Technology development and the Norwegian model

Per Gerhard Grini, Phd
Technology Manager
EQUINOR
Outline

- Energy transition
- Automation and digitalization
- The Norwegian model
- Equinor Technology Missions
- Key messages
A leading company in the energy transition
Turning natural resources into energy for people, and progress for society

With global reach

>21,000
Employees

26
Countries

2,079
Million barrels of oil equivalent per day

1,562
GWh Renewable energy equity production

Accelerating our transition

Always safe
High value
Low carbon

High value growth in renewables
New market opportunities in low carbon solutions

Optimised oil and gas portfolio

How we will get there – together

Safe and secure operations
Guided by our values
Building on competencies and our experience
Together as one team – engaging partners and society
Reduce CO₂ in upstream oil and gas

Carbon under target in 2030
Equinor's technology mission

Transforming through technology

1972—2022

1972

Field developments

Gas infrastructure

1972

CO₂ removal and storage

Hammerfest LNG

1972—2023

2030—2050

Asgard subsea compression

Floating wind power

Northern Lights

Unmanned field developments

50 years of industry history, realised by innovation, research & technology developments and project execution excellence

31 May 2023
Transforming through technology
Shaping the future of energy
Transforming through technology
Shaping the future of energy

Offshore wind

What are Equinor’s key strengths?

- Safety is our first priority
- Experience with large complex projects and supplier relations
- Financial strength and risk management
- Leveraging local presence and corporate capabilities
- Technology and innovation
Solar - Building capabilities and capturing opportunities through partnership

- Adding resilience to our renewables portfolio
- Cost competitive power tailored to market needs
- Providing portfolio flexibility
- Applying power market capabilities

The Bigdan solar plant, Poland, 63 MW: Wento Equinor's 100% subsidiary

2000 MW: Plans in Equinor's NextWind project outside or Europe. Offshore New York, potentially producing up to 2000 MW of electricity.

- Technology and innovation
- Flexible projects and solutions
- Project management
- Global brand and corporate installations
New technologies: Robots make our operations safer
Digitalization & automation
Digitalization and automation will dominate technology for the foreseeable future

**Technology enablers**
- All electric
- Maintenance free pumps
- Seal-less compressors
- Power from shore or unmanned power production

**Increased safety**
- Improve production
- Reduced Capex & Opex

**Digital enablers**
- Autonomy
- Robotics
- Digital twins
- Smart sensors
First unmanned production platform™ – Munin¹

- Value driver at scale in future field development
- Enhancing value and safety via Automation, Interoperability & Robotics
- Applying know-how across energy value chains

~30 PERCENT
Facility capex reduction

~50 PERCENT
Opex reduction

0.4 KG CO₂ / BOE
Among world’s lowest CO₂ emissions from production

1. Formerly Kratfjø
2. Capital markets update 2023
Collaboration

The Norwegian model – Technology Development

Collaboration between academia, government, suppliers and operators continues to be fundamental for development and implementation of new technologies.
Equinor collaborates with many universities across the world:

Academia spend

- Oil & Gas: 39%
- Renewable & Low Carbon Digital: 17%
- Other: 8%

Leading in the energy transition

- Education
  - Educate the next generation for Equinor and Norway
  - Continuous learning to reskill internal personnel

- Recruitment
  - Brand Equinor as an attractive employer
  - Access to the next generation needed in the energy transition

- Technology & innovation
  - Research enabling technology and innovation
  - Innovation is and will be key success factor for Equinor & Norway

Equinor’s strategy, climate ambitions & technology strategy
Working with suppliers

Interoperability

Standard docking station

SWiG

STANDARD INTERFACES
Our technology ‘strategy on a page’
Introducing our 11 strategic themes

**EQUINOR’S TECHNOLOGY MISSION**

‘Transforming through technology’

**GUIDING PRINCIPLES | TRANSFORM THE WAY WE OPERATE**

- **Embed:** data and digital
- **Scale:** for competitive advantage
- **Integrate:** technology
- **Deliver:** distinctive expertise
- **Modernise:** our delivery models
- **Co-innovate:** with partners

**STRATEGIC THEMES | FOCUS FOR CREATING DIFFERENTIATION**

Strategic themes across three pillars that articulate what the technology strategy is solving for

<table>
<thead>
<tr>
<th>Delivering impact to the businesses today</th>
<th>Applying solutions to build the company of tomorrow</th>
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<tr>
<td>Discover and utilise the total near and in field resource potential</td>
<td>Develop large-scale value chains for hydrogen and derivatives</td>
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<tr>
<td>Extend lifetime and re-use of infrastructure</td>
<td>Capture synergies through energy system integration</td>
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<tr>
<td>Optimise energy production through next gen operations</td>
<td>Build scalable solutions for carbon capture, transport and storage</td>
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<tr>
<td>Reduce CO2 emissions from our activities</td>
<td>Develop competitive solutions for trading and supply</td>
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<td>Drive cost-efficient scaling of offshore wind</td>
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<th>Transforming into a data-driven company</th>
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<td>Develop a resilient and scalable digital foundation to drive business agility</td>
<td>Accelerate data-driven decision making</td>
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**INFORMED CHOICES | ACROSS KEY ENABLERS**

- People and capital prioritisation
- Internal delivery models and ways of working
- New business models & strategic partnerships
- Capability building
- Safety improvement & technology resilience
Key Messages

1. In general, very good match between Technology efforts in Equinor and BRU program areas!

2. Potentially BRU could increase focus on:
   - Optimise energy production through next gen operations
   - Capture synergies through energy system integration

3. Need for speed – more important than ever!
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