



# IMR in Statoil - next level

Inspection, **M**aintenance & **R**epair

FFU seminar - January 2012

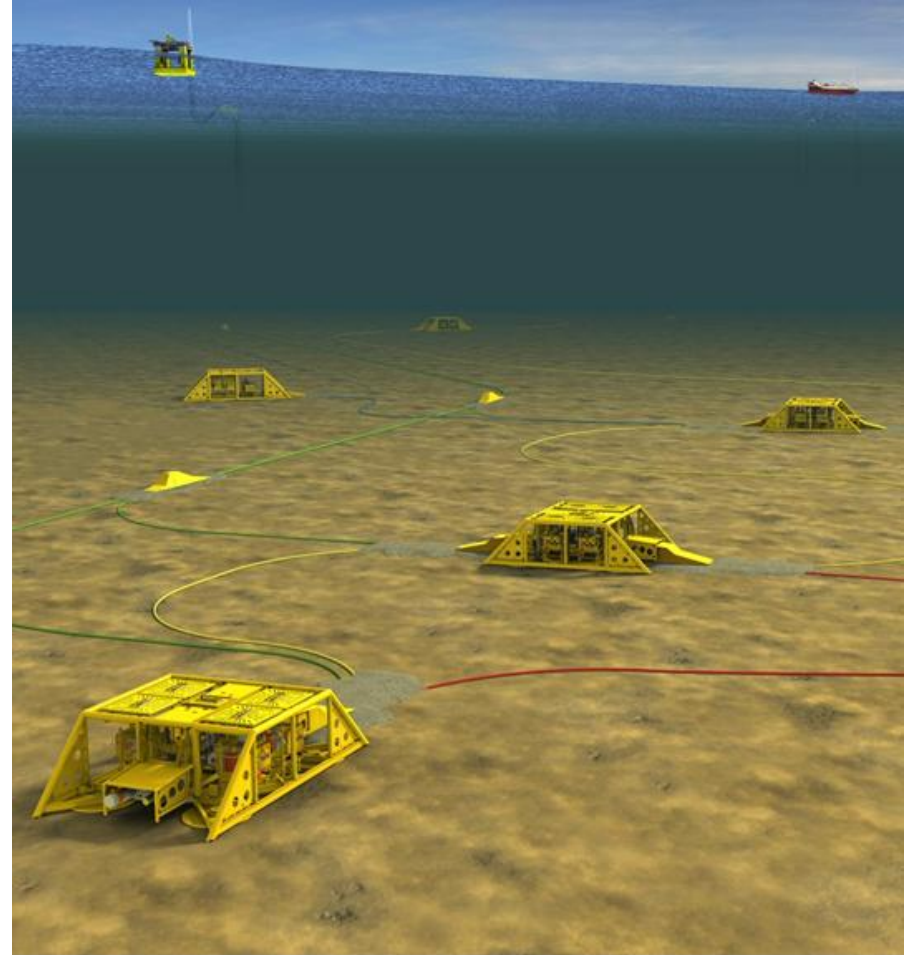
