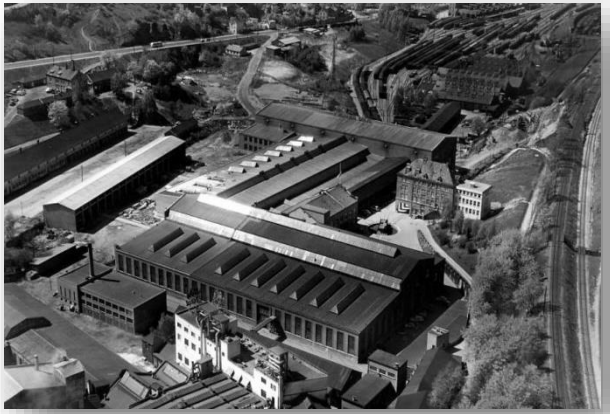
Business opportunities in offshore wind

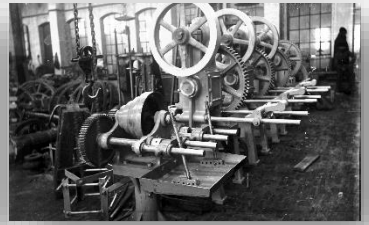
Science meets industry, Bergen 12.09.2019

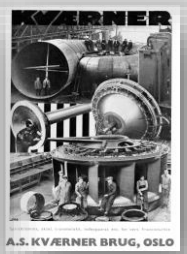
KVÆRNER™

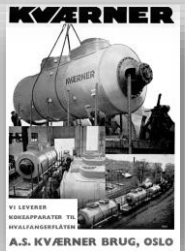
For almost 170 years, Kvaerner has been at the centre of Norwegian industrial development…

1853 → 1870s → 1950s









Picture: Internal, Oslo Museum and Oslo Byarkiv

© Kvaerner 2019 |

KVÆRNER™

Building on a strong local presence, we have delivered projects all over the world

1960-70s → 1980/90s → 2000/10s →

Ocean Viking – our entry into oil and gas

Troll A towed to field - the largest object ever moved by man.

Huge number of projects worldwide

© Kvaerner 2019 |

Picture: Internal, Oslo Museum and Oslo Byarkiv

KVÆRNER

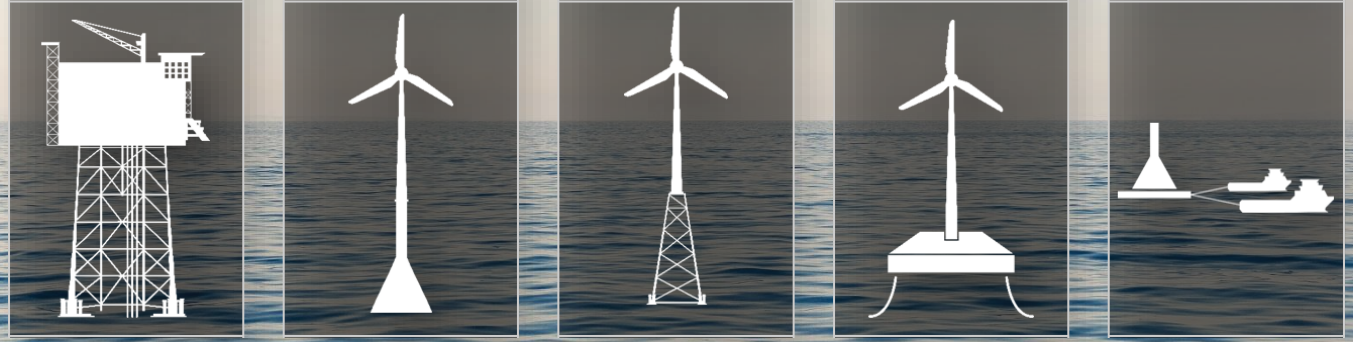
Kvaerner has delivered 10% of all offshore wind jackets currently deployed in the world

