

# WA Technology

## Improving Weld Start Quality

(While Saving MIG Shielding Gas, Typically 40 to 50% Savings is Reported)

### History, MIG Start Quality

The first 15 years of my career were in welding R&D with the leading welding/gas companies at the time (*Linde renamed Praxair.*) While managing the company's filler metals and shielding gases 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 problem or methods to improve it. From fabricator visits and our research since forming WA Technology in 1999, we have found the starting 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:

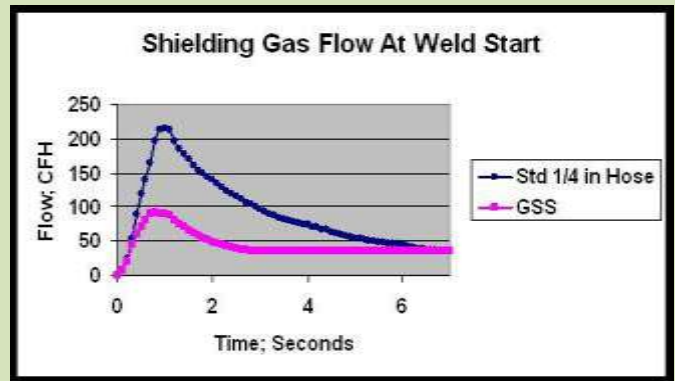
When testing our patented Gas Saver System (**GSS™** US Patent # 6,610,957 ) at American SpiralWeld Pipe with the objective of reducing costs, the welding engineer and I were surprised when the welder immediately said he could see the difference! Not the gas savings but the improved weld starts. The 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 before the repaired part could continue in production. They were finding a significant amount of subsurface weld start porosity. They used flux cored wire and CO<sub>2</sub> shielding for the repair welds. The welder said he knew the starting gas surge was the cause and would cut the wire back to the tip and hold the torch well above the work when he triggered the gun to minimize the peak surge effect.



(Our tests showed that was no help to the 3 second 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 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:

Recently discussed weld quality with the Maintenance Manager of our largest Customer, Chart Industries in a plant in Louisiana. He has worked there for over 20 years and had an interesting perspective of all the benefits of our **GSS**!



They manufacture liquid natural gas production and storage tanks. Their welds are all nondestructive tested. We discussed the shielding gas savings as they have well over 500 **GSS** system. I mentioned some folks have difficulty understanding how we save gas. His comment was it's so obvious when you look at the small ID versus the typical hose. Then I remembered they deal with pressurized gases and understood the excess pressure in the gas delivery hose at each weld start causes a lot of gas blast and flow rate at each start.



He said the additional and major cost benefit is the reduced weld start defects AND overall defects from the lower hose moisture.

The reduced starting gas surge reduces This facility found that are heavy wall hose with its unique construction significantly.

### 3rd Testimonial:

Mike Buehner purchased two **GSS**s 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 on your website. I guess I didn't know what I didn't know!*

*Thanks for your emails, and fast shipping of good products. Count me in as a happy customer!"* (Note, Mike also said he download and read the PDF "MIG Gas Control" available on top of every [www.NetWelding.com](http://www.NetWelding.com) web page.)

### 4th 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."

### 5th 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."*



### 6th 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."*

### 7th 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." They've purchased 50 **GSS**s.