



The 2025 US air gases market report

New plant builds slowed by economic uncertainty

By Maura D. Garvey

The US industrial gas industry is moving forward from the challenges and uncertainties brought by the global economic struggles of the past few years, driven by the wars in Ukraine and the Middle East and geopolitical energy issues. As the US moves into 2025 with continuing GDP growth, a healthy labor market, and productivity enhancements from artificial intelligence, the industry looks set to continue to grow. At the same time, the US elections have contributed to a wait-and-hold attitude when it comes to new investments, and not surprisingly it has leaked into this new year, as various markets try to understand how the new presidency and potential tariffs may impact business.

When it comes to air gases, supply chain issues that began during the pandemic have been improving but are not fully resolved, with many challenges persisting. Like other parts of the industrial gas business, US air gases production and investment has been impacted in some markets more than others by these supply chain challenges, including issues.

These issues have caused some

planned plant startups to be delayed and in general slowed new plant builds due to a lack of demand. At the same time, US economic data points to some markets being more resilient than others. Markets that have fared better include healthcare, electronics, and food processing, while the greatest negative impact has been on general manufacturing and the metals sector.

In 2024, announcements of domestic air separation unit (ASU) and liquefaction builds and expansions for startup through 2027 were similar to the prior year, reflecting the impact of the slow recovery to the economy on

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the US air gases business. At the end of 2024, just three new or ASU expansions with liquefaction had come online in the prior 12 months, with an additional four new ASUs expected to come on-stream between now and 2027.

The economic landscape in 2025 will drive how demand develops for oxygen, nitrogen, and argon across sectors, especially in fabricated metals and automotive, and stainless steel and electronics for argon. Production of argon has always relied on large-volume oxygen production at ASUs.

ASU builds, expansion, and replacement

Investments in new or expanded capacity among to many millions of dollars and are based on large and long-term demand drivers for industrial gas products in regional markets. New ASUs, expansions, and replacement activity result from a need to remedy regional supply issues or replace aging and inefficient plants. The distribution supply chain substantially drives where new capacity is needed to support growth in demand for oxygen and nitrogen. Growth in oxygen and nitrogen has been slow but ►

► steady, but growth in argon has been higher, causing supply to be tight in some regions.

Intelligas expects an increase in plant builds as the economy improves to expand supply or replace older ASUs. These plants will support oxygen demand to serve the steel, chemicals, and energy markets; an increase in nitrogen demand to serve the energy and merchant markets, such as food; and an increase in argon to serve the stainless steel and specialty steel markets, electronics, and welding/construction markets. New plants being built are planned to support the coming growth in the electronics market driven by reshoring semiconductor production supported by the CHIPS Act.

Announcements for ASU builds continued into 2024. Most producers, including several independents, announced plans to increase capacity over the past year specifically to remedy these situations. Here is some detail:

Air Liquide/Airgas operates over 80 ASUs in the US. Last year, Air Liquide proposed a \$550m project to build a new world-scale ASU in Baytown, Texas, for distribution to customers in the Gulf Coast area. The expected start date for the construction of the ASU is 2026, with an expected end date in 2028.

The other project announced by the industrial gas major in May 2023 was its investment in two plants in North Texas to supply ultra-high-purity (UHP) nitrogen and oxygen to the electronics industry. The investment will support the expansion of two existing manufacturing facilities and be used to build onsite plants and systems at a new manufacturing site in the region that's set to be announced. Operations and supply were expected to begin in the second quarter of 2023 at the existing facilities and to start in the first half of 2025 at the new

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manufacturing site. To achieve UHP grade, dedicated columns with strict controls on pressure and temperature are used to further purify the nitrogen and oxygen streams.

Airgas previously strengthened its argon supply chain for its customers in automotive and aeronautical, electronic, manufacturing, and metal fabrication applications by adding two argon storage nodes in Ohio and New York respectively. And it has now followed up, installing a third argon node in early 2024.

