



by Bob Farrell, president, Farrell MarCom LLC

PROGRAMMING POWER

Q&A reveals how to find productivity when programming robotic welding operations

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utomation is becoming an increasingly large part of manufacturing, and robotic welding

delivers substantial results. While advancements put this technology within reach of more fabricators, time spent programming this complex equipment can take a toll on productivity.

Fortunately, an offline programming solution with features dedicated to robotic welding is changing all of that. I spoke with Jandre TerreBlanche, CEO of Mach Machines LLC, to learn more.

Farrell: Let's begin with a quick overview of your company. What can you tell us about Mach Machines?

TerreBlanche: Mach Machines is unique in the market. As a single-source, complete solutions provider of hardware, software, engineering design, robotic integration and supporting services, we make it easy for any manufacturer to move from manual to automated robotic welding. Our team brings decades of practical hands-on

software and manufacturing industry experience to every project.

Farrell: So, automation continues to push manufacturing forward?

TerreBlanche: Absolutely. Think about the average manufacturer or fab shop today as compared to even 10 years earlier. Material towers, lights-out production, robotic welders, autonomous material handling – the list goes on and on. And software continues to fuel these advancements.

Farrell: Let's talk about software. What can you tell us about Delfoi Arc and its benefits?

TerreBlanche: Delfoi Arc is parametric and feature-based offline programming software for welding robots. Delfoi's niche is its incredible breadth of features dedicated to robotic welding. These days, software is largely over-diversified with hundreds of applications encompassing every conceivable way that robots can be utilized. Delfoi's strength lies in a tool set focused on improving robotic welding programming efficiency. Delfoi software users can keep three or four

welding cells busy with a single license. The software is extremely efficient.

Farrell: You mentioned offline programming. Can you explain it more?

TerreBlanche: In robotic welding, offline programming involves creating and testing the program on a computer independent of the welding cell prior to installing the program on a physical robot. The process generally involves the use of computer simulation. In this way, robotic movements, cycle time, collision avoidance and so on can be analyzed in advance.

Farrell: Why would someone want to change the way they program robotic welders?

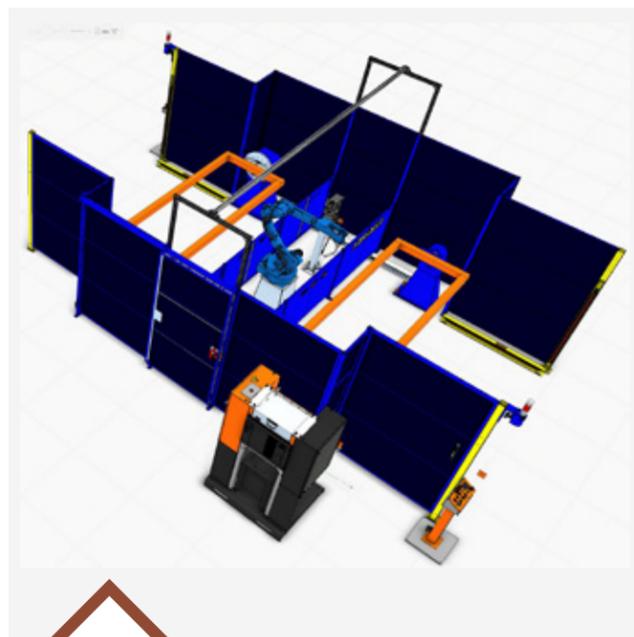
TerreBlanche: The biggest advantage is that the program is installed and tested like any other piece of CNC equipment. This means the robot is ready and waiting in advance of the part being placed in the welding fixture.

This is in stark contrast with placing a part in a welding fixture and then starting a long, tedious manual

programming process that can take days, weeks, even months. Those who insist on using robotic welding in this way are living in the past and wasting the resources in which they've made serious investments. A fabricator would never accept this type of drawn-out ▶



Jandre TerreBlanche, CEO of Mach Machines LLC, is dedicated to helping companies become more productive and profitable by moving from manual to automated robotic welding.



In addition to helping customers choose which welding robots might be best for their needs, the team at Mach Machines is fully equipped to help customers design the layout of their welding cell.

programming on a laser cutter for example – why should it be acceptable for robotic welding?

Offline programming is all about accelerating the process exponentially. Imagine reducing programming by as much as 95 percent. What would that mean for business?

