

Kvaerner's yard at Stord

19 March 2018

Steinar Røgenes, EVP EPCI

KVÆRNERTM

Kvaerner at Stord

Core business

- › Module and platform assembly
- › Onshore plant installation
- › Installation and hook-up
- › Platform demolition and recycling

1600 employees

- › 750 office
- › 850 non office



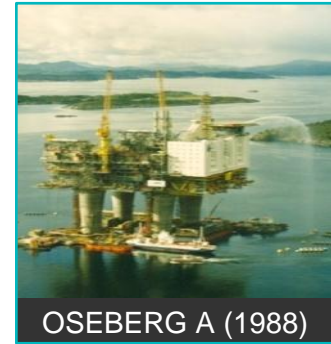
Established in 1919 as a herring oil factory



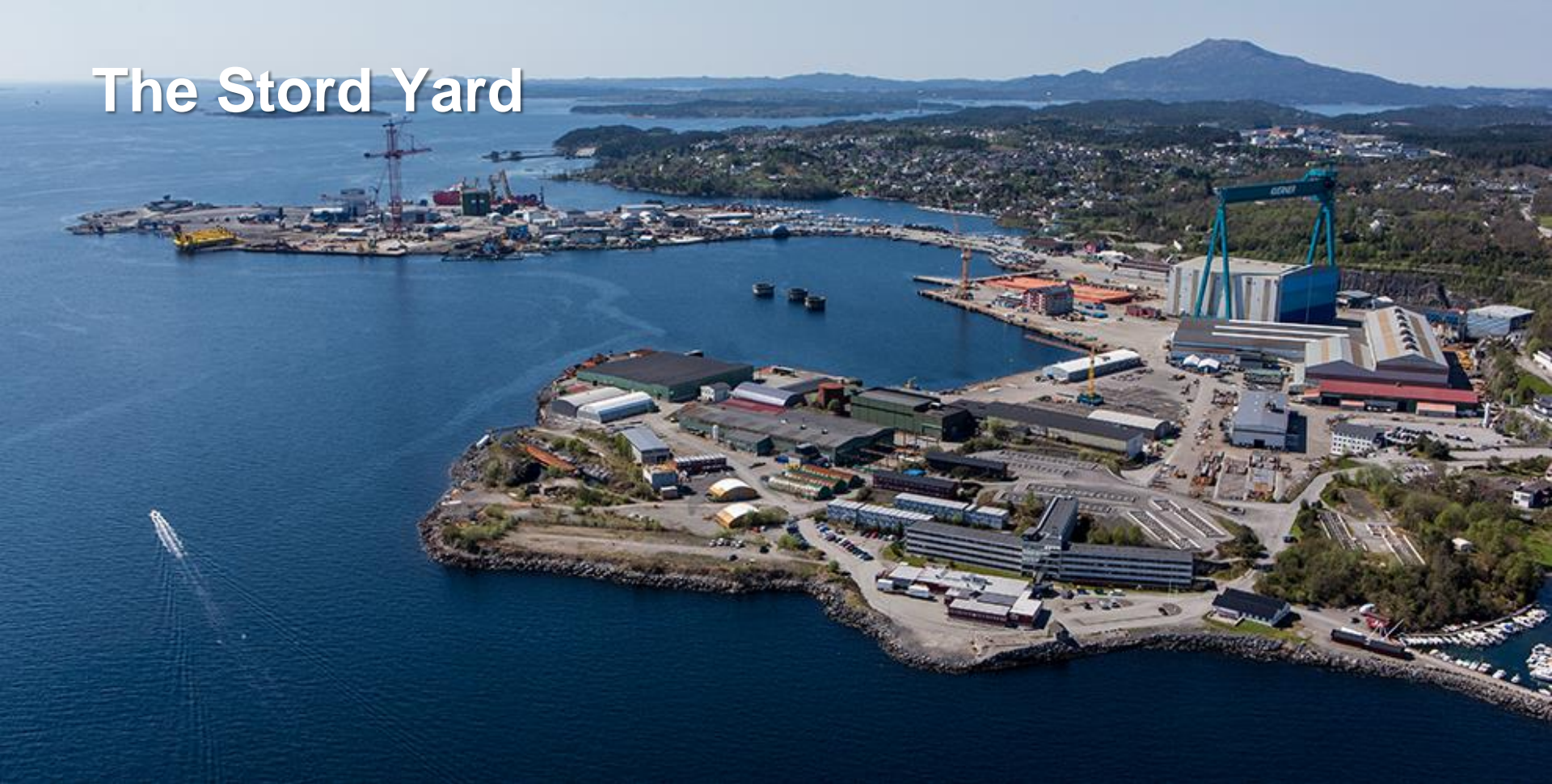
A leading ship yard in the 1970s



Oil and gas focused from 1975



The Stord Yard





Yard numbers

- > Fabrication area 50 000 m²
- > Assembly area 90 000 m²
- > Service area 50 000 m²
- > Office buildings 10 000 m²
- > Total yard area 200 000 m²

Improved productivity with new crane



Old crane:

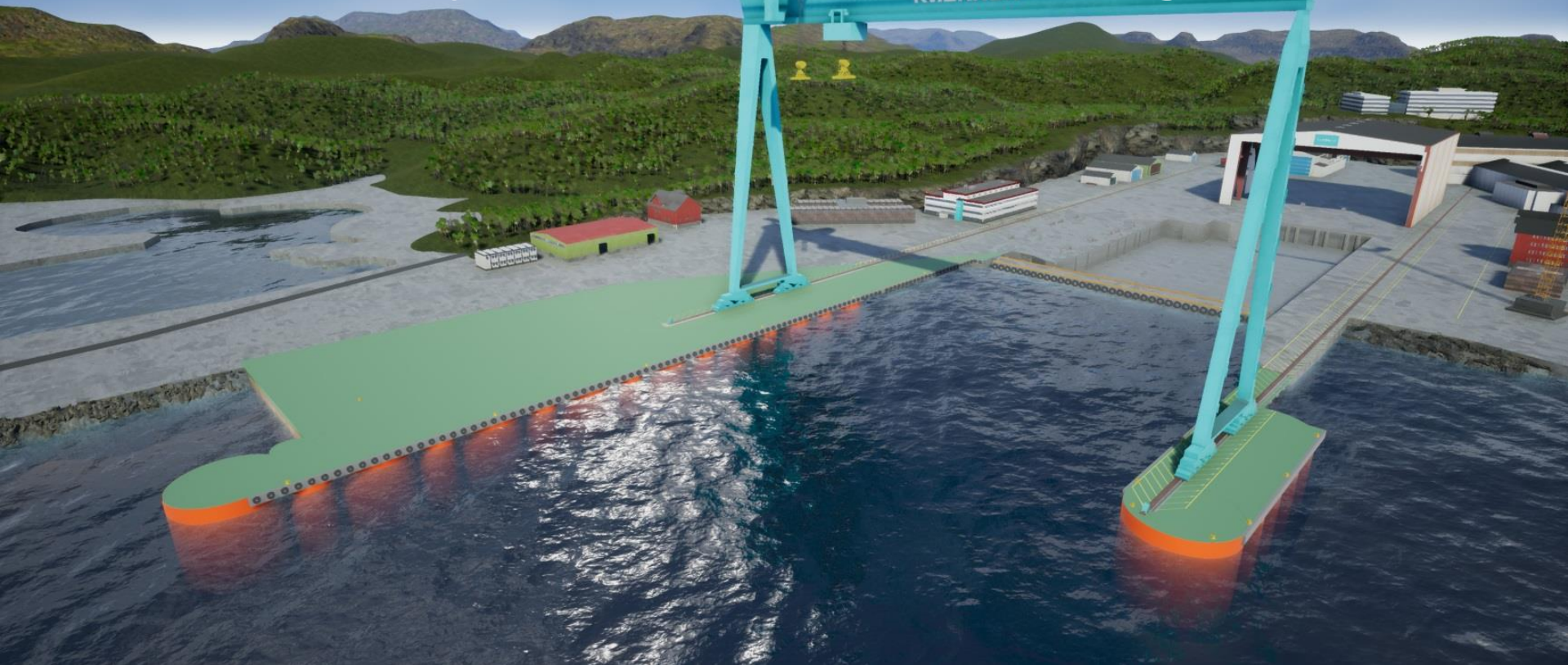
- > Lifting capacity: 350 T
- > Total height: 74 m
- > Total width: 125 m

New crane:

