Cable-lay for offshore wind: a massive new market

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Cable lay for offshore wind: a massive market

Martyn Drye - Director of Engineering & Innovation, Global Marine Group

Offshore Webinar Week: 6 November 2020

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The Cable Installation Market

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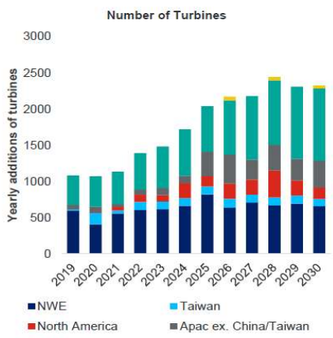
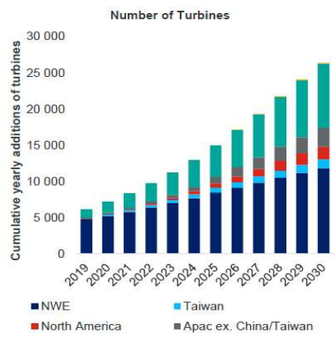
Stabile additions of >1,200 turbines annually post 2023

25,000 turbines will be active in 2030, up from 6,000

Annual additions



Cumulative numbers

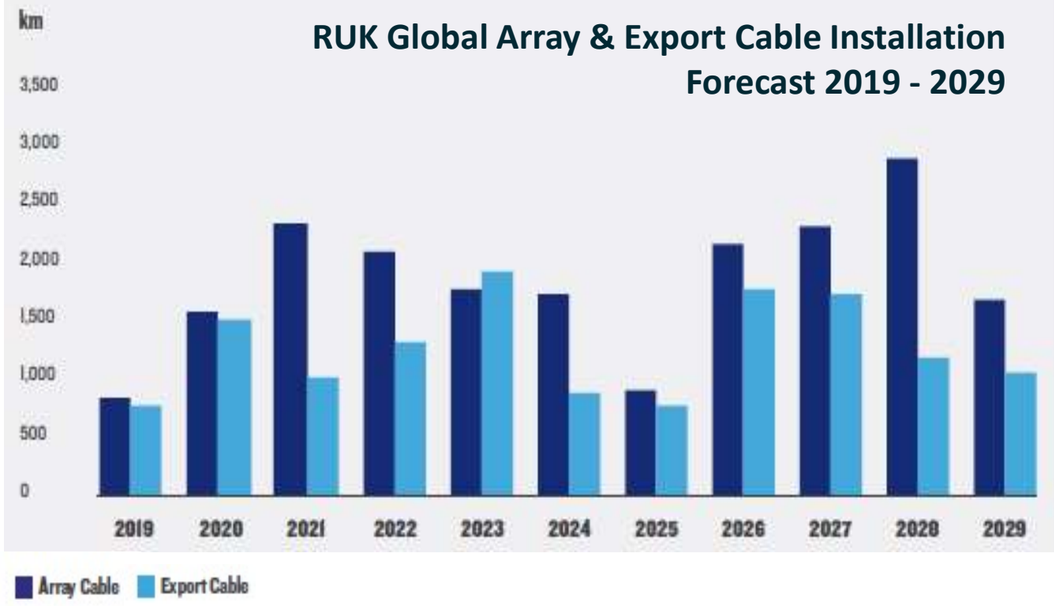


Comments

- Additions of 1200+ turbines annually towards 2030
- Pace of turbine size development will determine number of turbines installed
- Approaching 2022, majority of turbines installed will be outside Europe
- Some uncertainty towards supply chain in turbine manufacturing in the US, China, Japan
- Mainly due to wishes to develop own turbines/ manufacturing supply chain
- # of turbines in operation will be almost 6 times in 2030, this will drive up operation and maintenance services making it the driver of many vessel segments

Number of turbines is the key driver of vessel demand

RUK Global Array & Export Cable Installation Forecast 2019 - 2029



According to RenewableUK, a total of 9,606km of array cables are forecast to be installed between 2020 and 2024.
The value of the global market for subsea power cables will grow by 57% from GBP 717 million this year to over GBP 1.13 billion by 2023.

