

Dan Spohn

From: ARM, Inc. <dspohn@arminc.com>
Sent: Thursday, March 16, 2017 1:40 PM
To: dspohn@arminc.com
Subject: Don't Buy Solely on Brochure Specs, Fainting Goats are Real, Aging Asset Options



Advanced Research Manufacturing 719-538-5959
Innovative High Purity Gas Supply System Solutions

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Dear Dan,

So we moved onto a 5 acre property late last year that is zoned for horses. It included a chicken coop, so why not keep chickens for fresh eggs? In anticipation, we did a search on Craigslist.com under 'farm animals' and ran across something I'd never heard of before, fainting goats! Not really believing that there are goats that faint, we did a Youtube search for 'fainting goats'. I've never laughed so hard in my life!

Technically referred to as Myotonia Congenita, the major symptom is delayed relaxation of the muscles after voluntary contraction. So the goats don't actually faint, but rather freeze for a few seconds, and if in motion when the freeze takes place, they will fall over as if they fainted. The action is typically a result of a fright or panic in a given situation. Apparently the condition can affect humans as well as goats, statistically 1/1,000,000 of us suffer from it. I can't say I've ever met any sufferers, but my stage fright in a grade school production of A Christmas Carol, hhhmmm....

But that's not what I wanted to talk about.....

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ARM's Signs Distributor Agreement with Yarbrough

ARM is happy to announce entering into a distributor agreement with Yarbrough Southwest Assoc. Inc. They cover the western, and Southwestern US including California, Oregon, Washington, Arizona, Nevada, Idaho, New Mexico and Texas. The Northeast including New York, Pennsylvania, Vermont and Massachusetts. They will also be distributing ARM products internationally from their location in Taiwan.



We are excited to be working with Yarbrough, check them out on the web at www.yswsemi.com, e-mail info@yswsemi.com.

Brochure Specifications - good, bad, otherwise?

There are a wide variety of parameters to consider when specifying a purifier for any given application. These include:

- Inlet gas purity in percent or PPM
- Actual impurities to be removed
- Outlet gas purity required in percent or PPM
- Impurities other than the one to be removed
- Pressure, and flow rate of the gas being purified
- Total gas usage over time, typically 1 year
- Duty cycle required of the purifier

Purifiers come in a variety of sizes. Larger purifiers can hold more media and have a larger overall capacity for the impurities they are designed to remove. For a given flow rate and impurity level, a larger purifier will typically provide an overall longer lifetime than a smaller purifier. Smaller purifiers though cost less than larger purifiers. Somewhere in between is the sweet spot, offering a useful lifetime at an affordable price.

There are a variety of media (getters, catalysts, adsorbers) that ARM and other manufacturers utilize to purify gases. Which is chosen is based on the gas being purified and the actual impurities the customer wants removed from that gas. In many cases, there are impurities that exist in a gas supply that do not cause concern for the process using that gas. That said, not all of these impurities can be ignored as some can react with certain media reducing the life of the purifier and in some cases poisoning the media rendering it useless.

All purifiers come with a nominal, average or typical flow rate specification, as well as a maximum flow rate specification. Gas demand can also be specified with nominal-average-typical and maximum flow rates. Matching these specifications seems logical and in many situations, it is sufficient to determine a suitably sized purifier.

Most of the various media available for purification have limited capacity for each of the impurities it can remove. It stands to reason then, that the lifetime of any purifier is based on the inlet impurity level, and the flow rate through the purifier.

Duty cycle is another factor that can influence the vessel size selection, as can the desired replacement or regeneration frequency.

So where do we start when we look at publishing specifications in a product brochure or cut sheet. ARM starts with a few assumptions when specifying our standard products. First, for the gas to be purified we assume the impurities are what is typical for the most common industrial supply method. An example would be bottled Argon gas for small point of use purifiers and liquid Argon tanks for the larger bulk purifiers. Second, we assume the purity of the gas from the source is in 4N5 to 5N5 range (99.995% to 99.9995%). The third assumption is that the gas flow rate is steady state and flows 24/7. The fourth assumption is that a 1 year life at the assumed inlet impurity levels and nominal flow rate is acceptable for most applications. We produce standard specifications for our standard products based on these assumptions and selecting a standard product from our literature should easily provide specified outlet purity over 1 year of operation. With more information specific to the application, we can specify a more exact solution typically resulting in a lower purchase price and lower operating cost.

As an example, if your nominal production flow rate is 8 SLPM, you could select a model 02K purifier which is rated for a nominal flow of 10 SLPM. But say your production runs 2 shifts, or 16 hours/day instead of 24 hours/day. Total usage in a year would be 2/3 of the 24 hours/day usage which is the basis for the nominal flow rate specification of the 02K purifier. Selecting the model 600 purifier with a nominal flow rate of 6 SLPM and a maximum flow of 30 SLPM would still provide a 1 year operating lifetime at 8 SLPM flow operating 16 hours out of every 24 hour day.

