Global Helium Market Swings to Oversupply Following Supply Constraints and Demand Destruction, IHS Markit Says

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Demand for MRI -- along with Asian manufacturing growth for electronics, semiconductors, LCD and fiber optics --will continue to drive helium market

HOUSTON (Nov. 7, 2016) – The global market for helium, an inert gas essential for medical resonance imaging (MRI), semiconductors, welding and other manufacturing and industrial uses, is growing at 2 percent per year. That is less than the anticipated production rate since new capacity is coming online and recent shortages have destroyed some demand, according to new research from IHS Markit (Nasdaq: INFO), a world leader in critical information, analytics and solutions.

"Except for hydrogen, helium is the lightest of all gases, which makes it ideal for numerous applications, particularly for MRI and scientific uses," said Ralf Gubler, director at IHS Markit, and lead analyst of the report, entitled: Helium: Chemical Economics Handbook. "However, the global market for helium has been extremely volatile in recent years, which has caused significant challenges for suppliers and consumers. The market has gone from intensely undersupplied to oversupplied in just three years, as tight supplies have caused product substitution and recycling in some applications."

According to Gubler, the helium market suffered under massive supply constraints during 2011 to 2013, which caused severe shortages and greatly reduced demand as consumers started to either substitute or recycle helium. The situation improved toward the end of 2013, Gubler said, when the Qatar Helium II project went on-stream midyear, and then swung quickly into oversupply, with additional capacity added from expansions in Algeria and in the U.S. at the end of 2013 and 2014.

"Several factors contributed to the shortage, Gubler said. “Even in full production, the helium supply was tight, and any production disruption caused significant product shortage and subsequent relocation of supply. Additionally, declining demand for natural gas, along with planned and unplanned maintenance, has curbed global helium production. Because of the tight supply, and even supply interruptions, helium end-users started to look at substituting helium with another gas (e.g. with hydrogen in gas chromatography) or recovering and recycling helium.”

North America is the largest producer and consumer of helium. In 2015, North America produced 53 percent or 78 million cubic meters of helium and consumed more 42 percent of global supply or more than 71 million cubic meters. In terms of consumption, Europe follows North America with 19 percent of helium supply consumption.

From a production standpoint, the Middle East follows North America as the world’s second-largest producer of helium, with more than 27 percent of world supply. Africa rounds out the top-three producers with nearly 11 percent of world helium production. Qatar, Algeria, Russia, Poland and Australia also produce commercially significant quantities of helium, the IHS Markit report said.

In terms of individual countries, the U.S. is, by far, both the largest producer and consumer of helium the IHS Markit report said. In the U.S., the Bureau of Land Management (BLM) manages the world's largest helium reserve. The BLM provides the bulk of U.S. production and accounts for 35 percent of
Commercially, oil and gas producers recover helium from natural gas deposits, so the helium market ties to natural gas production activities. Additionally, producers extract helium from vent gases at some liquefied natural gas (LNG) processing plants.

At atmospheric pressure, helium becomes liquid at 4.2 K (minus 268.9 degrees Celsius or minus 452.1 degrees Fahrenheit). In 2015, an estimated 25 percent to 30 percent of global helium consumed was in liquid form. The entire helium supply depends on roughly 20 liquefaction plants, located in the United States, Poland, Russia, Algeria, Qatar, China and Australia.

In the major consuming regions, the U.S., Western Europe, Japan, China and other Asian nations, MRI was the largest application for helium at nearly 19 percent of total consumption, followed by semiconductors/electronics at 14 percent, and fiber optics at more than 10 percent. Welding applications, according to the IHS Markit report, accounted for nearly 9 percent of helium demand.

IHS Markit researchers expect electronics manufacturers in China, South Korea and Taiwan to drive future helium demand. Semiconductor manufacturing, flat-panel display manufacturing, and optical-fiber manufacturing are all significant consumers of helium in Asian markets.

While IHS Markit expects worldwide growth for helium to grow at just 2 percent from the study period of 2015 through 2020, demand in these countries will grow at nearly double the global rate, due to technology manufacturing. As such, with high-tech manufacturing shifting to Asian countries, the U.S. and Western European share of worldwide helium demand will continue to decline, the IHS Markit report said.

The logistics of transporting helium are complex and, because of the properties of helium, the helium business is extremely capital intensive. The most important cost factor for transporting helium is the number of cryogenic containers needed. The storage tanks for helium are double-walled pressure containers with multi-layer vacuum insulation and a radiation shield chilled with liquid nitrogen. With costs of $750,000 per container, the global ISO container fleet is worth approximately $750 million.

“The helium business is a highly consolidated business, with only 10 companies—mostly industrial gas companies, having direct access to sources of helium—which keeps the market very competitive and extremely tight,” Gubler said. “These companies control access to almost the entire global production of refined helium, and as a result, we’ve seen a great deal of recent consolidation and M&A (merger and acquisition) activity in the market.”

According to the IHS Markit report, the major players in the helium market include Air Liquide, Air Products, Buzwair Gases, Global Gases Group, Iwatani Corporation, Linde, LNG Japan Corporation, Matheson Tri-Gas, Messer and Praxair.

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