by Rob Tessier, national director of advanced fabrication technologies, Airgas Inc.

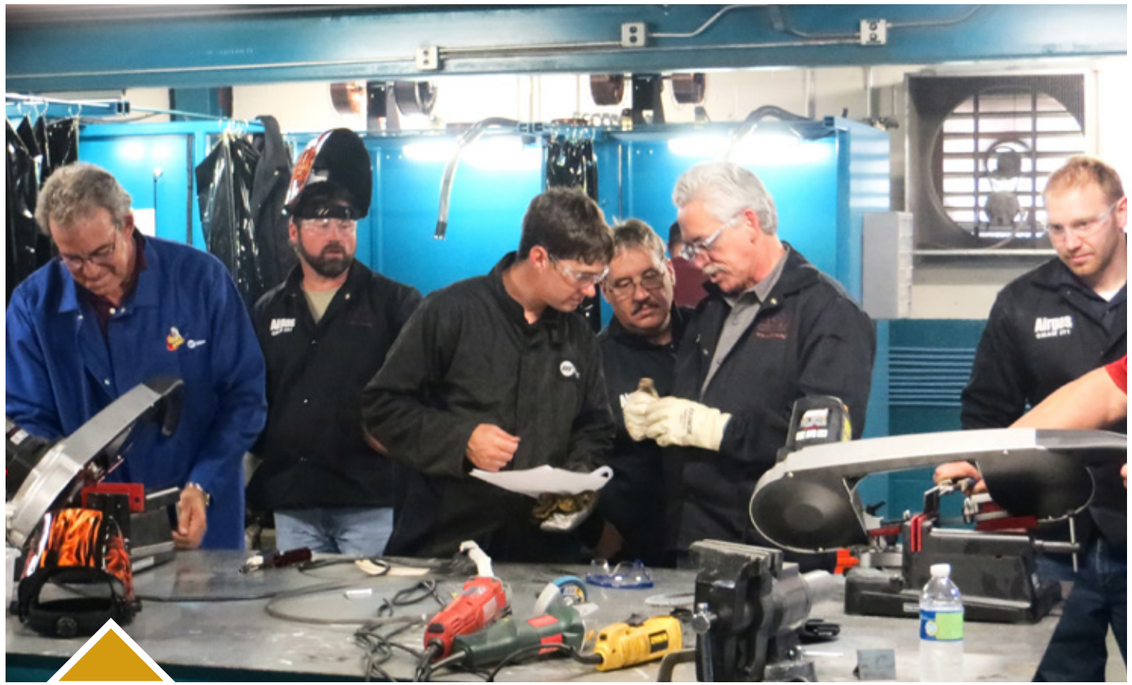
WELDING TO COMPETE

Bringing awareness to the issues that truly affect the bottom line

From one customer to the next, equipment suppliers notice a handful of common inefficiencies that customers tend to walk right by on their very own shop floors. It's easy to take the infrastructure or daily process for granted, especially if you're only looking at your reflection in the mirror. After all, it's often difficult to get a glimpse into the competition's operations for the sake of comparison.

So, how does a fabricator know if they were efficient last year if they're only comparing internal work year over year? Did they use the most appropriate weld procedure, go through an average amount of MIG consumables or have the right weld size needed to generate a quality weld every time?

While fabricators look time and again to improve the price paid for consumables with little success – given



The importance of quality standards and their impact on weld costs and productivity are covered in Airgas' classes.

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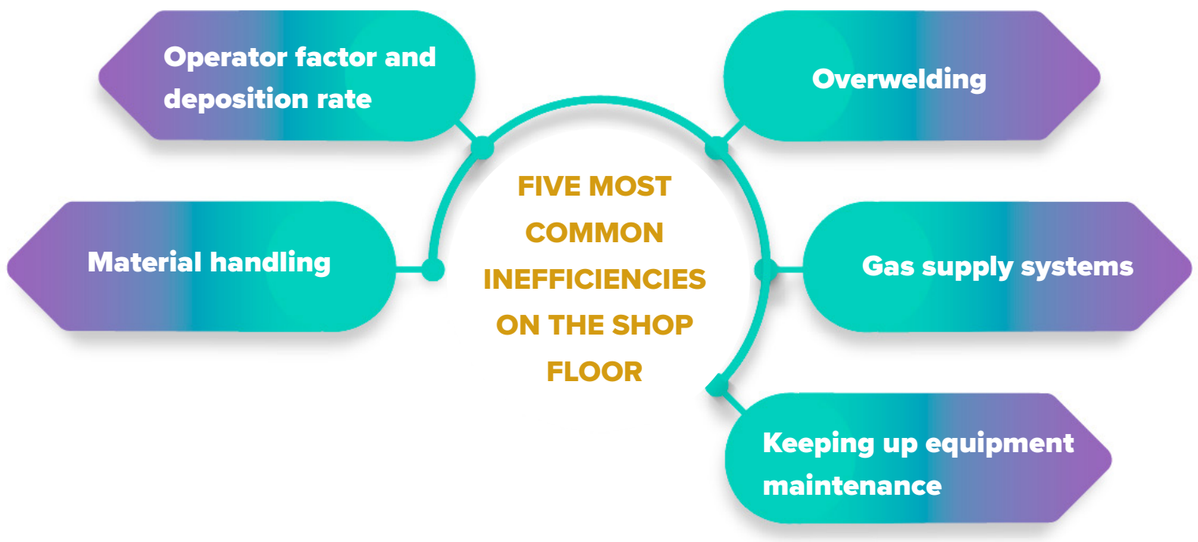
prices are similar from one supplier to the next because they all buy and resell from the same product manufacturers – are high-impact opportunities hiding in plain sight?