- Renewable energy grows strongly
- Offshore wind is the fastest growing energy resource
- Offshore windfarms are becoming more complex:
  (distance, deeper, turbine size, floating)
- Bigger Turbines = bigger cable loads

Source: Clarkson's Platou Offshore – January 2020
www.clarksons.com

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Supply: Existing Fleet

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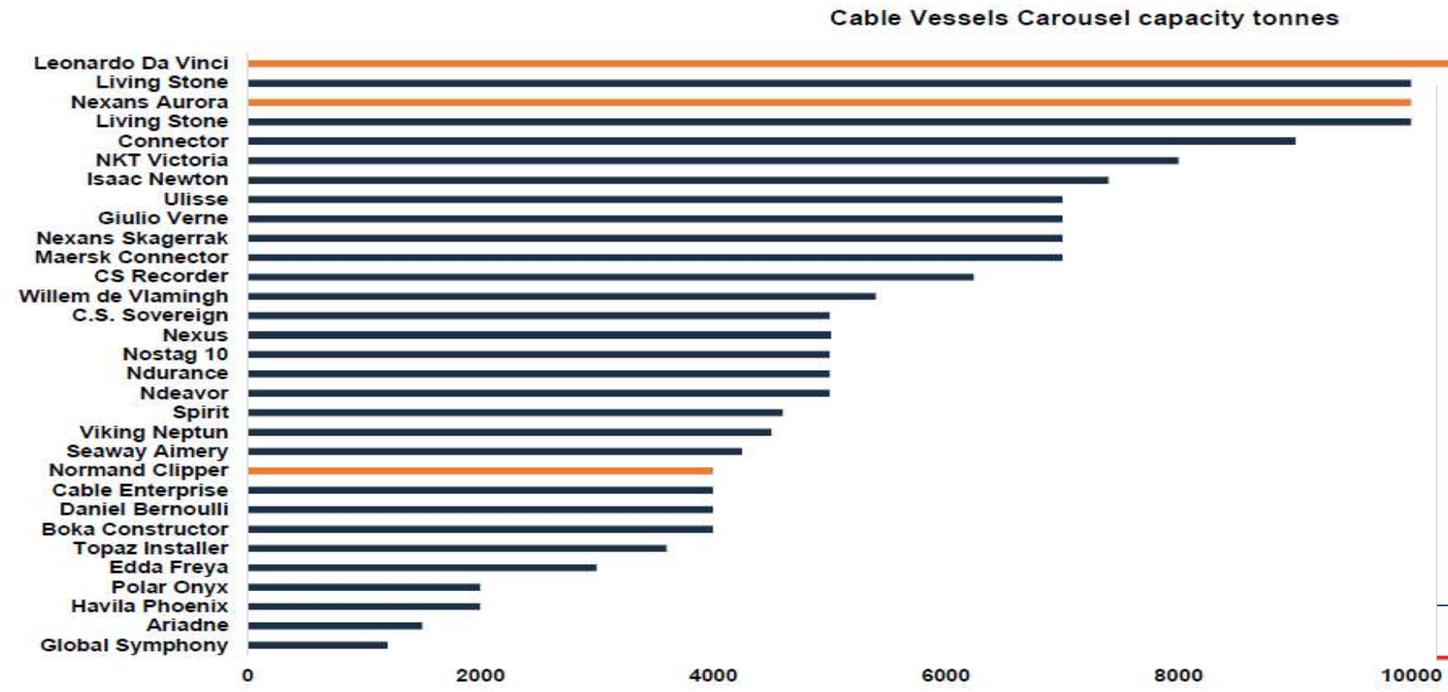
Cable Lay Vessels

Supply



The inter array suitable fleet

Expect renewal program similar to interconnector cable layers

Cable laying vessels with carousel less than 7,000 tons

Vessel	Carousel tons	Owner/Contractor
Ndurance	5 000 tons	Boskalis Offshore / VBMS
Nexus	5 000 tons	Van Oord
CS Sovereign + NC + GS	2000 - 5000 tons	Global Marine
Stemat Spirit	4 600 tons	Boskalis Offshore / VBMS
Atalanti	4 500 tons	Jan De Nul
Siem Aimery	4 250 tons	Seaway 7
Cable Enterprise	4 000 tons	Prysmian
Topaz Installer	3 600 tons	nkt cables
Aura (not active)	2 500 tons	NSW
CLV Sia	565 tons	M-TECH Offshore

Clarksons Platou Offshore | January 2020 | Offshore wind market Clarksons Platou Offshore |

Source: Clarkson's Platou Offshore – January 2020
www.clarksons.com

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Supply: Existing Fleet

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Cable installation Vessels

Global Symphony
(130.20m)

C.S. Sovereign
(130.70m)

Normand Clipper
(127.50m)

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Demand: Global Opportunities

