BIOGRAPHY
Sander van Helvoort

Introduction

- Director Renewable Energy - FibreMax B.V.
- + 13 Years experience in the Offshore Wind Sector
- Volunteer positions:
  - Board Member Northern Netherlands Offshore Wind
  - Chairman Moi Offshore Energy Start-up community
- Education:
  - Master Renewable Energy

    (University of Edinburgh/ European Energy Center)

RENEWABLE ENERGY MASTER AWARD ACHIEVER 2020

MARKET UPDATE

What is happening?.

HIGH LEVEL MARKET UPDATE

WHAT IS HAPPENING?

- Good & Bad news

HIGH LEVEL MARKET UPDATE

WHAT IS HAPPENING?

Good news, UK

- **Celtic Sea Round 5 Leases**

  The UK's dedicated floating offshore wind leasing round in the Celtic Sea has a total potential capacity of 4.5 GW. This was finalised when Ocean Winds officially signed an Agreement for Lease for the third and final commercial-scale site, joining Equinor and Gwynt Glas in developing the region.

- **Port Talbot Transformation**

  The UK Government announced £64 million in funding to Associated British Ports (ABP) to build one of the first floating offshore wind ports at Port Talbot in South Wales. This will support initial 4.5 GW projects in the Celtic Sea and unlock over £500 million in localized investment.

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HIGH LEVEL MARKET UPDATE
WHAT IS HAPPENING?

Good news, UK

- **FLOWMIS Investment in Scotland**

  The UK Department for Energy Security and Net Zero awarded a £55 million grant under the Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS) to the Port of Cromarty Firth. This funding will enable the port to manufacture floating turbines on site.
  Works will begin around 2028.

- **Strategic & Financial Backing**

  Great British Energy Involvement Pioneering floating wind sites—such as the Pentland project in Scotland—have secured major backing and investment options from Great British Energy and the National Wealth Fund, cementing a push for greater UK energy security.

  Supply Chain Funding The Crown Estate has set out plans to invest up to £400 million of capital into UK-wide supply chain infrastructure to support the next generation of floating wind farms.

HIGH LEVEL MARKET UPDATE

WHAT IS HAPPENING?

Good news, UK

- **Supply Chain Funding**

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HIGH LEVEL MARKET UPDATE

WHAT IS HAPPENING?

Good news, France

- **The French government has officially merged its A09 and A010 offshore wind tender rounds into a single, massive 10-gigawatt (GW) mega-auction.**

This explicitly allocates **5 GW strictly to floating wind technology** across all French coastlines. Announced by Minister Delegate for Energy Affairs Maud Bregeon, this unified bidding round aims to position France as the undisputed European leader in commercial-scale floating wind deployment, targeting nearly 6 GW of operating floating capacity by 2040

HIGH LEVEL MARKET UPDATE
WHAT IS HAPPENING?

Good news, France

- **Key Details of the 10 GW Mega-Auction**

  The Split: The 10 GW target is divided equally into 5 GW of fixed-bottom installations and 5 GW of floating wind arrays.

  Timeline: Winners for the 10 projects spanning the English Channel, Atlantic, and Mediterranean will be selected by late 2026 or early 2027.

  Anti-Monopoly Criteria: The tender rules mandate strict industrial resilience. To reduce supply chain dependence on China, developers cannot source more than four out of nine strategic turbine components—and a maximum of 50% of permanent magnets—from Chinese manufacturers.

HIGH LEVEL MARKET UPDATE
WHAT IS HAPPENING?

Good news, France

- **Major Floating Wind Project Zones On Offer**

  According to the Ministry's combined plan, the floating allocation is carved into several strategic geographical lots:

  - **North-West Brittany:** One massive **1.2 GW** floating zone.
  - **Golfe du Lion Centre**: A combined **2.2 GW** block (one 1.1 GW site and two 550 MW sites).
  - **South Brittany 2:** A **500 MW** floating project.
  - **Narbonnaise Sud Hérault 2:** A **500 MW** floating project.
  - **Golfe de Fos 2:** A **500 MW** floating project. [1

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HIGH LEVEL MARKET UPDATE

WHAT IS HAPPENING?