Our capabilities from oil and gas are appreciated in offshore wind

Kvaerner – a robust partner in offshore wind

INTEGRATED SOLUTIONS FOR OFFSHORE WIND

CONVERTER PLATFORMS	CONCRETE GBS FOUNDATIONS	STEEL JACKET SUBSTRUCTURES	FLOATING FOUNDATIONS	MARINE OPERATIONS



KVÆRNER™

Our value proposition: We take holistic project delivery responsibility…

FEASIBILITY & CONCEPT

| Opportunity appraisal | Feasibility studies | Concept selection | Concept definition |

ENGINEERING

| System definition | Concept development | System design and layout development | Global design | Detailed design |

PROCUREMENT

| Global sourcing | Frame agreement | Long lead items | Planning | Bulk material sourcing | Supply management |

CONSTRUCTION, HOOK-UP AND COMPLETION

| Work preparation | Prefabrication | Fabrication | Transport and positioning | Assembly | Mechanical completion | Commissioning | Transport and installation | Take-over | Close-out |

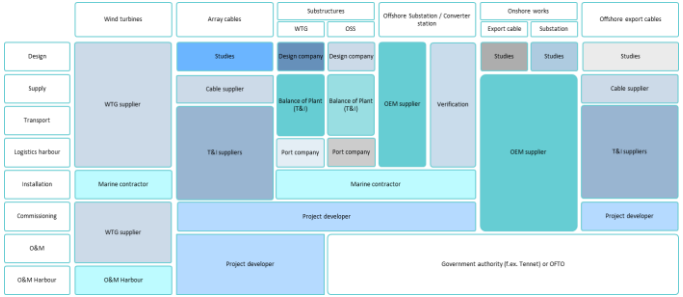
INSTALLATION

| Marine operations management |

DECOMISSIONING

| Marine operations management | Vessel management | Disassembly | Recycling |

Time



© Kvaerner 2019 |

KVÆRNER

…and by doing so, we reduce time to delivery, risk and cost

- *10-25% reduced project development time*

FEASIBILITY & CONCEPT

| Opportunity appraisal | Feasibility studies | Concept selection | Concept definition |

ENGINEERING

| System definition | Concept development | System design and layout development | Global design | Detailed design |

PROCUREMENT

| Global sourcing | Frame agreement | Long lead items | Planning | Bulk material sourcing | Supply management |

CONSTRUCTION, HOOK-UP AND COMPLETION

| Work preparation | Prefabrication | Fabrication | Transport and positioning | Assembly | Mechanical completion | Commissioning | Transport and installation | Take-over | Close-out |

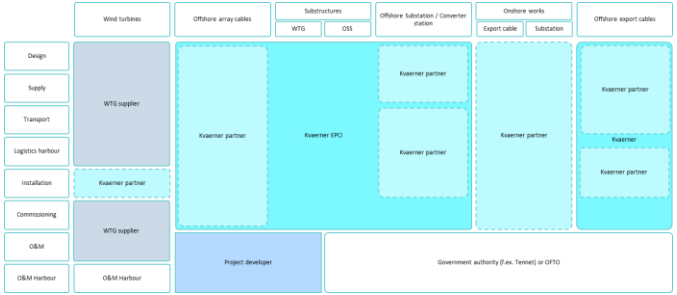
INSTALLATION

| Marine operations management |

DECOMISSIONING

| Marine operations management | Vessel management | Disassembly | Recycling |

Time



© Kvaerner 2019 |

KVÆRNER

Kvaerner is floating wind agnostic

	Spar	Semisub	TLP	Barge	Multi-WTG / other
Concept with projects	Hywind Advanced Spar Toda Spar TetraSpar	Windfloat Cobra Semi-Spar Naval Energies MHI 3 column Mitsui 4 column Eolink		Ideol SATH - Saitech	Hexicon Hexafloat
Less mature concepts	Telwind SeaTwirl Modec D-SPAR	OO Star Volturnus TLPWind FloatMast Nautilus TetraFloat SCDNezzy	ECO TLP PelaStar TLPWind FloatMast		W2Power

