

Worker Safety

# Your Guide to Plasma Cutting Safety

Brought To You by MCR Safety | Mar 03, 2021

During the 1960s, a new innovative form of welding appeared on the scene: plasma cutting systems. Thermal Dynamics ***sold their first system*** to Ryerson Steel for processing stainless steel. Its advantages were immediately recognized: as a cleaner and a more accurate cut. Once just an industrial tool, plasma cutters are now extremely affordable and are used by professional metal workers and hobbyists alike.

**What is plasma cutting?** Well, not many of us have an extensive physics background, so the process may initially seem complicated. However, MCR Safety will break down ***how it works*** for you below. The easiest way to think of it is by visualizing a superheated, electrically ionized gas that melts through metal.

This article will go over how plasma cutting works, provide an overview of the safety precautions that should be taken when using a plasma cutter, and suggest the best ways to protect your eyes while working with one.

## Plasma's Origin



A traditional gas atom contains an equal number of positive ions and positive electrons. ***Plasma is created*** when heat causes many atoms to lose their electrons. The plasma stream from a plasma cutter is like a torch, where the plasma flows through a small opening at the end.

## How Does Plasma Cutting Work?

Plasma cutting is the ***process*** that cuts through electrically conductive materials by using a strong jet of hot plasma. In other words, it uses the basic principles of physics to cut through metal such as steel, stainless steel, aluminum, brass, and copper.

The process requires compressed air and electricity, which, when combined, will create plasma gas.

## Use in a Variety of Industries



You'll find the plasma cutting process used across numerous industries, from creating custom art and signs to cutting aluminum to manufacturing finished parts. ***Automotive repair*** regularly employs plasma cutting, as custom parts are needed to fit different types of vehicles. However, multiple industries utilize this form of welding.

Here are some other industries utilizing this affordable cutting process:

- **Industrial Construction** – bridge construction
- **Metal Centers** – salvage and scrapping metal
- **Manufacturing** – factory maintenance and shipbuilding

Across each industry, both manual and mechanized plasma cutters are used. The equipment utilized all depends on what is needing to be cut and the mobility required. For example, construction work is performed remotely, not in a fixed building, which means you can't take mechanized cutters entirely with you out onto the job site.



Manual Plasma Cutting vs. Mechanized Plasma Cutting

## Advantages

### 1. Saving Time and Money

Since hiring a contractor costs money based on the amount of time they spend on the project, a plasma cutter can cut the job's time in half, thus saving money in the long run.

### 2. Precision

A plasma cutter is controlled by a computer, which means robot-like precision is achieved every time and with no human error.

### 3. Versatility

Plasma cutters can cut through a wide range of metals with various thicknesses. And it cuts every time with consistent accuracy and speed.

### 4. Safety Features

Plasma cutters can be used underwater, which means that workers are exposed to lower heat levels and lower noise levels when using this technique.

### 5. Fast Delivery

With the time a fabricator is saving by using a plasma cutter, the materials are delivered faster to the construction site and with less chance of delay.

Keep in mind that there is no Garden of Eden, and there are always disadvantages to products and processes. High power consumption is one disadvantage of this cutting process.

Continue reading this ***blog*** in its entirety and learn how to protect yourself against the hazards of plasma cutting.

***Previously Featured on MCR Safety's blog.***