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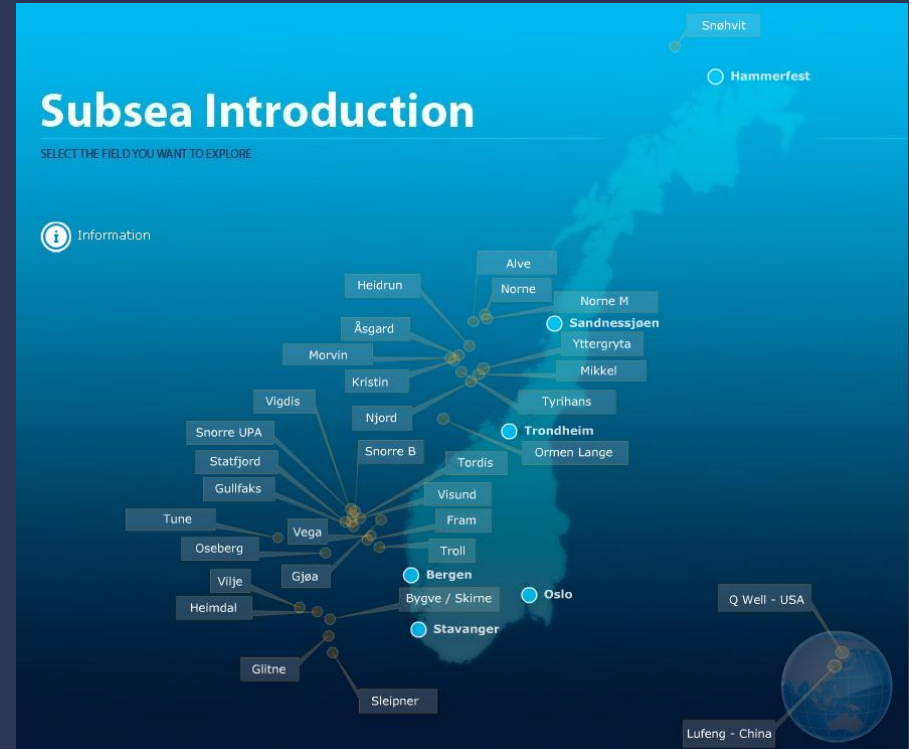
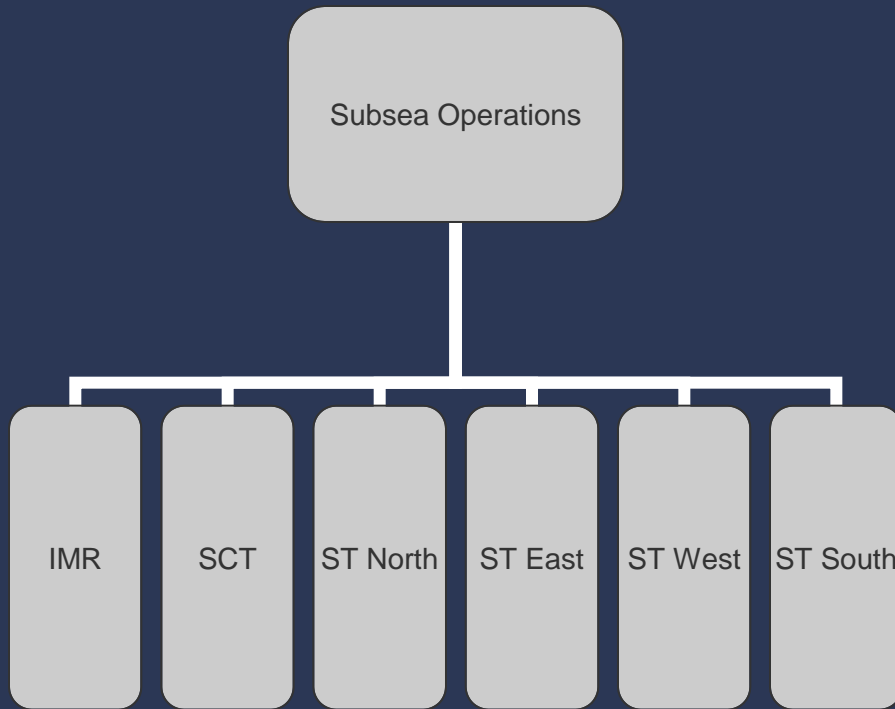


