

WA Technology

Improving Weld Start Quality

As Important as the 40 to 50% Savings in Shielding Gas Use for Many Customers

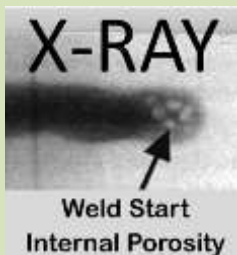
History, MIG Start Quality

The first 15 years of my career were in welding R&D with one of the leading welding companies at the time (*renamed Praxair.*) While managing the company's filler metals and shielding gases, 30 person R&D Lab, 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. Since forming **WA Technology** in 1999, from our research, fabricator visits and customer feedback, we have found the starting gas surge is not only a major cause of shielding gas waste, it causes inferior weld start quality.

Testimonials: Improved Weld Starts

1st Testimonial:

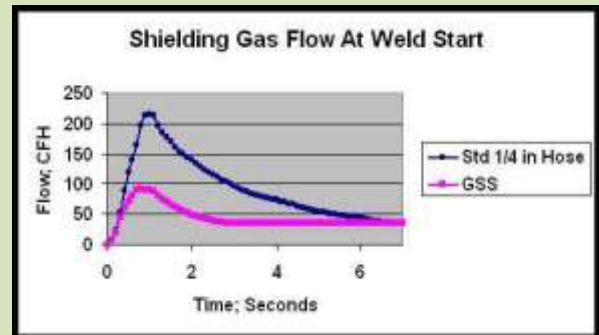
When testing our patented Gas Saver System (**GSS™** US Patent # 6,610,957) with the objective of reducing costs, the welding engineer and I were surprised when the welder immediately said he could see the difference! **Not the gas savings but the improved weld starts.** The tests showed a 40+% gas savings



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 CO₂ 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 hose, the surge gas flow rate is very turbulent, mixing air into the shielding gas stream causing excess spatter and porosity. Note with their standard gas delivery hose the flow exceeded 100 CFH for 2 ½ seconds. With the **GSS** peak flow was under 90 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:

Discussed weld quality with the Maintenance Manager of Chart Industries in their plant in Louisiana. He worked there for over 20 years with an interesting perspective of all the benefits of our **GSS** they started buying in 2014!



They manufacture liquid natural gas storage tanks. These critical welds are all nondestructive tested. We discussed the shielding gas savings as they have well over 500 **GSS's** and although important, he said their larger cost benefit is reduced weld defects mostly from the superior weld start quality. They also investigated and found the hose has far superior reduced moisture permeability with its unique, heavy wall design. They had tested (*pic right*) and found their TIG torch hose was even leaking gas and causing moist air to be pulled back in!



In addition to **GSS's** used on every welder, they have replaced TIG torch hose purchasing thousands of feet of our very heavy wall, rugged hose. **At the end of the conversation, he thanked me for providing such a great, inexpensive product!**

AIR PRODUCTS: This industrial gas supplier was the first to discover the reduced moisture benefits of our **GSS** hose. They fabricate their own cryogenic tanks, many from aluminum. They always had internal porosity defects in humid summer months. Defects are costly to repair. They found our hose eliminated the porosity issues they had for years. In two plants they have over 30,000 feet of our **GSS** hose not only to reduce gas waste, but they also replaced all their TIG torch hose!



*We have a technical report discussing the reduced moisture benefit of our **GSS** 3-part, fiber reinforced, heavy wall hose. Email: TechSupport@NetWelding.com for a copy.*

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."**

"It has reduced costly rework that was due to the excessive gas surge at the weld start."



5th Testimonial:

Jason Insley sent this note after installing a **GSS**:

"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 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."**