- > Lifting capacity: 1050 T
- > Total height: 115 m
- > Total width: 153 m

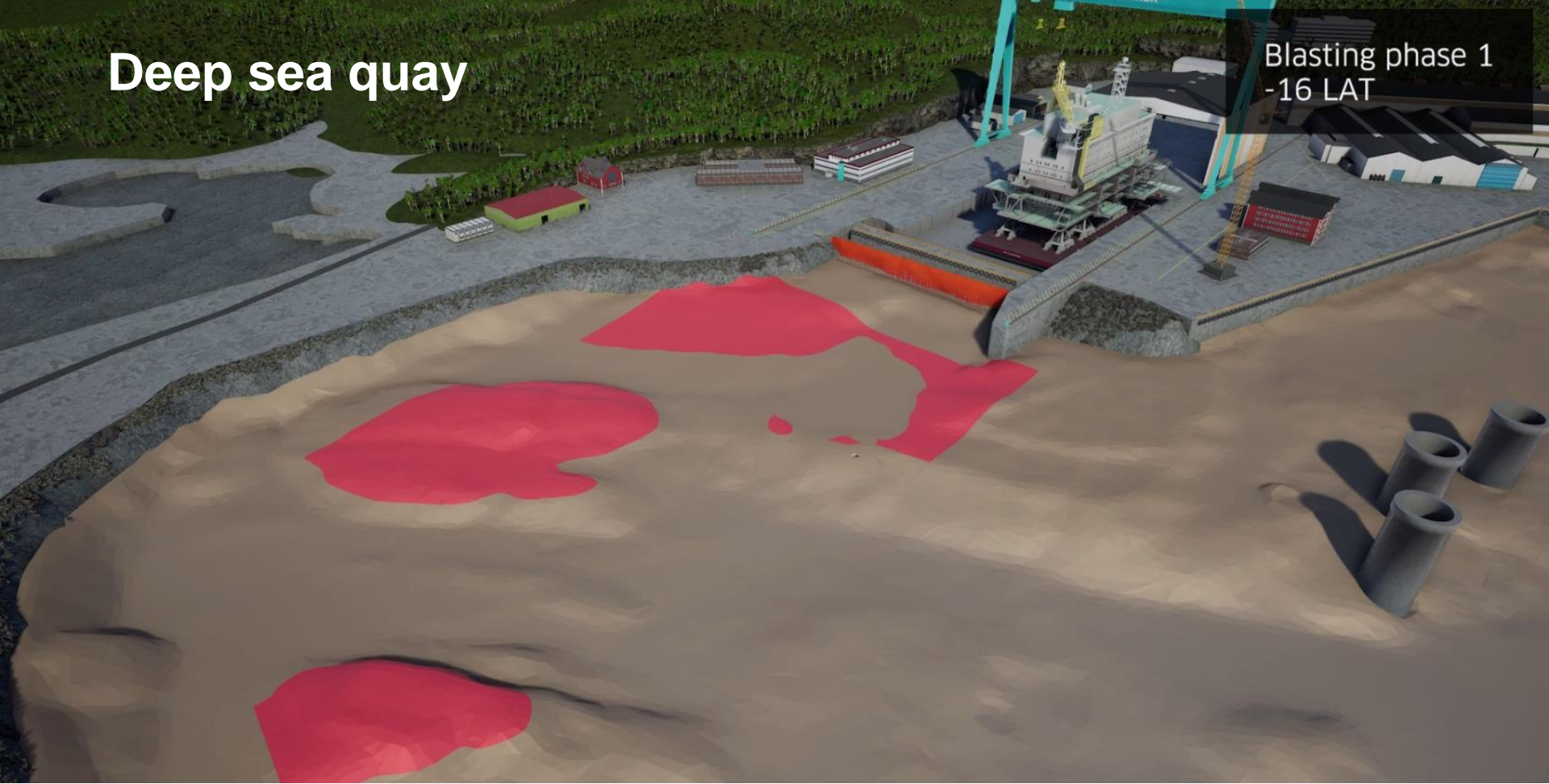
Increased crane coverage and new deep sea quay

More flexible yard – tailor made for floating facilities



Deep sea quay

Blasting phase 1
-16 LAT



Quay numbers

266m

quay west

17 000m²

production area west

100m

extension of gantry crane

122m

distance between pier and new
quay

-16m

water depth

15t/m²

area loads

Johan Castberg with Storen crane and quay expansion



51 new apprentices in 2017



29 nye lærlinger på Stord



22 nye lærlinger i Verdal

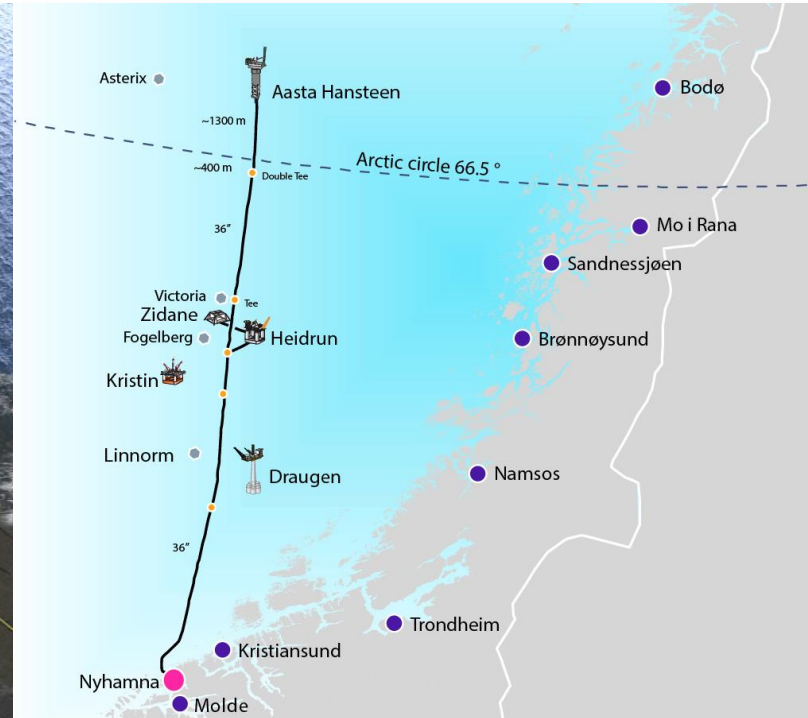
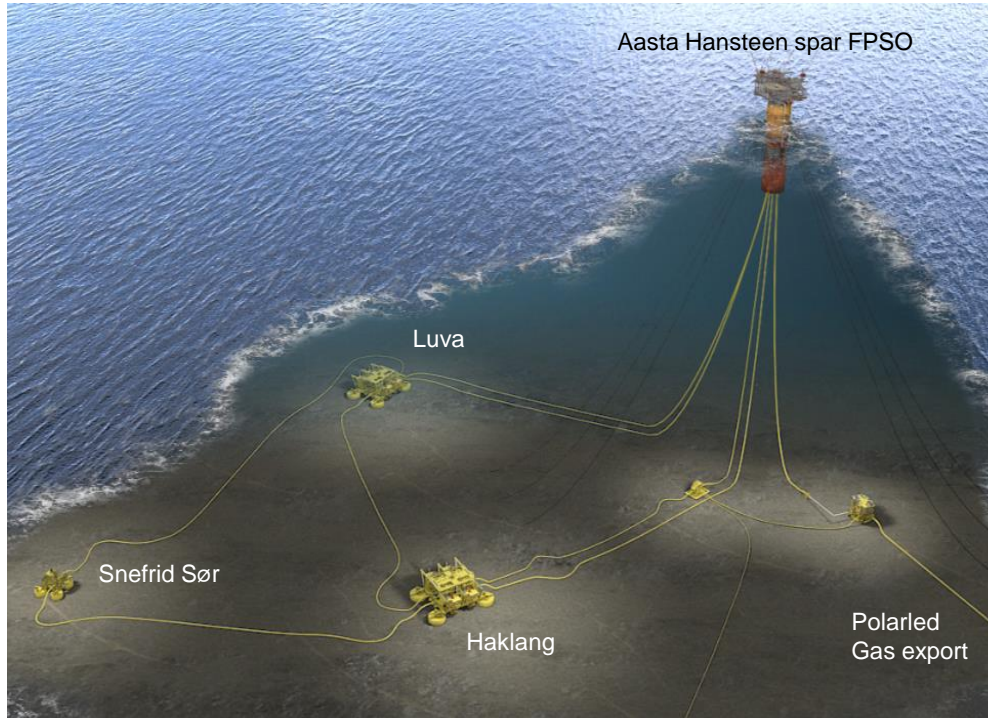
Aasta Hansteen completion project

