CNC-robot with 3D seam tracking for laser applications

for stationary and mobile use

LASER on demand

ibs Automation

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Because the laser beam tool focuses on a few tenths of a millimeter in diameter, it requires a highly precise and flexible guiding system to exploit the advantages of laser material processing for welding, cutting and surface treatment.

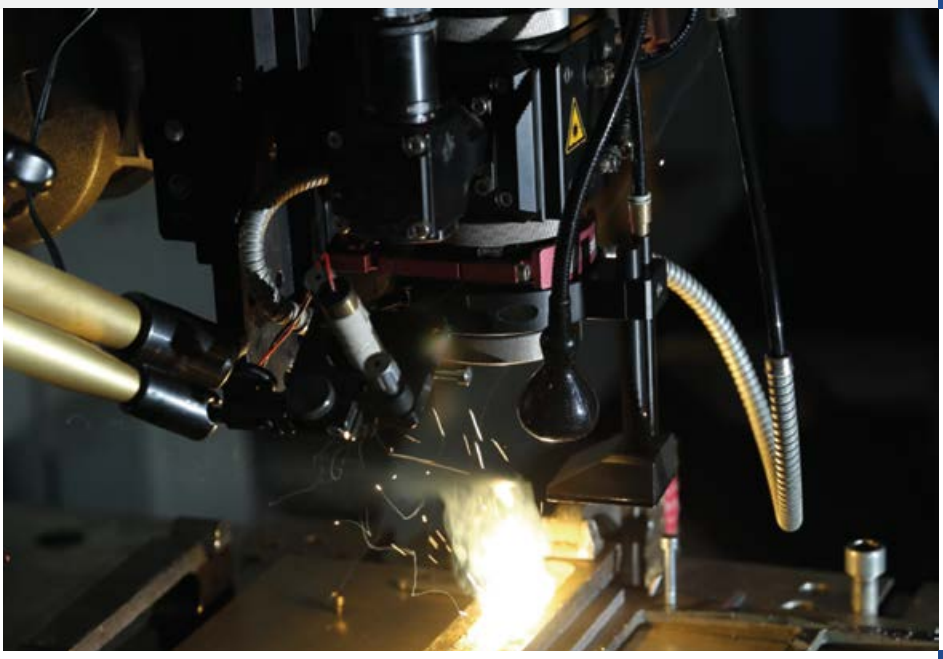
The CNC robot meets these requirements perfectly. Combining the high degrees of freedom and flexibility of a jointed-arm robot with the performance of a CNC control system, the result is a precision system that is equally suitable for small batch sizes and series production.
The integration of a 3D sensor system reduces the programming effort and enables automatic compensation of tolerances.

DEPENDING ON THE APPLICATION, TRAJECTORY MOVEMENTS WITH

- up to 6 m/min path speed
- with a path radius of 50 mm
- and a maximum path deviation of +- 70 µm from the setpoint path can be achieved.

ADVANTAGES

- High path accuracy
- Compensation of material, clamping, and process tolerances
- Significantly reduced programming effort
- No repeated teaching effort
- Adaptive process control depending on the geometry



APPLICATION EXAMPLES

- Mobile laser welding of large components, e.g. forming tools for aircraft construction
- Laser welding of sheet metal assemblies or complex structural components
- Laser deposition welding for wear protection or as a repair process, e.g. for components of large engines, power plant technology or the oil industry
- 3D laser cutting of complex sheet metal parts

SUITABLE LASER BEAM SOURCES

- Fiber-coupled high-power diode lasers
- Disk or fiber lasers
- Single-mode fiber lasers

PROCESS HEADS FOR LASER MATERIAL PROCESSING

- Welding head with dynamic beam shaping (“wobbling”/beam oscillation) for improved gap bridging and flexible adjustment of the effective beam width
- Standard welding heads (straight or angled)
- Optional wire feed for all welding heads for improved gap bridging and filling or for deposition welding
- Welding heads with powder nozzle (coaxial or lateral feed) for laser deposition welding
- Cutting heads (optionally with distance control)
- Optics for laser beam hardening (if necessary, with pyrometric temperature control)

THE COMPANIES

LASER on demand

LASER on demand supplies customer-specific laser systems including the corresponding process expertise. Drawing on more than 15 years of experience in the development and application of laser processes, the company works together with custom machine builders to realize laser integrations.

Furthermore, LASER on demand has mobile high-performance lasers for rent, and sells used lasers, including maintenance and repair.

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LASER on demand

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ibs Automation supplies CNC robots with integrated seam tracking systems as the basis for complete laser systems and adapts hardware and software to customer specific requirements.

For over 28 years, ibs Automation has been developing and supplying control solutions for innovative machine concepts and manufacturing processes.

ibs Automation supplies CNC control functions, complete control solutions and robot solutions for retrofitting of existing machines and new machine concepts on a global basis.

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