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USA 87.5GW

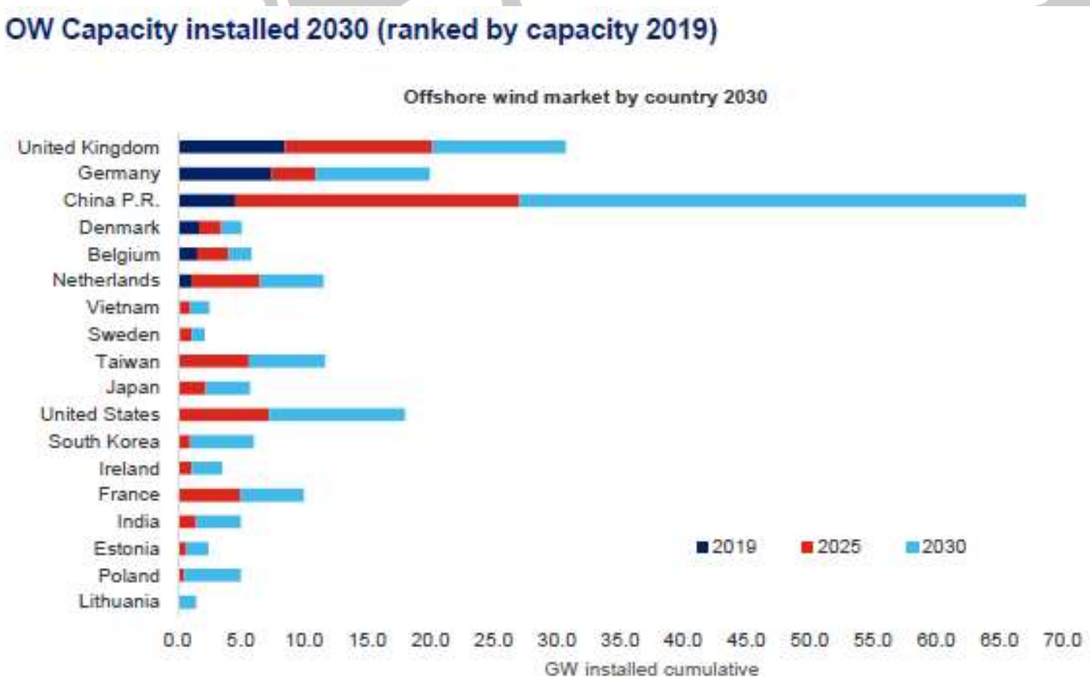
UK 24.8GW

GER 33GW

INDIA 55.2GW

CHINA 258GW

TAIWAN 9.5GW



Estimated >1,200 GW by 2028

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Subsea Assets: Cable burial and protection

