

Combining the expertise in laser applications with an extensive know-how in automation, Fives offers high-productivity systems

Welding - 3D Cutting - Cladding - Additive Manufacturing
Drilling - Hardening

BENEFITS

Laser

- Energy delivered to the workpiece is minimized
- High speed processing
- The beam can be guided into hard-to-reach areas
- Operations are performed under normal atmospheric pressure
- Unrivaled repeatability
- Excellent quality finish

Industrialization

- Automation for high-volume production
- Industrial mastery of laser process quality
- Highly reliable systems with low maintenance cost
- Laser safety expertise

TYPICAL APPLICATIONS

Automotive

- Gearbox & transmission components
- Driveline components
- Engine parts (shafts, turbochargers, etc.)
- Axle components
- Tubular chassis components
- Seat recliners

Aerospace & other industries

- Cutting and welding of aluminum alloy parts
- Cutting of tubular products
- Laser surfacing of used parts (repair of turbine blades)
- Laser cladding to build up near-net-shape parts



Global Services Laser



Gear shafts

Laser-based systems

Welding and special-purpose applications



With over 30 years of experience, Fives is a global player in the design and manufacturing of systems using high-power lasers (≥ 1 kW) for the welding of mechanical parts. This expertise is now extended to other laser-based applications such as additive manufacturing, 3D cutting, hardening and cladding.

- From standalone machines to multi-featured laser-based assembly lines
- High-production systems
- Standard modular design
- Ability to integrate all types of laser sources: CO₂ lasers and solid-state lasers (YAG, fiber, diode laser)

Fives proposes fully-automated laser assembly lines with modular and multi-feature solutions. Offering comprehensive solutions, Fives integrates its own modules into laser welding lines to achieve combined operations



Gears and dog rings assembly

Fives offers its expertise in mechanical engineering, automation and industrial process control to manufacture reliable and precise fully-digitized machines and systems dedicated to Additive Manufacturing



5-Axis Laser Center



Pressing module



US control module

AUTOMATED LASER WELDING LINES

Modular, multi-featured concept & fully automated

The welding operation is achieved using a Fives compact welding machine.

Other systems commonly integrated into the laser welding lines:

- Washing & drying module
- Pressing module
- Heating module
- In process & final welding seam control
- Ultrasonic control module
- Brushing & deburring module
- Marking module

Customized automation & interlinking solutions allowing a flexible layout:

- Buffer magazine
- Conveying system
- Gantry
- Robot
- Pick & place



Welding module



Run out control module

All Types of Laser Sources:
CO₂ laser and solid-state lasers (YAG, fibre and diode laser, disk)

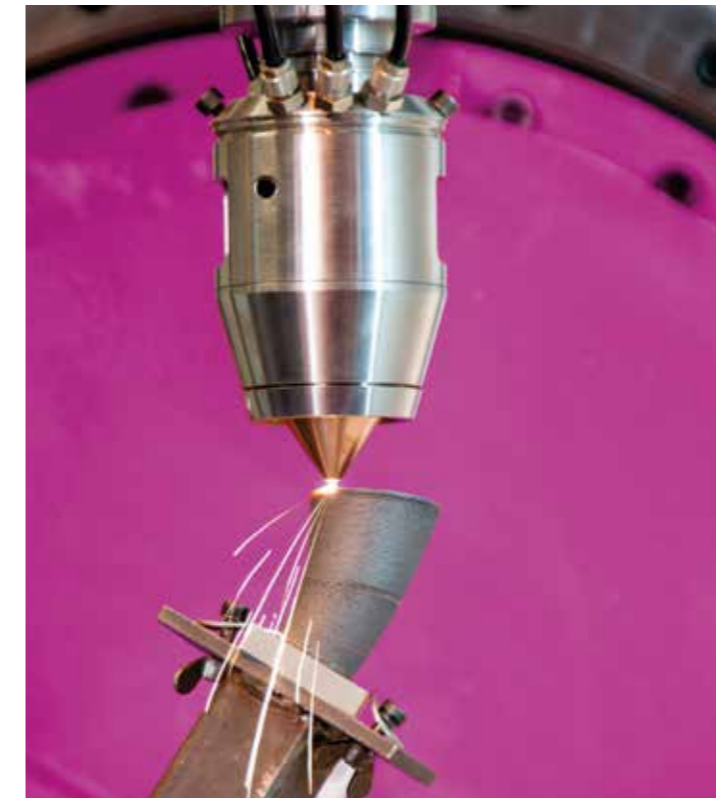
STANDALONE WELDING MACHINE

Based on standard modular design fitted with customized tooling (for round parts, shafts, ...)

- Manual loading upgradable to fully automated system
- Standalone machine or integrated into a full-featured assembly cell
- Additional functions can be implemented to provide global solution (pressing, heating, control)
- Available in dual station version:
 - 2 rotary tables,
 - 2 spindles,
 - 2 upper stops,
 - 1 shared focusing head.
- Integrated automatic loading/unloading



Dual Clutch Transmission



Laser Metal Deposition

5-AXIS LASER CENTERS

Ideally suited to laser surfacing for the accurate repair of used parts and 3D manufacturing of complex geometry products

- 5 axis available: 3 axes (X, Y, Z) + 2 axes (B, C)
- Powdered metal feeder and nozzle(s) for Laser Metal Deposition (LMD) and laser assisted additive manufacturing
- Laser surfacing for the accurate repair of used parts (turbine blades) and 3D manufacturing of complex geometry products (Near-net-shape production for aerospace, mining, energy and medical industries)
- Adaptable working volume up to 1,200 x 800 x 800 mm
- Bi-material or multi-material manufacturing

This system can be also used for 5-Axis laser welding, cutting, drilling and hardening operations

A range of expertise that meets the technological requirements of additive manufacturing constraints as well as those of reliability and reproducibility of controlled industrial production.

Global Services

A NETWORK OF EXPERTS TO SUPPORT YOU IN OPTIMIZING YOUR PRODUCTION:

- Customer support 24/7
- Spare parts
- Predictive maintenance
- Process optimization

- Group head office
- Regional offices
- Metal Cutting | Composites plants
- Global Services Centers

