



# HOFIM<sup>®</sup> compression solution

**MAN Energy Solutions**  
Future in the making

HOFIM<sup>®</sup> for  
exploration and production



Subsea | Platform | FPSO | Onshore application

# Highest reliability for exploration and production

The HOFIM<sup>®</sup> compression solution radically improves the oil & gas business with its unmatched system reliability. It features a wide operating range and highest efficiency, with low life-cycle costs and no impact on the environment. The HOFIM<sup>®</sup> technology enables subsea gas compression that increases gas field recovery rate while substantially reducing CO<sub>2</sub> emissions at the lowest investment and operational costs.



# 20%

additional recovery rate

## Subsea

Subsea compression requires an extremely reliable remotely operated compressor on the seafloor. The substantially reduced system complexity of the modular HOFIM® compressor design only involves electrical and process interfaces.

Thanks to the robustness and proven longevity of its components, the compressor features greatly extended maintenance intervals.

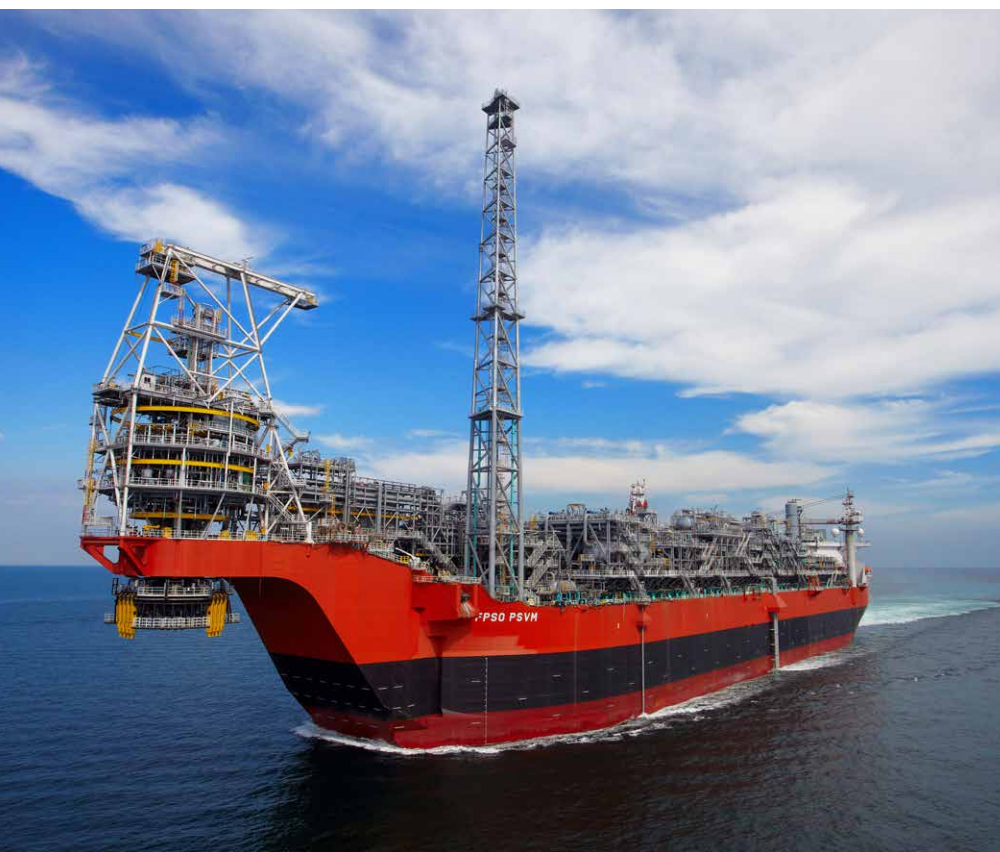
As demonstrated in the Åsgard subsea gas field, the subsea compression design and unmatched efficiency of the HOFIM® can deliver up to 20% higher recovery rates.