Air Products operates more than 45 ASUs in the US. In July 2024, the industrial gas giant announced plans to build two new ASUs to replace older units and to expand capacity at its Conyers, Georgia, and Reidsville, North Carolina, locations. Both locations will produce oxygen, nitrogen, and argon for existing customers and in the merchant market. Both ASUs are projected to be onstream in 2026 and will serve as back-ups to each other.

Linde plc has over 60 ASUs across the US. In 2024, Linde started up the Mims, Florida, ASU expansion plant and brought onstream a new ASU in La Porte, Texas. Linde increased capacity at Mims by almost half to supply its contracted customers across all end markets, including aerospace, healthcare, manufacturing, food processing, and water treatment. This expansion follows a similar project in 2020 that doubled its production. Linde also doubled its merchant liquid capacity at its La Porte ASU to meet

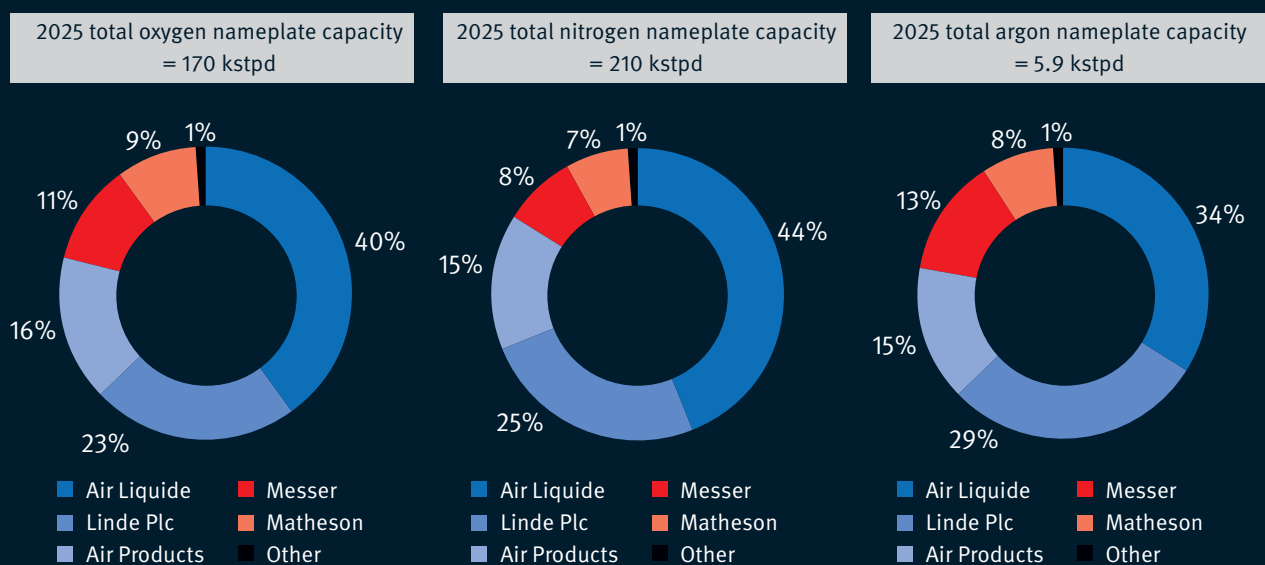
increased demand for industrial gases across the US Gulf Coast. In addition to merchant liquid products, the LaPorte ASU supplies the company's Gulf Coast nitrogen and oxygen pipeline system, which extends from the Houston ship channel south to Freeport.

Linde has two more ASUs set to come onstream in 2025. First, Linde is building an on-site complex in Beaumont, Texas, which will include a large ASU. The new complex will be integrated into Linde's extensive Gulf Coast industrial gas infrastructure. In addition to supplying OCI, Linde will also use its pipeline network to supply atmospheric and rare gases to existing and new customers. Linde is also planning to complete a new ASU in Charleston, Tennessee, in 2025 to serve growth across multiple segments along the I-75 corridor. The new ASU will produce liquid oxygen, nitrogen, and argon, serving customers in Knoxville, Chattanooga, and Nashville areas of eastern Tennessee, as well as in northern Alabama and Georgia.