19 Mars 2018
Hans Bruntveit, Project Director



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Aasta Hansteen field development



Aasta Hansteen SPAR FPSO

Topside

- › Dry weight: 24 500 tonnes
- › Conventional gas processing plant

Substructure

- › Total length: 200 m
- › Spar deck freeboard: 21 m
- › Hard tank diameter: 50 m
- › Displacement: 146 000 tonnes
- › Condensate storage: 25 000 Sm³

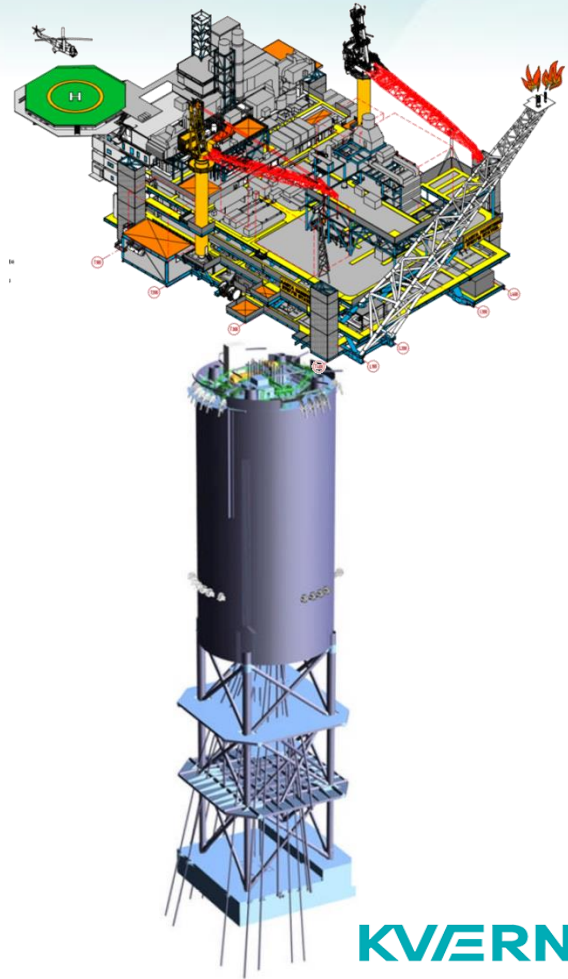




Illustration: Statoil

Kvaerner's Aasta Hansteen contracts



> **Scope:**

- Mooring
- Upending
- Ballasting
- Installation of predefined equipment
- Make ready for mating



> **Scope:**

- Fabrication of modules
- Inshore hook-up
- Offshore hook-up
- Commissioning assistance
- Completion

Upending of SPAR substructure



Towed to and anchored at Digernessundet



Submergence test

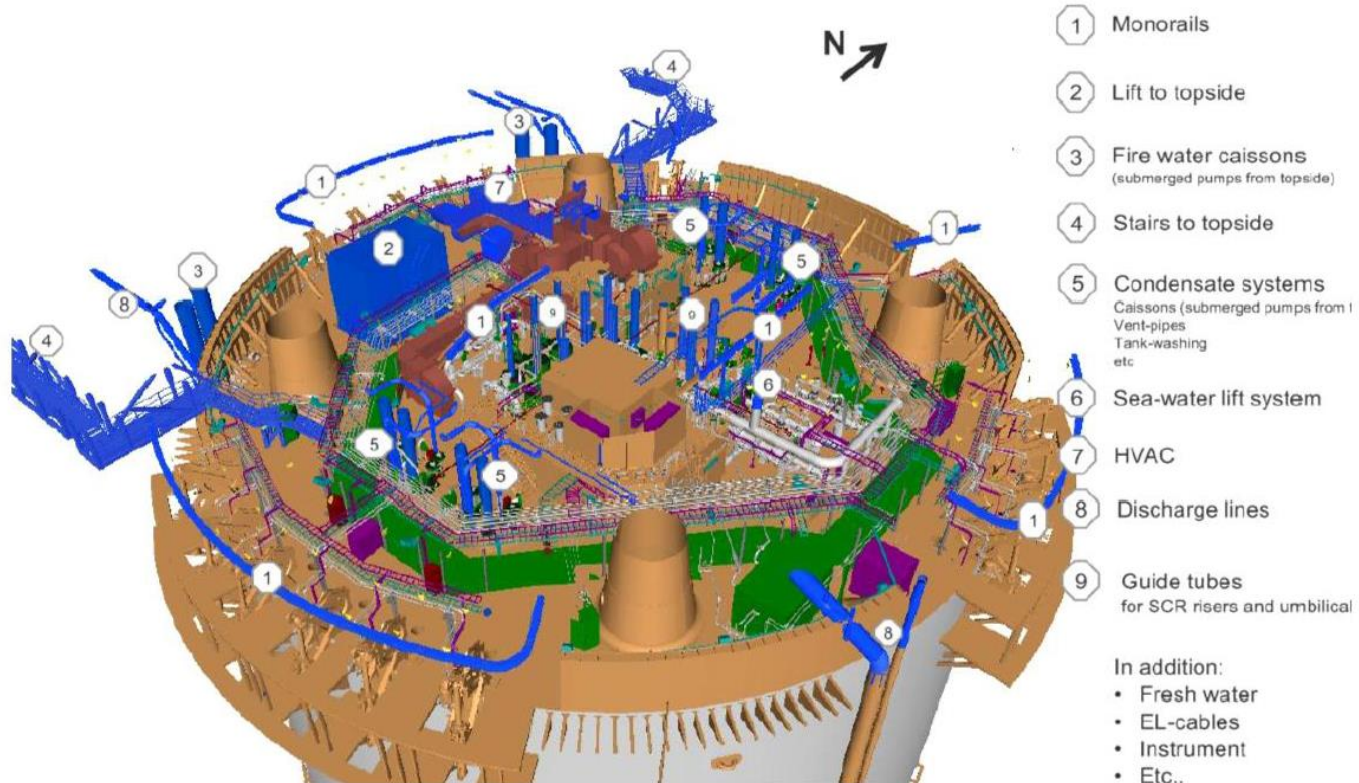
- › Executed in Q3 2017
- › Submergence test down to 6 metres draft
- › Test to verify that SPAR was ready for mating



Mating of topside and hull



Inshore hook-up scope



Current project status for Kvaerner

- › Platform at Digernessundet, where inshore phase is being completed
- › Progress according to plan
- › HSSE: Zero lost time incidents
- › Sail-away from Stord early April
- › Offshore hook-up to start summer 2018





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Decommissioning

19 March 2018

Eirill Hatlevik, Vice President Decommissioning



KVERNERTM

Historical Decommissioning projects



ESSO Odin



Maureen Alpha



Brent Flare



Frigg

Kvaerner's Disposal site - Stord



Deconstruction area with controlled drainage and deep water access.

The acquisition of GMC Decom has provided access to machinery, more decom resources, and extended decom area and quay.

Capacities

- › Tonnage at site: 60 000 tonnes
- › Permit to receive relevant hazardous materials and safely dispose these through approved disposal routes
- › Concrete area pads: 40 000m³, total processing area 80 000m³ incl. new areas.
- › Deepwater quaysides with waterdepth - 26m and – 32.5m
- › Access to cranes with high lifting capacity and inhouse multi-wheelers



Miller

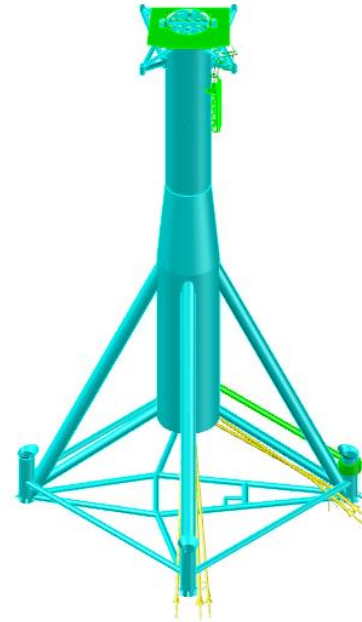
- › Client - Saipem UK (BP)
- › Topside: 28 700 tonnes
- › Substructure: 12 000 tonnes
- › First modules received in 2017, remaining 37 000 tonnes to be delivered this summer by Saipem
- › Scope: dismantle and recycle modules