DID YOU KNOW…?

Did you know the cost of items purchased from a welding distributor represents less than 15 percent of the cost of the finished weld? While that may sound unbelievably low, the team at Airgas has documented hundreds of welding operations over the past two decades and have demonstrated a 20 to 40 percent productivity improvement – with little to no capital outlay.

The other 85 percent of your cost per weld is labor and power costs. If you could reduce this pool of expenses by a fraction, you could make a bigger impact on the bottom line than you would from switching distributors to try to get cheaper consumable prices. A 10 percent improvement on labor, power and capital efficiency adds 8.5 percent to your bottom line.



The question is how to manage those costs if you don't measure them. How do you know if you are getting better if you don't benchmark them?

Many times what is obvious to suppliers can be overlooked by customers. Suppliers like Airgas see as many as four or five fabrication shops a week, year after year. During those visits, it's common to see a variety of different ways to weld the same joint design. The customer, on the other hand, does not have this vantage point and is, therefore, unaware of the many opportunities to approach a job in a new and potentially better way.

ON A MISSION

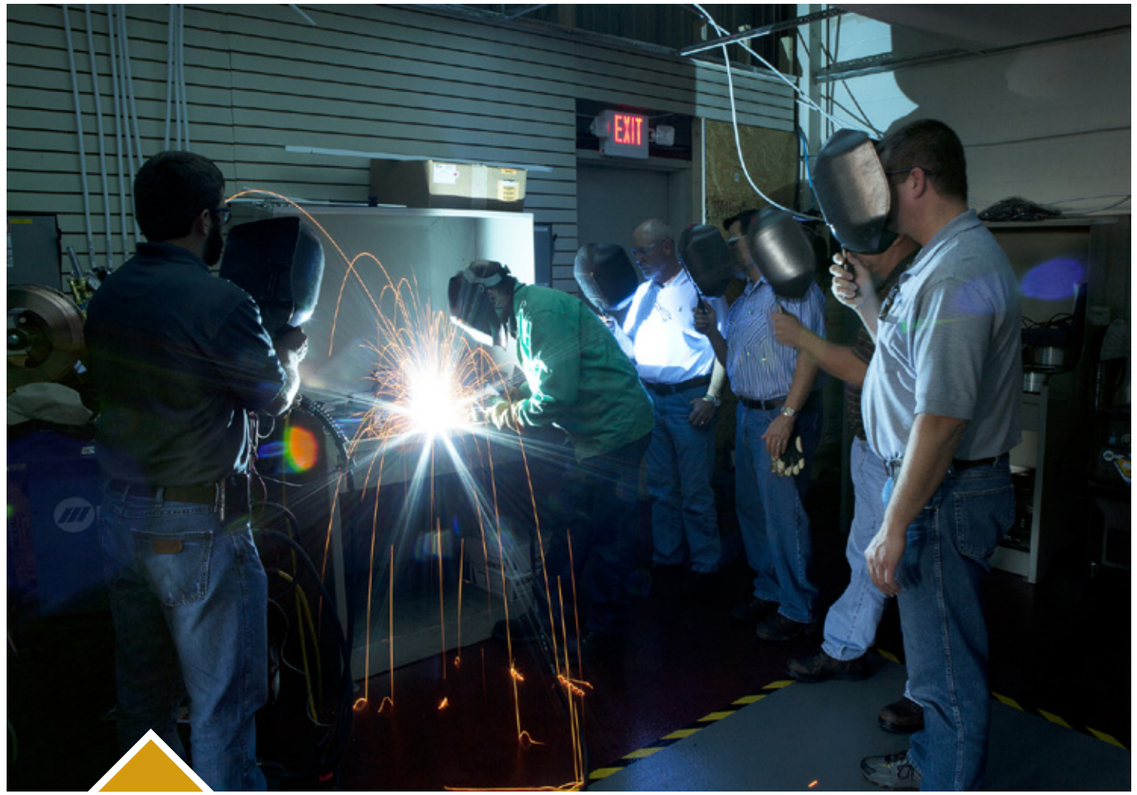
Several years ago, Airgas created its Advanced Fabrication Technology group with a mission to find ways to help manufacturing firms become more profitable – not through lower acquisition costs, but through greater welding efficiency.

