unitechnologies’ patented chamber.

sylas® selective 3D polishing

Advantages

- High throughput compared to known mechanical polishing processes
- Fully automated process - from the CAD drawing of the part to be treated
- Surfaces adjacent to the polished surfaces neither affected nor damaged
- Particle free process
- Contactless process, no mechanical constraints
- Polishing processes with a perfect repeatability
- Large range of material types
- Pre-polishing for esthetical purposes

Application examples

- Medical: dental implants, endoscopes, pacemakers
- Automotive: piston rings
- Watchmaking: timekeeping movement parts, design parts

sylas® micro-welding

Advantages

- Fully automated process
- Combination of various and complementary competences for the same equipment:
  - loading/unloading and assembling of miniaturized and/or delicate parts
  - competences in the design and realization of specific tools
  - “online” and “offline” control integration
- Modular system for any application
- 3D welding of complex contours
- Compatible system for the realization of standalone cells and for the integration to fully automated lines

Application examples

- Medical: electrodes, pacemakers, nuclear seeds
- Automotive: fuel injectors, LED lightening, wire to wire, wire to pin
- Watchmaking: gear wheels, pins in mounting plate, bracelets
- Microelectronics: sensors, relays, motors, actuators, hard to hold devices

sylas® other laser applications

In addition to the selective polishing and the micro-welding, the sylas® platforms can also be used for the following applications:

- Surface structuring
- Engraving
- Cutting
- Marking