Improving Weld Start Quality
(While Saving MIG Shielding Gas)

History, MIG Start Quality
The first 15 years of my career were in welding R&D with Linde, a leading welding company at the time (renamed Praxair now back to Linde after being acquired by German Linde AG!)

While managign the company's shielding gases and filler metals R&D facility, we understood the shielding gas surge at a weld start was excessive and caused turbulent flow. However we never took the time to quantify the extent of the start problems or methods to improve it. Since forming WA Technology in 1999, we have found from our Lab research and fabricator visits, starting MIG (& TIG) gas surge not only causes inferior weld start quality it is also a major cause of shielding gas waste!

Testimonials: Improved Weld Starts

1st Testimonial:
When testing our patented Gas Saver System (GSS™ - US Patent # 6,610,957) with the objective of reducing costs, the welding engineer and I were surprised when the repair welder immediately said he could see the difference! Not the gas savings but the improved weld starts! The tests showed a 40+% gas savings but more important to the welder, the improved weld starts. When his repair welds were completed they required Ultrasonic Testing (UT) before the repaired part could continue in production. UT was finding a significant amount of subsurface weld start porosity. The welder said he knew the starting gas surge was the cause and would cut the wire back to the tip and hold the nozzle well above the work when he triggered the gun to minimize the peak surge effect. (Our tests showed those extra steps provided little help for the 3 second plus high surge flow problem!) With the GSS he immediately saw the gas surge was significantly reduced!

The following is a graph showing the starting flow test data from the welding station making the repair welds.

With a standard gas delivery system, the surge flow rate is very turbulent and mixes air into the shielding gas stream causing excess spatter and porosity. Note with their standard gas delivery system the flow exceeded 100 CFH for 2 ½ seconds. With the GSS peak flow was under 100 CFH and quickly returned to the preset 35 CFH. After using the GSS for 6 months the welder said he had very few rejects versus the common occurrence before!

2nd Testimonial:
Mike Buehner purchased two GSS’s in October 2014 and our portable flowmeter (PFM.) Paraphrasing his comments about their use:

“Yesterday, I used my TIG welder to fix a bracket on a mower deck. I had a Victor 2425, 25 psi flowmeter and a GSS on the system. I used the PFM portable flowmeter to set the Argon at 12 CFH at the TIG torch. I found the arc starts are much better and the welds are the best I’ve had since I bought this TIG welder. A significant improvement.

On my MIG welder I used a 36 psi flowmeter and a GSS. Again, I used the PFM at the MIG gun to set the shielding gas flow. I no longer get a huge surge of gas when starting the weld and the shielding is much better producing far improved looking welds.

In conclusion, I have significantly better welds from using your portable flowmeter
(PFM) and GSS hose system so I know exactly what the gas flow is at the torch and have much less of a gas burst at weld initiation. I used to take shielding gas flow for granted before looking into your products. I guess I didn’t know what I didn’t know! I can’t speak to the gas savings yet because I haven’t done enough welding since installing and using your products.

Thanks for your emails, and fast shipping of good products. Count me in as a happy customer!” (Note, Mike also said he downloaded and read the PDF “MIG Gas Control” available on top of every www.NetWelding.com web page.)

3rd Testimonial:

Brad Fenley, an Argyle TX fabricator, called requesting a 6 foot long (FB6) GSS shipped overnight. He had a job to complete for a customer and was getting weld start porosity on most parts. He had adjusted all welding parameters including gas flow rate without improvement. He could hear the shielding gas surge at the weld start and found our web site that discusses how porosity can be caused by the turbulent “Blast of Gas” pulling in air. He uses a good MIG Spray Arc gas mix, 98% Argon/2% Oxygen, welding a carbon steel tube to a base.

We sent the Gas Saver System by Express Mail and it arrived the next day. He sent this email, “After putting the GSS hose on I have some of the best looking welds I’ve seen. I think out of 50 parts, I only had 2 or 3 to clean up. Thanks for the help.”

4th Testimonial:

One of the several Caterpillar Tractor locations who have GSS’s installed, reported:

“The GSS reduced the porosity problems previously encountered in several production cells.”

They also noted after purchasing more GSS’s for all their MIG welders, “It has reduced rework numbers that were due to the excessive gas surge at the start.”

5th Testimonial:

Jason Insley ordered a GSS for his welder and after installing sent this note:

“Everything worked fine. And my weld starts have definitely improved since installing the GSS. Thanks again.”

6th Testimonial:

Al Hackethal reported GSS results in his shop: He wrote:

“Glad I found your website, I understood the theory, though in practice I understand it much better. I can't believe it. I'd never have thought a hose could make that much of a difference. I had a small job that had been waiting for a while. The weld quality is considerable better. Almost no splatter! I realized that the gas I'm buying is actually working the way it's supposed to.

Thanks for making products affordable!”

7th Testimonial:

A custom fuel tank fabricator recently reported these results after their test of a GSS on a MIG robot: “Immediately the arc starting problems went away. There have been little to none of the intermittent arc starts caused by the initial gas surge since converting over to the GSS. With our standard setup, approximately 1 out of every 3 arc starts had the “popping” arc starts associated with the gas surge and purge issues.”

This fabricator has purchased 51 GSS’s.