Farrell: Can you elaborate on the return on investment a fabricator can expect?

TerreBlanche: Any investment should be a business decision based on ROI; and it will be different for each application. Robotic welding is being used in a variety of ways – from multi-robot applications to quantity-of-one or high-part variance cases. Sources of return include the 90-plus percent programming time reduction I mentioned.

But that’s just the start. Offline programming is also shown to deliver measurable and sustained improvements resulting from increased capacity, reductions in cycle times due to efficient software toolpath optimization and the versatility of running the same part on different welding cells – even those of a different brand – without reprogramming paths. The user only needs to solve air moves and potential collisions.

The user can design welding cells for future applications with the software. And, of course, they get the benefit of labor reassignment, allowing them to utilize resources in new more efficient ways throughout the organization.

It’s unbelievable how inefficient equipment is utilized in some places.

Mach Machines is dedicated to helping people improve.

Farrell: With those productivity improvements, it sounds like the investment pays for itself fairly quickly.

TerreBlanche: Absolutely. The software investment is minimal – a single license can keep a half a dozen robotic welders busy. Again, it’s going to vary from one application to another, but I can say that our average customer generates enough savings to purchase a new welding cell within a year. One customer recently relayed to us that the software

reduced cycle time by two hours and saved weeks of programming. This translated into an ROI of just four months. That was with a single robotic welding cell. The savings increase exponentially when multiple cells are involved.

Farrell: What robot brands do you support?

TerreBlanche: Our software tools are machine agnostic. While we’re a Yaskawa Motorman strategic partner, we can integrate a variety of original manufacturer equipment based on the application or requirements. This allows ▶

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Jandre TerreBlanche, CEO, Mach Machines LLC

us to support more than 1,500 robot models including all major brands, of course.

Farrell: How can the average fabricator determine if robotic welding is the right choice for them?

TerreBlanche: Again, here is where we can bring value. We work with companies to quantify the effects of adding such equipment. A feasibility study provides an understanding of the issues, investments and returns they can expect through automation.

While it's true that automation may not be for everyone, at least not at the time, I believe we can help any fabricator profitably implement robotic welding. Ultimately, if a person can do it, a robot can do it. Robots don't have to eat, sleep or take lunch breaks. We'll help the customer figure out how to do it and what the welding cell should look like.

Look, we're not here to push products or services; fabricators get enough of that. Our goal is to allow those with robotic welders to maximize that investment and help those considering such technology to determine if it's a good fit

for them. If so, we would like to be a part of implementing that solution.

Farrell: I imagine a move to robotic welding is a major adjustment for many fabricators.

TerreBlanche: It certainly can be. For many, it's a paradigm shift — changes that challenge the status quo can be uncomfortable. Over the years, metal processing companies have become comfortable with doing things a certain way. They know the time, costs and profit margins associated with cutting, grinding, welding and so on.

Robotic welding is a gamechanger, and growth-oriented fabricators are looking past any inhibitions and recognizing value. Mach Machines provides the technical solutions, but sometimes the company's cultural challenges require visionary leadership to adapt to modern technology.

Farrell: What's the key to successfully adopting this technology?

