Global helium supply shortages, coupled with a stable worldwide demand, have caused frequent price increases and a notoriously tight market. As new capacity enters the market and there is a balancing of supply, a less strained supply chain should ensue as 2014 unfolds. But there are also questions as to whether helium demand will actually be marginally smaller than it once was.

This is of course related to the ‘price elasticity of demand’ concept, as prices go up, demand falls – as long as there are suitable substitutes. The so-called Helium Cliff scenario of the last few years has enforced fresh thinking in the industry, with significant innovation effort invested in developing both alternatives to helium, and recovery and recycling technologies. Technology development in certain end-user applications is also ongoing, potentially heralding the dawn of a less voracious helium demand. One such example is magnetic resonance imaging (MRI).

MRI – Peaked consumption?

The relationship between helium supply and MRI applications is well documented. As a technical challenge in cooling down these machines, gasworld understands an MRI magnet could use up to 1500 litres of liquid helium for supercooling. With potentially more than 1000 people waiting in hospitals for an MRI scan at any given time, and with laboratories and medical facilities being struggling to obtain and afford the liquid helium they require.

Quantum Design is another company active in this area, producing Advanced Technology Liquefiers (ATL) along with innovative helium recovery, storage and purification systems. In the past year the company has installed many ATL recovery systems in physics labs, MEG centres and NMR facilities around the world.

Is helium demand likely to be less than it once was due to measures taken during global shortages?

Many MRI manufacturers have, for many years, managed to capture helium, re-liquefy it and put it back into their processes. So while the amount of liquid helium required to cool down an MRI unit after the manufacturing process is relatively constant, the amount of product recovered increases. Linde Kryotechnik is understood to have been installing such liquefiers at a number of manufacturing facilities throughout the world. In addition, next generation liquefiers allow scientists and medical laboratory professionals to produce liquid helium from helium gas, thereby removing the previous requirement to start operations with liquid helium. The new liquefier technologies came at a time when laboratories and medical facilities have been struggling to obtain and afford the liquid helium they require.

Industrial Gas Recovery & Purification System

The PCU Industrial Gas Recovery & Purification System is designed for unattended plant wide operation and provides an efficient means to reuse industrial gases. The system is custom engineered to exact plant requirements for each application.

- Typical flow rate range is from 1 scfm to 20 scfm (with higher flow rates available)
- Typical test pressure is 200 psig (up to 3500 psig)

The industrial gas supply can be connected to either one or multiple locations. Gases are routed through strainers, filters, and dryers resulting in the rapid removal of particulates, condensibles, and moisture.

Additionally, the Industrial Gas Recovery & Purification System can be configured to monitor the gas mix concentration (resulting in concentrations from 10 to 100%).

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Is helium demand likely to be less than it once was due to measures taken during global shortages?

Yes Marginal No Unsure

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Illinois-based Ability Engineering Technology Inc (AET) is also seeing an upward curve in helium purification and recovery systems. In addition to providing standard models and associated accessories, the company can provide custom designed purification and recovery equipment to meet specific requirements – and has seen an increase in enquiries for its technology.

Eugene Botsoe, President and CEO of AET, told gasworld, “With the ongoing shortage of helium and the high costs associated with its purchase, we are seeing an increase in inquiries for helium recovery and purification systems. In the last six months of 2013, AET Inc. has experienced a doubling of inquiries for helium recovery and purification systems used in both scientific R&D and industrial applications. The inquiries have been global (Asia, Europe, Africa, the Middle East), and potential clients have expressed an interest in both low and high pressure systems.”

Recent enquiries are understood to have been from US Department of Energy (DOE) laboratories and academic institutions involved in scientific R&D. “These inquiries have been for our LP60P low pressure helium purifier systems.”

“In the last six months of 2013, AET has experienced a doubling of inquiries for helium recovery and purification systems said Botsoe. “The LP60P purifier has a 30-year track record of successful operation in scientific R&D application, and it is designed for a helium flow rate of 60 grams/sec with an MAWP of approximately 350 psig for the helium circuit. AET is currently developing the LP30P and LP100P models, which should be commercially available by the summer of 2014.”

“In interest in AET’s high pressure systems have been from industrial companies focused on helium recovery and purification,” Botsoe added. AET offers a high pressure system rated for gas pressures of approximately 3000 psig, with two models are available based on the impurity level of the helium gas stream. A 150Nm3/hr flow rate system is currently available, while the company is developing both 25Nm3/hr and 50Nm3/hr models which will be available in 2014 – highlighting the growing thirst for conservation and recovery technologies.

With initiatives in place, the question exists in 2014 whether the demand for helium coming out of the market shortages will be less than it was before; market indicators appear to suggest a marginal softening in demand in the post-shortage helium business.

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