

Industry Newsdesk

Texas fabricator reduces MIG welding shielding gas waste

Welders often use the adage, "If some is good more must be better," when it comes to setting shielding gas flow rates. This not only wastes expensive shielding gas but causes moisture-laden air to be pulled into the shielding gas stream, creating inferior weld quality.

Texas Hydraulics, a manufacturer of hydraulic cylinders, has improved weld quality while simultaneously reducing weld costs by installing flow rate limiters on each of their company's 30 MIG welding stations.



The company installed flow-rate limiters that cap the flow of weld gases so that welding specifications cannot be exceeded.

According to welding engineer Doug Watkins, Texas Hydraulics welders were able to adjust the shielding gas control flowmeters at any time to a flow rate beyond the range of their welding procedure specification (WPS). Some flowmeters were found set with the flow measurement ball pinned to the top of the flow tube.

"We have found with our flowmeters that can mean a flow rate of 100 CFH or higher was being used," Watkins says. "In addition to the shielding gas waste, any flow setting beyond about 50 CFH with our wire stick-out pulls air into a turbulent gas shield. That air creates weld spatter and possibly internal (or even external) weld porosity."

The maximum flow rate is now set at 40 CFH and this maximum setting is locked-in. After an initial gas use audit, the calculated shielding gas savings was measured at 25%. With follow up audits the actual savings exceeds 35%.

Finding the rotameter float ball pinned to the top of a flowmeter tube is an all too common occurrence in the welding industry according to Jerry Utrachi, president of WA Technology, manufacturer of the locking device. "Welders often believe they are improving the situation by using more shielding gas. They may be trying to counter drafts in the shop. However the opposite is true. With the typical size MIG torch gas nozzle, shielding gas flows set above 55 CFH create a turbulent shielding gas stream."

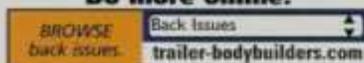
For drafts above five miles per hour air flow, a wind block of some type must be employed, Utrachi says.

"Even a small sheet metal dam can protect the shielding gas stream," he says. "Higher shielding gas flows can not solve the problem."

The Flow Rate Limiter lock that Texas Hydraulics installed fits most flowmeters used in the welding industry. The existing flowmeter should be set to the desired maximum setting, and then the locking device is installed over the flow control knob. A blocking pin and small brass lock are then slipped in place preventing access to the set screw. Nothing is altered on the flowmeter itself.

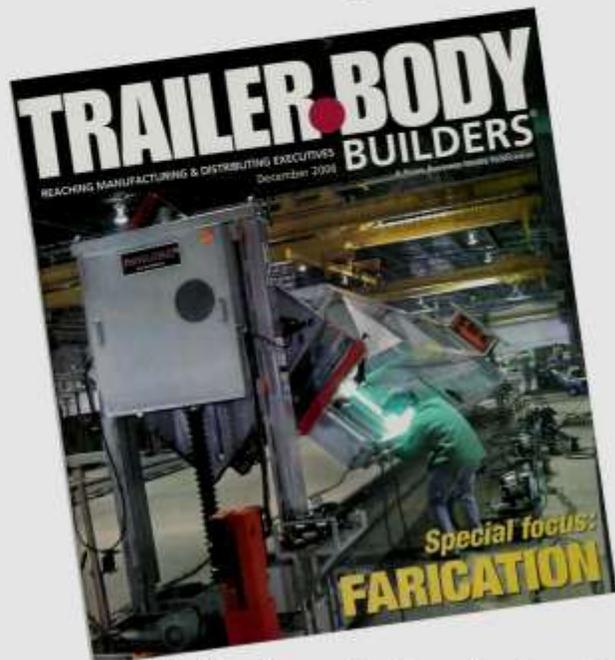
More information is available at www.NetWelding.com.

Do more online!



December 2006 www.trailer-bodybuilders.com

Testimonial About Flow Rate Limiter in Trailer Body Builders



Published Article in December 2006 issue summarizes how Texas Hydraulics saved 35% MIG shielding gas and improved quality with WA Technology's Patent Pending Flow Rate Limiter

Payback for Patented* “Flow Rate Limiter” (*WAT-FRL & FRL*)

* US Patent Number 7,462,799



Using the actual cost savings percentage data from the Texas Hydraulics article and the following assumptions shows a payback of investment in a *WAT-FRL* of *less than a month*.

ASSUMPTIONS:

1. Flow rate being used, 60 CFH
2. A maximum flow of 39 CFH is required for quality welds
3. The gas savings can be 60 CFH — 39 CFH = 21 CFH or $21 \text{ CFH}/60 \text{ CFH} = 35\%$ savings as quoted in the Texas Hydraulics article.
4. Assume a welders actual arc time is 40% of a working day or $8 \text{ hr/day} \times 40\% \times 5 \text{ days/week} = 16 \text{ hrs/week}$ actual arc on time.
5. Each week = $16 \text{ hrs} \times 21 \text{ CFH/hr} = 336 \text{ CF}$ gas saved per week.
6. Assume Argon/CO₂ shielding gas cost is $\$5/100 \text{ CFH} = \$0.05/\text{CF}$
7. Weekly savings = $336 \text{ CF} \times \$0.05 = \16.80

PAYBACK FOR:

At ~\$50 COST *WAT-FRL* = $\$50/\$16.80 = 3 \text{ WEEKS}$

(Payback ~current Argon prices of $\$0.10/100 \text{ CFH} = 1.5 \text{ weeks!}$)

To Purchase a *WAT-FRL* or *FRL* See:

http://netwelding.com/Flow_Rate_Limiter.htm

The Welding Engineer at Texas Hydraulics went to Chart Industries in New Iberia LA

Of Interest, Doug Watkins found gas flow settings in New Iberia were maintained within specified range but found even more gas savings with the WA Technology Gas Saver System (**GSS**)!



Chart in New Iberia now has >700 **GSS** and Chart in all their fabricating plants >2500.

WHAT IS A **GSS**?

A low cost simple to install gas delivery hose that utilizes a small ID custom extruded hose with a “peak flow” limiting orifice in the fitting on the wire feeder/ welder/ or MIG welding Robot end. It stores less gas when welding stops.

Note, the “peak flow limiting orifice” DOES NOT affect the steady state flow. That is

still set with a quality flowmeter at the gas source, be it cylinder or pipeline. A fixed flow control orifice can also be used on pipelines.

Welders set flow as they do now and only observe the improved weld starts. We (and others) have measured peak flow with normal systems at weld starts up to 225 CFH! Anything over ~60 CFH just pulls in air and causes weld starts to have inferior shielding and excess spatter.

Welders appreciate the weld start quality benefit and fabricators gain improved weld start quality (less internal porosity and less spatter) AND gas savings reported from 30 to 60% (depends on the number of weld starts, tack welds, gas hose length).



Purchase a **GSS** at: <http://netwelding.com/prod02.htm>