ECONOMY DURING THE WAR

GMK CENTER

GMK Center is a Ukrainian think-tank and media-source continues its work to share relevant information about the economy of Ukraine during the war. We call for attention to the devastating effects of war on civilians and infrastructure, as well as the negative effects for the whole world.

War exacerbates GLOBAL CHIP SHORTAGE

70%
of neon gas is supplied by Ukraine globally

40%
of krypton gas is supplied by Ukraine globally

Ukraine Is the world's largest producer of noble gases including neon, krypton and xenon. All three are critical to semiconductor manufacturing, especially high-end chips. Gas mixtures with neon, krypton and xenon are used to power lasers for photolithography (the process of etching circuits into silicon wafers).

According to market estimates, Ukraine supplies about 70% of the world's neon gas and 40% of the world's krypton gas. Moreover, Ukraine supplies 90% of the highly purified, semiconductor-grade neon for chip production in USA.

Neon, krypton and xenon are all byproducts of the air separation plants that produce oxygen for large steel mills. Gas suppliers like Linde and Air Liquide buy inert gases, purify and liquefy them to get finished product which can be supplied to global chipmakers.

According to Reuters, from 45% to 54% of the world's semiconductor-grade neon comes from two Ukrainian companies, Ingas and Cryoin. Both closed production operations after the start of the war.

Ingas is based in Mariupol. Before the war it produces from 15,000 to 20,000 cubic meters of neon per month.

Cryoin is located in Odessa. The plant produces from 10,000 to 15,000 cubic meters of neon per month.

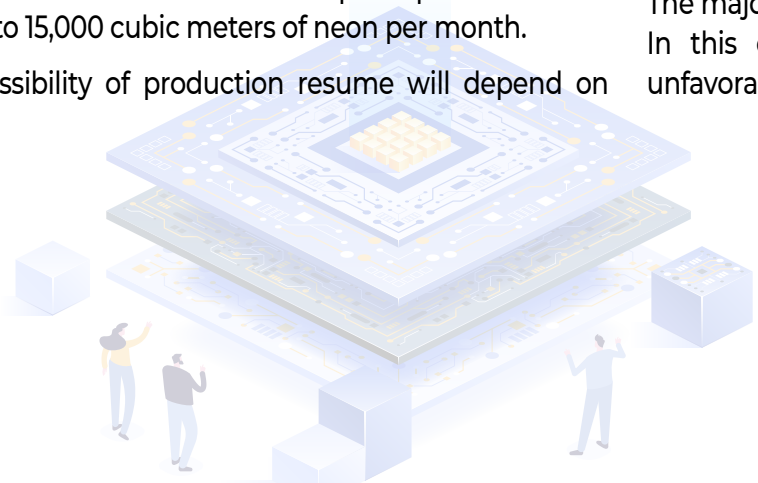
The possibility of production resume will depend on the state of the steel plants after the end of hostilities. Before the war Ukrainian gas supplier also use neon from Russian steelmakers. Continuing this cooperation in the future is unlikely.

Theoretically it is possible to launch neon production elsewhere, outside Ukraine, but there are several problems. Neon has to be refined to a 99.99 percent purity. Only few companies in the world can receive such quality. It would take nine months to two years to scale up production. Additional issue is product certification that could take several months or even more than half a year.

Interruption in the supply of noble gases has already disrupted the production of high-technology goods, including automobiles. For example, Volkswagen closed two factories in Germany for several days after the Russian invasion.

It is not possible to accurately assess the short-term consequences of disrupting supply chains, because the market of noble gases is not transparent. Market observers assume that large chipmakers have sufficient reserves of inert gases, while small producers are under pressure.

The major risk is the prolongation of the war in Ukraine. In this case forecast for world chip production is unfavorable.



STOP THE WAR