The bad news

- **750 MW – S. Korea - Bandibulli (FireFly) - Equinor**

  Equinor failed to execute its Renewable Energy Certificate (REC) support contract by the final deadline, causing the project to lose its initial government backing. By missing the deadline, the developer risks being excluded from future state-sponsored renewable auctions in South Korea for up to five years.

- **32 MW – UK – TwinHub - Hexicon**

  This pioneering UK floating wind project sold for **£1** after government revenue contract was cancelled

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HIGH LEVEL MARKET UPDATE

WHAT IS HAPPENING?

Concerning developments

- **FOW Demonstrator issues**

  Fukushima FORWARD (Japan) — Commercial Failure
  The Failure: The project was entirely dismantled and withdrawn by 2021. It suffered from exceptionally low-capacity factors (around 32% for the smaller turbine and a dismal 2% for the 7MW turbine) alongside **unsustainable operation and maintenance costs**. The government concluded the site was not commercially viable.

  The Kincardine Offshore Windfarm had to tow entire turbines to port **for major component repairs shortly after commissioning.**

FLOATING OFFSHORE WIND

DYNAMIC STIFFNESS CHALLENGES WITH POYESTER ROPES .

Courtesy Acteon

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FLOATING OFFSHORE WIND
MOORING CHALLENGES

What have we learned ?

- Unexpected shock loads, where compliance (stretch) was expected
- Turbine accelerations appeared to be much higher than calculated
- The understanding of the dynamic stiffness values is crucial
- Stakeholders accepting what is known and try to make it work
- Best practices in Oil & Gas are not always suitable for FOW
- FOW Certification is not conclusive

Source: Windpower Monthly, Kincardine Wind Farm

FLOATING OFFSHORE WIND
TRADITIONAL, BRAIDED ROPES

How to solve:

- Shock loads
- Unknowns and limited data on Dynamic EA
- The need for additional components to make it work
- Inconclusive Certifications (operational parameters not addressed)
- Splicing (man-made end terminations)
- The lack of accurate software for modelling

FLOATING OFFSHORE WIND
UNDERSTANDING THE CHALLENGES

What have we done?

- In depth technical sessions with designers and developers
- Extended engagements with fiber manufacturers
- Extensive studying and testing to understand the issues
- Developing a representative Dynamic EA Test
- Data validation
- Software development
- Extensive dialogues with Class Societies