MATHESON currently operates over 35 ASUs across the US, including the 16 ASUs purchased from Air Liquide in 2016. It completed construction of its last ASU in 2019, when it built a new large-scale ASU to supply Lotte Chemical Louisiana LLC with tonnage oxygen and nitrogen to its world-scale monoethylene glycol (MEG) plant in Lake Charles, Louisiana.

Messer, which has over 30 ASUs in the US, in 2024 brought online a new ASU in McGregor, Texas. The new large-scale ASU will substantially use energy supplied from an onsite solar panel array. It is the first Messer plant to be powered by a co-located renewable energy source, helping to reduce its carbon footprint. The new plant will produce gases that assist growth in central Texas, supporting expanding industries in the area,

FIGURE 1: 2025 US producer share of nameplate oxygen and nitrogen capacity



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including aerospace, chemicals, electronics, food and beverage, as well as healthcare, metals, and oil and gas. This plant extends its southwestern merchant gases supply network to meet growing customer demand in the region, which has been supplied from existing plants in La Porte and Terrell, Texas, as well as Lewisville, Arkansas.

In January 2025, Messer announced its investment in a new state of the art ASU in Berryville, Arkansas to increase production capacity in the region to meet growing demand. The new ASU, to be on-stream in the second half of 2026, compliments the existing Lewisville, Arkansas ASU.

Absolute Air LLC broke ground in Faribault, Minnesota, about 50 miles south of Minneapolis, in September 2019, executing its plan to build a merchant ASU in the Minneapolis metropolitan area to serve its partners and customers. The plant started up a year ago, behind schedule partly due to supply chain issues brought on by the pandemic. The five distributors

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involved in the project are Mississippi Welders Supply, Toll Company, Minneapolis Oxygen, A-OX Welding Supply, and Huber Supply. The location, Faribault, is in the heart of the five partners' operations.

UIG, a division of Nucor Corporation, focuses on the middle market nitrogen and oxygen gas users. UIG owns and operates several ASUs around the US, many of which produce dedicated liquid product, in addition to the gaseous products they feed directly to pipeline customers. UIG, and its plant operations affiliate

Universal Cryo Gas (UCG), works with customers by building a customer's plant to produce their own gases or by UIG building, owning, and operating an ASU at the customer site where the customer is buying the gases produced.

In 2022, Nucor announced mill modernization projects at its Nucor Steel Berkeley division located in Huger, South Carolina. One of the projects was the construction of a new ASU by UIG for the purpose of supplying industrial gases for the mill's steelmaking operations. That ASU went live in 2024 and is operated by UIG. This ASU allows Nucor to produce and supply all the gases needed for the steel mill from the new Nucor-owned facility, both now and into the future.

Air Water Gas Solutions, a subsidiary of Air Water Americas (a subsidiary of Air Water Inc of Japan), has signed a 20-year agreement to supply RED-Rochester, LLC (RED) with nitrogen for its Eastman Business Park (EBP) pipeline in Rochester, New York. ►