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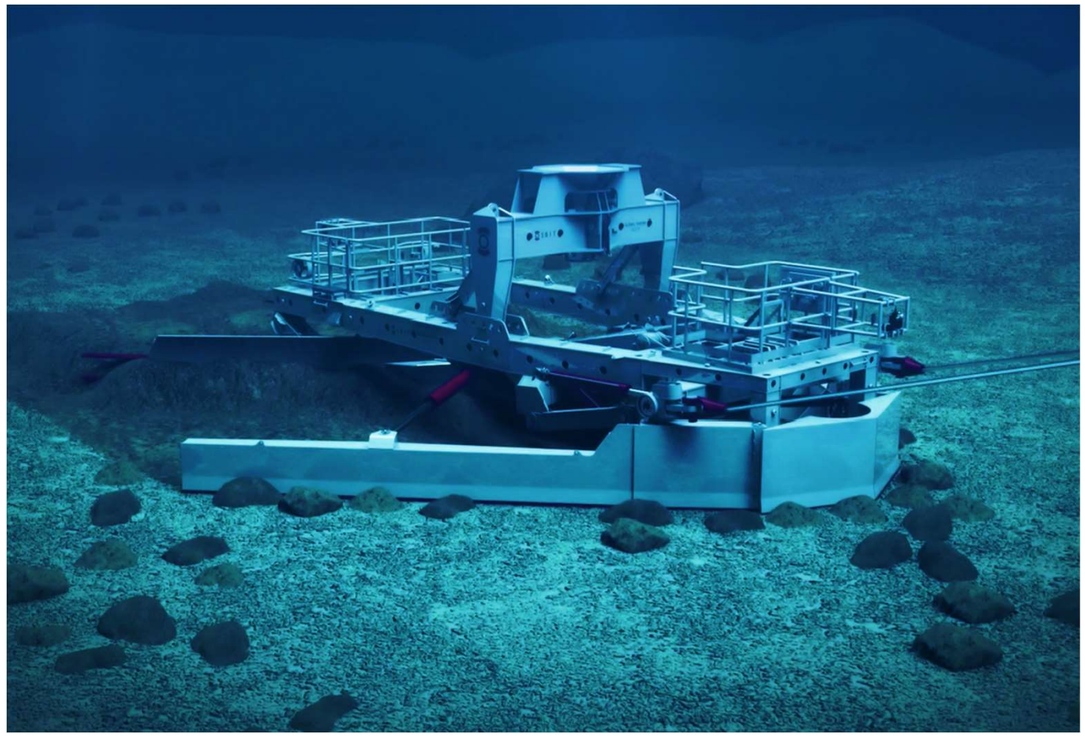
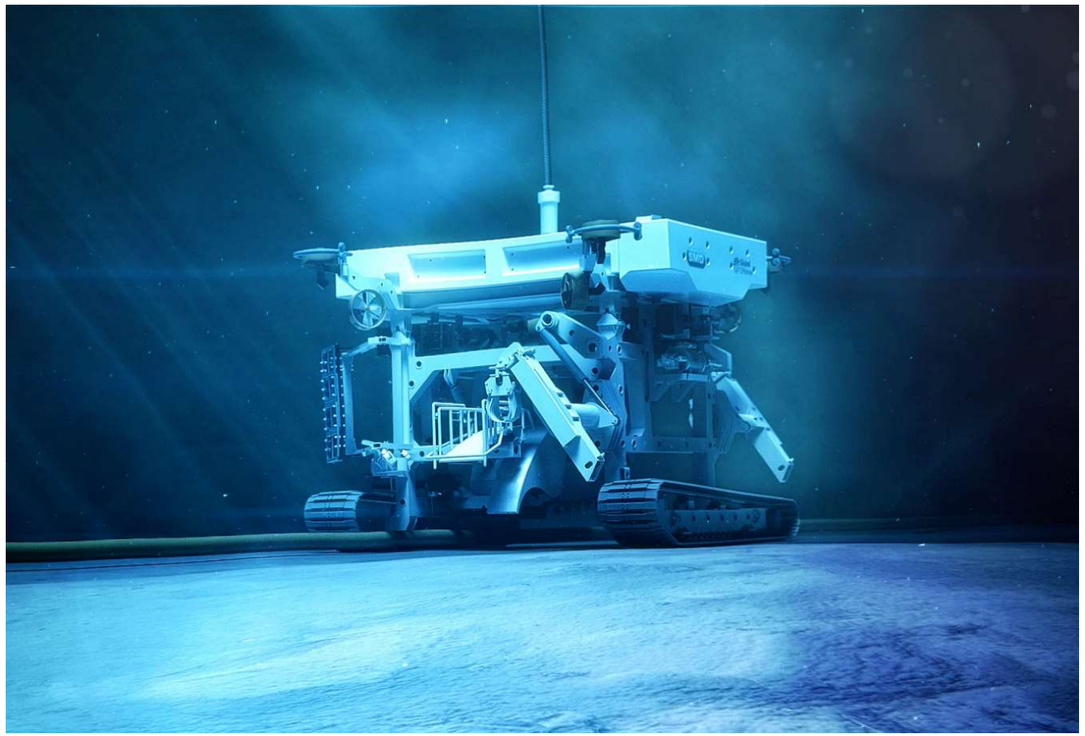


PLP240: Unrivalled single pass capability that delivers boulder clearance and pre-trenching up to 1.7m.



Q1400: Capable of jet trenching in soils of up to 100KPA, and mechanical cutting chain soils of up to 250 KPA.

