ADVANTAGES OF FIBER LASERS OVER CO2 LASERS

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Category: Laser Cutter News

Fiber laser cutting technology is a cutting process that has only begun to develop in recent years. Although many companies are just beginning to understand the technology, they are also beginning to realize the difference between fiber laser cutting and ordinary CO2 laser cutting. With the continuous improvement of cutting technology, fiber laser cutting has become one of the most advanced technologies in this industry.

Thermal energy cutting methods mainly include flame, plasma and laser cutting technologies, among which laser cutting can achieve excellent cutting quality, especially for fine feature and hole cutting with diameter and thickness ratio less than 1:1. Therefore, laser cutting technology has become the most suitable method in this industry that requires strict and fine cutting. In the field of laser cutting, fiber laser cutting has gained a lot of attention because it provides the cutting speed and quality that CO2 laser cutting can achieve, and the maintenance and operation costs are reduced.

An important and meaningful advantage of fiber cutting technology should be its energy efficiency. With the complete solid-state digital module and single design of fiber laser, the fiber laser cutting system has higher electro-optic conversion efficiency than CO2 laser cutting.

Fiber lasers have a short wavelength, which increases the absorption of the cutting material to the beam, and can cut materials such as brass and copper as well as non-conductive materials. The concentrated beam produces a smaller focal spot and a deeper depth of focus so that the fiber laser can cut thinner materials quickly as well as cut medium thickness materials efficiently. When cutting materials up to 6mm thick, the cutting speed of a 1.5kW fiber laser cutting system is equivalent to that of a 3kW CO2 laser cutting system. Because the operating costs of fiber cleaving are lower than the cost of conventional CO2 cleaving systems, this translates into increased output and lower business costs.

There is also the issue of maintenance. CO2 gas laser systems require regular maintenance; mirrors need maintenance and calibration, and resonators need regular maintenance. Fiber laser cutting solutions, on the other hand, require hardly any maintenance. The CO2 laser cutting system needs CO2 as the laser gas. Due to the purity of CO2 gas, the resonant cavity will be polluted and needs to be cleaned regularly. , compared to CO2 cutting systems, fiber cutting solutions are compact and have a low ecological impact, so less cooling is required and energy consumption is significantly lower. The combination of less maintenance and higher energy efficiency makes fiber laser cutting the most environmentally friendly compared to CO2 laser cutting systems.