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A TREND Publication October 2007

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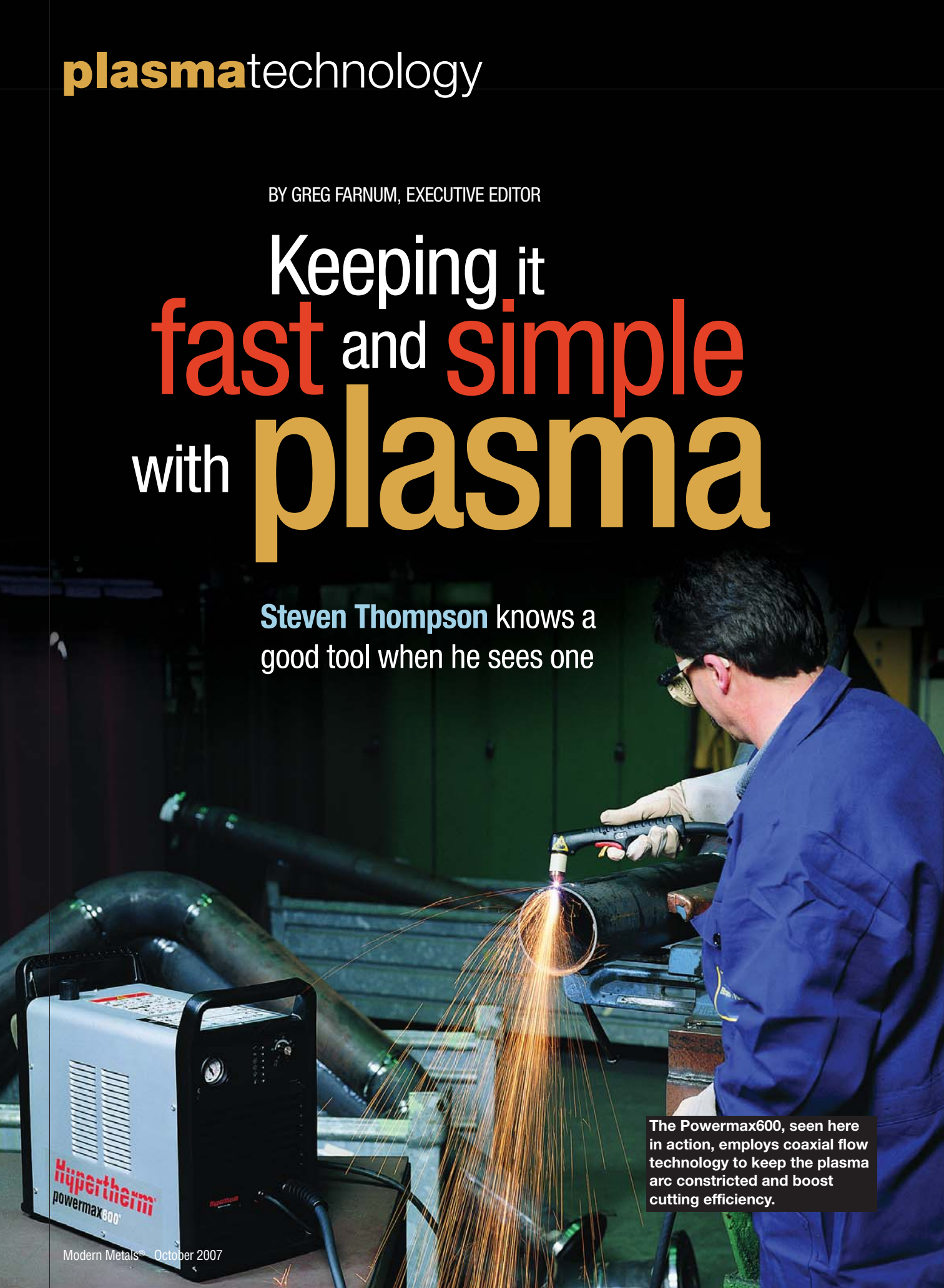
**Hypertherm's plasma cutters keep it fast and simple**

**plasma**technology

BY GREG FARNUM, EXECUTIVE EDITOR

# Keeping it fast and simple with plasma

Steven Thompson knows a  
good tool when he sees one



The Powermax600, seen here in action, employs coaxial flow technology to keep the plasma arc constricted and boost cutting efficiency.

In terms of units sold, handheld plasma cutters reach some pretty impressive numbers. Hypertherm, Hanover, N.H., for instance, recently announced the sale of its 50,000th Powermax600, a 40-amp handheld plasma cutting system that it introduced in 1999.

The 50,000th unit is now in the hands of Steven Thompson, owner of Central Oregon Industries, Prineville, Ore., structural steel fabricators and erectors serving the Pacific Northwest as well as Idaho and, on occasion, California and Nevada, as well. Thompson's company works primarily on the construction of commercial buildings but also fabricates a variety of ornamental and architectural pieces such as hand rails and sun shades.

Until recently, Thompson and his team of 16 relied on saws, cutoff wheels on grinders and, primarily, on oxy-fuel torches for cutting. Recent business growth, however, was posing a problem because the company's traditional cutting methods couldn't keep pace with the expanded workload.

