OneSubsea
A Schlumberger Company

Subsea Multiphase Compression System

First and only true subsea wet gas compressor

Aligned with United Nations Sustainable Development Goals:
7—Affordable and clean energy, 12—Responsible consumption and production, 13—Climate action

Energy Consumption Reduction:
Lowers energy consumption by about 2.9 TW.h or 67%†

Emissions Reduction:
Decreases CO2 emissions by about 1.44 × 106 metric tons or 67%†

Size Reduction:
Lowers your impact with about half the weight‡

Liquid fraction:
0%–100%

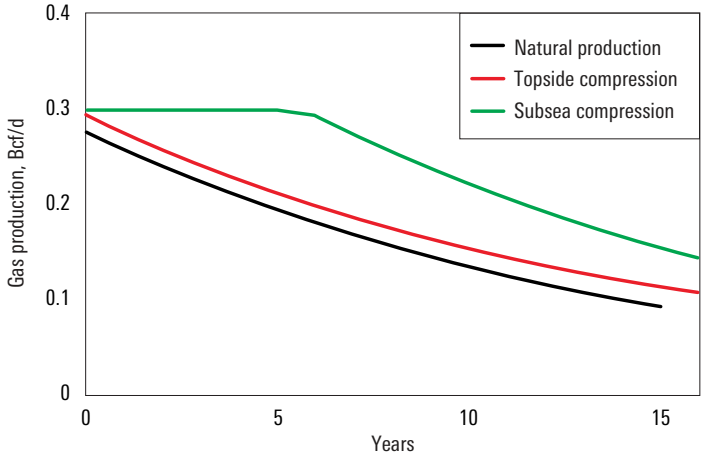
Pressure:
Up to 10,000 psi [689 bar]

Water depth:
Up to 10,000 ft [3,000 m]

Step-out from host to subsea compressor:
Up to 74.6 mi [120 km]

Technology readiness level:
TRL 7

Performance record:
10,000 consecutive hours of operation with 100% availability



Subsea compression significantly extends plateau production and increases ultimate recovery compared with topside compression and natural production.

Applications

- Enable or boost subsea—including deepwater—gas production
- Improve estimated ultimate recovery
- Increase tieback distance

How it enables and improves production

Compression is required when produced gas is transported over long distances to a host facility. It helps increase ultimate recovery by making it possible to produce at lower reservoir pressures. Compared with platform-based and conventional subsea gas compression technologies, subsea multiphase compression

- reduces complexity
- lowers capex and opex
- shortens lead time and revenue generation
- increases reliability
- provides liquid-handling capability
- reduces environmental impact.

Adding compression compensates for the losses generated in the production line between subsea wells and the topside host. Subsea compression's role in unlocking gas resources and improving the economics of subsea gas development is becoming more critical with the increasing focus on sustainability. Compared with the option of lowering the near-end pressure using topside technology, compressing gas near the start of a long production flowline (where gas pressure is higher) can be significantly more energy efficient—with correspondingly lower CO_2 emissions—over the productive life of the field.

How it works

Subsea multiphase compression systems are the most effective method of enhancing gas production for underwater applications. Essentially, compression is a mechanism for transferring energy to the production stream to overcome losses during extraction and transport.

The award-winning subsea multiphase compressor from OneSubsea® is the world's first and only true subsea wet gas compressor, with no requirements for an upstream separation facility or antisurge system, which greatly simplifies subsea system requirements. Incorporating two contrarotating shafts, it is specifically designed for pressure boosting an unprocessed well stream. This unique configuration enables a compact and robust design that is based on OneSubsea's proven multiphase boosting pumps.

The compressor can operate in any flow regime—with liquid fractions ranging from 0% to 100%—and tolerates sand and solids. Its low speed enables long step-outs without subsea variable speed drives, and the low module weight—approximately 60 metric tons—enables intervention with light vessels.

Additionally, the OneSubsea compressor has a proven one-to-one compatibility with qualified subsea variable speed drives, unlocking power step-outs of 100 MW up to 600 km.

† Compared with topside compression; for a typical gas subsea tieback of 120 km with 95% uptime across 10 y

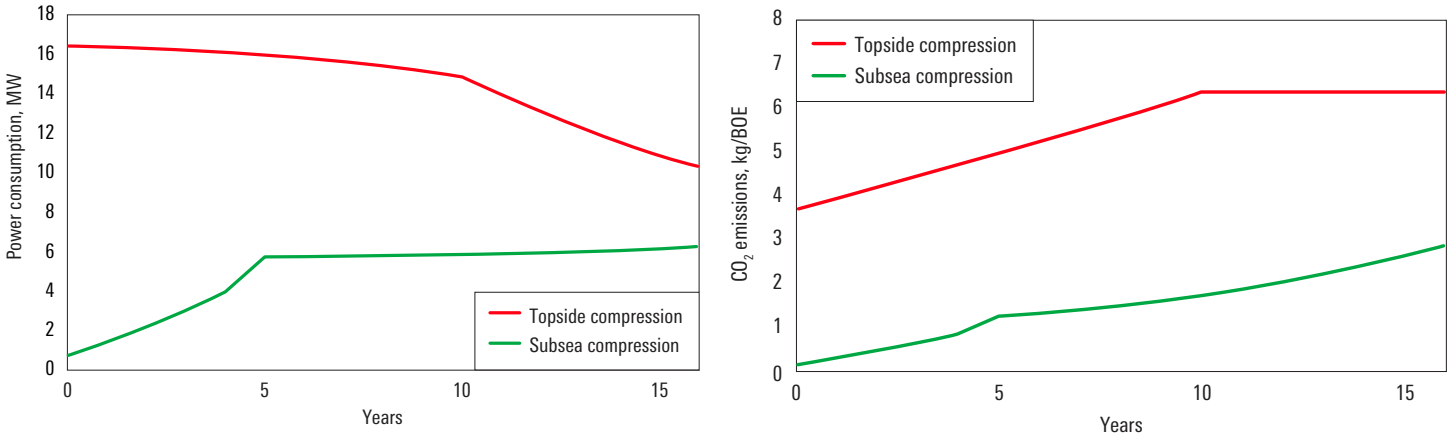
‡ Compared with a conventional subsea compression system

Subsea Multiphase Compression System

The subsea compression system from OneSubsea is the first and only true subsea wet gas compressor.

Energy efficiency—producing more with less

While greater recovery, accelerated production, and fast return on investment have been the primary motivators for use of subsea compression technology, it also offers greater energy efficiency and a reduced CO_2 footprint. The energy savings potential increases with tieback distance, water depth, and complex production assurance challenges. Compared with topside compression, for a typical gas subsea tieback of 120 km with 95% uptime across 10 y, power consumption savings of approximately 70% can be expected when subsea compression is deployed early to maintain plateau production and increase reservoir recovery. The equivalent reduction in CO_2 emissions is also approximately 70%. Additionally, all-electric controls for subsea gas compression systems will increase the environmental benefits.



Subsea compression uses considerably less energy and decreases CO_2 emissions compared with topside compression.

onesubsea.slb.com/subsea-compression

OneSubsea and Transition Technologies are marks of Schlumberger.
Other company, product, and service names are the properties of their respective owners.
Copyright © 2021 Schlumberger. All rights reserved. 21-SUBPS-1121890

OneSubsea
A Schlumberger Company