Source: FibreTech

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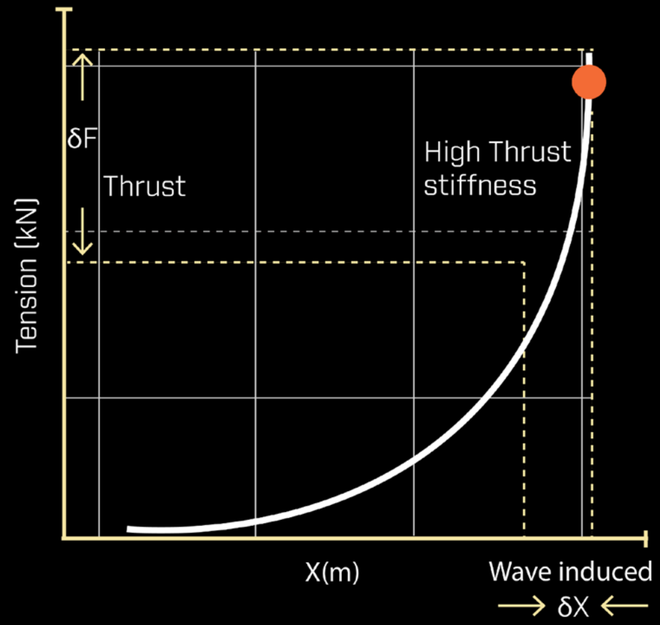
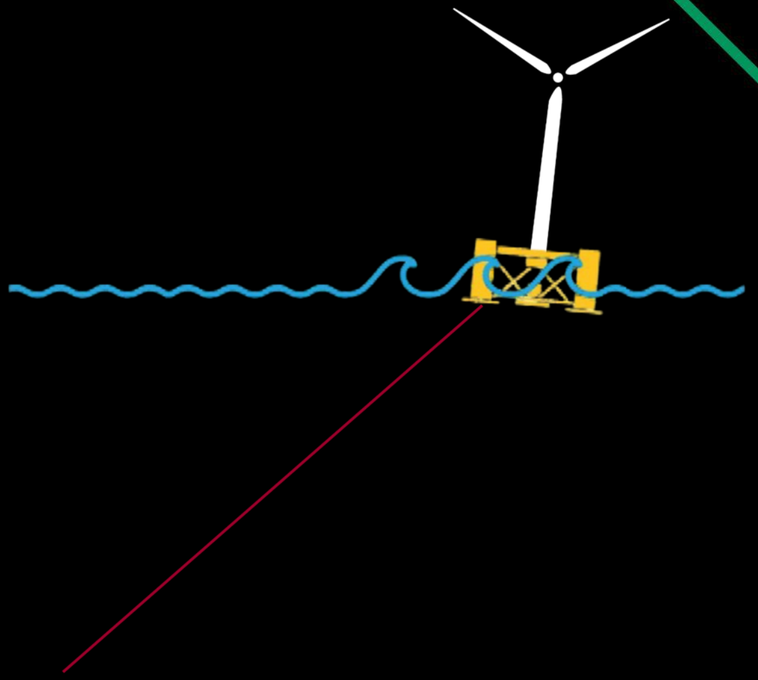
FLOATING OFFSHORE WIND
UNDERSTANDING THE CHALLENGES

Shock loads

- Construction related
- Increased internal fibre tension
  - Caused by twisting and braiding angles (the construction)



Source: TFI Marine



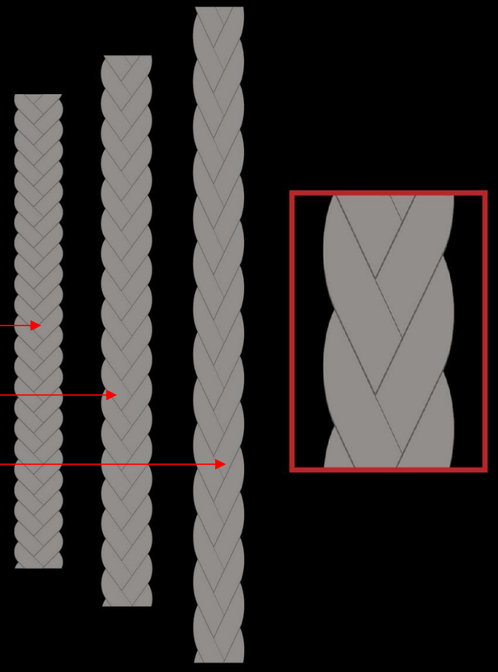
FLOATING OFFSHORE WIND
UNDERSTANDING THE CHALLENGES

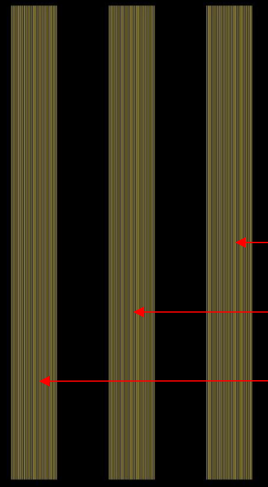
Different construction

- Comparison in construction stretch between twisted fibre/ braided ropes vs. untwisted fibre/ Parallel Wound

