

WHAT ARE THE ADVANTAGES OF CO2 LASER CUTTING MACHINE?

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The [CO2 laser cutting machine](#) uses a focused high-power-density laser beam to irradiate the workpiece, so that the irradiated material is rapidly melted, vaporized, ablated or reached the ignition point, and at the same time, the molten material is blown away by the high-speed airflow coaxial with the beam, so as to achieve cutting. The workpiece is cut open. CO2 laser cutting is one of the thermal cutting methods.

Compared with other thermal cutting methods, CO2 laser cutting is generally characterized by fast cutting speed and high quality. Specifically summarized as the following aspects:

1. High cutting efficiency

Due to the transmission characteristics of the laser, CO2 laser cutting machines are generally equipped with multiple CNC workbenches, and the entire cutting process can be fully realized by CNC. During operation, only need to change the CNC program, it can be applied to the cutting of parts of different shapes, which can not only carry out two-dimensional cutting, but also realize three-dimensional cutting;

2. Save material

Using computer programming, products with different shapes can be cut into the whole board material to maximize the utilization rate of materials.

3. Fast cutting speed

Use a CO2 laser with a power of 2000W to cut a 1mm thick low-carbon steel plate, and the speed can reach 30m/min. The material does not need to be clamped and fixed during CO2 laser cutting, which not only saves tooling fixtures, but also saves auxiliary time for loading and unloading;

4. Good cutting quality

- (1) Due to the small spot, high energy density and fast cutting speed of CO2 laser, CO2 laser cutting can obtain better cutting quality;
- (2) The incision of CO2 laser cutting is thin and narrow, the two sides of the slit are parallel and perpendicular to the surface, and the dimensional accuracy of the cutting parts can reach $\pm 0.03\text{mm}$;
- (3) The laser cutting head will not touch the surface of the material, so as not to scratch the workpiece.
- (4) After the material is cut by CO2 laser, the width of the heat-affected zone is very small, and the properties of the material near the kerf are hardly affected, and the deformation of the

workpiece is small, the cutting precision is high, the geometry of the kerf is good, and the cross-sectional shape of the kerf A more regular rectangle.

5. The CO₂ laser cutting process has low noise, little vibration and no pollution.

6. Non-contact cutting

Non-contact cutting, the cutting edge is less affected by heat, basically no thermal deformation of the workpiece, and completely avoids the collapse of the edge formed when the material is punched and sheared, and the slit generally does not require secondary processing.