

MATHESON *Select*PRO

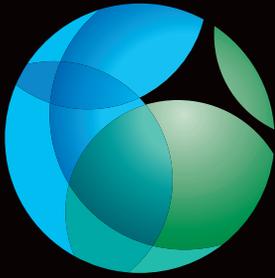
Metal Fabrication Process Optimization Program

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MATHESON

The Gas Professionals



The Time is Right for the **MATHESON Select***PRO* Metal Fabrication Process Optimization Program



If you're like most fabricators, you're continually searching for ways to improve quality, reduce cost, and improve the competitiveness of your business. Barriers to optimum productivity – and opportunities for improvement – can be found at many points in the welding, cutting, and metal fabrication process:

- Deposition rates
- Arc control issues
- Porosity
- Rework
- Discoloration
- Slag and spatter cleanup
- Quality rejects
- Refitting
- Workstation efficiency
- Gas use and control
- Weld design
- Process and shielding gas selection
- Fumes and emissions
- *The list goes on*

That's why we developed the **MATHESON Select***PRO* Program. The Program puts our team of welding experts at your side to focus on these three foundations of welding effectiveness:

- Productivity Improvement**
- Reduced Cost Per Weld**
- Optimization of Processes**

Working with you and key members of your team, our experts evaluate your welding and metal fabrication operations.

Our goal is to lead you to a more effective welding and fabrication operation – with improved quality, reduced total costs, and smoother workflow ... putting you in a better position to deliver greater satisfaction and value to your business and to your customers.

Productivity Improvement • **Reduced Cost Per Weld** • **Optimization of Processes**

How the MATHESON *SelectPRO* Program Works.

In principle, the Program is quite simple: the more we understand about your fabrication practices, challenges, and goals, the better we will be able to help you get better results.

When principle is put into practice, the Program is quite comprehensive.

The **MATHESON *SelectPRO*** Program is an end-to-end solution for ensuring the optimization of your welding and fabrication operation.

As a **MATHESON *SelectPRO*** Program partner, the Program never really ends. Our shared commitment to better welding results is a continuous commitment.

Partnership

The ***SelectPRO*** Program begins with a partnership and a shared goal to gain insight into your operational challenges, opportunities for improvement, and your business goals.

Where do you seek improvement? Delivery times? Quality? Code compliance? Cost? Workflow? Workplace safety? Automation?

Are you getting complaints? Customers? Employees? Inspectors? Managers?

Insights into questions like these help us guide our Site Survey in ways that are meaningful to your actual current business situation.

Site Survey

MATHESON experts will perform a comprehensive site survey, covering topics such as:

- An inventory of gas and other consumables
- Interviews of production teams, supervisors, and other employees. From management and operations personnel, we learn what we can about your challenges - past, present, and future
- A safety and equipment audit
- A review of weld strategies, such as materials, process choices, work angles, and weld design
- A review of welding machine conditions such as wire feed speed, voltage, and current
- A review of consumables consumption and waste, including gas delivery and control, filler materials, consumables, and replacement cycles

The more information we gather, the more relevant our recommendations will be.

Analysis and Recommendations

Using the data gathered in the Site Survey, our team will perform an analysis, looking for changes and improvements that could increase productivity, quality, and cost-efficiency ... and also address your business goals and requirements.

In addition to putting their experience to work for you, our experts perform calculation-based quantitative analyses that help us analyze fillet size, deposition rate, welding efficiency, material consumed (gas and filler metal), and other variables.

The recommendations we provide are backed up by data. The data will help you justify any needed changes, and calculate projected cost savings.

Calculation of Volume and Weight of Filler Metal

Choose a material from the list by: [Menu - Select] [OK]

Density = 0.283 Bbl/in³

Compound Bevel For Pipe Welding

Insert the following dimensions:

OD	2.000	inches
d	1.750	inches
Angle 1	45.000	degrees
Angle 2	45.000	degrees
r	0.1250	inches
h	0.1250	inches
h ₁	0.1250	inches
h ₂	0.1250	inches
h ₃	0.1250	inches
h ₄	0.1250	inches

Volume of Veld into Reinforcement: 0.76 in³
 Weight = 0.49 Bbl
 Length of Veld = 0.67 in

Volume of Veld into Reinforcement: 0.76 in³
 Weight = 0.49 Bbl
 Length of Reinforcement Veld: 0.67 in

Compound Bevel For Plate Welding

Insert the following dimensions:

Length	1.000	inches
--------	-------	--------

Volume of Veld into Reinforcement: 0.00 in³
 Weight = 0.00 Bbl
 Length of Veld = 0.00 in