# Statoil in NCS

- 490 subsea wells with different generations of subsea equipment
- Statoil strives to achieve 55% oil recovery from Subsea wells
- Subsea represents more than 50% of the total production



# Integrated subsea operations in Statoil



# The IMR model

## Subsea Emergency and Fast Response Corps

- Flexible and ready
- Readily available and prompt to action
- Cost conscious

## Factory-like operations

- HSE - #1 priority!
- Process oriented
- Volume driven - IMR services offered and executed
- Production optimization focused
- Implement technology improvements to address dynamics of subsea technology
- Apply acquired experience from repeated operations



# IMR vessel portfolio 2012

Edda Fauna



Edda Flora



Edda Fonn

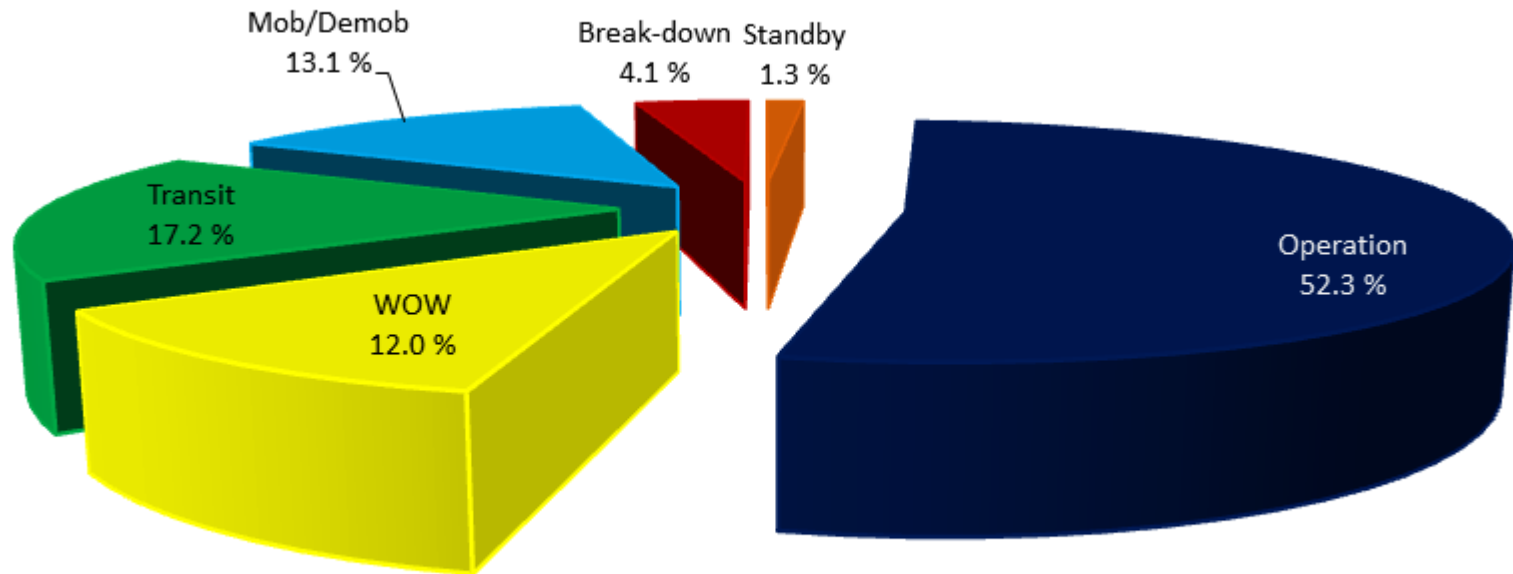


Havila Subsea



# IMR results 2011

## Vessel utilization (2011)



# Selected Accomplishments



Edda Flora: TVCM project



Havila Subsea: Volve anchorline project



Edda Fauna: Scale squeeze operations

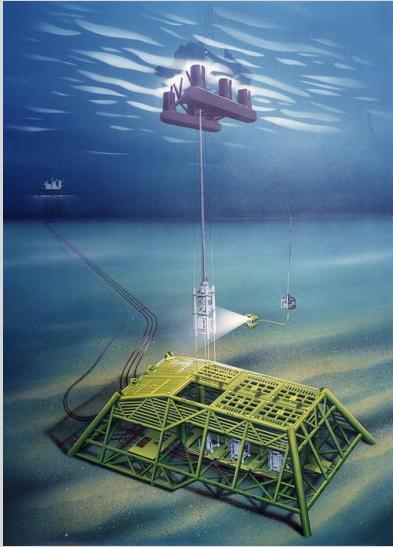


