

LASER WELDING OF MINIATURE BEARINGS ASSISTED BY INDUSTRIAL VISION

CHALLENGES

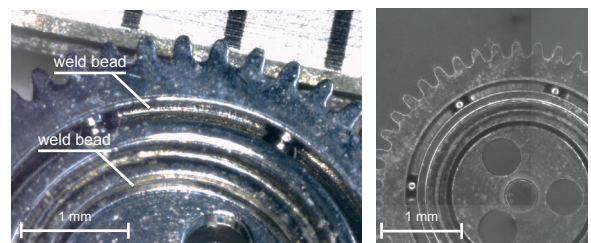
- ▶ Laser weld two inner rings of miniature ball bearings without altering the quality of the balls movement.
- ▶ The aesthetical appearance of the weld is important, no rework is possible.
- ▶ The bearing must not be deformed due to excessive power/heat.
- ▶ The ball movement/track must not be modified.
- ▶ No splatter from laser welding is acceptable.
- ▶ No cracking is tolerable due to the fact it could weaken the strength of the bearing.
- ▶ The bearing surfaces must not be damaged.
- ▶ Spot welding as well as seam welding is required.

ADVANTAGES

- ▶ Very fine weld bead
- ▶ Welding of larger items possible using mosaic of images

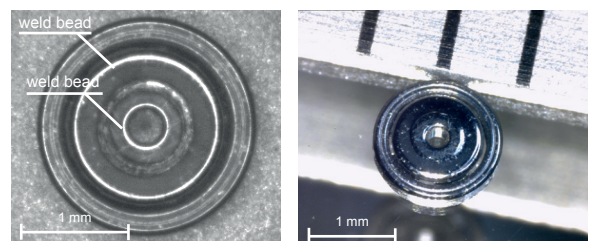
RESULTS

- ▶ Welding time from 10 to 200 ms
- ▶ Repositioning using dynamic industrial vision allows workpiece holder tolerances to be forgiving.
- ▶ Continuous, smooth, aesthetically accepted and 5x stronger weld



Bearing detail

Bearing detail



Bearing from above

Complete bearing

CPAUTOMATION PRODUCT

GENERAL SPECIFICATIONS

Welding machine	TLase
Speed	< 2 s
Positioning accuracy	+/- 1 μ m