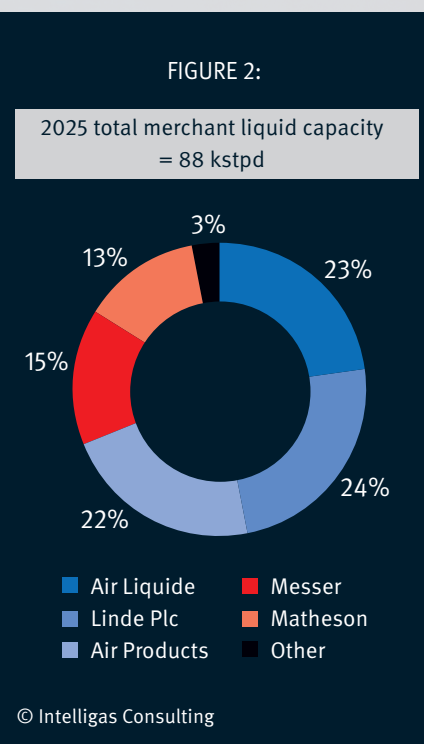
► Air Water will deliver high-purity nitrogen gas from a new ASU plant located within EBP in Rochester. The ASU will have the ability to meet RED's clients' needs within the park and the surrounding local New York market for merchant liquid nitrogen, oxygen, and argon.

Air Water will build, own, and operate the ASU and commence operations in 1Q 2026. Air Water currently supplies merchant liquid products to clients in the Midwest and Central US.

Air Water America Inc acquired American Gas Products LLC (AGP) on September 28, 2023. AGP is a national helium and industrial gas supplier with a large customer base in the US. Air Water previously acquired independent industrial gas and welding products distributor Noble Gas Solutions in Albany, New York, in May 2022 and Phoenix Welding Supply of Phoenix, Arizona, in August 2023.

Iwatani Corporation of America, a wholly owned subsidiary of Iwatani Corporation of Japan, acquired Aspen Air US LLC, with a small ASU located in Billings, Montana, on January 4, 2023, entering the US industrial air gases market. Aspen Air is a leading manufacturer and distributor of bulk liquid industrial gases in Montana and the surrounding states. Aspen Air supports a diverse industrial and medical base of customers, including those in the energy and chemicals sectors, hospitals, and the very important packaged gases and

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independent distributor network. The acquisition reflects Iwatani's focus on supporting customers in underserved markets.

Iwatani has operated in the US for more than 40 years. In recent years the company has broadened its business platform to include hydrogen, helium, specialty gases, and now air gases.

Markets and demand

Demand for oxygen and nitrogen has been growing with the pace of the economy, but growth in argon has fared better, causing supply to be tight in some regions. In general, when the economy improves, Intelligas anticipates an increase in oxygen demand to serve the steel, chemicals, wastewater treatment, and energy markets, plus an increase in nitrogen demand to serve the energy and merchant markets such as food. Finally, we expect to see an increase in argon to serve the stainless steel and specialty steel markets and welding/construction markets.

Key markets for oxygen are steelmaking and metal-cutting applications, the chemical and refining industries, pulp and paper processing, glassmaking, gasification, and healthcare. Strong market drivers include oxygen combustion, fabrication, and environmental applications like wastewater treatment. Durables manufacturing, which includes fabricated metals, machinery, electrical equipment, and motor vehicle manufacturing, comprises about 25% of US industrial gas revenues and is a key oxygen market. This segment has seen growth through 2024 in proportion to the recovering manufacturing sector.

Key markets for nitrogen include food and food services, welding and metal fabrication, fuels and chemicals production and refining (including the oil patch), electronics, pulp and paper processing, glass making; oxyfuel combustion applications, gasification processes, and medical therapies. US nitrogen-consuming markets have grown, like oxygen, in relation to the manufacturing sector, with electronics, medical, and food markets increasing.

Air gas capacity

Intelligas tracks developments across industrial gases in the US and has developed and maintained estimates of US plant capacities for a variety of products, including oxygen, nitrogen, and argon from ASUs. Intelligas capacity estimates are based on publicly announced capacity data, discussions among players, and estimates of continual improvements to those capacities from de-bottlenecking and reaming out of nameplate capacities. The plant capacity estimates below do not include non-cryogenic capacity or customer-owned and -operated capacity.

As mentioned earlier, US producers build or expand their capacity to meet rising demand for air gases or to replace

older, less-efficient plants. Typically, ASUs do not operate at full capacity and reduce production during slowing economic times or recessions. The rise of new ASU announcements and expansions in 2024 was very like prior years and reflects the impact of the slowly recovering US economy and inflation on the US air gases business.

