All data provided on the following slides is for information purposes only, explicitly non-binding and subject to changes without further notice.
**Centrifugal Compressor Refresher**

**Types - Magnetic Bearing**

**Conventional Electric Motor Driven Turbo Compressor Train**

- No gearbox, no fluid coupling
- No lube oil system
- No shaft seals, no seal system
- No emissions
- Reduced footprint / smaller motor

**Hermetically Sealed Turbo Compressor**
History of High-Speed Development
From the first MOPICO® at Transco Station 100 in 1990 to today’s offshore applications

To date 109 units, 102 in Pipeline / Gas Storage

- First MOPICO® standalone
- First HOFIM™ standalone
- First HOFIM™ sealed
- First tandem HOFIM™ sealed
- K-LAB HOFIM™
- First O&G offshore HOFIM™
- First subsea HOFIM™
- First HOFIM™ with MAN motor for commercial operation
- Marinisation program

First MOPICO®
STATION 100, 1990

ONSHORE GAS TRANSPORT

Plant: STATION 100 ALABAMA
Client: Williams Transco Gas Pipeline, USA
Duty: Pipeline Compressor

MAN Diesel & Turbo Equipment:

Compressor type: 1 x MOPICO RM 40
Driver: ALSTOM MGV2 / Ross Hill VFD

Frame Size: RM 40 (Series)

Handl. Gas: CmHn
Flow: MMSCFD 340.4 (serial operation)
Inlet/Outlet pressure: psia 590 / 800 (series operation)
Power: HP 8'160
Speed: rpm 10'000
Seal types: NONE – Hermetically sealed unit
HOFIM™/MOPICO®
Accumulated operating hours

> 1'600'000 accumulated operating hours with onshore installations

> 11'000 operating hours with upstream qualification machine

> 1'000 hours with the Åsgard pilot unit in submerged tests

> 3'000 production hours with Åsgard unit 1 on the seabed

Picture courtesy of Statoil

Picture courtesy of Statoil Hydro

Picture courtesy of Statoil
Statoil says…

“Åsgard subsea gas compression will be realised in 2015 as the world’s first project of its kind.”

“The installation of the compressors will allow us to add a formidable 306 million barrels of oil equivalent to our production” “extending the reservoirs’ productive lives until 2032,”

“This is one of the most demanding technology projects aimed at improving oil recovery. We are very proud today that we together with our partners and suppliers have realized this project that we started ten years ago.”

September 17th, 2015

“The first subsea gas compression plant in the world on line – a step change in subsea technology”

First Subsea Compressor Station
Ribbon Cutting Ceremony

Picture courtesy of Statoil
First Subsea Compressor Station
Ribbon Cutting Ceremony

Picture courtesy of Statoil
First Subsea Compressor Station
Ribbon Cutting Ceremony

Picture courtesy of Statoil
Subsea Compression Alliance

Integrating Key Capabilities to Create Value

The most experienced subsea compressor vendor

- Man Diesel & Turbo primary experience is on the motor-compressor and its active magnetic bearing system

The only subsea EPC contractor with the experience from delivering large subsea compression systems

- Aker Solutions combines subsea processing, control and power system know-how with system integration capabilities

Together we are a complete solution provider with full in-house core competence

One-stop shop for Subsea Compression
Simplified process using HOFIM™
Demonstrated over the complete performance map

> 9000 hours of full scale tests with up to 30% LMF (ca. 95% GVF)

up to today

 tomorrow
Extensive Experience

Two decades of pioneering innovative compression technology
1989-2016

98+ compressor units –
with over 1,600,000 operating hours

the design concept proved to be excellent for oil & gas requirements
Do you have any questions?

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