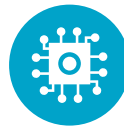




Since 1973, we have become one of the world's most trusted LNG innovators. Today, we bring proven compressor technology to an industry facing changing needs.

Whether you're retrofitting an existing vessel or commissioning a new build, Atlas Copco Gas and Process can develop a complete system that's built on standardization to reduce delivery and commissioning times and simplify maintenance. We understand how to work within the latest regulations while helping you prepare for what comes next.



Pioneering integral-gear technology

Integral-gear technology — developed by Atlas Copco Gas and Process — is at the heart of our compressors and makes them uniquely versatile. Integral-gear technology can house up to eight stages on a single gearbox to minimize the onboard footprint while maximizing efficiency and reliability.

With integral-gear technology, we can start from a standardized design and tailor a solution that exactly fits your needs — reducing overall engineering and CAPEX.

FUELING MARINE LNG HISTORY

- 1973**
First BOG compressor for the Venator (LNG carrier)
- 2000**
First onboard reliquefaction with compressor and expander on the Jamal
- 2005**
First onboard reliquefaction with Comander solutions
- 2006**
First "conventional" DFDE gas handling system
- 2008**
Expander booster selected for FLEX LNG producer
- 2011**
First high-pressure send-out pumps installed on an FSRU vessel
- 2014**
Two sets of MSO compressors installed for an FSRU retrofit with combined turbocompressor / reciprocating concept
- 2017**
Gas screw and centrifugal compressors installed for KOGAS 7 500 m³ LNG vessel
- 2018**
Oil-free gas screw compressors with vapor return function installed for 9 x 22K container vessels
- 2019**
First to offer oil-free screw technology for BOG management on LNG carriers and for LNG fuel systems
- 2021**
Oil-free gas screw becomes the standard solution on shipyards in Korea and China

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Boosting Offshore LNG and Marine Productivity

Atlas Copco Gas and Process helps increase efficiency and comply with changing regulations — without decommissioning vessels.

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Flexible and reliable turbomachinery to drive your marine LNG process

As new regulations take effect, the marine industry needs an environmentally conscious fuel option that can be implemented quickly, reliably and cost-effectively. That option is liquefied natural gas — and Atlas Copco Gas and Process can help identify the right LNG solution for your needs.

LNG can drive carrier vessels and fuel systems, and Atlas Copco Gas and Process offers a range of efficient and reliable options for both applications. Many older carrier vessels can be repurposed into floating storage regasification units (FSRUs) at just half the time and cost of building a new vessel, helping carriers save money while minimizing downtime.

Over seven decades, Atlas Copco Gas and Process has continuously innovated to help industries keep moving reliably. We have more than five decades of experience within the marine LNG industry, and constantly adapt proven technologies for new applications to solve emerging challenges.



Atlas Copco Gas and Process brings a wealth of expert LNG compressor knowledge, service and support to marine applications around the world:

- 200+ single- and multi-stage turbocompressors
- 62 reliquefaction plants on board Qatargas LNG carriers



Compressor technology must keep pace with both ship technology and changing requirements.

Rethink your approach to onboard fueling. Look for opportunities to improve your system without complete replacement, and consider modular designs that can reduce engineering and costs. Atlas Copco Gas and Process can actually help you boost your onboard productivity while giving you the flexibility to adapt to changing needs. With Atlas Copco Gas and Process, you get:

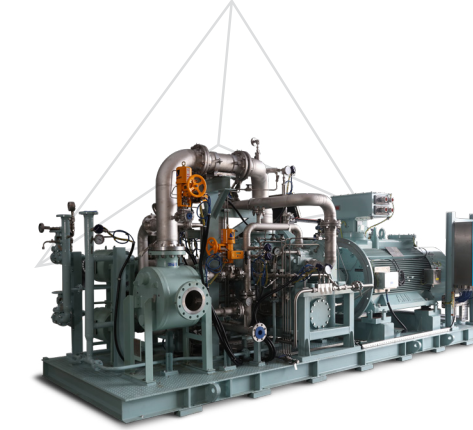
- ▲ Increased reliability that minimizes downtime
- ▲ Compact single-skid mounted machinery
- ▲ Operating costs just a fraction of competitors'
- ▲ Unique oil-free solutions that need less maintenance
- ▲ Complete solutions, from standard to fully customized