Given the geographical scope and organizational depth at Airgas, the company is able to synthesize vast amounts of production and ▸

BENCHMARK COMPARISONS

When fabricators are able to compare their processes and consumption with typical and optimal inputs from Airgas benchmark profiles, they are able to better identify areas for improvement. A few stats to consider include the following:

- A typical welder has their arc on for less than 9 min. an hour, which is less than 15 percent of the workday. The very best operate 30 percent of the day.
- The average welding operation uses one grinding wheel for every 65 lbs. of welding wire purchased. The best operations use one wheel every 248 lbs. of wire used.
- Customers generally use 12 cu. ft. of gas per 1 lb. of wire used, while an efficient operation uses 1 lb. of wire for every 4 to 5 cu. Ft. of gas. The average manufacturing facility purchases three times more shielding gas than needed.



Welding classes are designed to train welders, operators, supervisors and management to effectively apply welding procedures.

consumption data from around the country and across many industries. That valuable data is analyzed to develop a profile of what "good" production looks like and what doesn't measure up. The resulting benchmark profile can be compared against any individual customer's purchasing data to provide guidance, help them compete and see where improvement opportunities can be made.

These improvements are more than just theoretical suggestions – they can and should be implemented. For example, do you know your gas to wire ratio? Airgas analysis shows that an efficient operation uses 1 lb. of wire for every 4 to 5 cu. ft. of gas, yet an average customer typically burns through 12 cu. ft. of gas or more per 1 lb. of wire used. More often than not, these shops do not realize that they are going through three times more gas than an otherwise efficient organization.

Walking through your process with an outside perspective shines a much-needed light on secondary processes that have cropped up because something earlier in the process isn't working. If you fix the process upstream – retrofit the CNC cutting system for tighter dimension tolerance, for example – you won't need to overweld due to joint discrepancies.

COLLEAGUE INVOLVEMENT

Once a fabricator is aware of those hidden costs and is interested in bringing in an outside perspective to become more efficient and competitive, it's time to rally the troops around the idea of finding new ways to do things better, with a common purpose.

This crucial step is often undervalued. It's important to have a conversation and see if work colleagues share the same enthusiasm for working smarter,

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not harder, to drive outcomes and find new ways to work more efficiently.

Try to find compelling ways to keep the team motivated. Sometimes a layered approach works best. For example, financial data comparing you to your competitors may win over the GM, and quality standards may speak to your QC experts, but hands-on challenges and learning opportunities are what build pride in your welders and engineers. The whole team has a role to play in moving the company toward its goals.

HIDDEN COSTS

Facts in hand, it's time to dig in and find out where your company's resources are going. Whether it's by checking your figures against the benchmark inputs, attending welding classes or having a supplier like Airgas make an on-site visit, you'll learn ways to reduce labor, eliminate waste and rework, and shorten manufacturing cycle times, typically with little or no capital investment.

Welding classes, such as the type that Airgas hosts, are designed to help identify and quantify weld quality standards and develop welding procedures that meet those standards. Welding classes are also beneficial as they are designed to help train welders, operators, supervisors and management to effectively apply the procedures.

Welding class participants also learn what questions to ask and what to look for while observing upstream fabrication, the welding operation itself, and downstream finishing procedures and practices. The importance of quality standards and their impact on weld costs and productivity are covered, as well.

Hands-on exercises are designed to help develop weld procedures on common weld joints in the flat and horizontal position. The effects of conditions – from torch manipulation technique, torch angle, wire speed, amperage, voltage, contact tip to work distance, electrode diameter and shielding gas – on quality standards can also be identified and studied. Quality is assessed by a range of factors, including joint penetration, fit-up, weld size, bead shape, bead appearance and spatter.

For more than 20 years and through literally thousands of interactions, Airgas has helped customers apply what they've learned through the process and witnessing their positive outcomes. Typical results include:

- Improved travel speeds.
- Increased throughput
- Reduced MIG consumable costs
- Decreased gas consumption (with one customer citing a decrease from 7 million to 1.4 million cu. ft. per year). ■

AIRGAS INC.