



Reduce Shielding Gas Use and Improve Starts

This guide presents steps to measure and reduce gas use while improving weld start quality:

Two recent publications quote knowledgeable welding authorities indicating the average user of MIG welding consumes from **3 to 6 times** the amount of shielding gas they could or should use. Check References at: http://www.NetWelding.com/Sales_Literature.htm

Estimate Shielding Gas Waste:

1. Determine wire and gas purchases in pounds and cubic feet over the past 6 or more months. Ask your suppliers; they keep data in the units you'll need, pounds and cubic feet.
2. Insert the data for each wire size/type in the WORK SHEET included at the end of this document.
3. Estimate the average amperage being used from Procedure Qualification documents or just a rough estimate will do. You do not need to be exact. If you error on the low current side you will also be calculating less waste than you actually have but the results will still surprise you!
4. You'll need to insert the approximate gas flow settings.
5. The WORK SHEET defines the wire deposition rate for the current you estimate for each wire size and type. Using the calculations shown you will be defining the actual amount of time the arc is actually "on" versus time spent cleaning and fitting parts etc.
6. Sum the data for each wire and you'll have total theoretical gas usage from flow rate and total hours the arc is on. Don't be surprised if you actually bought 3 times that amount! A high percentage of that gas waste is coming from the gas surge at the weld start!

Example

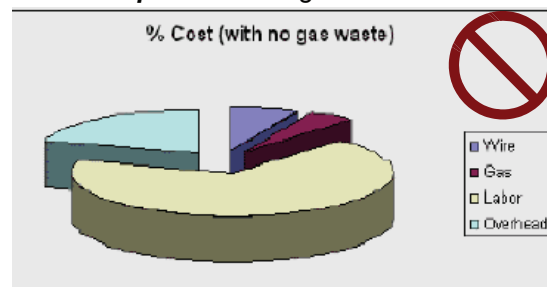
You purchased 46,000 lbs of 0.045 solid wire operating at 200 amps and 35 CFH on average in the past 6 months. During the same period 610,000 CF of Argon and 100,000 CF of CO₂ were bought:

1. Using the WORK Sheet you find the actual arc hours were 7931 and theoretical gas use was 277, 586 CF..
2. But you purchased a total of 710,000 CF of gas. Therefore $710,000 - 277,586 = 432,414$ CF was wasted or $432,414 \text{ Wasted} / 710,000 \text{ Purchased} = \mathbf{61\% \text{ Gas Wasted!}}$
3. If you use several types of wire, treat each individually and add the total gas requirements.

The % Cost of Shielding Gas

A typical way welding gas costs are presented simply multiplies the hours spent actually welding times the gas flow setting. This is based on an **erroneous assumption** that no gas is wasted.

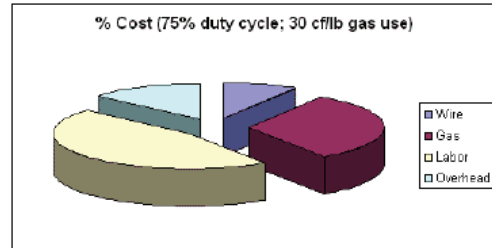
The cost of shielding gas is often quoted by gas suppliers as only about 5% of total welding cost. But this does not include the inevitable extra gas used which may not even come from leaks or excess flow settings as we'll show in the next example. This pie chart is typical of what is shown in most welding articles. **Then why is your gas use so much more? Your not alone!**



The % Cost of Shielding Gas (continued)

If the typical gas waste (as defined in published literature) is used, a much different picture is found.

The pie chart on the right assumes the 30CF of shielding gas per pound of wire is used that the two published articles (one by a major gas supplier) site as typical. Now shielding gas costs are not 5% of total cost but rather **32%!!** Depending on what you're paying for gas this could be you!



Where Does the Extra Gas Go?

Excess gas is stored in the hose from gas source to feeder and expelled at high velocity at every weld start. An example of a fabricator who tested our Gas Saver System (**GSS™**) provides a graphic picture of how much gas is wasted at the weld start. Note: gas leaks, high gas flow settings etc, are not part of this test. Savings achieved were just from reduced gas surge at the weld start!