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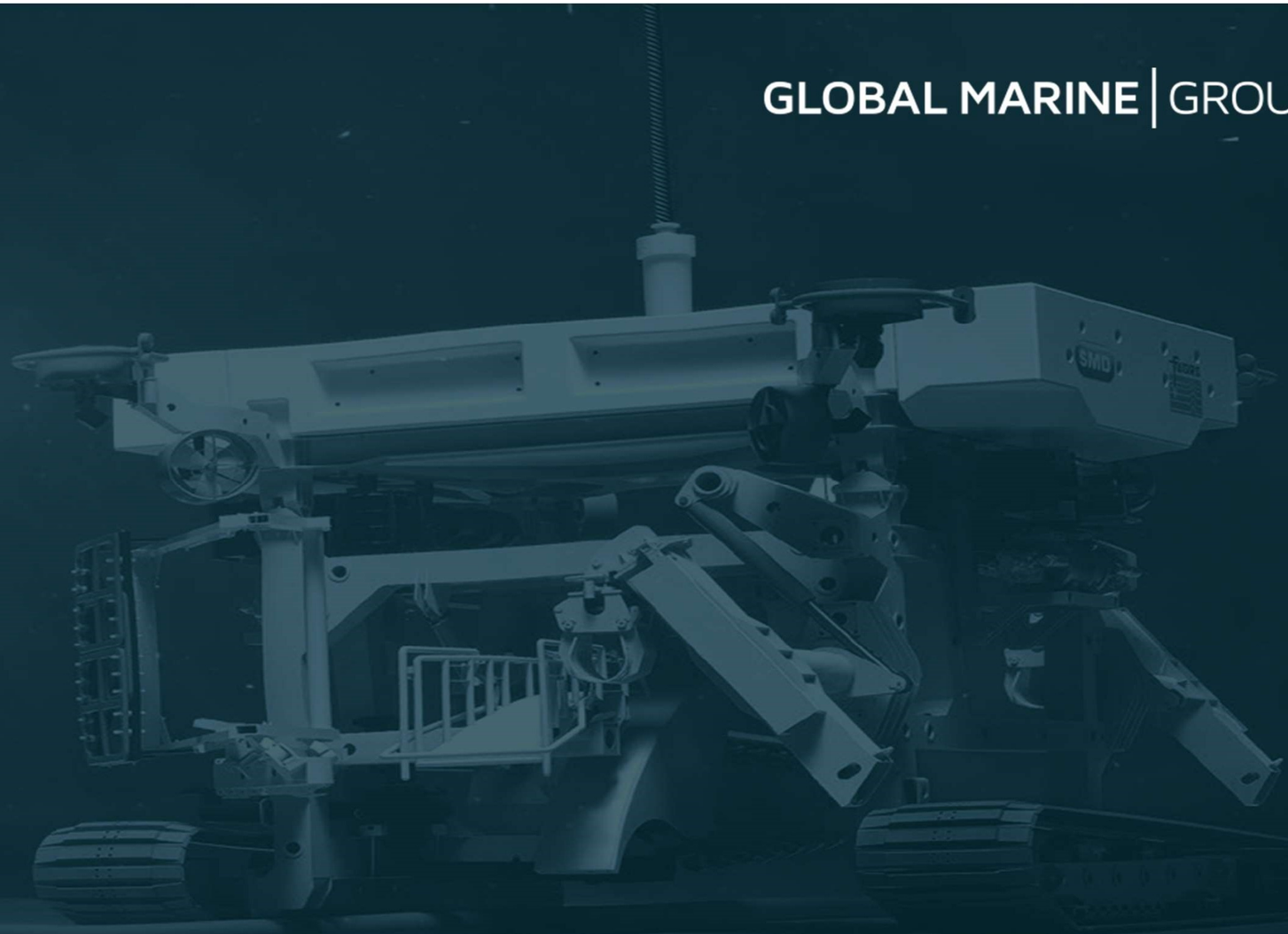
Thank You



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Cable-lay for offshore wind: a massive new market