Twisted yarn, braided
Construction

Low tension
Medium tension
High tension





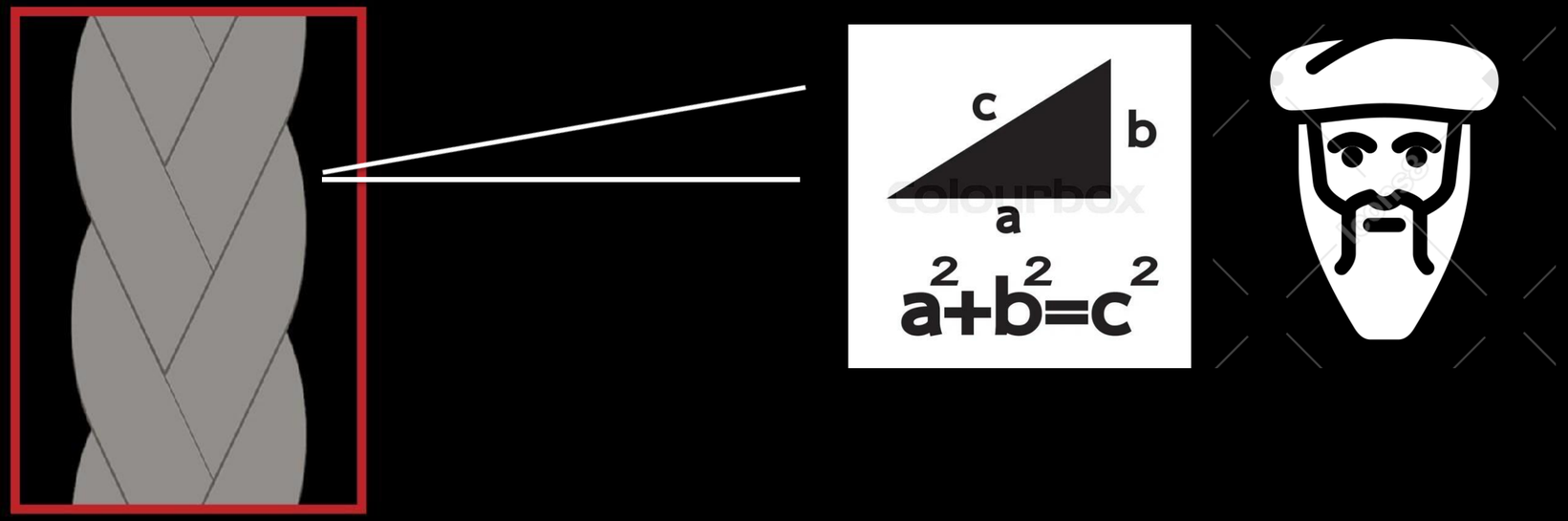
Untwisted yarn, parallel wound
Construction

Low tension
Medium tension
High tension

FLOATING OFFSHORE WIND
UNDERSTANDING THE CHALLENGES

Different construction

- Increased fibre tension due to the construction and braiding angels



FLOATING OFFSHORE WIND
UNDERSTANDING THE CHALLENGES

What are our conclusions?

- Mooring ropes (constructions) are the main issue, **not** the polyester fiber
- Traditional braided ropes have stiffness issues in relatively shallow waters, and therefore, they are not fit-for-purpose as a stand-alone component
- Load reduction devices can overcome the high stiffness issues and metal fatigue
- In water depths over 400 Meters the braided ropes will have limited to no operational issues
- Innovation in accurate data/ software and products are a big part of the solution
- Updating of certification standards for operational parameters are needed and now pending

