Guest Editorial

Specialty Gases: Going Beyond the Molecule

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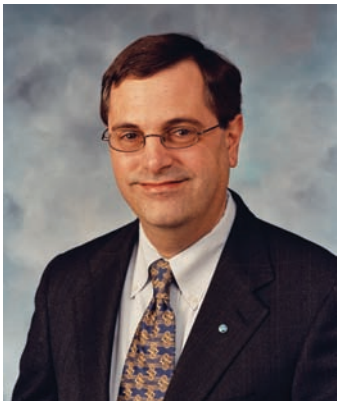

As perhaps a smaller fraction of your overall industrial gas spend, you might be tempted to conclude that specialty gases are way down the list in terms of purchasing priorities. In fact, many an uninformed purchasing agent has undervalued the importance of specialty gases and discovered later the consequences of inaccurate measurements, poor performing instruments or manufacturing line shutdown. And, it's easy to see why you'd be tempted to sway your attention from this relatively smaller spend in favor of your much larger gases and chemical purchases. However, when you look closer, you will see just how much of an impact specialty gases can have on your operation and how your success in specialty gas applications goes way beyond the molecule itself.

From medical procedures to deposition of elements on semiconductor devices, specialty gases, in pure or mixed form, are pervasive. In addition to medical and semiconductor applications, specialty gases are found in a plethora of applications in environmental testing, renewable energy, laboratory, oil and gas, refining, chemical, power generation and petrochemical market segments. Within these segments, there are mission critical applications that require gases of specific purity, accuracy, or precision.

Sometimes these "special" gases (or gases of precise specification) are consumed in the manufacturing process or application. Some medical specialty gases are actually inhaled by patients for therapeutic use, and electronic specialty gases leave behind important elements or compounds on advanced semiconductor circuits that enable devices such as cell phones, televisions, computers and appliances to function properly. Other times, these specialized gases are not directly consumed in the application but instead are created to simulate process or emission gas streams, so that process, medical or analytical instruments can be properly calibrated. These types of specialty gases are often defined as "reference standards" or "calibration gases." One example of the use of calibration gases is in the area of continuous emission monitoring (CEM): trace part-per-million concentration mixtures of stack gas pollutants, such as sulfur dioxide and nitric oxide, are carefully blended and analyzed in cylinders as a "known sample," and a stack monitoring system is calibrated daily against them.

Because many of the applications used in various segments are absolutely mission critical, the considerations for the selection of a supplier of specialty gases go way beyond the molecules themselves. Using a little alliteration, the core attributes are Capabilities, Consultation, Customization, Customer Care, Consistency and Collaboration. In addition to leading edge capabilities, an excellent specialty gas provider will have experienced sales personnel, backed by product and applications specialists to consult with customers up front to understand the requirements of the application and to customize a total solution, including gas, equipment, service and information to support it. And since specialty gases often involve detailed and customized purities and specifications, the provider must not only have the appropriate cylinder preparation, purification, precision blending and analysis technologies for product consistency, it must also have proper CRM systems and experienced people to render excellence in ongoing customer care. And when all parties work hard together to get the details right, then a true collaboration exists between the customer and supplier.

In summary, while your specialty gas purchases may not rival other commodities you purchase in terms of dollar spend, the opportunity cost associated with ignoring their criticality or choosing the wrong provider can be very large…look beyond the molecule!

CSA is reaching out to cover the industrial and specialty gases industry. This is the first in a series of invited articles on various aspects of these markets. If you're interesting in contributing, contact theresa@cryogenicsociety.org.