# Evolution of Subsea Systems in Statoil

## 1<sup>st</sup> generation

Diver assist solution

Gullfaks, Tommeliten



1986-1990

## 2<sup>nd</sup> generation

Big templates,  
vertical trees

Sleipner, Statfjord  
Heidrun water injection



1991-1995

## 3<sup>rd</sup> generation

Compact, separate  
protection structure,  
horizontal tree

Yme, Norne, Lufeng,  
Åsgard, Gullfaks

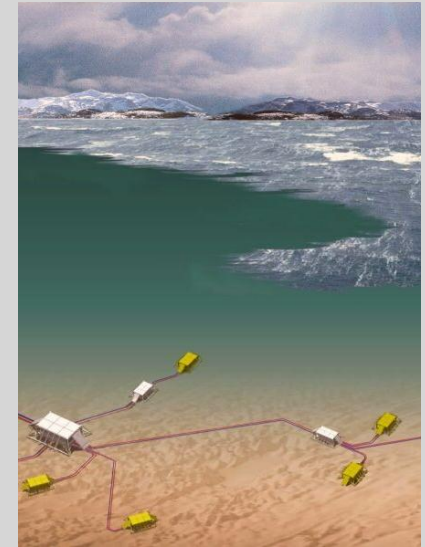


1996-2000

## 4<sup>th</sup> generation

Integrated templates,  
more space, horizontal  
trees

Kristin and Snøhvit



2004-2006

