PRINCIPLE AND APPLICATION RANGE OF LASER CUTTING MACHINE

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Laser cutting: how it works

Understand the working principle of laser cutting machines and the materials used for laser cutting. Laser cutting is a commonly used method for processing various materials. When using laser cutting processes, the high accuracy, speed, and versatility of laser technology are significant advantages. This guide describes the working principles of laser cutting and the materials suitable for processing. Buy laser equipment and find Hanting Laser!

Laser cutting: technical aspects

Laser cutting is a thermal separation process. The laser beam strikes the surface of the material and heats it strongly, causing it to melt or completely evaporate. Once the laser beam completely penetrates the material at a point, the actual laser cutting process begins. The laser system follows the selected geometry and separates the material during the process. Depending on the application, the use of process gases can positively affect the final result.

Advantages of laser cutting

The following are four main reasons for using laser cutting for material processing:

Suitable for multiple materials No other technology can cut so many different types of organic and non organic materials.

No post processing is required because laser cutting is a separation process, and in many cases no post processing is required. During laser cutting, the edges of the textile are sealed and therefore do not become loose. This can save on post processing procedures such as mechanical sealing or polishing, depending on the type of material being processed.

High accuracy produces cuts that are almost no larger than the laser beam itself. This makes it possible to cut very fine geometric shapes of any shape. In addition, the integrated camera system can read positioning marks and automatically compensate for the laser cutting path - even if the original template is misaligned, rotated, or twisted.

No tool wear

Due to the fact that laser cutting is a non-contact process, unlike other technologies, the light beam is not subject to wear, one example of which is the blunt tool head. This helps reduce processing costs.

Comparison of cutting procedures: Laser cutting, plasma cutting, and mechanical cutting Plasma cutting is a hot melt cutting process that is often used to cut steel, stainless steel, and aluminum. Compared to laser cutting, plasma cutting has lower cutting quality, higher energy consumption, and more dust generation and noise emissions. However, plasma cutting is the preferred technology for cutting any electrically conductive material. This is due to its flexibility in the process.

However, compared to mechanical chip removal cutting processes, laser cutting technology generally has advantages over materials. Contactless processing, reduced setup costs, reduced pollution, and processing flexibility are only a small part of this.

The ideal cutting method varies depending on the material and application, as each processing method has advantages.