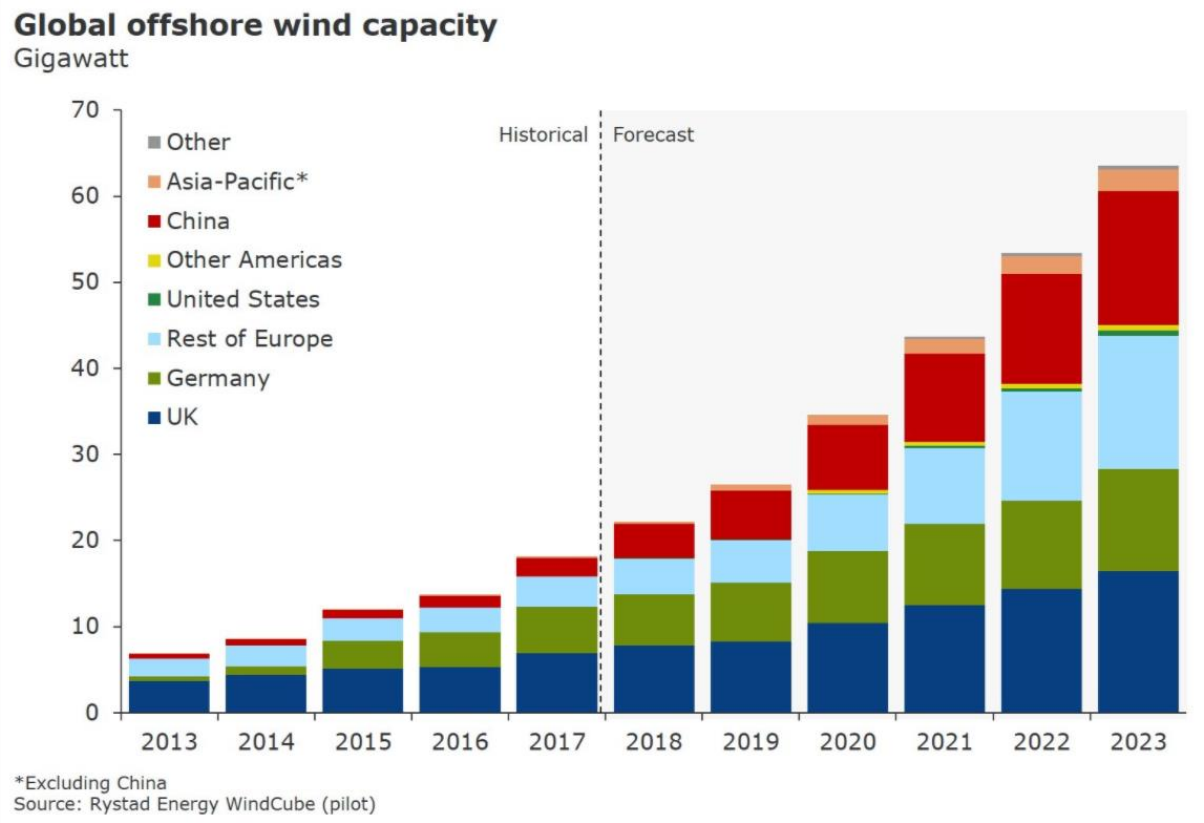
Offshore wind going global

- ~15% CAGR to 2030

- North Sea and China to date
- Significant OWF globalisation occurring
- Turbines and cables, are getting bigger

- New regions with local customers per country
  - Taiwan
  - Japan, Korea, Vietnam
  - USA

- Construction trends
  - European CLVs serving global demand



Cable Lay Vessels – Today

Differences
- Capacity
  - IAC 3000 - 5000t
  - IC 7000t+
- Operational methodology
- Budget / CAPEX

Similarities
- Almost all from the NSEA
- Most have been newbuilding
- What else.. ??

Is there too much capacity in the market??
- Capped pricing -> ‘Yes’
- However..

Cable Lay Vessels – the Future

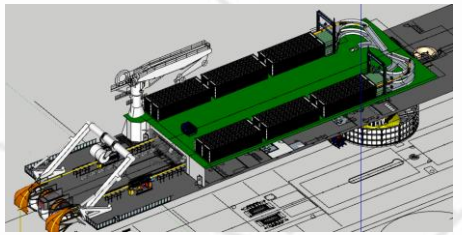
- Equipment:
  - Squeezing ‘too much into not enough’
  - Array cable – volume
  - CPS – volume
  - Attention to cable handling

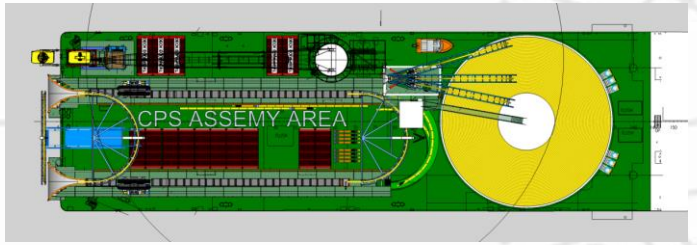
- Conversion + newbuild
- Underdeck + On deck carousel options

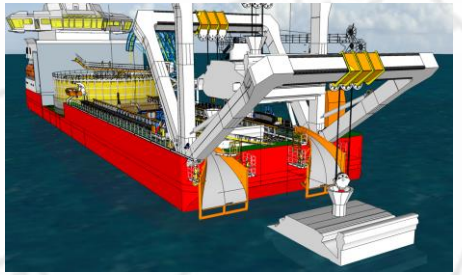
- Multi function:
  - IC (T1) + IAC (T2).. (DC?)
  - Combined trenching
  - Other / dual purpose
  - 4 array cable / day

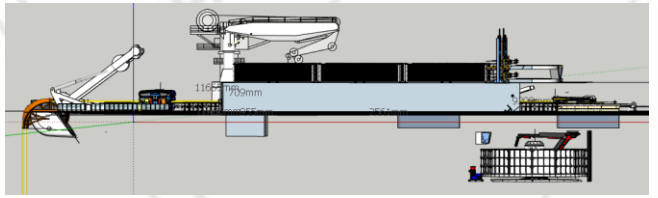
- Construction trends
  - European CLVs
  - Local operators: Asia, USA, Europe

Archive images from MAATS deck layout / concepting service:









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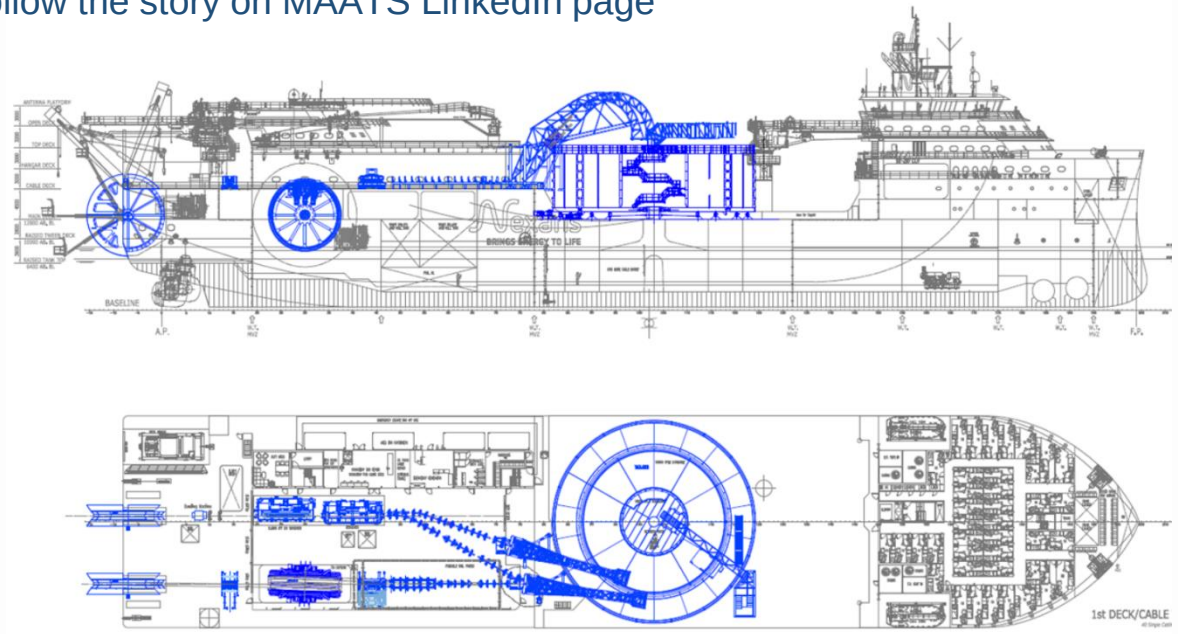
A new CLV is arriving

Follow the story on MAATS LinkedIn page



ANALYSIS CONSULTANCY

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PUSHING ENGINEERING BOUNDARIES

MAATS TECH PROVIDE DETAILED DESIGN AND NUMERICAL ANALYSIS OF STRUCTURAL COMPONENTS AND ASSEMBLIES

MAATS Tech engineers have experience of developing and creating innovative engineering solutions to ensure that structural designs remain active and effective no matter the industry or application.

MAATS Analysis Capabilities centre on:

- Statics
- Dynamics
- Frequency Response
- Shock/Impact/ Drop
- Heat Transfer
- Random Vibration
- Kinematics
- Composites

MAATS Tech has over 30 years of engineering and analysis experience with a wealth of projects in industries from marine and mining to automotive and aerospace.

Our analyses provide key information on component performance and are used to optimise and validate the integrity of structures such that they are durable and cost-effective.

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ANALYSIS TECHNIQUES

MAATS FEA engineers have practical experience in the following analysis techniques:

- Linear Static Finite Element Analyses
- Dynamic response Finite Element analyses
- Fatigue and creep investigation of high priority components
- Frequency response analysis of structures.
- Thermo-mechanically coupled load combinations
- Environmental loading and transit loading analysis
- Analysis of composite structures
- Analysis of multiaxial loading including internal/ external pressure loading
- Pressure vessel analysis to codes of practice such as PD 5500
- Non-linear plastic deformation and strain analyses
- Analysis including non-linear materials
- Analysis of lifting equipment
- Ballistics Analysis including fragmentation

MAATS is proud to have been involved in a wide scope of projects, no matter the industry we have the analysis experience to take on jobs of any size.

Some examples of our work include a Submersible Oxygen Cylinder, an Excavator Canopy, Longwall Mining roof supports, Transport Conveyors and many more.

Other Services for the Engineering Sector

In addition to our analysis services, MAATS are able to offer project management, design, test programme support and classification society liaison support. We have over 30 years of experience in engineering design and analysis, working in various engineering sectors including but not limited to marine, medical, defence, automotive and energy.

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There are many ways you can interact with us, see below.