TerreBlanche: Robotics must be used efficiently. This is where fast ▶

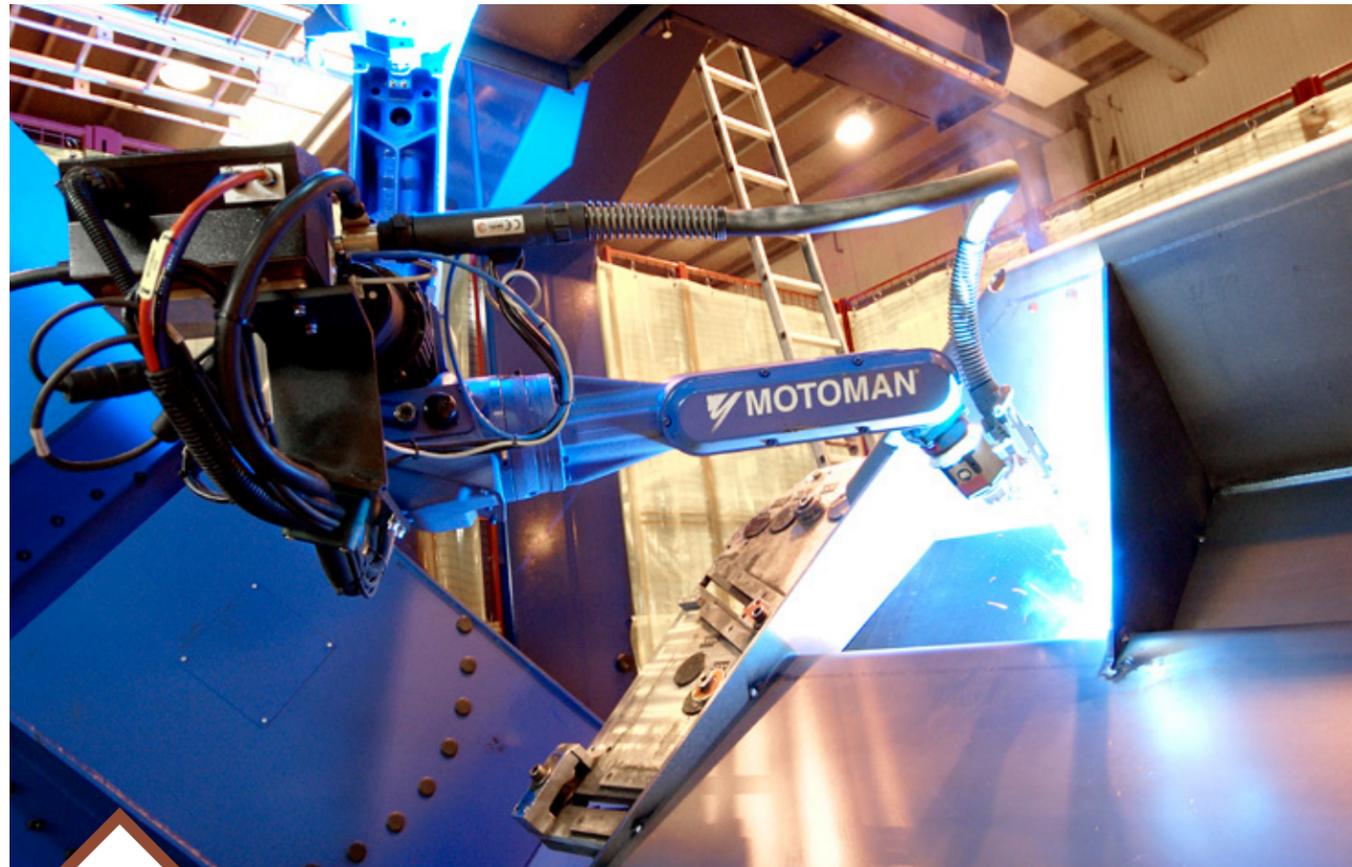


programming comes in. A shop can't have a guy spend days or weeks programming a robotic welder. The program must be ready by the time the shop is ready to start welding.

Think about how other CNC equipment works – CNC mills, lasers, tube cutters and other profile cutting machines. Imagine programming the laser by

hand. That is insanely tedious, and no one would ever do that. Likewise, with hand-coding a CNC mill. Imagine what the program would look like without a 3-D solid model. It would be near impossible to do.

So why have so many people elected to continue manually programming the robot? The reason is that so many



In the past, robotic welding didn't seem like a viable solution for smaller fabricating companies, but as the price of equipment becomes more affordable by the day, more and more companies are adopting it.

“A fabricator would never accept this type of drawn-out programming on a laser cutter – why should it be acceptable for robotic welding?”

Jandre TerreBlanche, CEO, Mach Machines LLC

integrators don't provide software tools. Mach Machines provides the complete solution, including the software to use the equipment the way it was intended.

We have a 100 percent customer retention rate – those who program a welder with Delfoi software never go back.

Farrell: What sets your company apart? What is it like to be a customer of Mach Machines?

TerreBlanche: We're a one-stop shop where the customer doesn't have to work with different people for design, hardware, integration and software. We are looking to partner with companies as they guide their organization through the adoption of robotics.

We begin with a feasibility study and digital twin welding cell mockup. Reachability and time studies help calculate the expected ROI. When the case is compelling, we provide production engineering design services, build the cell, provide robotic integration and commissioning, and provide software tools to program the equipment. We've got the customer's back all along the way with programming services and, of course, training and support. ■

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