



CHECK THE FACTS

New Technology Dispels Outdated Notions About Plasma Cutting

By Reese Madden

Plasma systems have been used to cut metal for over 50 years and provide numerous advantages over other cutting methods. So why isn't everyone cutting with plasma? Some people believe that plasma systems are too expensive or too hard to learn. This article exposes the truth behind those myths and four other misconceptions to show why today's plasma systems are essential productivity-enhancing tools.

Myth #1: Plasma Is Expensive

Plasma systems are higher priced than some other cutting tools. But there is a difference between price and cost. Plasma systems' fast cutting speeds and superior cut quality deliver productivity gains, saving operators time and money. Faster cutting speeds – without any preheating of the work piece – enable operators to complete jobs quickly. Better cut quality, with less dross and better edge quality, means fewer labor-intensive finishing operations are required. And, unlike oxyfuel cutting, because most handheld plasma systems run off of compressed air, costly cylinder rentals and delivery charges are eliminated.

Cost is one reason why Northern A1 Services, a safety and environmental clean up company out of Michigan, switched from oxyfuel to plasma. For years, the company used oxyfuel to cut titanium for a variety of aerospace projects. Today, it uses a Hypertherm plasma system to cut titanium up to an inch thick.

"There's no question our company is saving money by using plasma," said Brian Balon, a project manager for Northern A1. "We used to pay a lot for gas. With plasma, we're saving that money and at the same time, we've created a safer working environment since we no longer have to worry about gas leaks."

Of course, these gains are only realized when using a high-quality plasma system. Today, many low-price, low-quality plasma models are available. The low price may make these models look like a good deal – especially in a down economy – but ultimately the poor design, poor workmanship and outdated technology will disappoint operators, who may not see the productivity gains and cost savings that they expected.

Myth #2: Plasma Is Only For Use On Thin Materials

Twenty years ago, this statement may have been true, as some early handheld plasma systems did not meet operators' expectations for performance on thicker material. And, plasma does offer some distinct advantages on thin materials – like a smaller heat affected zone and less warping – over oxyfuel cutting. But as plasma technology has advanced, the belief that plasma is only for use on thin



Plasma does a good job of cutting thick plate as shown in this photo



materials has become outdated. Indeed, borrowing from a well-known automobile advertising campaign, today's best plasma systems "are not your father's plasma cutters." Advances in torch, consumable and power supply design have allowed plasma engineers to deliver systems that provide more cutting power and thicker cutting capacity – as much as 1.75" (44 mm) or more – even as system sizes have shrunk and duty cycles climbed.

The outdated belief that plasma is only for use on thin materials causes too many operators to reach for their oxyfuel torch for cutting thicknesses on which a plasma cutter would deliver faster cutting speeds and better cut quality. Not using plasma through the tool's full specified cutting range limits the productivity gains and cost savings that could otherwise be achieved.

Northern A1 finds plasma is the best choice 80 percent of the time. "We still use oxyfuel when cutting our thickest stuff, but for the vast majority of jobs, plasma is faster and gives us better cuts," Balon adds.

Myth #3: Plasma Is Only For Use On Stainless Steel

Many plasma owners purchase their first plasma system for cutting stainless steel, aluminum or other non-ferrous metals. Some people continue to believe that plasma can *only* be used on these materials. In truth, plasma is effective at cutting *any* electrically conductive metal and is actually one of the world's most popular methods for cutting mild steel.

Of course, plasma's ability to cut stainless steel and aluminum is one of its primary advantages over oxyfuel cutting, which is not effective on these materials. Plasma is also more effective at cutting painted, dirty or even rusted steel, which makes it an indispensable tool for heavy equipment repair, automotive restoration, farm equipment maintenance, and many other tasks.



Plasma cuts mild steel, stainless steel, aluminum and any other electrically conductive metal.

Myth #4: Plasma Is Only For Cutting

Plasma systems are highly versatile cutting tools. Plasma systems cut, pierce and bevel electrically conductive metals of all types, shapes and sizes. With a simple change of the torch and/or consumables, some plasma systems can switch between hand and automated cutting. Plasma systems can also be used on X-Y cutting tables; on robotic arms; with a track burner for effective long, straight cuts; or with pipe cutting and beveling tools.

But, beyond cutting, some plasma systems – including small, portable systems like Hypertherm's new Powermax45 – are also very effective gouging tools. In fact, for some customers, their plasma system is a gouging tool first and a cutting tool second. And for good reason, as plasma systems are perceived to offer benefits – including less smoke and less noise – not matched by other gouging methods. Some common plasma applications include back-gouging for weld preparation and gouging out worn or cracked parts for repair or replacement.

By using their plasma systems for gouging as well as cutting, operators derive greater value from their system and more rapidly realize a positive return on their investment.

Reese Madden is product manager for Hypertherm's North American region.