up to

# 60%

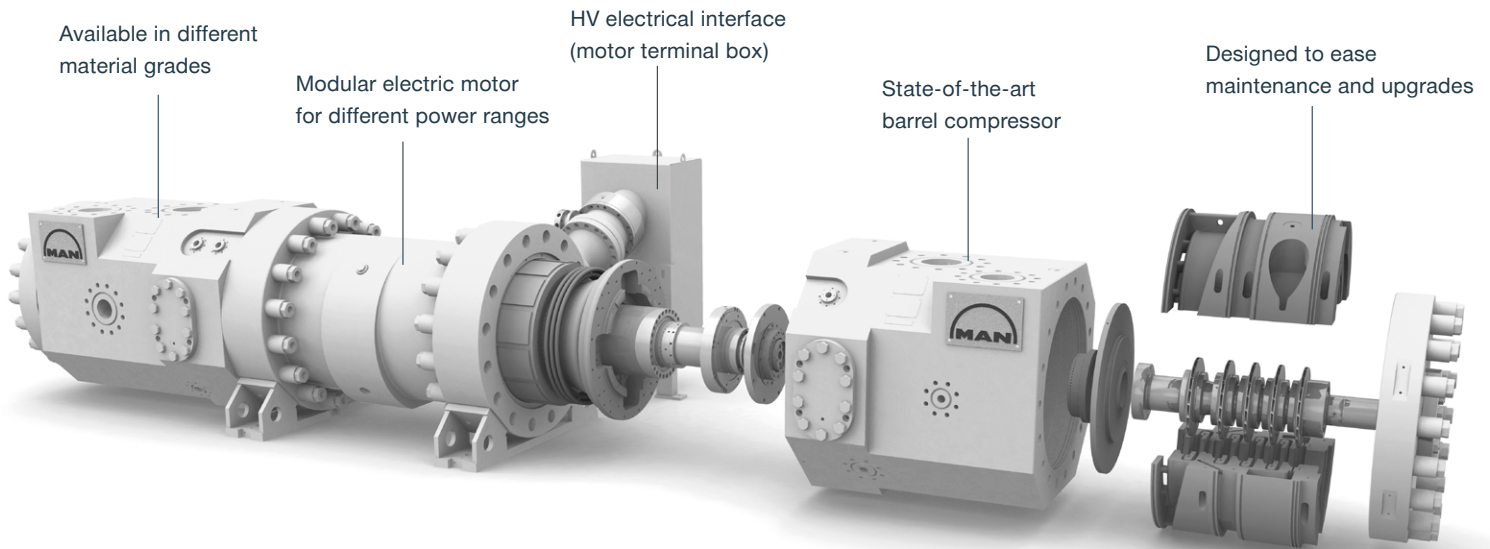
smaller footprint



## Platform, FPSO and onshore

Especially in space-constrained brown-field applications, space and weight factors impact your options. The ultra-compact design of HOFIM® units typically weighs in at 40% less than conventional compressor packages. The compression unit is qualified for wet gas operation and significantly reduces the process complexity by eliminating liquid separation.

The technology allows for fully remote and unmanned operation.



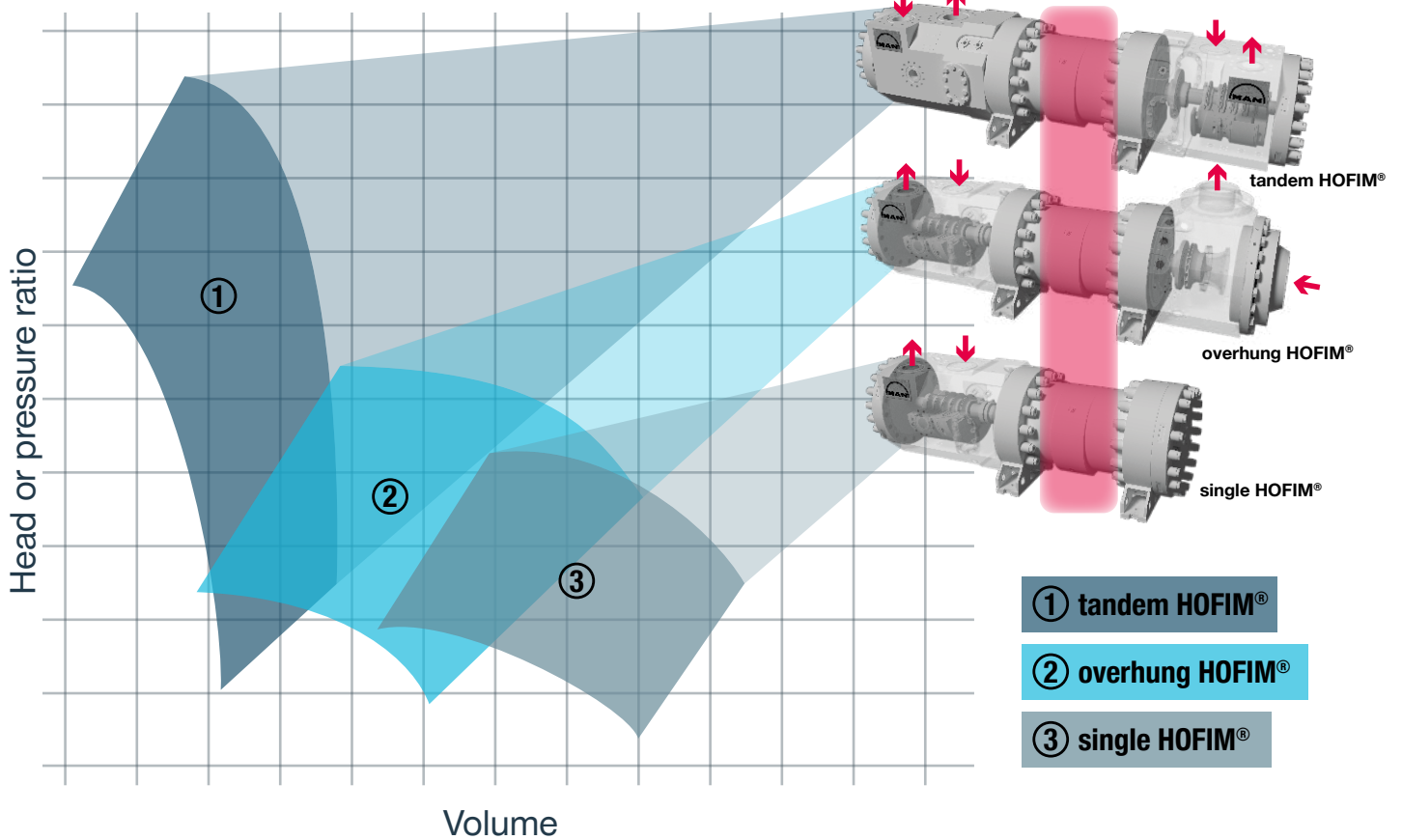
# Modular concept for maximum process design flexibility