Varg A



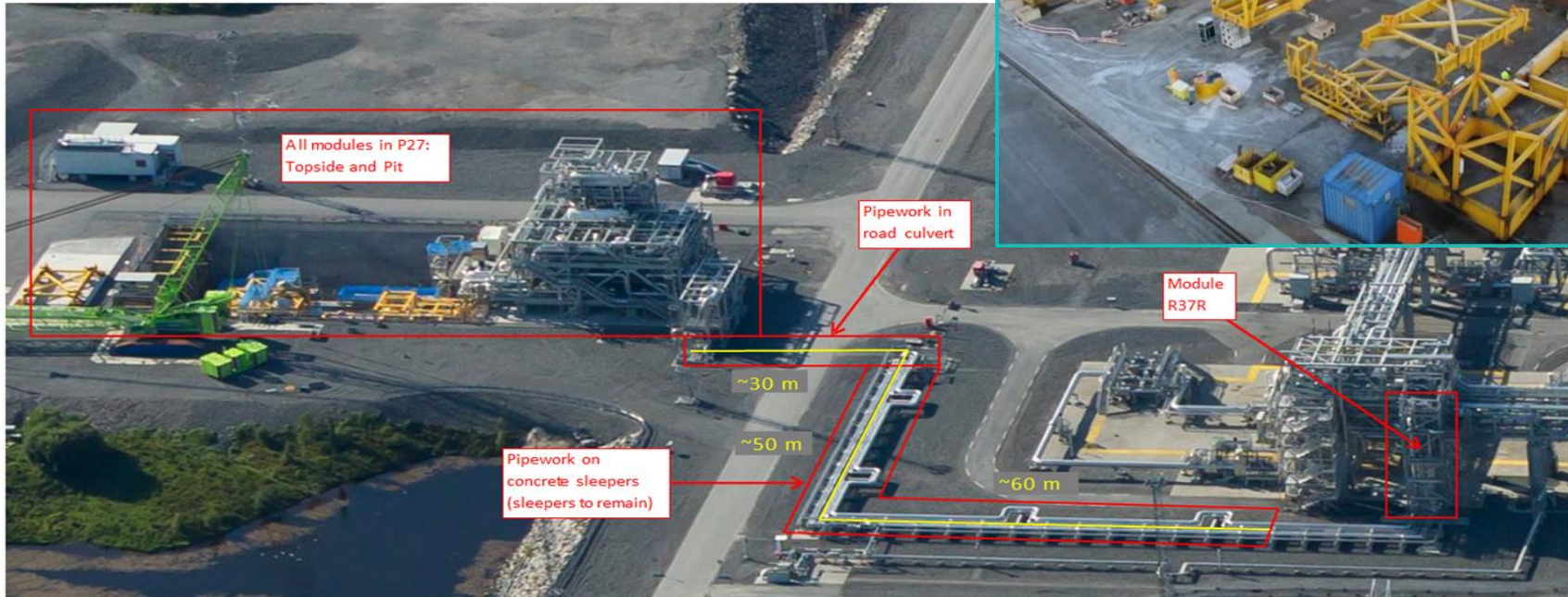
- > Client Saipem UK (Repsol)
- > Topsides weight: 900 tonnes
- > Scope: deconstruction and recycling of topsides and mono-tower



- > Mono-tower weight:
3 200 tonnes including concrete

Nyhamna

Subsea compression plant



Removal and disposal of test plant at Nyhamna. Accommodate inspections. Approximate weight 2 200 tonnes. Duration August 2017 to autumn 2018.

Valhall QP topside & bridge

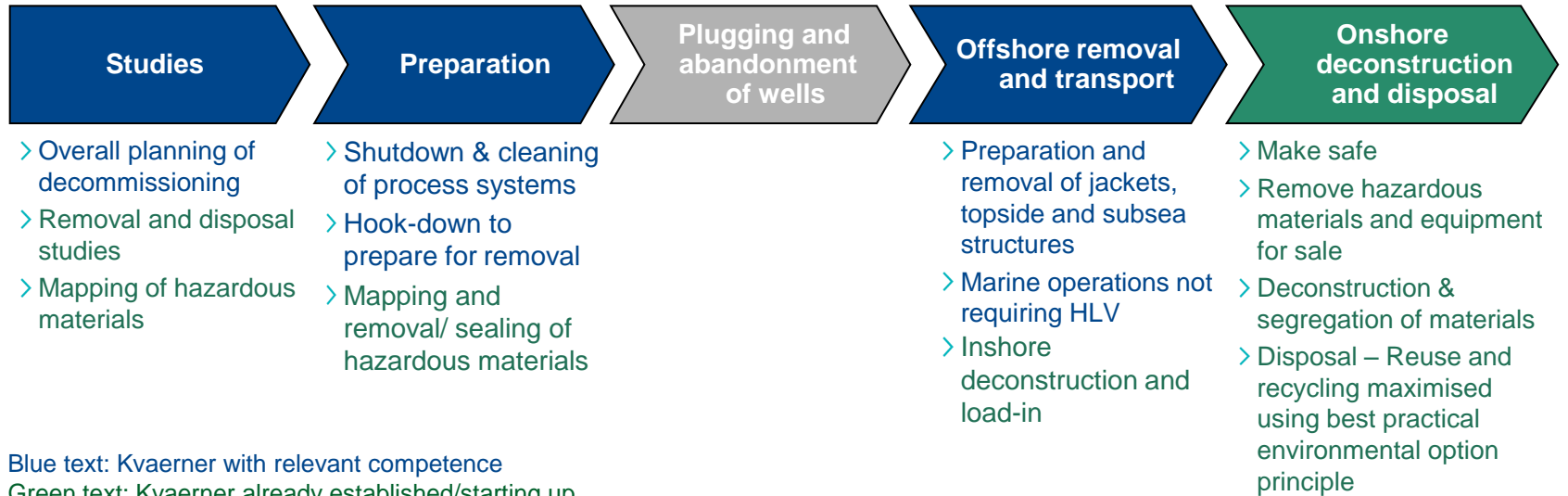


- Call off on frame agreement with Allseas for Aker BP decom work
- Scope: recycling of the topside and bridge
- Work to be completed by spring 2020



