

Air Liquide Autothermal Reforming technology selected for first low-carbon hydrogen and ammonia production in Japan

Air Liquide, through Air Liquide Engineering & Construction, is actively leveraging on its complete portfolio of innovative technology solutions to support the decarbonization of its industrial customers. Autothermal Reforming (ATR) is one of the latest technologies utilized enabling the efficient production of large scale, low-carbon hydrogen and ammonia, when combined with carbon capture technology. One of the leading companies for ATR, Air Liquide's technology has been selected for Japan's first demonstration project owned and operated by INPEX CORPORATION to produce low-carbon hydrogen and ammonia.

While other reliable solutions are available on the market today, such as Steam Methane Reforming with carbon capture, ATR is one of the most suitable options for specific larger scale low-carbon hydrogen production facilities. When ATR is combined with carbon capture technology, customers can achieve higher energy efficiency, lower investments and a simplified single train production process to facilitate carbon capture of up to 99% in highly integrated industrial facilities.

Air Liquide is one of the leading companies for Autothermal Reforming with proprietary technologies in the ATR process for large scale syngas production applications. Air Liquide Engineering & Construction will now provide the technology for low-carbon hydrogen and ammonia production to a pilot project owned and operated by INPEX CORPORATION, a Japanese oil & gas exploration and production company. ATR will be part of the development of the *Kashiwazaki Clean Hydrogen and Ammonia Project* in the Hirai area of Kashiwazaki City, Niigata Prefecture, Japan. The overall project will be Japan's first demonstration project integrating low-carbon Hydrogen and Ammonia production with carbon capture.

Michael J. Graff, Executive Vice President, Air Liquide Group, stated: *"Air Liquide's expertise in providing customers with efficient, reliable, innovative technologies and solutions is at the heart of our ambitions to support the decarbonization of industries. We are pleased to collaborate with INPEX CORPORATION and to be one of the contributors to the development of this first demonstration low-carbon Hydrogen and Ammonia project in Japan."*

Air Liquide Engineering and Construction

Air Liquide Engineering & Construction builds Air Liquide Group production units (mainly air gas separation and renewable and low carbon hydrogen production units) and provides external customers with efficient, sustainable, customized technology and process solutions. Air Liquide Engineering & Construction's core expertise in industrial gases, energy conversion and gas purification, enables customers to optimize natural resources. This business unit covers the entire project life-cycle: license engineering services / proprietary equipment, high-end engineering & design capabilities, project management & execution services. As a technology partner, customers benefit from our research and development to contribute to energy transition.

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A world leader in gases, technologies and services for Industry and Health, Air Liquide is present in 75 countries with approximately 66,400 employees and serves more than 3.8 million customers and patients. Oxygen, nitrogen and hydrogen are essential small molecules for life, matter and energy. They embody Air Liquide's scientific territory and have been at the core of the company's activities since its creation in 1902.

Taking action today while preparing the future is at the heart of Air Liquide's strategy. With ADVANCE, its strategic plan for 2025, Air Liquide is targeting a global performance, combining financial and extra-financial dimensions. Positioned on new markets, the Group benefits from major assets such as its business model combining resilience and strength, its ability to innovate and its technological expertise. The Group develops solutions contributing to climate and the energy transition—particularly with hydrogen—and takes action to progress in areas of healthcare, digital and high technologies.

Air Liquide's revenue amounted to more than 23 billion euros in 2021. Air Liquide is listed on the Euronext Paris stock exchange (compartment A) and belongs to the CAC 40, CAC 40 ESG, EURO STOXX 50 and FTSE4Good indexes.