EXHIBITOR: **Air Liquide** STAND: **O250**

Technologies for natural gas liquefaction across all global operational scales

David Maloney, Group Vice President Engineering & Construction and Capital Implementation, E&C Chairman and CEO of Air Liquide, provides an overview of the prospects for LNG

LNG is fast becoming one of the fuels of choice for the future. It can help a wide range of users meet the ever more stringent environmental and emission standards that are increasingly common around the world and its ease of transportation gives commercial flexibility.

In this environment, businesses of all kinds are looking for clean and reliable LNG plants for a wide range of applications and capacities. Plants must be cost effective and efficient, with minimal environmental impact. Expertise and a proven track record in helping to meet these needs is therefore at a premium. Air Liquide is a world leader in gases, technologies and services for industry and health, and is present in 80 countries with approximately 66,000 employees and serves more than 3.6 million customers and patients. Air Liquide's cryogenic technologies have been at the heart of our business for more than 115 years, and we are a pioneer in the field of LNG. Today, Air Liquide is a leader in the market, having delivered more than 20 LNG plants around the world, including the recent completion of the first

Mid-scale LNG plant in Vysotsk, Russia, using Air Liquide Smartfin Technology

mid-scale facility in the Baltic region. Excellent operational records testify to the quality and performance in the long run of Air Liquide's technologies.

Drawing on this track record, we can offer a comprehensive suite of technologies for natural gas liquefaction, covering applications requiring from around one tonne per hour capacity to millions of tonnes per year.

At the very small scale, we offer the Turbobrayton liquefaction system. It is a fully packaged solution using magnetic bearings to achieve very high reliability and low maintenance. As such, it is ideally suited to applications such as Boil off Gas (BOG) management on ships.

For small plants, such as peak shaving or remote power applications, Turbofin™ uses nitrogen refrigerant technology and a modular design to reduce on-site work. Furthermore, it

can be highly automated and fitted with data collection so that process optimisation can be done remotely and at any time. Moreover, in certain cases, the simplicity of the Turbofin technology can also make it an option for offshore applications.

For medium scale production, Smartfin™ uses single mixed refrigerant technology to boost energy efficiency and optimise Total Cost of Ownership.

For large-scale LNG production, Liquefin™ provides a highly efficient process. By combining dual mixed refrigerant cooling and compact plate fin heat exchangers, it can provide a gain of around 10 per cent in terms of energy efficiency compared to traditional solutions. It is also lighter and more compact, with up to 30 per cent less footprint. These advantages make it a particularly interesting option for large offshore projects.

Air Liquide continuously works to forge partnerships with various operating companies, project developers and EPC companies, providing, among others, a full suite of innovative LNG technologies and solutions for customers. We are excited by the opportunities for natural gas and LNG that exist in the U.S. market, having as well delivered projects in the region for methanol production with our Lurgi Technologies. We are delighted to be present at Gastech and are keen to explore partnerships and opportunities, and eager to develop our presence in the dynamic U.S. market.