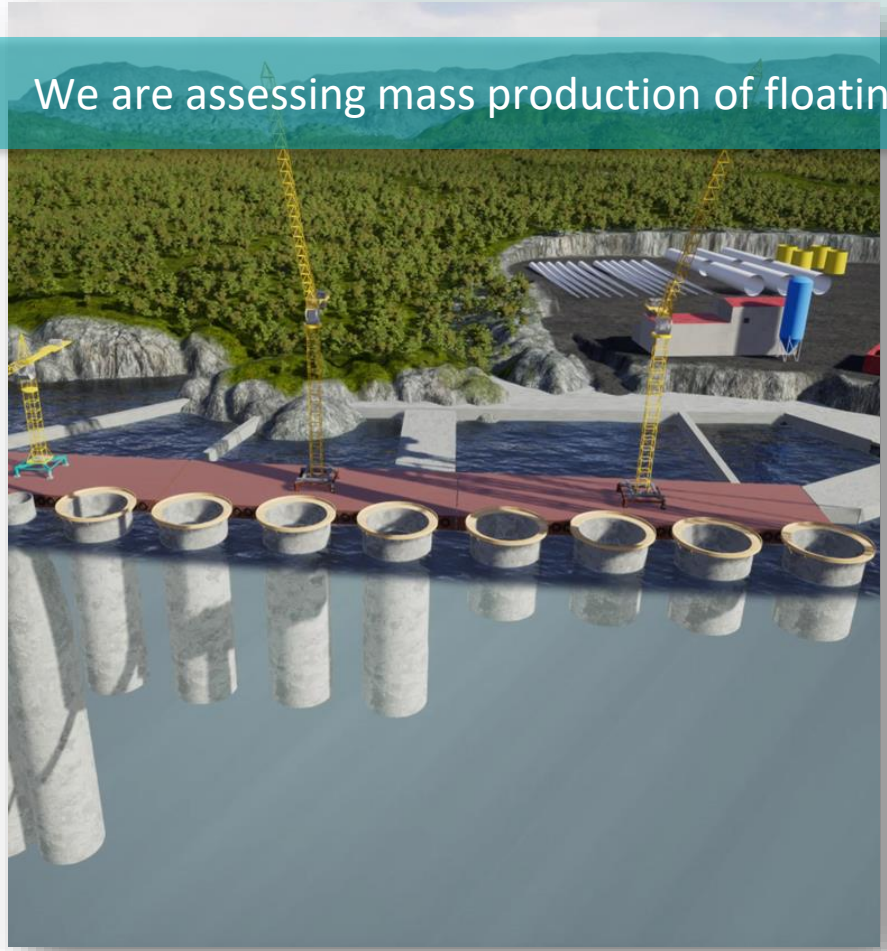
Assess concepts for complete delivery to commercial size parks

(Sites, construction, cost, marine transport, assembly, installation)

© Kvaerner 2019 |

KVÆRNER

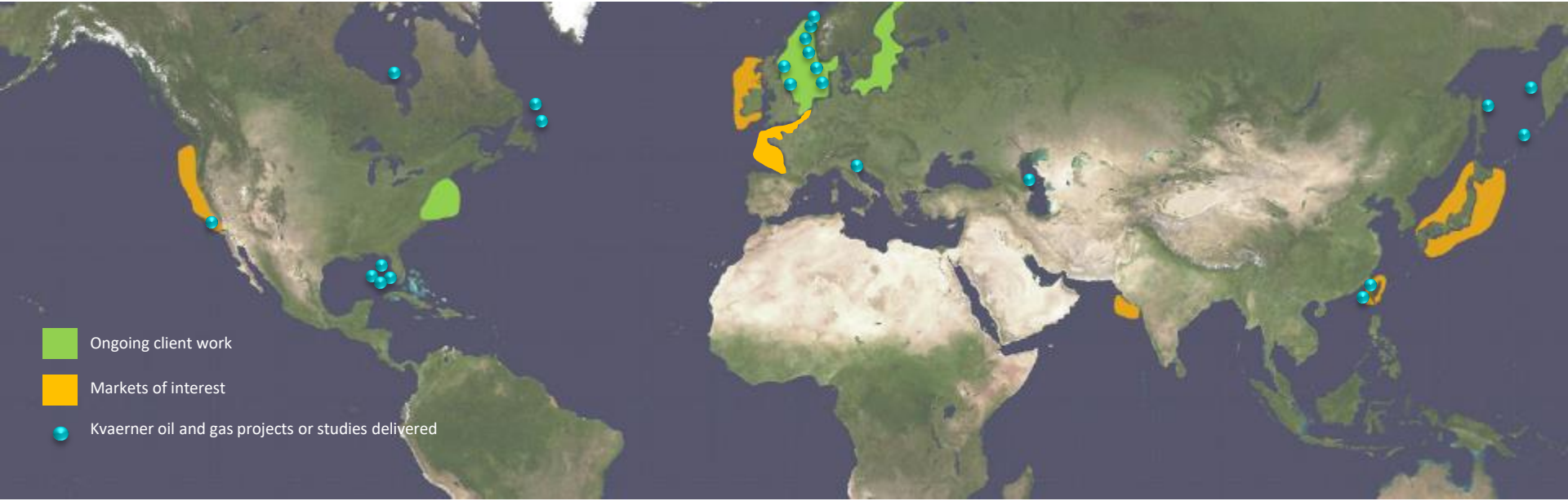
We are assessing mass production of floating wind, also for Norway



