

## Air Liquide's Turbo-Brayton solution acclaimed by the maritime transport industry to reduce greenhouse gas emissions

**Air Liquide is continuing to develop sales of its Turbo-Brayton cryogenic equipment, with around 50 units sold over the last two years for a total value of almost 180 million euros. This innovative solution, which was developed for the maritime transport industry and avoids greenhouse gas emissions, is acclaimed by customers and sales are growing strongly.**

The technology, developed by Air Liquide and based on the Turbo-Brayton principle, reliquefies LNG (Liquefied Natural Gas) boil-off on vessels transporting that product, thereby significantly reducing greenhouse gas emissions during transportation. Thanks to this technology, Air Liquide is helping its customers to reduce their environmental impact. Indeed, the approximately 50 Turbo-Brayton cryogenic units sold have the potential to avoid more than 240,000 tons of CO<sub>2</sub>-equivalent emissions per year. This equipment is designed to be installed on LNG carriers, both on newly built ships and for retrofitting existing vessels.

This Air Liquide technology was first used in the space industry to cryogenically preserve biological samples on the International Space Station (ISS), before being adapted for the maritime transport industry. It can also be applied to biomethane. For example, it is used to liquefy biomethane generated through the anaerobic digestion of household and agricultural waste. In liquid form, the biomethane can be transported easily to its point of use, as a fuel in NGV stations (Natural Gas for Vehicles) or in ferry terminals. Air Liquide has sold two such units in the Nordics.

**Emilie Mouren-Renouard**, Member of Air Liquide's Executive Committee in charge of Innovation, Digital & IT, Intellectual Property and the Global Markets & Technologies WBU, said: ***"This commercial success illustrates the Group's capacity to support its customers by developing efficient solutions that help them lower the environmental impact of their activities. Air Liquide has long been innovating for a low-carbon society. Our Climate Objectives are now the most ambitious in our sector and these new technologies, which are acclaimed by our customers, contribute to reducing CO<sub>2</sub> emissions."***

### **Global Markets & Technologies**

The Global Markets & Technologies (GM&T) World Business Unit delivers technological solutions (molecules, equipment and services) to support the rising markets of energy transition and deep tech, in order to drive Air Liquide's sustainable growth. GM&T employs 2,000 people world-wide and generated a 2019 revenue of €552 million.

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A world leader in gases, technologies and services for Industry and Health, Air Liquide is present in 80 countries with approximately 67,000 employees and serves more than 3.7 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.

Air Liquide's ambition is to be a leader in its industry, deliver long term performance and contribute to sustainability. The company's customer-centric transformation strategy aims at profitable, regular and responsible growth over the long term. It relies on operational excellence, selective investments, open innovation and a network organization implemented by the Group worldwide. Through the commitment and inventiveness of its people, Air Liquide leverages energy and environment transition, changes in healthcare and digitization, and delivers greater value to all its stakeholders.

Air Liquide's revenue amounted to 22 billion euros in 2019 and its solutions that protect life and the environment represented more than 40% of sales. Air Liquide is listed on the Euronext Paris stock exchange (compartment A) and belongs to the CAC 40, EURO STOXX 50 and FTSE4Good indexes.