"I had never used plasma—I'm old school," says Thompson. "But I knew we needed to find another solution if we were to have any hope of keeping up with the increased demand for our products, and a couple of employees suggested plasma. As a small business owner, I don't have much room for error. That's why I made sure to research the subject, and I determined that plasma was a much better way to go."

Thompson says he was looking for a system that was reliable and would cut with consistent results. He ended up buying the Powermax600 system from Norco, a gases and welding distributorship in Boise, Idaho. Coincidentally, Norco had also sold the first Powermax600 in North America years before.

#### The case for plasma

"Plasma offers several benefits over

Before its plasma cutting system, Central Oregon Industries relied primarily on oxy-fuel torches.



oxy-fuel," says Bruce Altobelli, Hypertherm's business team leader for manual systems. "For one thing, it's faster and cleaner. Plasma cutting speeds are up to four times faster than oxy-fuel and the cuts are cleaner because dry air is used in most applications. Plasma produces a narrower cut with a smaller heat-affected zone so less clean-up is required. Plus, it can cut a wider range of metals, includ-

ing stainless steel and aluminum, in addition to mild steel."

One of the key technical advantages of the Powermax600, says Altobelli, is in the torch design. "It uses a technology that we call coaxial flow, which allows the plasma to become more focused and thus of higher energy, resulting in faster cutting or thicker cutting, as the two go hand in hand."

In plasma cutting there's typically a plasma gas flow and a shield gas which is used to prevent splatter. With the Powermax line of products, the shield gas is directed by the torch into a tight columnar configuration around the outside of the plasma gas. Hypertherm refers to this as coaxial flow technology. This not only guards against splatter, but it also helps keep the plasma arc constricted, allowing more energy to be focused on the cutting



Hypertherm's Gold Edition marks 50,000 units sold.

zone, which is more efficient. In addition, the tightly configured shield gas also helps remove molten metal from the kerf, boosting both cut speed and cut quality.

## High tech for light weight

The Powermax600 is inverter-based, notes Altobelli. Unlike analog plasma cutters, which use a heavy mains frequency transformer, inverter-based plasma cutters rectify the mains voltage into DC which is fed into either an IGBT or a MOSFET for high-frequency switching. Hypertherm uses IGBTs—insulated-gate bipolar transistors—which are more rugged than MOSFETs. High-frequency switching greatly reduces the magnetic flux in the transformer, thus reducing the size. This allows the creation of plasma cutters that are smaller, lighter weight and more powerful than older models.

“Powermax600 has the versatility that most smaller metalworking shops are looking for,” Altobelli continues. “While it is ideally suited for cutting 0.5-inch-thick steel, it is capable of severing steel up to 1 inch thick, and yet it can also cut thin sheetmetal.”

That point wasn't lost on Thompson. “This week we've cut quite a bit of thin-gauge material. We've used the daylighters out of that plasma cutter. An oxy-fuel torch would have warped that thin-gauge material, but the plasma gives us wonderful clean cuts.”

With business booming, Thompson didn't want to sideline any of his 16 workers for lengthy training sessions. Fortunately with the new plasma cutter, he didn't have to. “With the 600, we essentially just plugged it in and were able to immediately start cutting and get the high-quality, clean cuts we were looking for. My guys were thrilled to have that kind of a tool at their disposal.”

Though Central Oregon Industries' Powermax600 is still relatively new, the company has used it enough to get a feeling for its reliability, which it rates



**Jeff Deckrow (left), Hypertherm's director of North American sales, presents the 50,000th unit to Steven Thompson, owner of Central Oregon Industries.**

highly. That doesn't surprise Hypertherm's Altobelli.

“It has been our most reliable product since we launched it,” he says. “It's been characterized by low maintenance requirements and long consumables life, and both of these factors increase uptime and reduce the total cost of operation for the customer.”

## Easy by design

Perhaps the best testimonial to Central Oregon Industries' experience with plasma cutting technology is Thompson's recent decision to purchase a second Hypertherm system, a HySpeed HSD130. This is a mechanized (table-based), oxygen plasma system (oxygen gives excellent cut quality on carbon steels and extends the life of consumables) that is designed to be easy to install and easy to operate. It features extensive self-diagnostics and fast consumable changeout for reduced downtime. Perhaps most important in this respect is the fact that the HSD130 is designed with significantly fewer internal parts than comparable sys-

tems—less than half the number of some of its competitors, Hypertherm claims. Fewer parts, of course, mean fewer things to go wrong, less downtime and reduced cost of ownership. On top of all of this, it boasts fast cutting speeds and rapid pierce times.

Though the system is very new, it has been a productive component of Central Oregon Industries' tool kit since the day it was installed. “It's very simple to operate,” says Thompson. “My guys had no problem learning how to run it, and we're pleased with the results it's giving us.”

Technology, says Altobelli, should fit with the needs of the business in which it is employed. Businesses shouldn't be forced to adapt to the needs of technology. In the case of plasma cutting and Central Oregon Industries, it seems to be a perfect fit. ■

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