Air Separation Technology is one in a series of reports published as part of Nexant’s 2019 Technoeconomics – Energy & Chemicals (TECH) program.

Overview
Air Separation technology separates air into commodity gases such as oxygen, nitrogen, and argon. These gases find applications in a broad range of markets including healthcare, refining, metal fabrication, steel chemical, and glass manufacturing.

The practice of air separation began in 1895, by Carl Von Linde, following experiments in his laboratory in Munich and the process has evolved over the time. This report discusses the current industrial, and emerging air separation technologies, latest business developments, supply modes, market drivers, and process economics.

The TECH report addresses the following questions
- What are the major technologies available for air separation and how do they differ?
- Who are the major technology licensors and producers globally? What are the licensor’s recent business developments?
- What are the industrial applications of these gases and the major market drivers for oxygen and nitrogen?
- How do the process economics compare across different air separation technologies and different geographic regions?

Commercial Technologies
The air separation technologies are categorized into cryogenic and non-cryogenic. The selection of these technologies depend on a variety of factors such as purity, consumption, and demand fluctuations. The non-cryogenic technologies are further sub-categorized into pressure swing adsorption, vacuum swing adsorption, and membrane air separation.

These technologies are provided by major global players such as Air Liquide, Linde, Air Products, Taiyo Nippon Sanso Corporation and the Messer Group. The report provides a detailed description of each of these technologies, the main players and their offerings.

Process Economics
The detailed cost of production for cryogenic and non-cryogenic air separation technologies in the United States, Western Europe, the Middle East, and China is presented. The report also provides a regional assessment and comparison of these technologies.

Commercial Overview
Air separation gases are widely used in a variety of industries including chemicals, steel, healthcare, food & beverages, paper & pulp, oil & gas. The demand for these gases has been growing with the rising demand for end-use applications. The report also provides an overview on the major air separation market drivers. While the use of air separation gases is broad and diverse, certain key markets and applications drive overall demand.

Major drivers for oxygen include its use as a reactant in many upstream applications such as coal gasification, sulfur oxygen enrichment, ethylene oxide, and propylene oxide production, and in the steel industry.

However, nitrogen is used largely as an inert gas in applications including enhanced oil recovery, LNG production, refinery operations, and petrochemicals production.

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  - Chemistry
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- Overview of product applications and markets for new as well as established products
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