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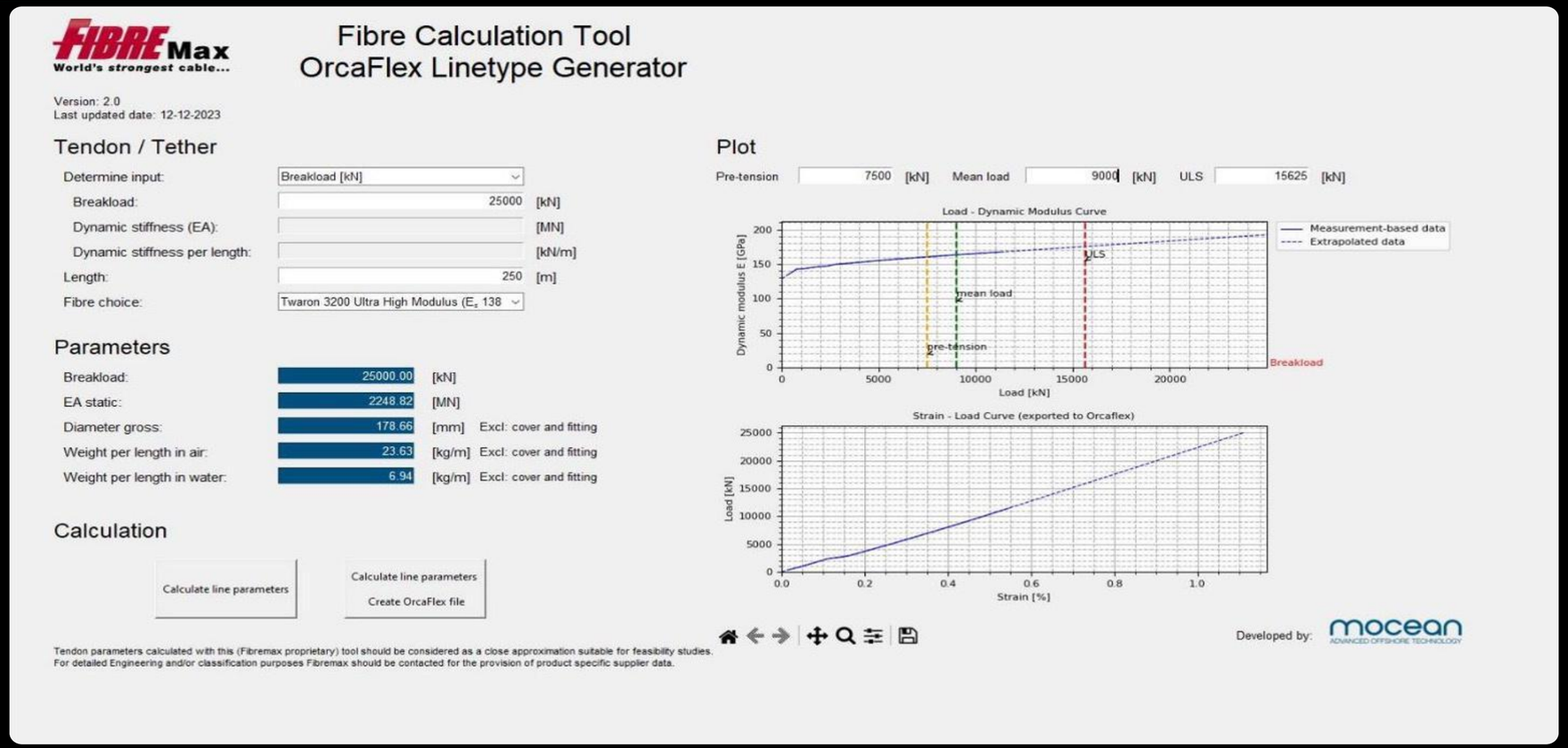
IT SOLUTIONS.

IT DEVELOPMENT & INNOVATION
ORCAFLEX LINETYPE GENERATOR

Easy engineering



- *Beta 2.4 version released June 2024*

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THANK YOU FOR YOUR ATTENTION!