Telephone: **(+44) 01452 546570**

Website: **www.maats.co.uk**

General enquiries email: **enquiries@maats.co.uk**

Head office

14 Lancaster Centre, Meteor Business Park,
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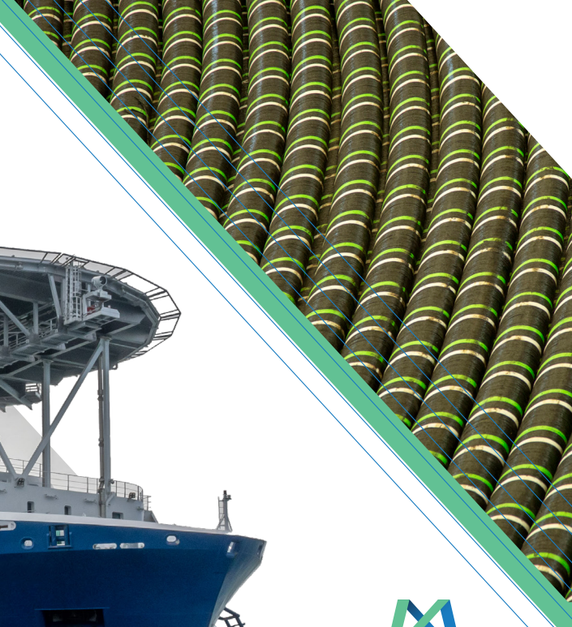
DESIGN ENGINEERING INNOVATION DRIVEN BY EXPERTISE



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PUSHING ENGINEERING BOUNDARIES

With 30 years of design engineering experience MAATS Tech are the leading supplier of cable, umbilical and flex lay equipment globally. As a trusted supplier of turnkey, reliable solutions, MAATS are actively pushing engineering boundaries to create innovative, progressive answers to challenging conditions.

MAATS ability to respond to a wide spectrum of client requirements, spanning the Oil and Gas and Renewables sectors, comes from a wealth of experience in design, engineering and manufacture. With over 50 carousels and associated deck spreads operating globally MAATS have proven that there are always solutions to any client or industry need.

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SOLUTIONS

DESIGN SERVICES

MAATS Tech provide a full range of expert design engineering from concept to completion within the energy, marine, defence, aeronautic and civil industries. With over 30 years' experience and innovation, working closely with our clients ensures the ultimate solution to any challenge.

NAVAL ARCHITECTURE

Our experienced Naval Architecture team can provide a vessel owner, repair or new building yard with a "one stop" solution for all aspects of naval architecture, marine engineering and project management.

AFTERSALES SUPPORT

MAATS Tech services continue after project delivery with support from the Aftersales team who provide high quality technical assistance for the equipment as well as any other operational challenges. This ensures operations are not delayed, more accurate budget forecasting and life extension of the products.

FINITE ELEMENT ANALYSIS

Our internal FEA team are qualified in a wide range of analysis techniques and can provide detailed design and numerical analysis of structural components and assemblies across a variety of sectors. MAATS Tech engineers have experience of developing and creating innovative engineering solutions to ensure that structural designs remain active and effective in the intended environments.

PRODUCTS

CAROUSELS

MAATS Tech specialise in the provision of carousel systems to suit client, vessel and operational requirements. MAATS carousels, both offshore and land based, have the capability to handle flexible pipe, umbilicals, power cables and can even accommodate chain if specified at the design stage.

TENSIONERS

Tensioners can be supplied in isolation or as part of a lay spread and can be designed for both loading out or laying operations. MAATS Tensioners have a capability ranging from 35e to 50te, each of which is specifically designed to respond to the specifications of the product and conditions in which it is being handled.

HORIZONTAL DEPLOYMENT SYSTEM

Providing the operational function of horizontal deployment and recovery of a range of products with an optional module attachment /detachment area. The modular chutes enable high tension cable lay in deep water eliminating the need for a vertical lay tower or system. The systems may be used on a low cost vessel of opportunity and reduce the weight and cost impact of a retrofitted VLS.

VERTICAL LAY SYSTEM

The MAATS vertical lay system design was born as a vertical alternative to the highly successful MAATS 90te horizontal lay spread supplied in 2017. The engineering comprises of wide opening tensioners, a top radius controller to control the product, A&R winch traction, a work table with gantry hoists for module handling, a telescopic crane for termination management and centralisers and hang off clamp.

CAPSTAN

The MAATS Tech Capstan utilises a fully mechanical solution, requiring no hydraulic control. The Capstan can accommodate a wide range of product diameters, can be used for cable or umbilical, and has the capability to allow large end terminations to pass through the product path on deck unhindered. Rotating knives enable both lay and recovery of cable in deep water, with a maximum line tension of 75 tonnes.

MAATS Tech has a variety of complementary products and services available which can be found on our website. **www.maats.co.uk**