This manufacturer of truck boxes selected a repetitive job of welding doors. They put a full cylinder of shielding gas on an existing welding system with the existing gas delivery hose. They welded 236 doors with that cylinder. They then put on a new full cylinder and our **GSS** with no changes in gas flow or welding procedures. When the cylinder was empty they had welded 632 doors! That is 2.7 times more parts or said another way they were wasting 63% of the gas they were using! See many more production examples at: http://www.NetWelding.com/Production_Test_Results.htm

How Does Our Patented **GSS** Work?

The savings come from the reduced hose volume with additional savings and improved starts from a built-in start flow surge flow restrictor. Total reduction in gas surge is 80 to 85%.

You can obtain a full explanation on the following web page:

http://www.NetWelding.com/Sales_Literature.htm Download a PDF file of this information.

Although the **GSS** looks and is simple, this recently patented product is unique and maintains the key important features of a gas delivery system, namely:

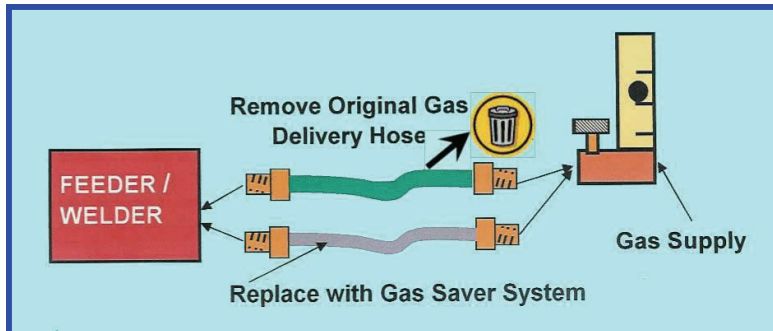
1. It maintains the system pressure so automatic flow compensation is retained. That is why high pressures were built into the system since the invention of MIG welding!
2. It provides a controlled amount of extra shielding gas at the weld start at a flow rate that does not produce excess turbulence to displace air in the weld zone and torch nozzle and body.

These features provide the benefit of reduced spatter weld starts and improved weld start quality.

IN SUMMARY, The **Gas Saver System** :

1. Has no moving parts to wear, leak or need repair.
2. Has no knobs to set or adjust.
3. Controls the start gas surge but NOT the welding gas flow. There is no need for the welder to drill out a restriction orifice! Most welders appreciate that the very high gas surge at the weld start they were getting with conventional systems is now controlled.
4. The **GSS** gas delivery hose is very heavy wall with fiber reinforcement. It can even be stepped on and will not stop or alter the gas flow rate.

It is Easy to Install the Gas Saver System in Most Installations:



If you have a different configuration than shown,
Email:
TechSupport@NetWelding.com

Has Your Shop Tried Gas Saving Products Unsuccessfully?

The Gas Saver System is different than past proposed solutions to the gas waste problem. Welders appreciate the benefits.

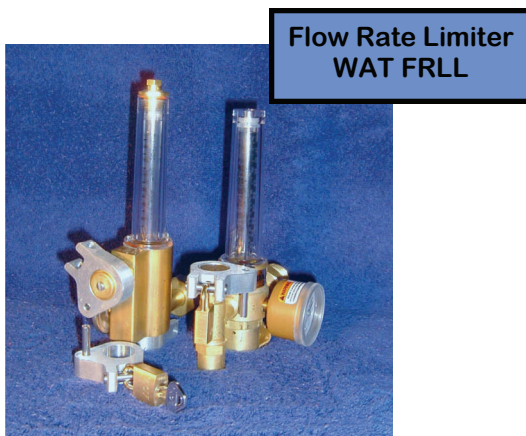
- It maintains automatic flow compensation for the flow restrictions that occur in production.

(This does not happen with low pressure systems. When testing low pressure systems, we've measured gas flow reductions of 65% or more due to system restrictions that can be caused by spatter build-up or bent torch and gas hoses.)

- It provides a controlled amount of extra gas at the weld start to quickly purge air in the weld zone and torch nozzle.

(In addition to maintaining the higher pressure needed to have automatic flow compensation some extra gas at the weld start must also be maintained. This does not occur if flow control is placed directly at the wire feeder)

- It does not try to limit flow settings. Welders don't need to drill out flow control orifices! If controlling max flow is desired add our patented Flow Rate Limiter; See it at: http://www.NetWelding.com/Flow_Rate_Limiter.htm



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6,610,957; # 7,015,412,
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