Marine	Applications	LNGC	FSRU	Bunker	LNG Fuel	FLNG
Type & Technology	Features					
(HD) Vapor Return Blower <i>(Centrifugal)</i>	Cryogenic, IGV or ITV control, parallel sequencing	✓	✓	✓		✓
(LD) BOG Compressor <i>(Centrifugal)</i>	Cryogenic, IGV or ITV control, parallel sequencing, one to six stages of compression	✓	✓	✓		✓
(LD) BOG Compressor <i>(Oil-free screw)</i>	VFD control, up to 24 bar(a), completely packaged and wired with gas preheater, intercooler and aftercooler, compressor package designed for installation in hazardous area, low maintenance costs, up to three stages of compression	✓		✓	✓	
Expander <i>(Magnetic / oil bearing)</i>	Hydrocarbon, inert gas	✓				✓
Compander <i>(Centrifugal / compander)</i>	Hydrocarbon, inert gas	✓				✓
Excess BOG Compressor <i>(Centrifugal)</i>	Custom designed to specification					✓
Regen Gas Compressor <i>(Centrifugal)</i>	Custom designed to specification					✓
Instrument Air Compressor <i>(Centrifugal)</i>	Custom designed to specification					✓
Maintenance Compressor <i>(Centrifugal)</i>	Custom designed to specification					✓

LNGC = LNG Carrier; FSRU = Floating Storage Regasification Unit; FLNG= Floating Liquefied Natural Gas

Marine solutions for every need



Boil-off gas (BOG) compressors

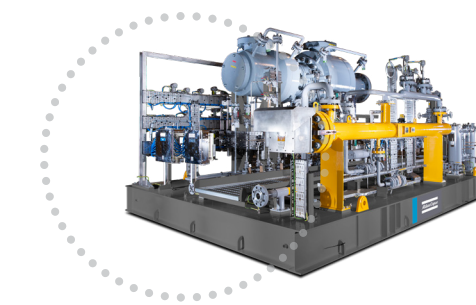
Our BOG compressors are used on vessels powered by steam, dual fuel or slowspeed diesel propulsion, for reliquefaction plants, LNG storage or regasification plants. Features include:

- Ability to maintain absolute cargo tank pressure and gas pressure
- Minimal noise and vibration
- Maximum reliability and efficiency
- Easy operation and maintenance
- Centrifugal, oil-free screw
- One to six compression stages, depending on configuration and model

Expanders

Our expanders for FSPO produce refrigeration and aid onboard liquefaction and processing. Features include:

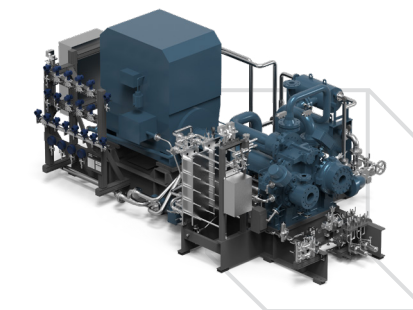
- Compact design with magnetic bearings that minimize wear
- Maximum flexibility
- Centrifugal technology
- Magnetic or oil bearings



Companders

An Atlas Copco Gas and Process original, the Compander merges compressor and expander functionality into a single machine that is optimal for both onshore liquefaction and smaller offshore plants. Features include:

- A model of efficiency
- Increased LNG load
- Space, energy and operational cost savings
- Centrifugal technology for hydrocarbon or inert gas



Vapor return blowers

Atlas Copco Gas and Process vapor return blowers handle extreme operating conditions with ease. Features include:

- Carbon ring seals for minimal gas leakage
- Space, energy and operational cost savings
- Maximum flexibility
- Centrifugal technology options

