

cost-effective solutions

Metal
FABRICATION

leading analytical services

comprehensive training programs



Praxair: Your Source For Solutions

Creative, cost-effective solutions. They're the key to developing and maintaining the competitive edge that metal fabricators need in a global marketplace now more demanding than ever.

Look closely and you'll find that the most effective welding solutions can reduce production costs, improve quality and comply with today's increasingly stringent environmental regulations. Each solution begins with the welding industry's leading analytical services and training programs — all available from Praxair.

As an industry innovator, you'll find Praxair offers everything you need to customize a solution for your business. Whether you choose one or more of our services or training programs, the results are the same — *a new edge in productivity and renewed efficiency for your business.*

Praxair's StarSolver® Productivity Enhancement Program

Consumables can impact overall costs far beyond their price per pound or cubic foot. Choosing the right shielding gases and electrodes can improve productivity and reduce labor costs.

Now, you can make your choices with confidence by relying on Praxair's *StarSolver®* Productivity Enhancement Program. This innovative, analytical program will show you how to increase welding speed and duty cycle, while you decrease post-weld cleanup.

First, we'll conduct a complete production survey to evaluate your operating costs. We'll then recommend any process changes that can enhance your profitability.

We'll develop two lists of project priorities: one involving projects requiring little or no capital investment, the second establishing cost-saving opportunities resulting from your capital investment.

Elements of the *StarSolver* program survey include:

- Gas composition
- Gas to wire ratio
- Gas supply system
- Weld size
- Weld travel speed
- Wire feed speed (establishing actual deposition rates)
- Wire type, diameter and appropriate packaging
- Welding electrode deposition efficiency
- Automation potential (including Return on Investment (ROI) calculations)
- Implementation of proper welding techniques
- Operator duty cycle measurements
- Electric power consumption analysis

Services



The accompanying graphic illustrates the component costs for welding.

Praxair's Services And Training: Increase Your Productivity

Gas Conservation Program

Our gas conservation program can help you significantly reduce your gas costs and improve your efficiency. We'll conduct a comprehensive evaluation of your gas supply system — from the bulk gas or cylinder source to your point of use. We'll determine your gas consumption at each individual welding station, including:

- Gas delivery pressure and flow measurement at point of use
- Pipeline integrity to ensure suitability for your application
- Pipeline leak testing
- Gas supply system evaluation
 - Bulk or cylinder
 - Mixer or premixed gases in cylinders
- Gas handling equipment, including manifolds, regulators, hoses and torches

You'll receive a detailed report outlining gas usage at each welding station as well as the necessary steps to reduce your shielding gas usage rates.

Gas Analysis Program

Most industrial mixers have tight tolerances, but normal wear and long-term use can widen these margins and vary the mixture, resulting in decreased welding quality, higher spatter rates and increased welding fumes. Ensure that your mixers can consistently operate within tolerances by relying on Praxair's gas analysis program.

We'll validate each mixer's performance and even calibrate the unit when necessary, certifying the calibration so you comply with all industry standards.

For most customers, Praxair's analysis, which complies with ANSI/AWS A5.32/A5.32M-97 specifications for welding shielding gases, helps improve productivity by reducing weld spatter and maintaining weld quality.

Weld Data Monitoring Program

This proven process can help you increase weld productivity from 20-40 percent with little or no capital investment. Equipment monitors on each torch provide real-time data, such as amperage, voltage, gas consumption, surge, wire feed speed and other important weld

parameters. This data is then transferred to a stand-alone or portable PC, or a weld network system. You'll then be able to determine if your current practices meet your procedure qualification standards and if you've selected the optimized operating parameters for each welding cell.





Topics covered include:

- Basic metallurgy
- Properties of electric arcs and gases
- Welding power supply – CC/CV equipment, including new developments like slope and inductance control, pulsed MIG, square wave and pulsed TIG
- Welding electrodes for GMAW, FCAW, SMAW, including AWS classifications
- Tungsten electrodes for GTAW, including AWS color codes, preparation and storage
- Plasma arc cutting of stainless steel
- Shielding gases selection for GMAW, FCAW and GTAW
- Gas flow and losses
- Fumes and gases generated
- Technique and equipment setup
- Weld discontinuities and defects
- Basics of oxy-fuel cutting of mild and low-alloy steel
- Welding polarity (AC, DCSP, DCRP)
- Precautions and safe practices

Welding Courses

Labor and overhead are responsible for approximately 85 percent of the cost of depositing weld metal. You can increase your welders' productivity and improve your bottom line by taking advantage of one or more Praxair welding training programs:

- Gas Metal Arc Welding (GMAW or MIG) and Flux-Cored Arc Welding (FCAW) of Carbon Steel
- Gas Tungsten Arc Welding (GTAW or TIG) of Carbon Steel
- Gas Metal Arc Welding and Flux-Cored Arc Welding of Stainless Steel
- Gas Metal Arc Welding of Aluminum
- Gas Tungsten Arc Welding of Aluminum Alloys

These programs are offered in two-, four-, or eight-hour courses to meet your specific needs and they can be customized.



Understanding Welding – Level 1

This two-hour training course, offered primarily for supervisors, foreman and robotics operators, covers the basics of welding, the affect of welding parameters, welding techniques, shielding gas properties, welding arcs and safety requirements.

Understanding Welding – Level 2

Our four-hour training course for welders who work with Gas Metal Arc Welding (GMAW or MIG) or Gas Tungsten Arc Welding (GTAW or TIG) applications covers the material discussed in Level 1 along with basic metallurgy and weld discontinuities.

Understanding Welding – Level 3

This eight-hour training course includes both Level 1 and Level 2 information in greater detail and incorporates hands-on applications.

Understanding Welding – Custom

Custom training programs are available on request, according to customer's specific needs.



Weld Cost Analysis

This four-hour course shows plant managers, supervisors and foremen how choosing the right consumables is the key to controlling overall costs. Specifically, the course demonstrates how selecting the right shielding gas, wire electrode and welding parameters can reduce overall welding costs and improve productivity by increasing welding speed and duty cycle, while decreasing post-weld cleanup time.

Seminars

Praxair's seminar series reviews a variety of themes related to welding, productivity and environmental issues. Our half-day programs include:

- Understanding shielding gases
- Weld cost analysis
- Fumes
- Gas conservation
- Gas distribution systems
- Train the trainers

Call Praxair Today

More than just welding gases, Praxair offers the industry's most advanced analytical services and training programs with one goal in mind — to help metal fabricators operate their businesses at peak performance.

Let us show you how we can help improve your productivity and lower overall costs. Call **1-800-PRAXAIR** today or visit www.praxair.com and learn more about how we can assist you in gaining your competitive edge.





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