Topside & bridge weight:
3 527 tonnes

Kvaerner – Decommissioning work scope



Johan Sverdrup ULQ topside

Elly Bjerknes, EVP Process Solutions
19 March 2018



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Johan Sverdrup ULQ topside

EPC delivery of
ULQ topside

JV between
Kvaerner and KBR

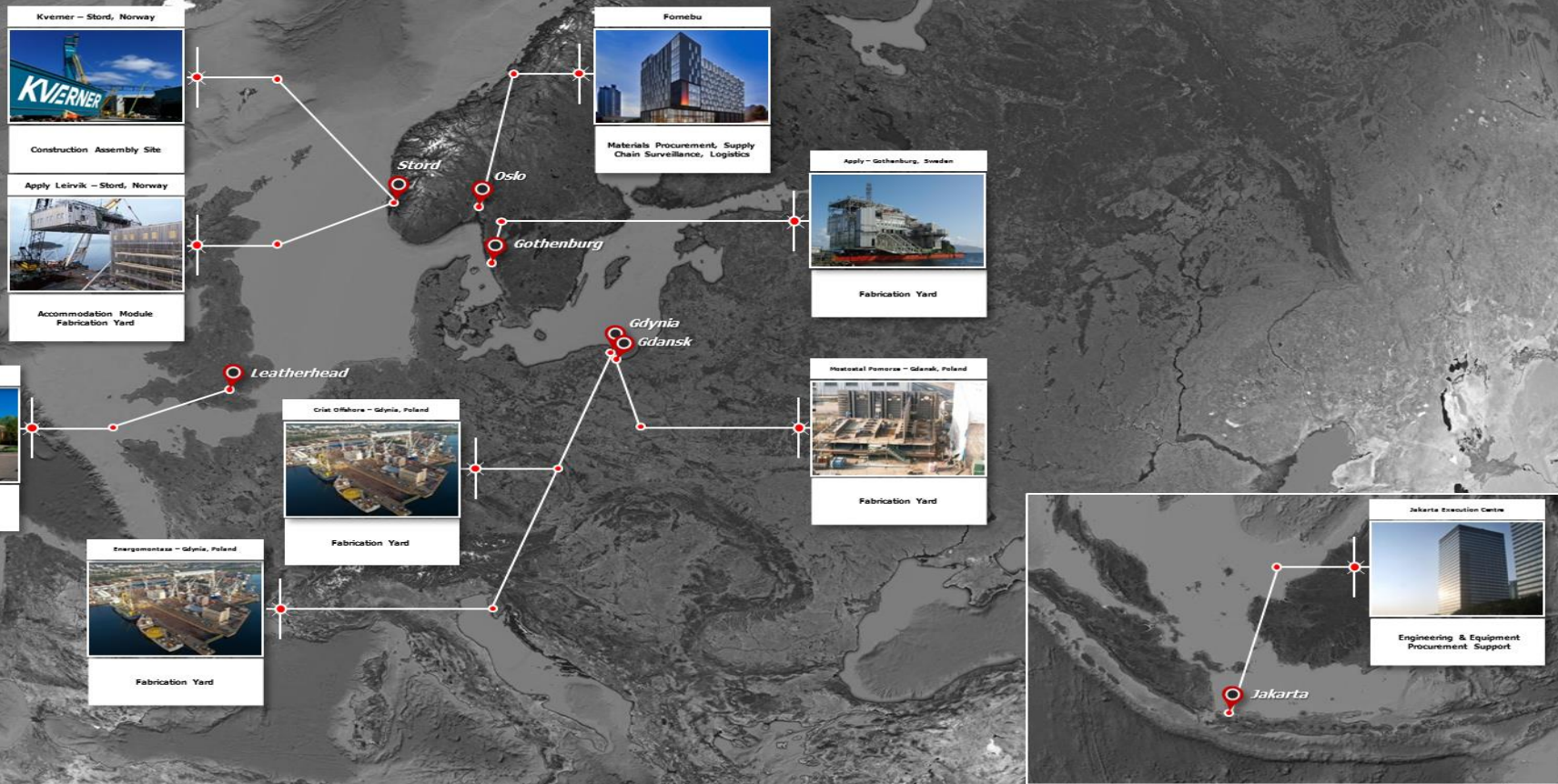
Topside dimensions:
105 x 65 x 50 metres

Delivery:
Q1 2019

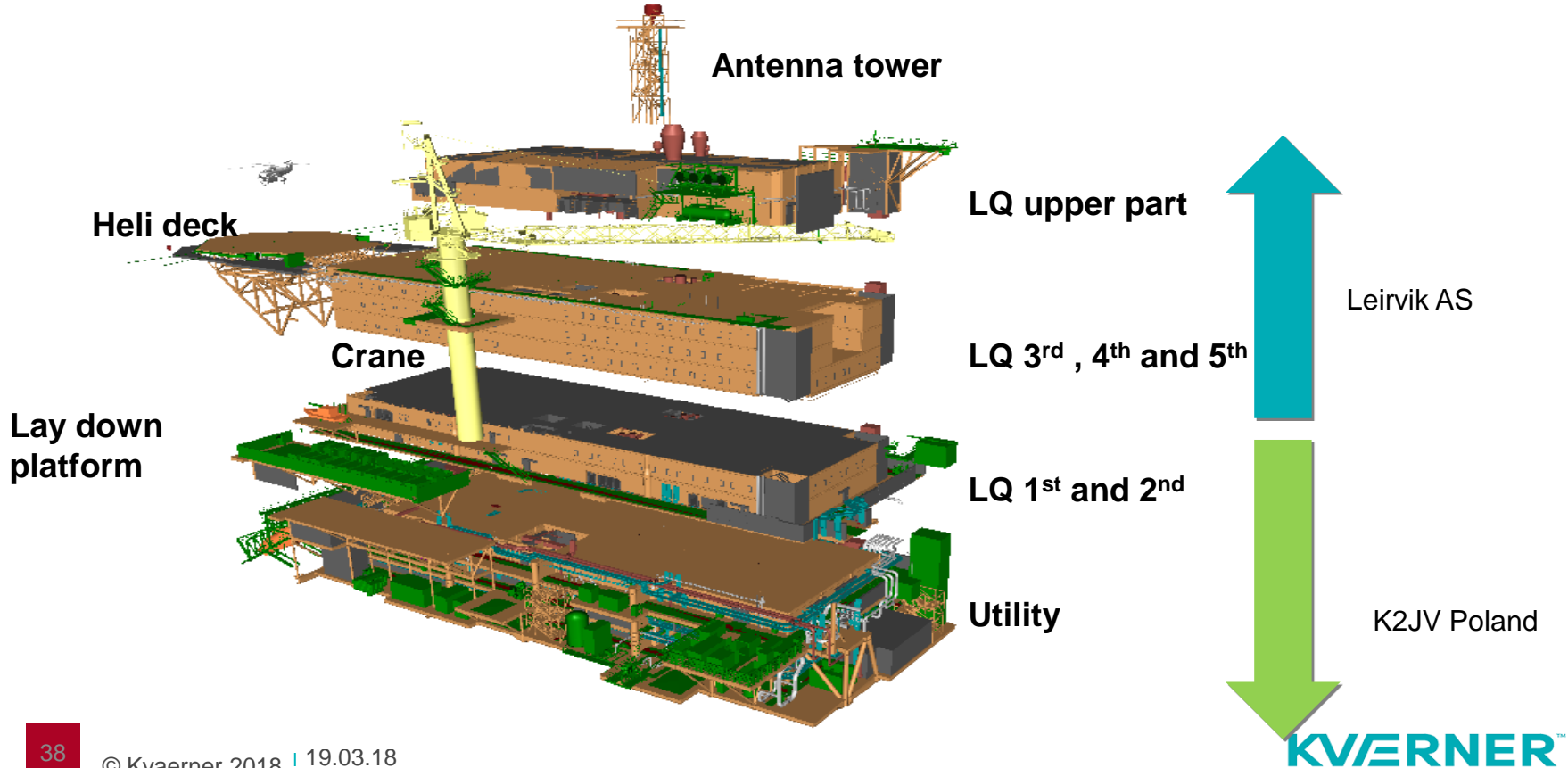
POB:
560

Topside weight:
18 000 tonnes

Execution Locations



LQ parts



Progress



First cut 31.03.16



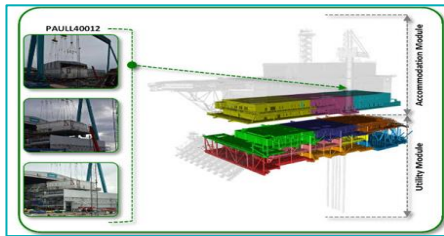
First section into the
assembly hall
21.10.16



Deliveries from
Poland



Equipment installed



Last steel section
installed
12.09.2017



Load out and jacking
November 2017



Accommodation modules
installed January 2018



Heli deck & heli-hangar
March 2018

Remaining main work

- › First half of 2018:
 - Installation of accommodation modules
 - Start loop testing
 - Heli-deck & heli-hangar installed
- › Second half of 2018:
 - Final weighing of topside
 - Mechanical completion
 - Completion and testing
- › Q1 2019:
 - Ready for sail-away and delivery



Illustration of ULQ sail-away

For illustration only/Kvaerner



Sverdrup riser platform hook-up

- > Contract value: NOK 450 million
- > Kvaerner works in an integrated team with Aker Solutions
- > Scope: Planning, management and hook-up of the seven platform modules
- > Offshore hook-up and completion work to start early May



Living Quarters (LQ)

Process (P1)

Drilling (DP)

Riser (RP)

Modules on their way to Norway from Korea

Offshore hook-up and completion work will start early May



Photo: Statoil

Njord A Upgrade Project

Elly Bjerknes, EVP Process Solutions
19 March 2018



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NJORD

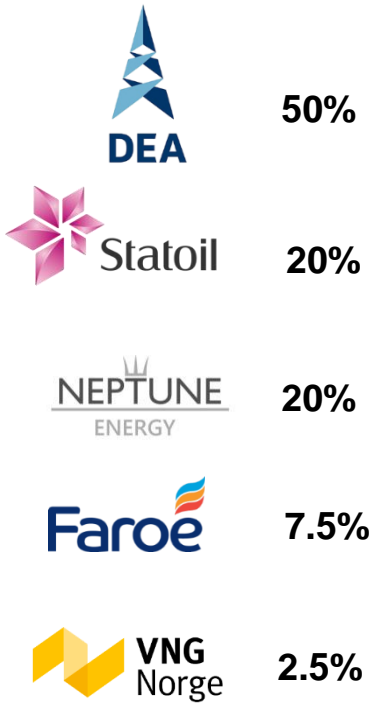
BRØNNØYSUND

NORWAY

TRONDHEIM

Illustration: Statoil

NJORD LISENCE PARTNERS



Njord A – delivered in September 1997



The platform was towed offshore only 28 months after cutting of the first steel plates.