© Kvaerner 2019

KVÆRNER

We have a step-wise approach to offshore wind



Establish market presence

- Develop customer relations, partnerships
- Build Kvaerner capabilities
- EPCI supplier to select project developers
- Supply: jackets, GBS foundations, HVDC platforms, marine operations

Expand capabilities

- Optimise execution models
- Establish state-of-the-art serial production capability
- Expand to select markets
- Refine value proposition to developers and supply chain

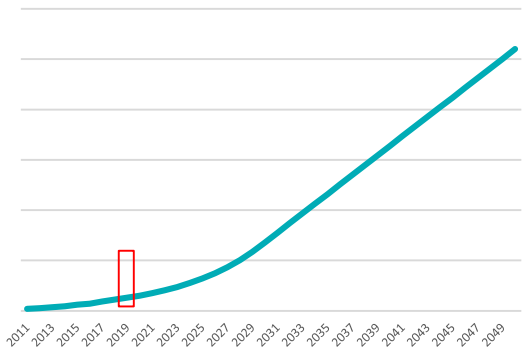
EPCI integrator of choice

- Leverage full-scale EPCI
- Expand product offering

© Kvaerner 2019 |
KVÆRNER

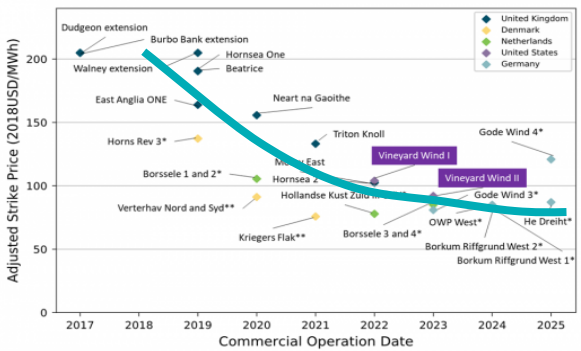
The offshore wind market is developing at speed, and the Norwegian offshore cluster needs to step up

Massive growth is coming…

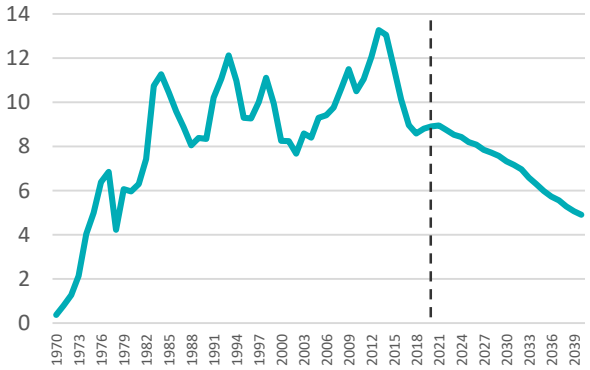


Source: *Nurturing offshore wind markets - Irena (2018)*

…and offshore wind costs are coming down



O&G share of Norwegian GDP decrease…



© Kvaerner 2019 |

KVÆRNER

THANK YOU!

Would you like to know more?

Reach out to us at:

www.kvaerner.com

niklas.eric.indrevaer@kvaerner.com