Laser Marking +
Engraving Solutions

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Application Case Study
→ *Automation of Laser Marking*

Automatic Loading and Unloading Increase Throughput During UDI Marking

In order to comply with UDI, a permanent UDI code must be applied to surgical instruments and implants. The laser marking service provider >add'n solutions< provides this service for medical device manufacturers in the German Medical Valley of Tuttlingen. Founded in 2016 as a medical technology start-up, within a short time add'n solutions had marked several thousand instruments and implants using two FOBA M3000-P laser marking workstations. Today, add'n solutions has seven FOBA machines and thanks to the automation of one of them, the young company has achieved even higher throughput and marking efficiency. The agile industrial robot "HORST" from >fruitcore robotics< has been fully integrated into the marking workflow. add'n solutions has thus increased its marking capacity and is ideally positioned for future growth and large volume customers.*

The Challenges

Not all medical device manufacturers are willing or able to perform UDI direct marking. The laser marking service provider add'n solutions has recognized this and took over this complex and demanding task, which not only includes product marking, but also involves passivation, cleaning, packaging and labelling. All work steps are of course validated. Many thousands of forceps, scissors, scalpels or bone plates are processed and marked in Tuttlingen every year. As the company grew, it became clear that processes had to be optimized and throughput had to be increased.

add'n solutions was looking for an automatic loading system for its laser marking machine M2000-P for the marking of surgical instruments. The primary challenge was **the large variety of parts** to be marked in small to medium batch sizes. Accordingly, a system was sought that could be used flexibly without long set-up times and modifications to the robot gripper. In addition, the system had to be connected to the marking workstation and fully integrated into the process with corresponding process documentation and subsequent machine validation.

→ addn-solutions.de
→ fruitcore-robotics.com/

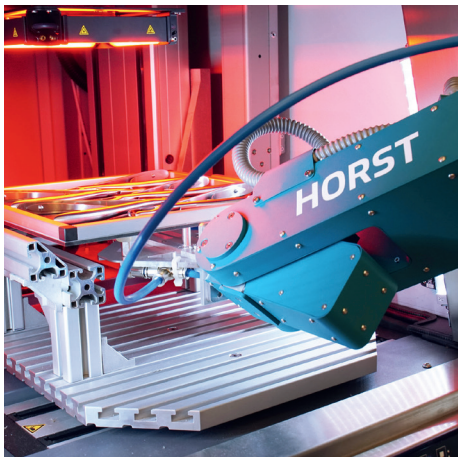
add'n solutions

fruitcore robotics

* UDI (Unique Device Identification), regulated for the US through the FDA and for the EU within the MDR

The Solution

A joint article on start-ups brought attention to fruitcore robotics and "HORST". The flexibility and price-performance ratio of the 6-axis robot was convincing. Now, the task was to implement the connection to FOBA's M2000-P and to fully integrate the industrial robot into the marking process.



add'n solutions came up with the idea that "HORST" would transfer the surgical instruments on trays to FOBA's M2000-P, as this would eliminate the need for conversion work on the gripper. In a first step, fruitcore robotics developed this special tray gripper. FOBA was then involved in setting up the connection to the M-Series and in the integration into the marking process. A protective cabin with two access points (service door and hatch for loading) was designed and the **processing procedure** was defined:

- Instruments are placed on a tray and sorted into a service trolley.
- "HORST" takes a tray from the trolley and loads the M2000-P.
- In the laser marking station, all loaded parts are checked automatically for part integrity and position; the marking content is aligned relative to the part position on the tray and the instruments are finally marked exactly at the intended position.
- "HORST" removes the tray with the now precisely marked parts and places it back in its original slot in the service trolley.

The successful test phase as well as CE conformity for the laser followed prior to commissioning. Since April 2019, "HORST" and the M2000-P have been working hand in hand without any problems.

Conclusion

According to Annette Marquardt, managing director at add'n solutions, "HORST" has become a "very dear and reliable employee". He tirelessly loads and unloads FOBA's M2000-P for UDI laser marking of a wide range of surgical instruments. Communication with the laser marking workstation runs so smoothly that the two have been able to mark even large quantities quickly and accurately, increasing both the efficiency and productivity of the system.

The current capacity can be flexibly increased at any time by retooling, so that add'n solutions can react quickly to new orders and large volumes.

Video of loading and unloading
→ www.youtube.com/watch?v=9xdLmcA4yv8

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