Laser cutting is fast, precise, and best suited for thinner materials.

In the world of industrial manufacturing metal cutting CNC machines, laser cutters, plasma cutting, and water jet cutters – it can be hard to keep them all straight.

To help you understand the difference between water jet vs laser cutting machines, we’ve put together this quick article. Take a look, and get the details on the differences between these two popular cutting methods!

**Water Jet Cutting – The Basics**

As the name suggests, water jet cutting utilizes high-pressure water to cut a variety of materials. While water without any additives may be used, other additives are often used in concert with water.

These include abrasives like aluminum oxide and garnets. The additional abrasive power of these materials can help water jet cutters get through extremely thick materials.

The process of water jet cutting is similar to the natural process of erosion, but at a much higher speed. A high-pressure pump is used to pump water through specialized hoses, which blast a forceful water jet onto the material to be cut. A typical water jet usually outputs between 4-7 kilowatts of energy, at a PSI between 30,000-90,000.

This results in an incredibly powerful cutting tool. Water jet cutting can cut virtually any material – even combination/hybrid materials. In addition, water jet cutting can handle extremely thick cuts, even on tough surfaces like stainless steel.

When used to cut hard surfaces like metals, water jets can usually handle thicknesses up to 2-3”. However, softer materials can often be cut at thicknesses in excess of 12-24”. From rock and ceramics, to wood, metal, and even fibers and fabrics, water jets can be used to cut almost anything.

There are a few drawbacks to water jet cutting, however. The process produces a lot of force, so it’s not appropriate for very thin objects. And though thermal stress is not a problem, surfaces must often be refinished after a cut, due to the “sandblasted” appearance that the abrasives used can cause.

It’s also not quite as precise as laser cutting. The typical minimum cut size slit is .02”, compared to the 0.006” tolerances of many laser cutters. Water jets are also somewhat slow compared to laser cutters, though this depends on the thickness and hardness of the material.

**Laser Cutting – The Basics**

Laser cutters are either based on CO2 lasers, or use specialized optical fibers. Both types of laser cutter use powerful, hot lasers to cut through a variety of different materials.

The high heat of the laser is what cuts through materials. Typically, lasers output somewhere between 1500-2600 watts, which is enough to cut through materials from between 0.12” and 0.4” in thickness.

Fiber lasers can handle any kind of metal. However, CO2 lasers are not effective for cutting through highly reflective metals like aluminum, brass and copper.

All laser cutting machines can handle a wide variety of materials, like water jet cutting machines. Ceramics, wood,
acrylic and plastic can all be cut with lasers.

One of the biggest benefits of laser cutting is its extreme precision. Most laser-cut materials do not require further finishing to remove burred or damaged edges. In addition, laser cutters can be used for detail work like welding, drilling, engraving, and detailing – unlike water jet cutters.

Lasers are also very fast for cutting through thin materials. A 0.04 steel plate can be cut at a speed of 319 inches per minute. However, thicker materials take much longer, seriously increasing processing times.

Due to its versatility, laser cutting is usually used for cutting thin materials, and for projects which require the use of a diversity of material types.

Understand The Difference Between Laser Cutting And Water Jet Cutting With This Guide!

Laser cutting is fast, precise, and best suited for thinner materials. In contrast, water jet cutting is a bit more slow and imprecise, but can be used to efficiently cut through even the hardest, most thick materials.

Depending on your particular manufacturing needs, either service could be right for you. So think about what you’ve learned in this article, and choose the process that is the best for your project!