# Evolution of Diverless Intervention Tools

1<sup>st</sup> generation

SCM RT



2<sup>nd</sup> generation

Universal RT



3<sup>rd</sup> generation

FCMRT

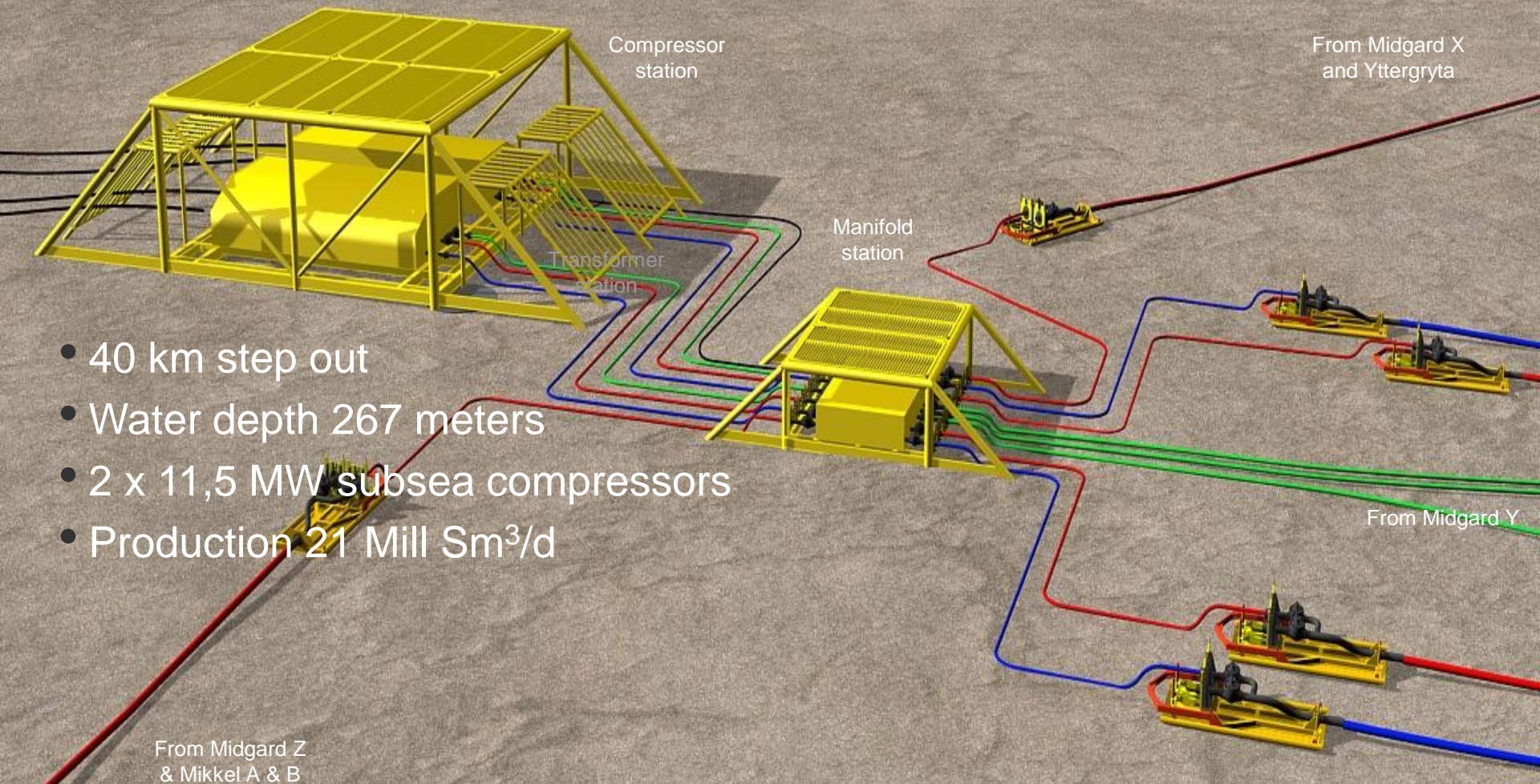


4<sup>th</sup> generation

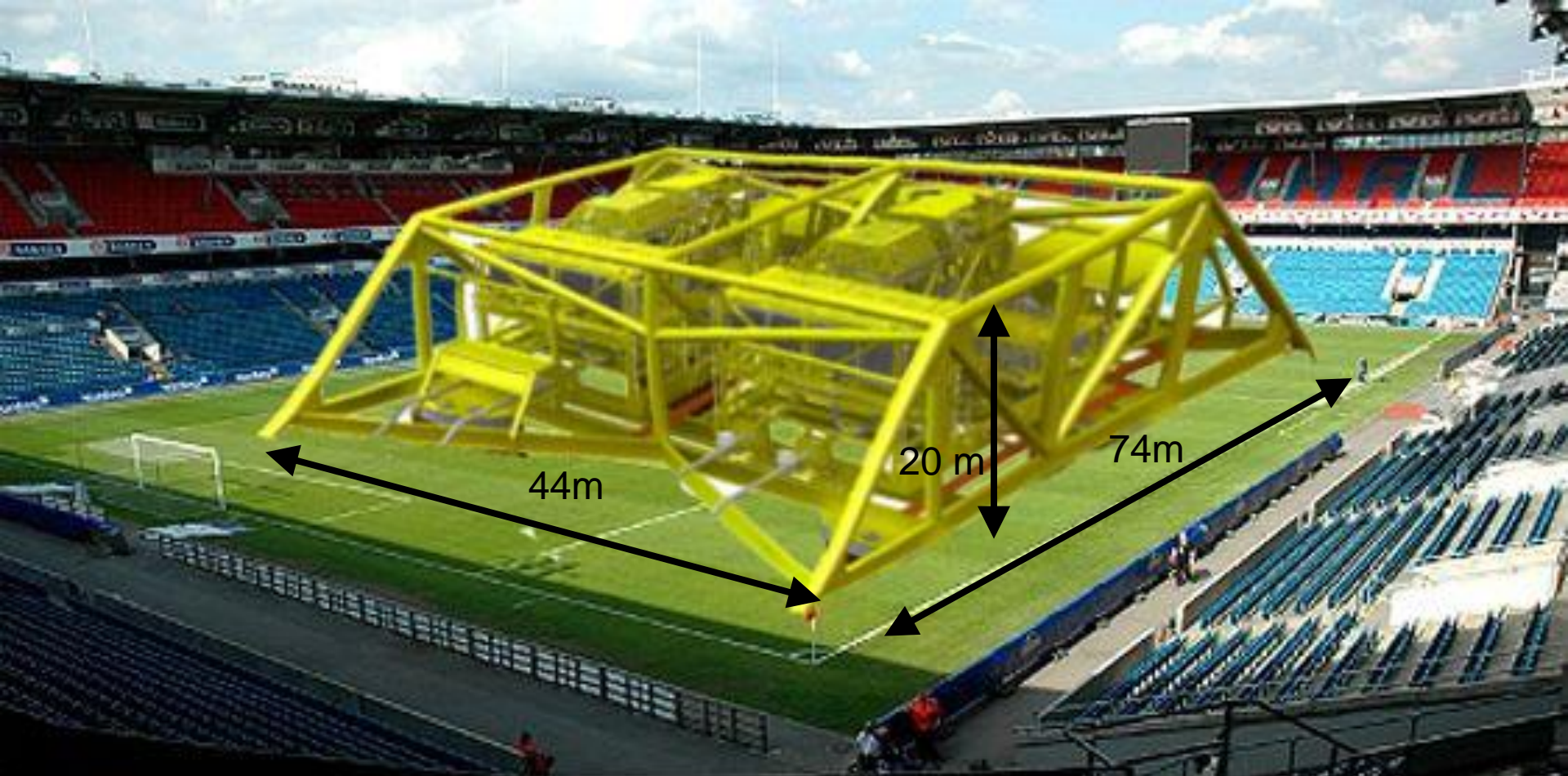
MIT



# Åsgard Subsea Compression

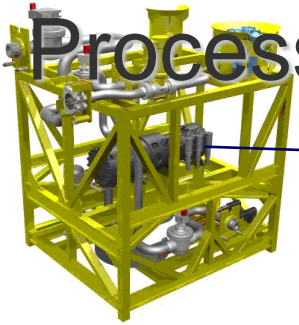


- 40 km step out
- Water depth 267 meters
- 2 x 11,5 MW subsea compressors
- Production 21 Mill Sm<sup>3</sup>/d

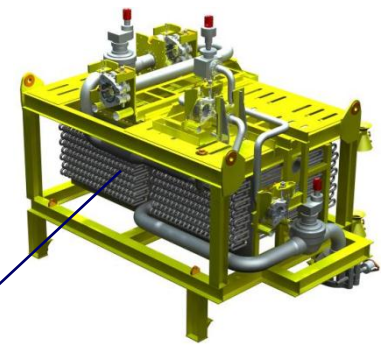
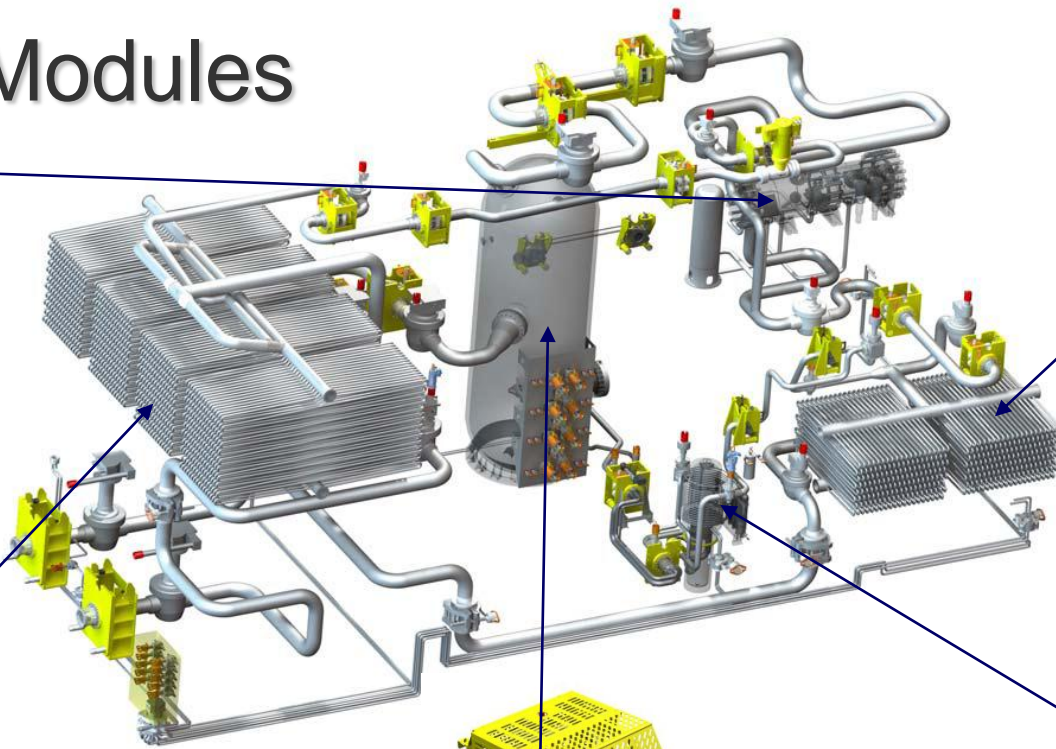


