WHAT ARE THE PROBLEMS THAT LASER CUTTING MACHINES OFTEN ENCOUNTER IN THE ACTUAL CUTTING PROCESS?

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During the cutting process of the laser cutting machine, the beam is focused into a small focal point by the lens of the cutting head, so that the high power density can be achieved at the focal point, and the cutting head is fixed on the z-axis. At this time, the heat input by the beam far exceeds the part of the heat reflected, conducted or diffused by the material, and the material is quickly heated to the melting and vaporization temperature. At the same time, a high-speed airflow will melt from the coaxial or non-coaxial side And the vaporized material is blown out to form holes for material cutting.

In recent years, laser cutting technology is developing at an unprecedented speed, with an annual growth rate of 15% to 20%. Since 1985, my country has grown at an annual rate of nearly 25%. Compared with traditional oxyacetylene, plasma and other cutting processes, laser cutting speed is fast, the slit is narrow, the heat-affected zone is small, the slit edge is vertical, and the cutting edge is smooth. At the same time, there are many kinds of materials that can be cut by laser, including carbon steel , stainless steel, alloy steel, wood, plastic, rubber, cloth, quartz, ceramics, glass, composite materials, etc.

So, what are the problems that laser cutting machines often encounter in the actual cutting process?

Analysis of solutions to problems often encountered by laser cutting machines in the actual cutting process:

1. The laser cutting machine does not respond after starting up
This kind of problem is usually caused by the output and input of the power supply, and you can check the power supply to solve it; the power failure is usually caused by the burnout of the fuse or the problem of the power switch, which requires better high-quality power fuse and control switch.

2. The output light of the machine is very weak after running for a period of time
When encountering this situation, first check whether the focal length has changed. If there is no change, check whether the focusing lens on the machine is polluted; whether the optical system deviates accidentally; the most important thing is to check whether the water circulation is smooth and The smoothness can dissipate the heat of the laser cutting machine as much as possible, improve the energy conversion of the laser equipment, and finally achieve the focus of the light source.

3. Abnormal sparks often appear when cutting thin carbon steel

We know that when laser cutting thin plate carbon steel, normally the spark beam is long, flat and less split, but abnormal sparks will affect the smoothness and processing quality of the workpiece cutting surface. At this time, when other parameters are normal, the loss of the nozzle of the laser head should be considered. If the problem exists, the nozzle should be replaced in time. In the case of no replacement of new nozzles, the pressure of the cutting working gas should be increased. If the thread at the connection between the nozzle and the laser cutting head is loose, stop the laser cutting immediately, check the connection status of the laser cutting head, and reinstall the thread.

4. The deformation of the processed round hole or straight line

When this kind of failure occurs, we should first rule out whether the laser cutting control software is moving normally. For example, draw a straight line and observe whether the laser head moves in a straight line during processing. This can basically rule out the possibility of software problems. At the same time, this step can also find abnormal problems of looseness in the mechanical structure. After excluding software and mechanical possibilities, we should think about whether the laser energy is too high, which causes the non-processing area to be affected. Observe whether the cutting edge of the workpiece is melted, and the normal processing edge should be smooth and flat. If this happens, we should properly reduce the laser power or frequency parameters to solve the problem. There is another kind that is relatively uncommon. Defects such as deformation of the focusing lens in the laser head can also cause such problems. It can be judged by observing whether the beam emitted by the laser head is concentrated or not.

5. The workpiece often has burrs

The workpiece often has burrs. We must give priority to the factors that cause burrs during the cutting operation. We cannot blindly increase the cutting speed, because blindly increasing the speed will easily cause the plate to not be cut through during the actual cutting process. This situation is particularly prominent when processing aluminum-zinc coated sheets. At this time, other factors of the machine tool should be considered comprehensively, such as whether the nozzle needs to be replaced, the guide rail movement is unstable, etc.

6. The laser is not completely cut

Reasons for such problems: Check whether the selection of the laser nozzle matches the thickness of the processed plate, replace the nozzle or process the plate; check whether the laser cutting line speed is too fast, and need to operate and control to reduce the line speed according to the actual plate condition.