DIFFERENCE BETWEEN FIBER LASER CUTTING MACHINE AND CO2 LASER CUTTING MACHINE

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Currently, there are many laser processing equipment on the market, but there are different types of laser processing. The most commonly used ones are fiber optic laser cutting machines and carbon dioxide laser cutting machines. However, in recent years, the development of fiber optic laser cutting machines is gradually replacing carbon dioxide laser cutting machines. What are the differences between fiber optic laser cutting machines and carbon dioxide laser cutting machines? Today, let's take a look and discuss:

Fiber laser cutting machine

1 The generators of lasers are different: carbon dioxide lasers are gas molecular lasers, with carbon dioxide as a medium that transmits light beams through mirrors. The optical fiber laser cutting machine transmits and works through diodes and fiber optic cables. Multiple diodes pump laser beams, which are then transmitted to the laser cutting head through flexible fiber optic cables. In carbon dioxide laser technology, the mirror must act at a certain distance, and laser cutting machines are not subject to such restrictions.

CO2 Laser Cutting Machine

2 Conversion rate: Fiber laser is currently an advanced laser technology, using a solid-state laser generator that is more efficient than traditional carbon dioxide lasers. The photoelectric conversion rate of carbon dioxide laser cutting machines is only 8% - 10%, while the photoelectric conversion rate of fiber laser cutting machines can be as high as 30%, which means that the overall energy consumption of fiber laser cutting machines is 3-5 times lower than that of carbon dioxide laser cutting machines, improving energy efficiency by at least 86%, This saves electricity.

3 Cutting ability: Optical fiber lasers have the characteristics of short wavelengths, which improves the absorption of cutting materials to light beams, making them more suitable for conducting in thin and soft optical fibers. Compared to carbon dioxide lasers conducted by specular reflection, they are more flexible and easier to maintain. A 3KW fiber laser cutting machine is equivalent to a 4-5KW carbon dioxide laser cutting machine in cutting capacity and speed, greatly reducing operating costs.

4 Maintenance cost: The carbon dioxide laser structure is relatively complex, and the maintenance cost in the later stage is relatively high. The carbon dioxide laser system needs to be regularly cleaned and maintained, and the mirror also needs to be regularly cleaned and calibrated.

Moreover, due to the purity of the carbon dioxide gas, the resonator also needs to be regularly maintained. In addition, the turbines that transport laser gas also require regular maintenance and refurbishment, which makes the later maintenance costs very high and complex. The fiber laser cutting machine is more convenient and environmentally friendly for later maintenance.

With the development of optical fiber laser cutting machines and their various advantages, carbon dioxide laser cutting machines are gradually replacing the market. Currently, carbon dioxide mainly cuts non-metallic materials, such as cloth, leather, acrylic, plastic, and so on. With the development of high power fiber lasers, they are gradually occupying the processing market of thick plates.