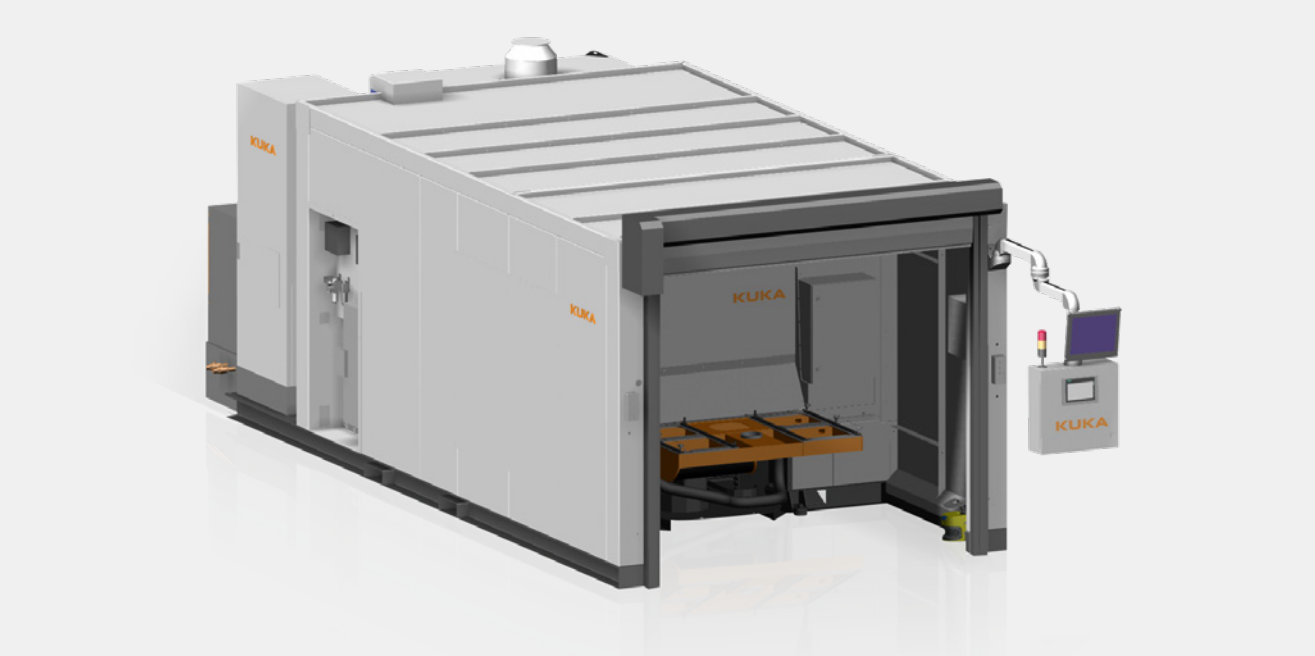
Automation Solutions_Standard CO_2 Laser Cutting Cell



Top quality in CO_2 laser cutting automation: due to increasing competition and ever greater demands on production, automation is a central topic in modern manufacturing – KUKA has addressed this issue with the development of a CO_2 laser cutting cell.

Application

This cell is optimally suited for processing non-metallic materials – such as fabrics, ABS, PP, fiberglass or carbon-fiber composite materials and SMC – as well as for leather and foam materials. Thanks to the high freedom of movement of the robot kinematic system with integrated beam guidance, almost any component geometry can be covered. The use of optional additional modules expands the functionality to include the perforation of components as a preparatory process for vacuum lamination or in conjunction with quality monitoring (APM module) for the fully documented perforation of airbag covers.

Quality

As a wear-free tool, the laser is ideally suited as an alternative to milling and waterjet cutting.
The standardized cell design enables constantly high manufacturing accuracy and system precision. The CO_2 laser sources used in combination with the integrated and robust beam guidance system and the industry-proven cutting optics guarantee consistently high process stability and quality over the operating life of the system. A lens control unit (LCU) incorporated as standard monitors the condition of the lens and thus allows for an early initiation of maintenance measures. Downtimes and poor processing results are thus minimized.

Standard equipment

The robotic cutting system consists of a KR 6 R2300 laser CO_2 robot including a controller, a beam source with cutting optics and LCU, a positioner and a suitable protective enclosure.
The size of the positioner table and thus also the protective enclosure is scalable – as too is the laser power. The turntable has an integrated standard energy/media supply system, which includes the electrical and pneumatic equipment (air and vacuum) as well as an extraction system. A control cabinet, an operator panel with Siemens Touch and a camera for process monitoring are additionally included in the overall package.

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Equipment options

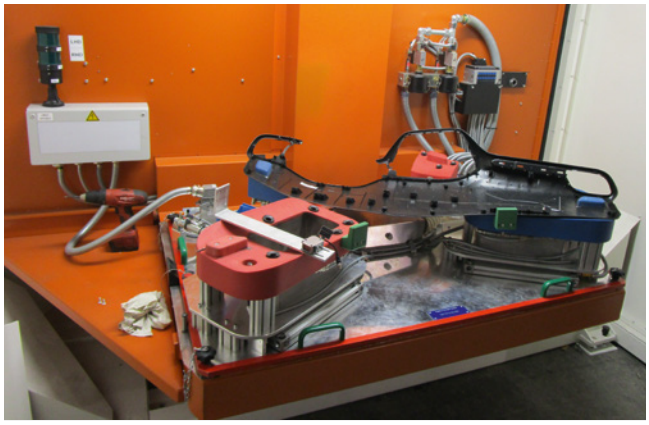
Turntable:
- Different table and fixture carrier plates are available:
  - D = 2,650 / 1,400 × 900 mm
  - D = 3,000 / 1,800 × 900 mm
  - D = 3,200 / 2,000 × 1,000 mm
- 2 additional vacuum circuits on each side of the table

Beam source:
- CO_2 laser source including cooling water recirculating chiller and control with a power output of 250 W, 350 W, 450 W or 650 W

Quality assurance:
- Power measuring device
- APM module

Protective enclosure:
- Roll door design (window)
- 3-color signal lights
- 2-man operation
- Point-of-operation guarding by means of light barrier or Sick scanner

Control cabinet:
- Cabinet lighting and double socket
- Additional switch for further PROFINET devices (8-way)
- Remote control



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