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

**Metal Cutting | Composites**

**Laser-based systems**  
Welding and special-purpose applications

**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

**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)

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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.

**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

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

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 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

[Map of global services centers]