

FIBER LASER CUTTING SPEED IPG LASER SOURCE

INTRODUCTION

The power selection of fiber laser cutting machines depends on the type and thickness of the materials being cut. The thinner the material, the faster the cutting speed. This infographic summarizes the key parameters and considerations for selecting the appropriate laser-cutting machine.



CORE POINTS

Power, Speed, and Thickness Parameters 1

General Rule

Higher power results in higher cost, but medium-power machines (1000W-2000W) are sufficient for most applications.

Carbon Steel Cutting

1000W: Cuts 3mm thick at 3.3 m/min.
1500W: Cuts 3mm thick at 3.8 m/min.
2000W: Cuts 3mm thick at 4.2 m/min.



3.3 m/min & 3.8 m/min & 4.2 m/min

Stainless Steel Cutting

1000W: Cuts 4mm thick at 1.3 m/min.
1500W: Cuts 4mm thick at 1.9 m/min.
2000W: Cuts 4mm thick at 3.2 m/min.

1.3 m/min & 1.9 m/min & 3.2 m/min



Aluminum Cutting

1000W: Cuts 2mm thick at 3.5 m/min.
1500W: Cuts 2mm thick at 6.0 m/min.
2000W: Cuts 2mm thick at 10 m/min.



3.5 m/min & 6.0 m/min & 10 m/min

Factors Affecting Cutting Speed 2

Material Type and Thickness: Different materials and thicknesses affect cutting speed and quality.

Thermal Conductivity: High thermal conductivity materials (e.g., copper, aluminum) dissipate heat quickly, making them harder to cut.

Reflectivity: High thermal conductivity materials (e.g., copper, aluminum) dissipate heat quickly, making them harder to cut.

Melting Point: Higher melting point materials require more energy, slowing down the cutting process.

Auxiliary Gases 3

Nitrogen (N2): Produces clean, flat edges without discoloration or oxidation. Suitable for cutting metals.

Oxygen (O2): Suitable for cutting low carbon steel due to its low pressure and high-speed characteristics.

Air: Suitable for cutting thin metal plates like aluminum.



Key Components of Laser Cutting Machines 4

Fiber Laser Source

High efficiency, long service life, and low maintenance cost. Popular brands include IPG and Raycus.



Other Components



Laser cutting head



Servo motor



Water chiller



Air cutting system



Control system



Stabilizer

Application Scenarios 5

Low-Power Machines (<1000W)

Suitable for cutting thin plates.



Medium to High-Power Machines

Suitable for cutting both thick and thin plates, ideal for mass production.



CONCLUSION

Selecting the right fiber laser cutting machine involves considering the power, material type, thickness, and auxiliary gases. By understanding these parameters, you can choose the most suitable machine for your needs.