Subsea Compression Station

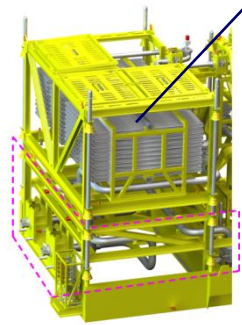
# Process Modules



Compressor  
Weight: 220 tons  
Size: 11 x 9 x 10 m



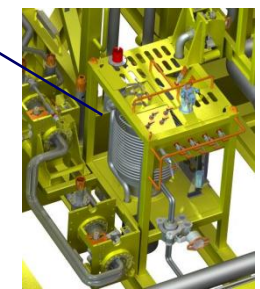
Discharge Cooler  
Weight: 110 tons  
Size: 9 x 7 x 5 m



Inlet Cooler  
Weight: 205 tons  
Size: 15 x 10 x 7 m



Scrubber  
Weight: 211 tons  
Size: 8 x 8 x 12 m



Pump  
Weight: 30 tons  
Size: 5 x 5 x 6 m

# Evolution of Statoil IMR Vessels



Viking Poseidon



Edda Fauna

Next generation IMR vessel



Far Saga



Edda Fonn

# Vessel Technology Improvement

## Arctic regions

- De-ice facilities with DNV class notation DEICE
- Enclosed module handling tower
- DNV class notation CLEAN DESIGN with an effective NOx catalyst

## New technology

- Integrated Scale Squeeze with DNV notation for Well Stimulation
- Deck space of 106.5m by 24.5m for large modules
- Removable bulwark rails for over boarding big modules
- Availability of 70 ton skidding pallets for large modules
- Twist lock system to secure containers and reduce welding
- 135 ton AHC and CT main crane



Seven Viking  
Delivery for 4<sup>th</sup> Q, 2012

## Deepwater and Ultra Deepwater

- 70 ton AHC Module Handling System
- 135 ton Main crane with 15m outreach, AHC and CT for 2000msw
- Capacity for a speed of 18 Knots
- DP class 2 and X-bow hull line to increase availability to 5mHs
- Capacity for 90 passengers with DNV comfort class notation
- Sufficient fuel tanks for one month operation, in addition to
- 1000 cubic meters of scale treatment chemicals
- Two WROV and One OBSROV

# IMR – next level

- IMR is even more critical. Large scale IMR vessel is included in portfolio
- Vessel and tooling/equipment capacity is matched up
- Automised mob/demob systems. More robotics -> less manual -> no welding!
- More complex subsea production systems -> integrated teams needed
- More IMR involvement in Fast Track, cessation, LWI, field development
- Less need for satellite transmission with LTE/4G hubs offshore







*Subsea IMR - 2012*



There's never been a better  
time for **good ideas**

THANK YOU

Statoil Subsea IMR  
The next level

Presenter: Kaj-Ove Skartun  
Title: Manager Subsea IMR  
E-mail address: [kajsk@statoil.com](mailto:kajsk@statoil.com)

[www.statoil.com](http://www.statoil.com)