23 August 2016:

Back to Stord the same way it left



Alle skal trygt hjem!

Wszyscy muszą bezpiecznie wrócić do domu!



Srtol
KVERNER

"I AM SAFETY"

EPC contract signed 17 March 2017



Client
Statoil

Project
Upgrading of the Njord A semi-submersible platform.

Awarded
Frame agreement awarded 1 April 2016,
EPC awarded 17 March 2017

Contract value
Around NOK 5.5 billion

Aker Solutions and Kvaerner in Verdal key suppliers



Njord: A unique project

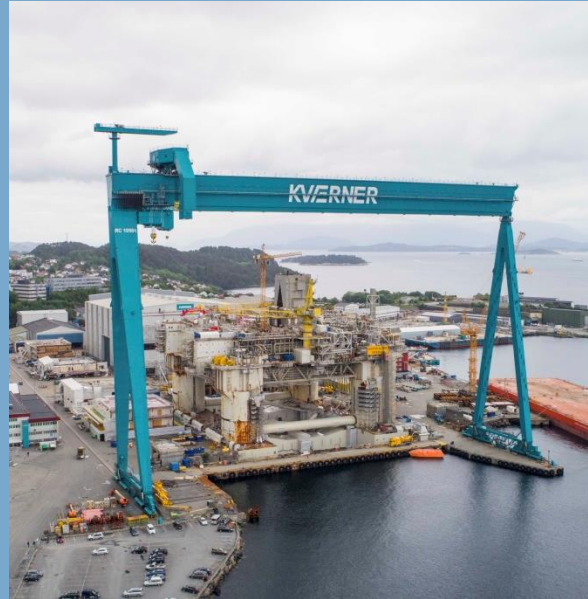
- › First NORSOK project
- › First production platform on NCS to be upgraded
- › Greenfield and brownfield in parallel
- › Hectic dock phase
- › Partly “hot work”
- › Challenging HSSE

Three main phases

PHASE 1:
Yard stay, inspection, pre-EPC



PHASE 2:
Dock phase: Increased buoyancy

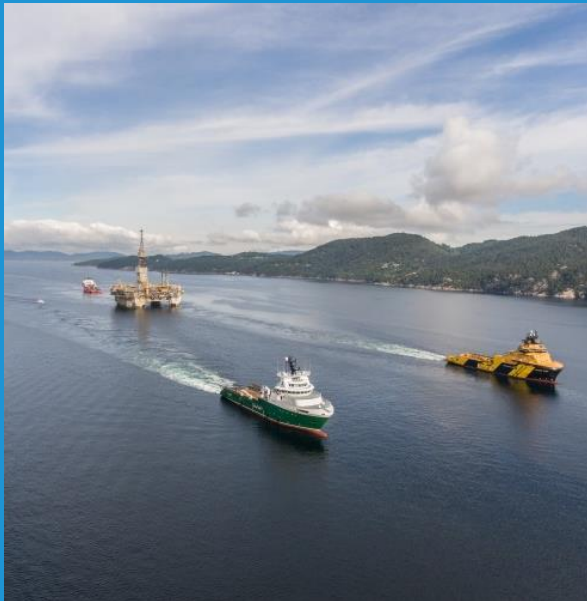


PHASE 3:
Further decom and upgrade work



Three main phases

PHASE 1:
Yard stay, inspection, pre-EPC



PHASE 2:
Dock phase: Increased buoyancy



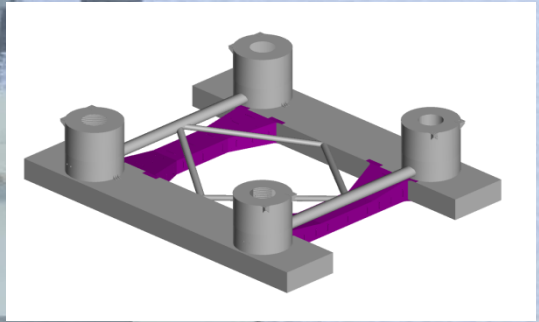
PHASE 3:
Further decom and upgrade work



Main activities in the dock phase

Removal scope

- Winches
- Helideck
- Cranes
- Compressors
- Lifeboats
- Riser guides



Reinforcement of existing pontoons

Dry dock numbers

4400 work permits

45 km welds
(Repair rate 0,5%)

200 tons of steel
(6349 items)

