

# A moving target

Global helium market balance and predictability

The worst of Helium Shortage 4.0 should be behind us, but only if stable operations, restarts and ramp-ups at key nerve centres around the world are realised as hoped. Spot pricing also to remain high in the short-term, write **Rob Cockerill** and **Dominic Ellis**.



A year of supply constraints, shipping pressures and rising prices – coupled with wars and accidents, healthcare challenges and soaring semiconductor demand – have created a perfect storm for operators grappling with ‘Helium shortage 4.0’.

Yet the clear message from the *Global Helium and the Role of MENA in the Supply Chain* session, on the opening day of the Abu Dhabi MENA Industrial Gases 2022 conference, is there may be some grounds for optimism – whether that’s through new products, fresh or returning capacity and market developments. Optimism that is, however, tempered with uncertainty.

The market has experienced unprecedented pressures primarily due to the natural gas explosion at Gazprom’s headline new Amur plant. If and when it returns this year (2023), it has the potential to make a significant contribution to supply and help moderate prices.

In fact, according to Phil Kornbluth, Founder and President of Kornbluth Helium Consulting, the Gazprom-Amur gas processing project will be the single biggest factor affecting helium markets in the next four years, and it will be a very low-cost product (sub-\$200/mcf) until initial pricing reopens, as that pricing was established pre-Helium Shortage 3.0 with conservative

price indexation.

Kornbluth was speaking during a pre-recorded presentation and Q&A at the conference. He explained how other major factors contributing to Helium 4.0 shortages are the outage of BLM’s Crude Helium Enrichment Unit, planned maintenance in Qatar, natural gas from Algeria partially diverted from LNG production to undersea pipelines to Europe as a result of the Ukraine conflict, and more recently the depletion of feedgas for Darwin’s plant in Australia and fire at Haven KS gas processing plant.

This has been met with modest demand growth of around 2-4%, driven by the construction of new wafer fabs, with electronics surpassing MRI as the leading application – modest demand growth that is only set to continue.

The worst, however, of Helium Shortage 4.0 is anticipated to be behind us all, even if the factors that will bring about that conclusion remain something of a moving target. Reflecting on the divergent dynamics within the market, Kornbluth said at the time of the recording in November (2022), “We all know about the delayed start-up of Gazprom’s Amur plant; we’ll come back to that shortly. The second big factor in Helium Shortage 4.0 was an outage of the US Bureau of Land Management’s (BLM) crude

helium enrichment unit (CHEU). That crude helium enrichment was down from mid-January through to mid-June, and that curtailed feedgas to four key helium liquefaction plants took roughly 10% of the world supply out of the market.”

“But there were some other important factors, too. There was planned maintenance in February and March at two of the three helium plants and in Qatar also, which took a significant amount of supply out of the market during that period. We also natural gas from Algeria diverted from LNG production to undersea pipelines to Europe, to compensate for the loss of Russian gas in the region, and that reduced the flow of feedgas to the helium plants as a result.”

“Meanwhile, the Darwin plant in Australia is producing less due to the depletion of the offshore gas field that feeds the Darwin LNG plant. And there was a fire at a natural gas processing plant in Haven, Kansas that produces crude helium. So, these are just the bigger contributing factors – the list is often much longer than this. There are also miscellaneous minor upsets during the year, and we often joke about ‘Murphy’s Law of Helium’ – that is, when one plant goes down or gets sick, the others seem to catch the virus. So in many ways, Covid was not the only virus going around this past year.” ▶

► “Yet, the worst of Helium Shortage 4.0 should be behind us if the BLM is able to maintain stable operations, and 2023 may be a year of transition to ample supply. But it all depends on the timing and magnitude of Amur’s production; the restart and ramp-up is likely to be delayed.”

“What I can say right now is, there’s definitely not going to be any helium production from Amur before the end of 2022. There probably will be some helium production beginning mid-year 2023, but there’s still a lot of uncertainty around those dates. Certainly the timing of the restart has been delayed by the war in Ukraine and the logistics to get product to and from or to get transport containers to and from Amur will be much more challenging due to sanctions.”

#### Pricing effects

Contract prices will continue to experience significant increases driven by cost shocks from Qatar and ExxonMobil, Kornbluth explained, and spot prices are likely to remain elevated.

As aforementioned, helium from the Amur plant will be a very low-cost product until initial pricing reopens, as pricing was established pre-Helium Shortage 3.0 with conservative price indexation.

“The spot market, which receives way more publicity than it deserves because it’s a relatively small part of the helium business, seems to have reached a plateau, or at least a temporary plateau, but at very high prices,” said Kornbluth. “The outlook for the next couple of years is again, very fuzzy, and very dependent on a more stable 2023.”

The emphasis is again very much on when the Amur plant finally reopens. “Prices should moderate when Amur supply enters the market, and supply should be plentiful in 2024 but it’s far from a sure thing,” Kornbluth said,

“given uncertainty about Ukraine and Russian sanctions.”

#### Outlook

In terms of outlook, Kornbluth provided more detail on the potential project updates and market factors that could affect the global helium business in 2023 and ultimately bring Helium Shortage 4.0 to an end.

“Irkutsk oil company is in the process of starting up their new Yarakinsky plant. As I’m recording this, they are hoping to produce their first liquid helium before the end of November. That could easily slip into December or even January, but it’s a 250 million cubic feet per year plant. When it reaches full capacity, it won’t be enough to end the shortage, but it would provide some relief.”

“In terms of the outlook through the first quarter of 2023, Gazprom has been telling people recently that they expect to start up their first train by April, with their second train just a couple of months behind. We have to caution that just because Gazprom is saying its going to start up in April, that doesn’t mean it’s going to happen. There have been many missed deadlines along the way, but certainly I want to consider the possibility that the plant may start up as early as April; up until then, helium markets will remain over-sold. Four of the five helium majors are allocating supply, although in some cases allocation percentages have increased a bit since the BLM restarted its CHEU.”

“Overall, I think the worst of Helium Shortage, 4.0 is probably behind us. It depends mostly on the timing and magnitude of production from Amur. If Amur doesn’t start up, we’ll have a shortage for the rest of 2023. If Amur does start up in April and the second train comes on two months later, and it runs fairly reliably, then we should see relief from the shortage

“I think the worst of Helium Shortage, 4.0 is probably behind us. It depends mostly on the timing of production from Amur...”

during 2023.”

“Another factor could come into play if we have a recession that would reduce demand and help to rebalance the market. Certainly, the semiconductor industry is in a bit of a slump at the moment and that will reduce demand from that segment.”

In closing, he summarised, “I get asked the question a lot – when will Helium Shortage 4.0 come to an end? And my answer to that is optimistically, 9 to 12 months from now. That’s kind of a best case, I would say, and it could go longer than that. And, you know, again, we have to keep an eye on Amur in 2023/24.”

“As far as the war in Ukraine is concerned, thus far, liquid helium exports have been exempted from sanctions. As of 22<sup>nd</sup> November when I’m recording this, there are no sanctions on helium exports from Russia.”

“Of course, that could change at any time, and if sanctions were to prevent Gazprom’s contract partners from contract performance, it could reduce and delay the impact of Amur supply on the global market and extend Helium Shortage 4.0 into 2024.” **gw**