Volume of Veld into Reinforcement: 0.00 in³
 Weight = 0.00 Bbl
 Length of Reinforcement Veld: 0.00 in

V-Groove For Pipe Welding

Insert the following dimensions:

OD	2.000	inches
d	1.750	inches
Angle 1	45.000	degrees
Angle 2	45.000	degrees
r	0.1250	inches
h	0.1250	inches
h ₁	0.1250	inches
h ₂	0.1250	inches
h ₃	0.1250	inches
h ₄	0.1250	inches

Volume of Veld into Reinforcement: 0.76 in³
 Weight = 0.49 Bbl
 Length of Veld = 0.67 in

Volume of Veld into Reinforcement: 0.76 in³
 Weight = 0.49 Bbl
 Length of Reinforcement Veld: 0.67 in

V-Groove For Plate Welding

Insert the following dimensions:

Length	1.000	inches
--------	-------	--------

Volume of Veld into Reinforcement: 0.00 in³
 Weight = 0.00 Bbl
 Length of Veld = 0.00 in

Volume of Veld into Reinforcement: 0.00 in³
 Weight = 0.00 Bbl
 Length of Reinforcement Veld: 0.00 in

Diagram: Double J Type Joint

RO=	0.25	inch
RF=	0.3	inch
T=	1.1	inch
A=	75	degree
R=	0.5	inch

CSA= 0.60502 inch²

WELD COST COMPARISON (NET DEPOSITED) - EXAMPLE

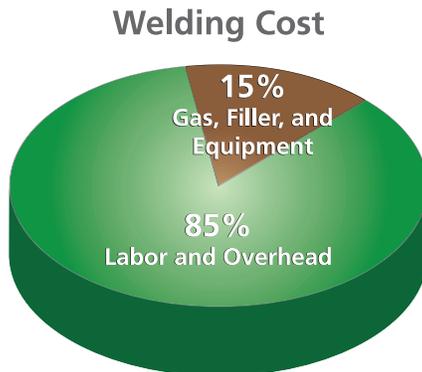
Parameter	Current	Proposed
Gas Flow	20Nm	20Nm
Wire Material	ADM 10% Br0126	ADM 10% Br0126
Wire Diameter	in	0.983
Wire Speed	in/hr	500
Gas Price	\$/hr	0.025
Wire Price	\$/lb	0.5
Deposition Efficiency	%	94
Labor & Benefits	\$/hr	15
Operator Factor	%	35
Wire Purchased	\$/lb	1111
Joint (Current)		1999
Joint (Proposed)		
Wire Density	Bbl/in ³	0.274
Joint CSA	in ²	0.125
Joint Volume	Bbl	0.411
Travel Speed	in/hr	11.721

Parameter	Current	Proposed
Gas Cost	\$/hr	0.503
Wire Cost	\$/hr	1.581
Wire Cost	\$/hr	0.350
Wire Cost	\$/hr	199.66
Labor Cost	\$/hr	0.731
Total Cost	\$/hr	222.99
Savings	\$/hr	1124
Savings	\$/hr	34285



What You Can Expect

It is widely known that 85% of the cost of welding is found in labor and overhead – the costs of filler and gas are not meaningless, but they are small in the larger view.



Examples of substantial changes can often include (when practical):

- **Moving from short circuit to spray to increase deposition rate**
- **Changing shielding gas to enable the use of one gas mixture in multiple applications**
- **Altering shielding gas, filler type, or both, to affect improvements in porosity, spatter, color, control, or deposition rate**
- **Adding automation to appropriate step(s) to improve throughput and improve welder availability**

... these are just a few examples of typical program outcomes. The possibilities are far greater in numbers.

Beyond the Recommendations

Our team will help you implement our recommendations by helping you with internal communications, training (classroom and/or production floor), and other support. We can also help you write or rewrite Welding Procedure Specifications (WPS), as well as your Welding Procedure Qualification Record (WPQR).

The **MATHESON SelectPRO** Program may have a beginning ... but it really does not have an end. We are always at your side to help guide you to continuous improvements in productivity, cost reduction, and process optimization.

Contact **MATHESON** today to discuss how our **SelectPRO** Program can help you.

Productivity Improvement • **Reduced Cost Per Weld** • **Optimization of Processes**



MATHESON SelectPRO Program Partners can expect:

- **Increased productivity**
- **Reduced cost**
- **Optimized performance**
- **Better working environment**
- **Improved gas selection and gas management**
- **Improved deposition rate and performance**
- **Improved quality and fit up**
- **Reduced porosity**
- **Fewer rejects and reworks**
- **Improved workflow**
- **Higher customer satisfaction**
- **Improved profitability**

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