50.000 l of painting



3.500 tons of sand

60.000 m2 of painting

1.100 tons of scaffolding

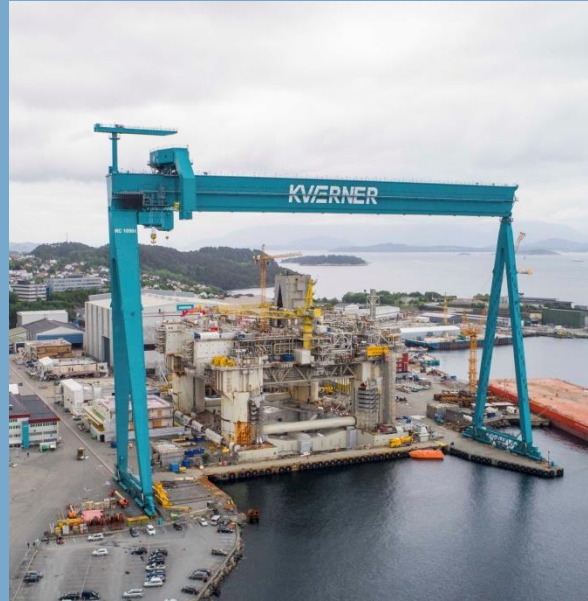
1 ton of welding wire a week

Three main phases

PHASE 1:
Yard stay, inspection, pre-EPC



PHASE 2:
Dock phase: Increased buoyancy



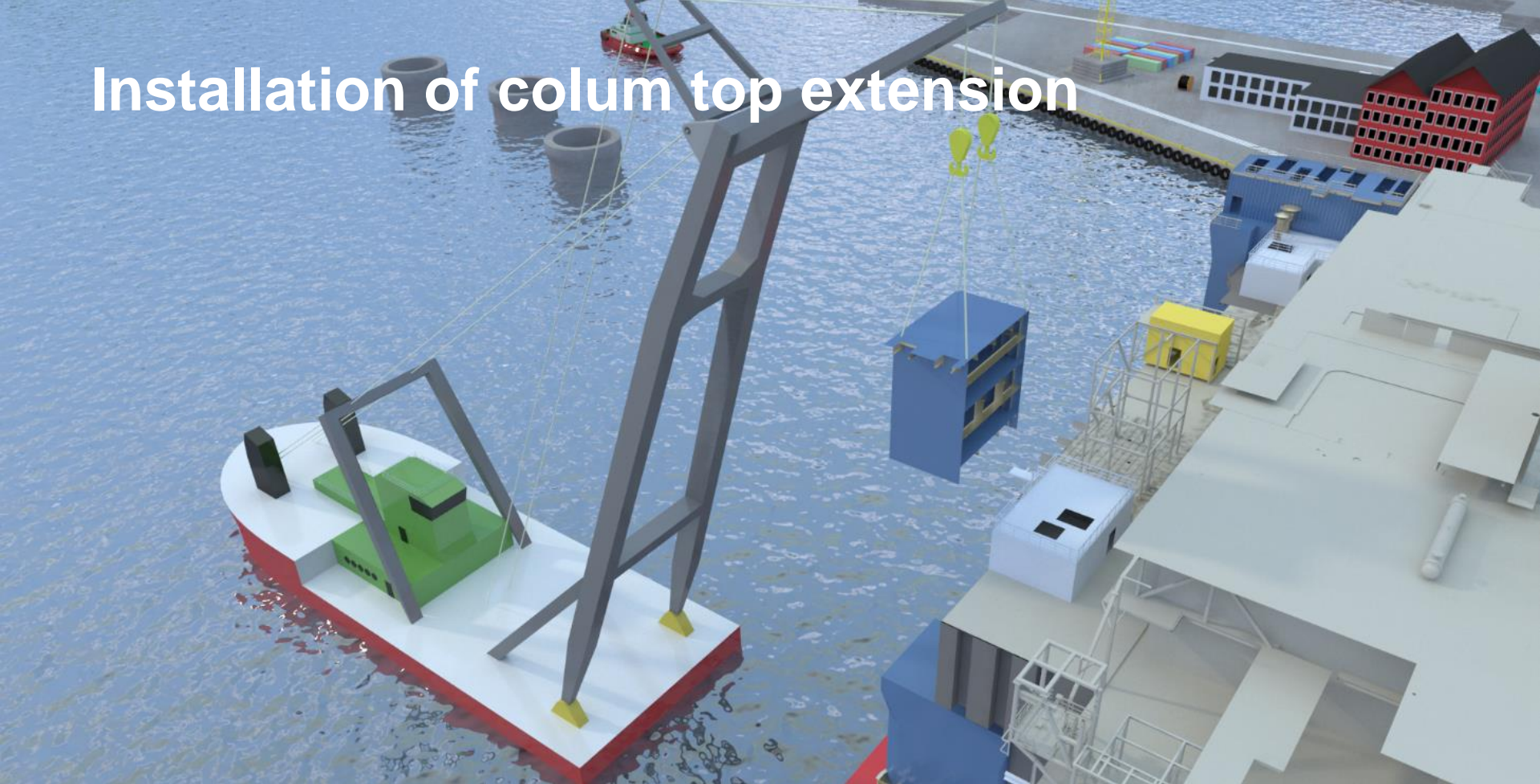
PHASE 3:
Further decom and upgrade work



Installation of blisters



Installation of column top extension



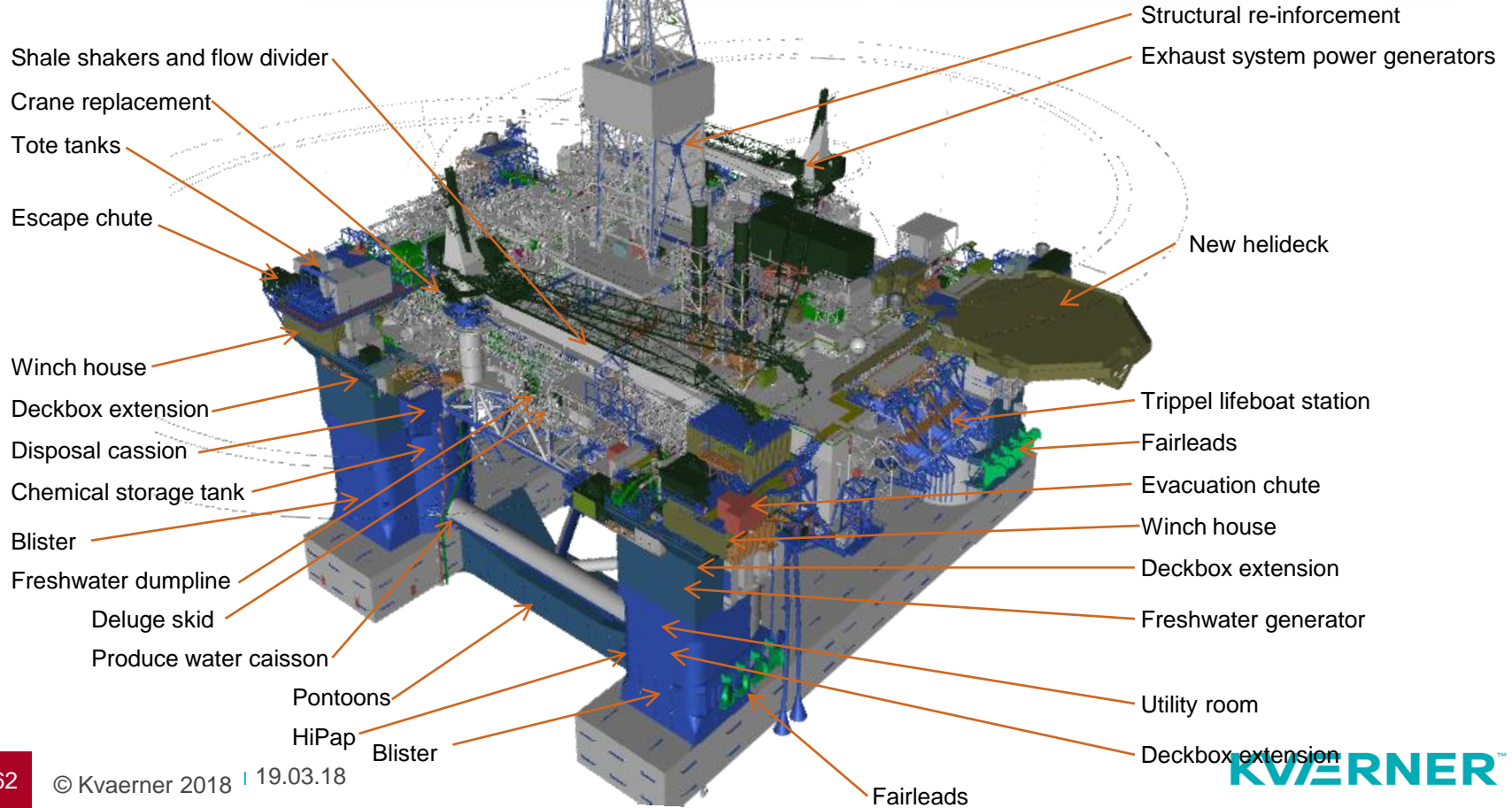
Installation of four top deck boxes



Installation of winch houses



Large scope



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Johan Castberg FPSO

Elly Bjerknes, EVP Process Solutions

19 March 2018



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The Johan Castberg field



Location: 240 km north of the Snøhvit-field in the Barents Sea

Partners: Statoil (Operator 50%)
Eni (30%) and Petoro (20%)

Water depth: 360-390 metres

Production start: 2022

Johan Castberg contracts

> NOK 3.8 billion contract

> Module fabrication contract

- 10 modules + flare
- Total weight: 14 645 tonnes
- Almost 10 000 tonnes of fabrication at Kvaerner

> Integration contract

- Install prefabricated modules
- Hook-up of modules at a total topside of more than 18 000 tonnes