**Design reflects three decades  
of operating experience**

The modular concept of the HOFIM® compression systems provides the highest flexibility in component and process configuration and facilitates extremely simple system integration.

The fully electrical HOFIM® system consists of a high-speed motor driving a multi-stage centrifugal compressor, levitated by active magnetic bearings. The unit is hermetically sealed and fully encapsulated, providing the highest possible level of safety.

## Operating range



The motor design incorporates various frame sizes from 1,300 HP (1 MW) to 24,000 HP (18 MW).

## Design aspects and features:

- The magnetically-levitated system ensures highest reliability and availability.
- Qualified for wellstream compression (up to 30% LMF) and suitable for wet and sour gas
- Motor and bearings cooled by process gas extracted from compressor
- No external cooling medium, no lube oil nor sealing gas
- Proven magnetic bearing technology
- Solid core, non-laminated electric motor rotor
- Solid axial thrust disc between motor and compressor shafts for high thrust loads and safety during transient operation
- Highly effective symmetrical internal motor cooling system
- Simple integration due to minimum number of interfaces
- Suitable for use with most high-speed VFDs
- Minimised utilities



# Innovation becomes proven technology

MAN – the undisputed leader  
in high-speed technology



MAN Energy Solutions is the pioneer in the development and application of high-speed, integrated motor-compressor systems. Originating in the midstream industry for gas storage and gas transport applications, the wealth of experience gained over 30 years of development, deployment and operation of high-speed motor compression units has culminated in the construction and delivery of topside and subsea HOFIM<sup>®</sup> compression systems. The two subsea HOFIM<sup>®</sup> units were successfully put into commercial operation at Åsgard in 2015. Since then, they have performed with an availability of well above 99%.

World's

# 1st

centrifugal compressor for subsea



more than

# 100

units in operation with exceptionally high availability

- 
- 1990 Hermetically-sealed, magnetic bearing motor-compressor unit
  - 1991 First HOFIM®
  - 1997 First tandem HOFIM®
  - 2000 First HOFIM® offshore
  - 2000 First integrated single HOFIM®
  - 2002 First integrated tandem HOFIM®
  - 2007 Successful testing of new motor generation for wet and sour gas
  - 2009 Upstream qualification program completed
  - 2015 Subsea compression station in production
  - 2017 First topside HOFIM® in production
  - 2017 Subsea HOFIM® TRL7 achieved
  - 2018 Wellstream qualification completed
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**MAN Energy Solutions**

86224 Augsburg, Germany

P + 49 821 322-1750

F + 49 821 322-49 1750

**MAN Energy Solutions Schweiz AG**

Hardstrasse 319

8005 Zürich, Switzerland

Phone +41 44 278-2211

[www.man-es.com](http://www.man-es.com)

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