

# WHAT IS THE DIFFERENCE BETWEEN A LASER CUTTING MACHINE AND A PLASMA CUTTING MACHINE?

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The gap between [laser cutting machine](#) and [plasma cutting](#) is mainly in cutting thickness and operating cost.

The surface of plasma cutting is rough, and it is advantageous to cut thick plates, and the price is low. The cutting surface of laser cutting is smooth, but the plasma is rough, and you need to send someone to repair the burr. The laser cutting surface is smooth, the compensation is small, the precision is relatively high, and it is a little more expensive. In terms of cost, plasma is about 1/3 cheaper than laser. The disadvantage of plasma is that the kerf is wide, about 3MM. The most important part of the plasma is the power supply, which is equivalent to the laser of the laser cutting machine. The power consumption of the plasma is quite high, and the commonly used spare parts, the electrode protection nozzle is also quite expensive, especially the electrode drilling is very expensive.

Plasma cutting machine is a new type of thermal cutting equipment. Its working principle is to use compressed air as the working gas and high-temperature and high-speed plasma arc as the heat source to partially melt the metal to be cut, and at the same time use high-speed airflow to melt the melted metal. The metal blows away, forming a narrow kerf. Plasma cutting machine can be used for cutting various metal materials such as stainless steel, aluminum, copper, cast iron, carbon steel, etc. It not only has fast cutting speed, narrow kerf, flat kerf, small heat-affected zone, low workpiece deformation, simple operation, but also has remarkable energy saving effect. Plasma cutting machine is suitable for the manufacture, installation and maintenance of various machinery and metal structures, for cutting, opening, digging and mending, beveling and other cutting processing of medium and thin plates; plasma cutting is to use the heat of high-temperature plasma arc to cut the workpiece A processing method in which the metal at the point is partially melted (and evaporated), and the momentum of the high-speed plasma is used to exclude the molten metal to form a cut. Plasma cutting machines are widely used in automobiles, locomotives, pressure vessels, chemical machinery, nuclear industry, general machinery, construction machinery, steel structures and other industries!

Optical cutting is to use a high-power-density laser beam to scan the surface of the material, heat the material to thousands to tens of thousands of degrees Celsius in a very short time, melt or vaporize the material, and then use high-pressure gas to melt or vaporize the material from the cutting seam. Blow away to achieve the purpose of cutting materials. Laser cutting, because the traditional mechanical knife is replaced by an invisible beam, the mechanical part of the laser cutter head has no contact with the work, and will not scratch the work surface during work; the laser cutting speed is fast, the incision is smooth and flat, generally no need Subsequent processing; cutting heat-affected zone is small, plate deformation is small, and the slit is narrow (0.1mm~0.3mm);

the incision has no mechanical stress, no shearing burrs; high processing accuracy, good repeatability, and no damage to the material surface; CNC programming, It can process any plan, and can cut the entire board with a large format without opening a mold, which is economical and time-saving.

In terms of cutting accuracy, the plasma can reach within 1mm, and the laser can reach within 0.2mm; in terms of cost, plasma cutting machines are much cheaper than laser cutting machines, and plasma cutting is rougher than laser cutting in terms of processing accuracy. Processing, one is fine processing!

The detailed distinction between laser cutting machine and plasma cutting machine:

1. Compared with plasma cutting, laser cutting is much more precise, the heat-affected zone is much smaller, and the kerf is much smaller;
2. If you want precision cutting, small kerf, small heat-affected zone, and small plate deformation, it is recommended to choose a laser cutting machine;
3. Plasma cutting uses compressed air as the working gas and high-temperature and high-speed plasma arc as the heat source to partially melt the metal to be cut, and at the same time blow away the melted metal with high-speed airflow to form a cut;
4. The heat-affected zone of plasma cutting is relatively large, and the slit is relatively wide. It is not suitable for cutting thin plates, because the plates will be deformed by heat;
5. Laser cutting machines are more expensive than plasma cutting machines.