Another example, most purifiers can remove multiple impurities dependent on the actual media being used. Nominal flow rates are based on the impurity for which the purifier has the least capacity for. If your process gas does not include some of the impurities listed, you may find the capacity for the impurity you are interested in removing will provide a much longer lifetime, which could also allow the use of a smaller, less expensive purifier.

Another consideration when sizing a purifier can be source change-out frequency and control of contamination. Agitation from refilling a liquid tank can cause impurity increases above the normal steady-state operation levels. Changing out a cylinder of gas without proper or adequate purging of the supply line can introduce impurities at higher than steady-state operating conditions. These are situations that are not typically covered when defining standard product specification, but should certainly be discussed when talking with ARM or any other purifier supplier.

Marketing presents data that will be meaningful for a majority of applications, and in a manner comparable to competing products. They try to avoid a depth of detail and breadth of caveats that can add confusion rather than clarity. At the end of the day, it is best to call ARM and provide the details found in the [Purifier Parameters](#) Form on our web site. With this information, we will be able suggest a purifier solution that assures process gas purity at the most economical price.

Latest Installation & Start-up!

ARM's latest shipment includes a couple of high purity subsystems along with an O2 purifier.

The purifier was refurbished under ARM's "Tech Refresh" program. [Tech Refresh](#) is an option ARM offers in-lieu of purchasing a totally new purifier. The O2 purifier for this customer was an existing SAES model PS6-MG60 ARM acquired in an asset purchase in the past.



A "Tech Refresh" starts with an evaluation of soft components looking at condition and life cycle. Only those suspect components identified during the evaluation are replaced, all hard components like high purity stainless steel vessels, plumbing, valves etc. are left intact.

ARM's Advantage Series control and instrumentation package is then installed. The Advantage Series control and instrumentation includes an Allen-Bradley PLC and touchscreen HMI, all software, and any instrumentation hardware required to implement the fully automated process control program. Once implemented the customer has 3 levels of access, "Operator", "Technician" and "Engineer", that allows full access at the appropriate level for operation, maintenance and if required/desired adjustment of process control parameters such as operating/regen temperatures, times, and alarm set points.



The benefit of a "Tech Refresh" versus a new bulk purifier include lower cost and quicker turn around. Assets for the ARM Tech Refresh option can be pre-owned ARM inventory, an existing asset that can be sent to ARM for refurbishment, or an asset that is acquired from a third party and sent to ARM.

If you have such an asset, or the need for purification but not the budget for new, send us an [e-mail](#) or call 719-538-5959. We can provide a ROM price based on the make and model to help you decide to pursue Tech Refresh or a new purchase. If pursuing a Tech Refresh is desired we will do a thorough evaluation and provide a firm fixed price quote.

Also part of this latest shipment is a Transfer Hose Docking Station, providing a continuous purge of a permanently installed liquid gas transfer hose. Use of the transfer hose docking station provides improved cleanliness as the continuously purged transfer hose will not introduce atmospheric contaminants that a truck hose can, and it reduces particulate generation that can end up in the tank.

Fabricated from stainless steel this component can easily live in any environment with little to no maintenance required. If your facility leases the tanks from the gas supplier, and this is of interest, pass on this newsletter to your gas supplier and have them contact ARM at sales@arminc.com. If you own your tank contact ARM directly and we can provide a quote.



Completing the order was a Pressure Control and Filtration Module. This module is designed for gas pad installation in an unprotected environment. The facility where this will be installed has 2 liquid tanks now and 2 vaporizers, the dual path with included automated valves and PLC controlled switch-over, allows for uninterrupted gas flow during peak demands. The parallel path design also provides redundancy and eliminated downtime for routine servicing such as filter cartridge replacement. Electrical controls are housed in a suitably rated NEMA enclosure integral with the stainless steel structural tube frame.

ARM's is much more than a supplier of point-of-use purifiers, our skill and experience covers all aspects and equipment from the gas source to the gas use point. Send us an [e-mail](mailto:sales@arminc.com) or call 719-538-5959 for additional information on these or any of ARM's UHP solutions.

Thanks for reading this far!

We understand that there is very little time in the day to read all the newsletters that make it to your inbox. We will strive to not be 'that company' spamming the world with useless information seemingly every other day for no better reason than some webinar told them that is what they should do.

As noted above if you opt out we will honor your request. If you do tho, you may want to like us on Facebook or follow us on LinkedIn so you can keep your inbox clear, but still keep in touch with what is going on with ARM Inc. in the gas world.

Sincerely,

Dan Spohn
ARM, Inc.



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