Key US-installed nameplate (NP) capacities for total oxygen, nitrogen, and argon molecules are produced from large, on-site pipeline (OSP) complexes. These complexes feed into dedicated pipeline networks and the primary markets supporting each piggyback and standalone merchant plant. At the end of 2024, Intelligas projects NP oxygen capacity to be approximately 170,000 short tons per day (kstd) and total merchant liquid (liquid oxygen (LOX), liquid nitrogen (LIN), and liquid argon (LAR)) at about 86 kstd.

Argon production is tied to oxygen production at ASUs – and large increases in oxygen capacity are needed to get significant increases in argon capacity. The most efficient way to produce argon is to piggyback pure argon capacity on large, on-site oxygen plants of 1,000 tpd capacity and larger.

Argon production has struggled in some regions to keep up with demand, and producers have windmilled plants (a process where argon is captured while the oxygen is vented) and made efficiency improvements to improve supply. Even with these efforts, supplies of argon can be tight in some regions.

Player share of capacity

Figure 1 shows the US share of total oxygen, nitrogen, and argon nameplate capacities by major industrial gas producer. Included in the oxygen chart are molecules that feed OSP customers and merchant liquid plants, whether piggyback or standalone. Of the five major producers, Air Liquide and

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Linde plc have 62% of all US oxygen capacity (about 170kstd). The three other majors, Air Products, Messer, and MATHESON have 35% of NP oxygen capacity. The remaining 1% of capacity is operated by other independent companies such as industrial gas distributor Norco, UIG, Absolute Air, and Iwatani (Aspen Air). Once the Air Water plant starts up in 2026, the company will join the ranks of the other independents. The shares do not change significantly each year, as the newly added volumes each year are very small compared with installed plant volumes in the US.

Air Liquide and Linde plc also have the largest share (69%) of all US nitrogen NP capacity, or about 210 kstd. The three other producers, Air Products, Messer, and MATHESON have 30% NP nitrogen capacity. The remaining 1% of capacity is operated by the other independent producers.

In 2025, total argon capacity is estimated to be 5.9 kstd, as shown in Figure 1. Air Liquide and Linde plc currently have 64% of the total US argon capacity, with 34% and 30% respectively. Air Products holds 15% while Messer holds a 13% share of this capacity. This is followed by MATHESON with 8% and others with 1%.

Total merchant liquid capacity for 2025, shown in Figure 2, is an important segment experiencing increases in demand from the food, electronics, and fabrication markets. The total US-installed merchant liquid capacity by player is estimated at 88 kstd. This figure constitutes all the merchant liquid that comes from the merchant liquid plants and ASUs (called piggyback ASUs) in the US that have merchant liquid capacity. Air Liquide and Linde plc have a combined 47% share; Air Products has a 22% share, followed by Messer with 15% and Matheson with 12%. Others account for the remaining 1%.

Air gases and the year ahead

New ASUs, expansions, and replacement activity result from a need to remedy regional supply issues or replace aging plants. Driving recent builds and expansions of ASUs in the US is the higher demand for oxygen and nitrogen from big chemical operations on the Gulf Coast, electronics for new semiconductor fabs, and merchant liquid customers, and increased argon demand from electronics and stainless-steel sectors. Intelligas is confident that air gas-related markets will improve as the US economy improves into 2025.

The air gases business continues to feel the effects of the recovering US economy, inflation, and business markets, as do other industrial gas products. The current economic recovery will bring challenges, especially in the more cyclical sectors such as manufacturing, chemicals and energy, and metals. Producers that serve a variety of markets will pursue growth in less-cyclical end-markets, such as electronics, healthcare/medical, and food and beverage – markets that were more resilient during economic slowdown and inflation of the past few years. **SW**