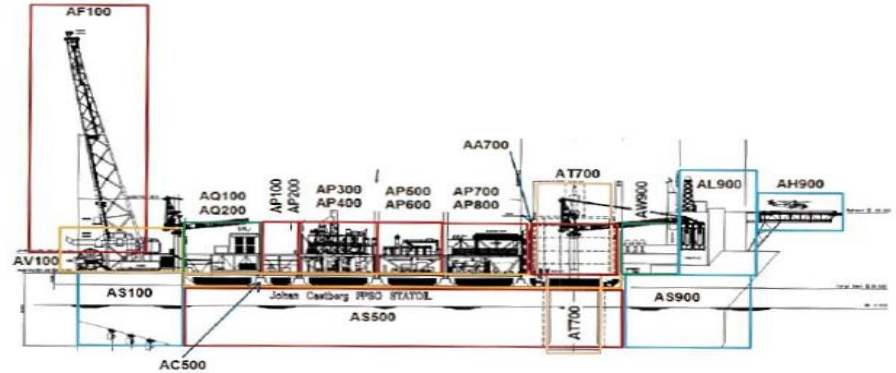


Figure 2: Main FPSO topside and LQ/Utility areas, side view

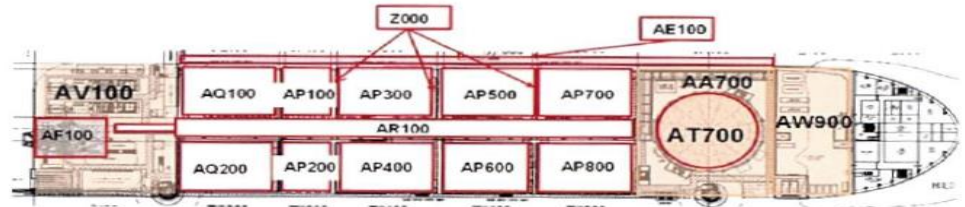
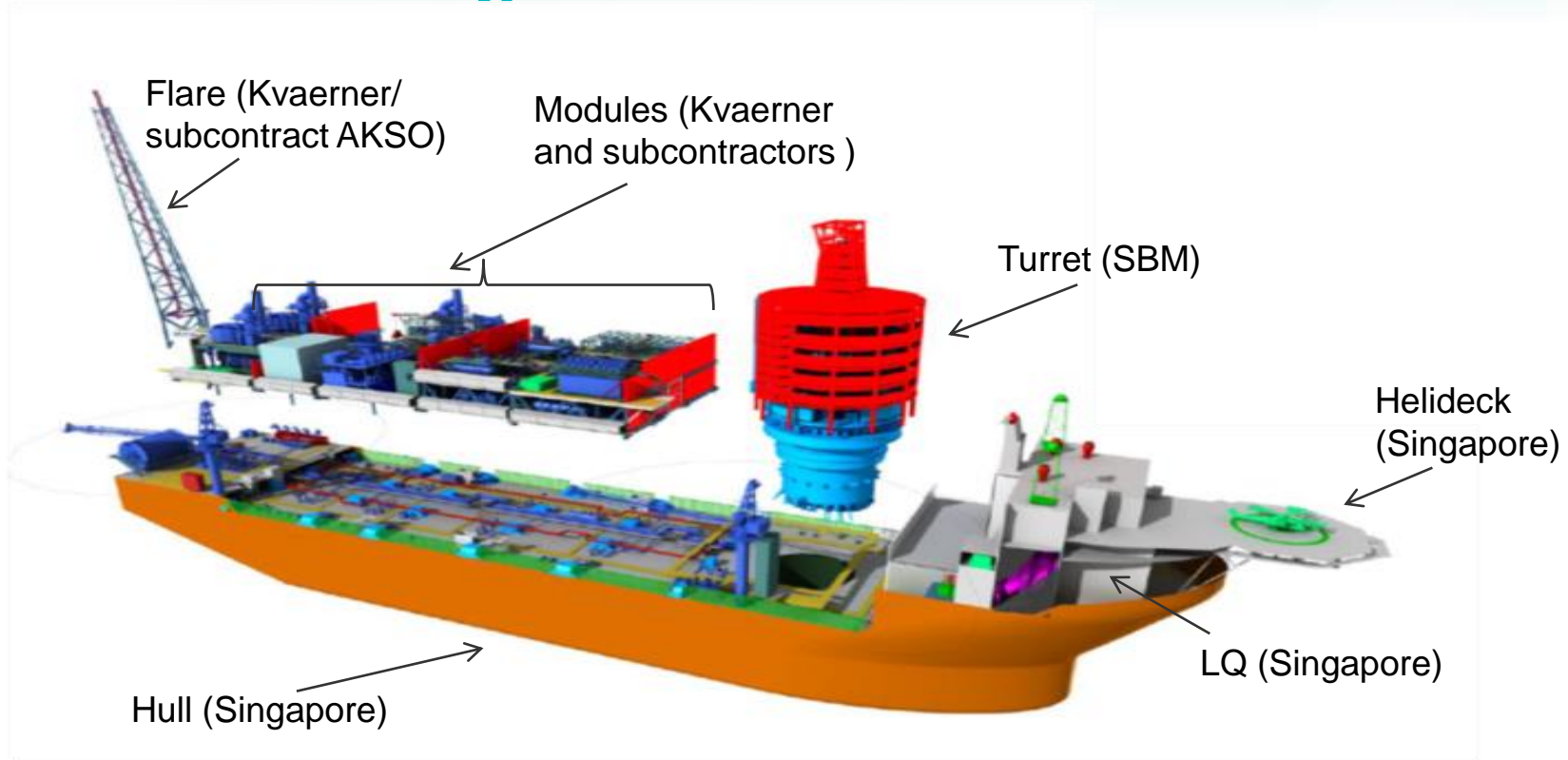


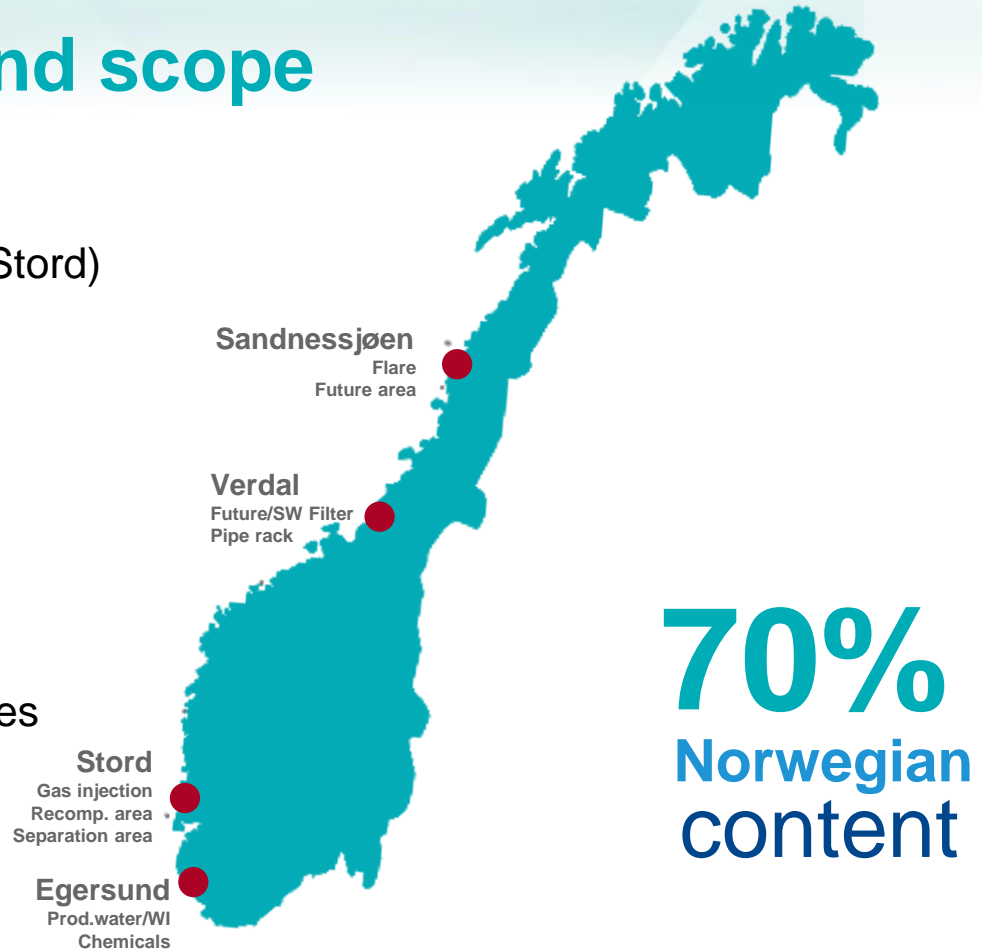
Figure 3: Main FPSO topside and LQ/Utility areas, plan view

Johan Castberg FPSO



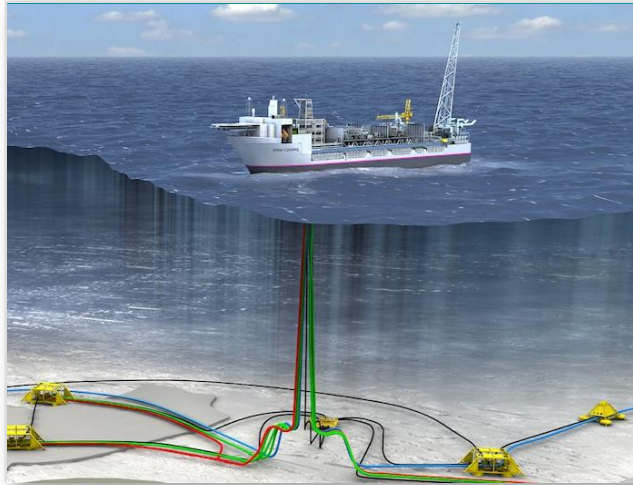
Execution locations and scope

- Kvaerner's scope
 - Fabrication of modules (Verdal and Stord)
 - Integration and hook-up (Stord)
 - Testing and completion (Stord)
- Main subcontractors:
 - Aker Solutions (Egersund and Sandnessjøen)
- Peak manning: around 2 000 employees and subcontractor personnel



70%
Norwegian
content

Project phases



2018 to 2020

Module fabrication

Fabrication start in Q4 18

Almost 10 000 tonnes of modules to be fabricated at Kvaerner

2019 to 2020

Interim phase

Assembly of “stick built” modules for Integration phase

Hull arrival from Singapore
Q3 2020

2020 to 2022

Integration phase

Installation of all modules and Hook-up and integration between modules and Hull

Commissioning and testing

Johan Castberg with Storen crane and quay expansion



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