

Offshore wind

# Diving Possibilities and Challenges



Roar Jørgensen  
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**Keeping diving relevant for the future**

# Offshore Wind Diving – Possibilities and Challenges

## Agenda

- Offshore windfarm development
- One Equinor
  - Diving strategy
- Typical Diving and ROV tasks
- Offshore windfarm diving stakeholders
  - Where do we go



# Offshore Wind Farm Development.

- 1991: The **first offshore** wind farm in the world is constructed in southern Denmark.
- 2000: **First large** – scale offshore wind farm at Middelgrunden in Denmark.
- 2003: The **UK's first** offshore wind farm was installed in north Wales.
- 2007: The UK authorities announces plans to install **thousands** of offshore wind turbines
- 2009: The worlds **first large floating** wind turbine was installed off the coast of Norway.
- 2013: The first offshore wind turbine in the **US** is launched.
- 2017: Hywind Scotland - The **world first floating wind** farm.
- 2020: Dogger Bank UK – it will be **the worlds larges wind Farm.**
- 2021: UN Climate Change Conference **COP 26** (Conference of the Parties) – Glasgow.

# One Equinor

Equinor supports the Paris Agreement and a net Zero future.

- Offshore wind is important solution for this transition.



Equinor has been involved in offshore wind since 2009 and are now heavily escalating investment

- Equinor are present involved in Offshore Wind in UK, Nederland, Germany, Poland, USA
  - Doggerbank offshore Wind is in 2021 the largest industrial investment in Equinor and will be the world largest offshore wind park.

## Equinor has a corporate strategi for Diving

- Diving operations are safe, sustainable and efficient.
- When considered the best solution, based on an overall assessment of Health, Safety, Environment, Economy and Quality, diving shall be Equinors preferred method for subsea intervention.
- Diving shall be performed in a uniformed manner – world wide

# Main drivers for choice of Intervention method and work tasks

## Diving versus Remote (ROV / Drone)

### Decision drivers for choice of Intervention method

HSE Risks

Design

Cost

Operational factors –depth, sea current, visibility

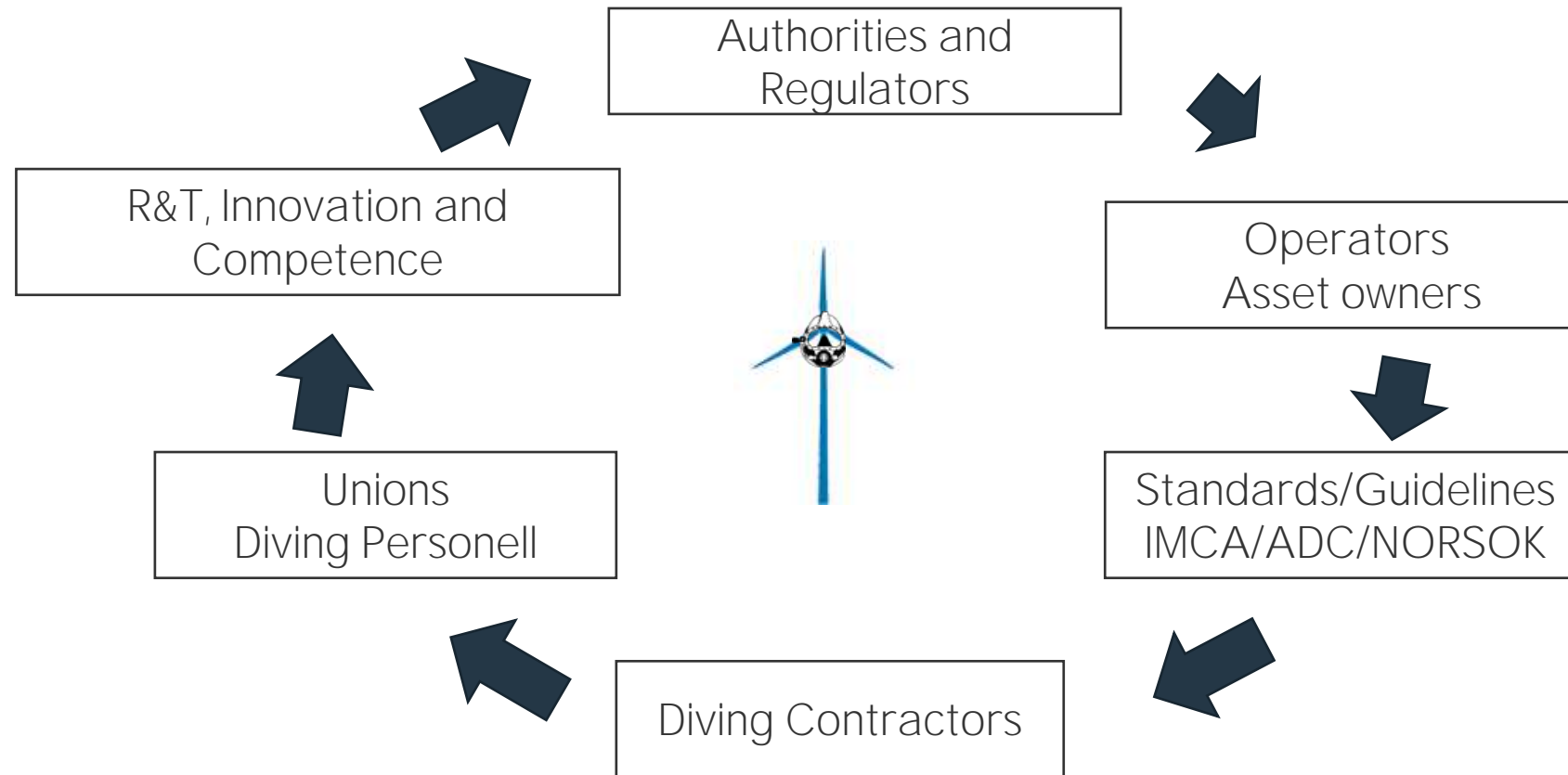


Typical Diving/ROV tasks	Diving	ROV
Landfall	X	(x)
Not expected incidents	X	(x)
UXO Identification and clearance	X	X
Cable Repair	X	X
Cable Stabilization	X	X
Inspection	X	X
Asset and Scour Protection	X	X
Cathodic Protection Installation	X	X

## Offshore Wind farm stakeholders - Challenges

Autoratives Regulators	Several countries world wide with different regulations.
Operators	Many "new" operators with limited offshore diving experience.
Diving Contractors	Medium/small size diving contractors with varied experience and quality.
Standards, guidelines, organizations	It is not established any common accepted guidelines, standards or diving tables within the wind farm industry. But these exists for O&G industry (IMCA, ADC; Norsok ) .
Diving competence organizations and forums	Competence organizations exists – the offshore wind industry have to adapt and define their best practice.

# Possibilities are depending on how the industry works together



*Take Away:*

- *How do we gather the offshore wind diving community?*
- *How do we proceed to keep diving relevant for the future*



Roar Jørgensen

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