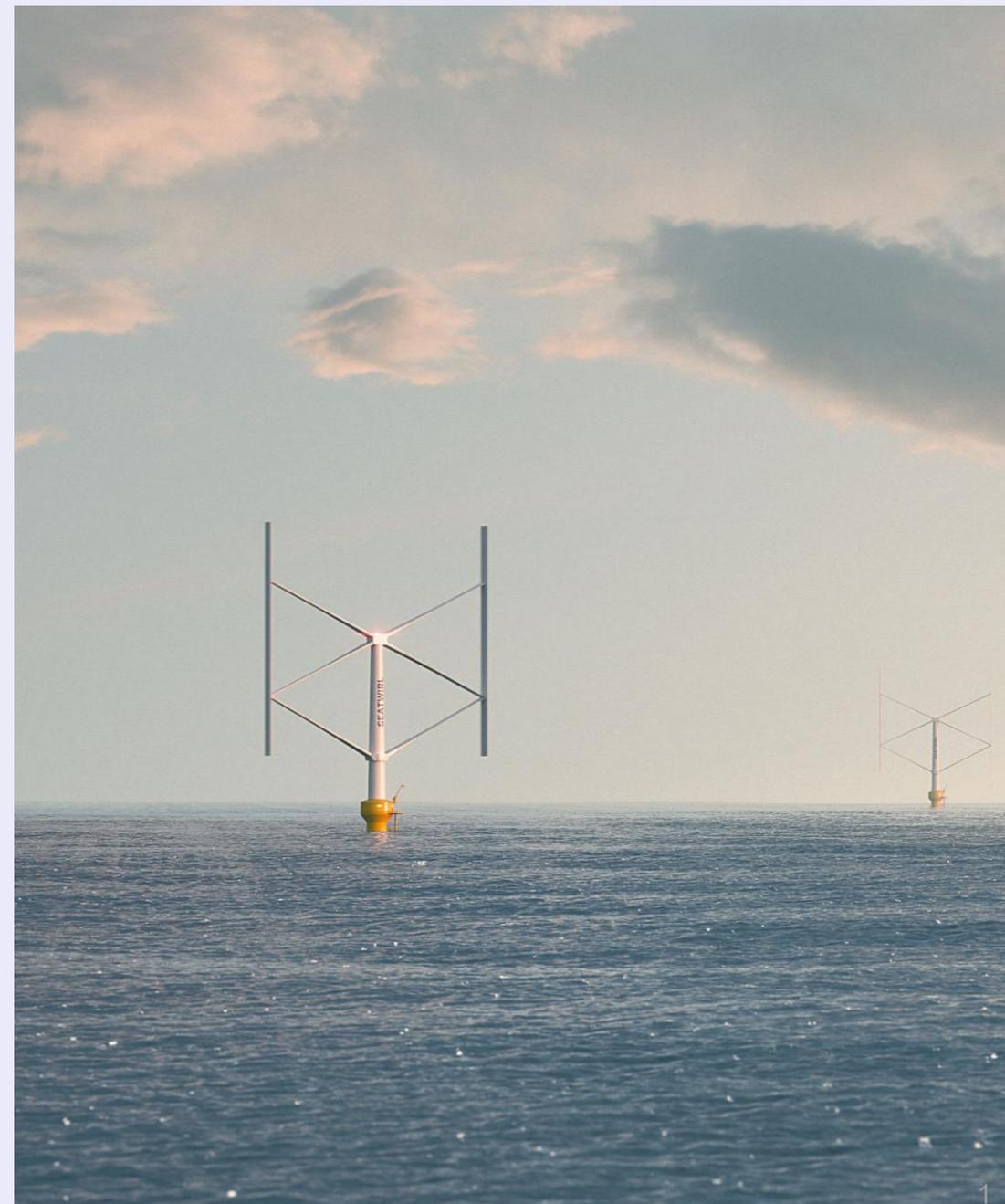


VERTI-GO

Demonstration of a **VERTI**cal-axis floating wind turbine for offshore energy **G**eneration with improved performance and accessibility for **O**peration & maintenance

General Presentation



Europe's Accelerating Renewable Transition

- By 2025, wind is projected to be the EU's main electricity source, supplying 50% of total power demand.
- Floating offshore wind is expected to reach 264 GW by 2050, contributing to 15% of offshore wind generation.



Source: WindEurope

Fig. 1 Build out capacity of wind energy in the EU under the REPowerEU scenario

Opportunities in Floating Offshore Wind Deployment



Fig. 2 Floating offshore wind turbine models by SeaTwirl

Fixed-bottom offshore wind is reaching its limits: suitable shallow sites are scarce, and visual/noise concerns often delay or block projects.

Floating wind unlocks new areas by accessing deeper waters (>50 m), opening up 80% of Europe's marine space with stronger, steadier winds.

Floating wind reduces seabed impacts compared to fixed-bottom foundations, easing environmental and regulatory pressures.

Challenges in Floating Offshore Wind Deployment

• HIGHER UPFRONT COSTS



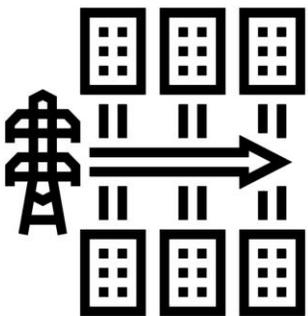
30–50% more CAPEX than fixed-bottom wind, with widely varying LCOE ($\approx 95\text{--}160$ €/MWh)

• EMERGING SUPPLY CHAIN



Limited production capacity for platforms, moorings, and vessels creates bottlenecks

• GRID CONNECTION COMPLEXITY



Far-offshore projects need advanced HVDC systems and grid upgrades

• CHALLENGING OPERATING CONDITIONS



Harsh offshore environments lead to demanding maintenance (50–80% total OPEX)

Opportunities for Vertical Axis Wind Turbines (VAWT)

HAWT rely on mature fixed-bottom tech, but face issues:

- complex installation
- high centre of gravity
- expensive O&M

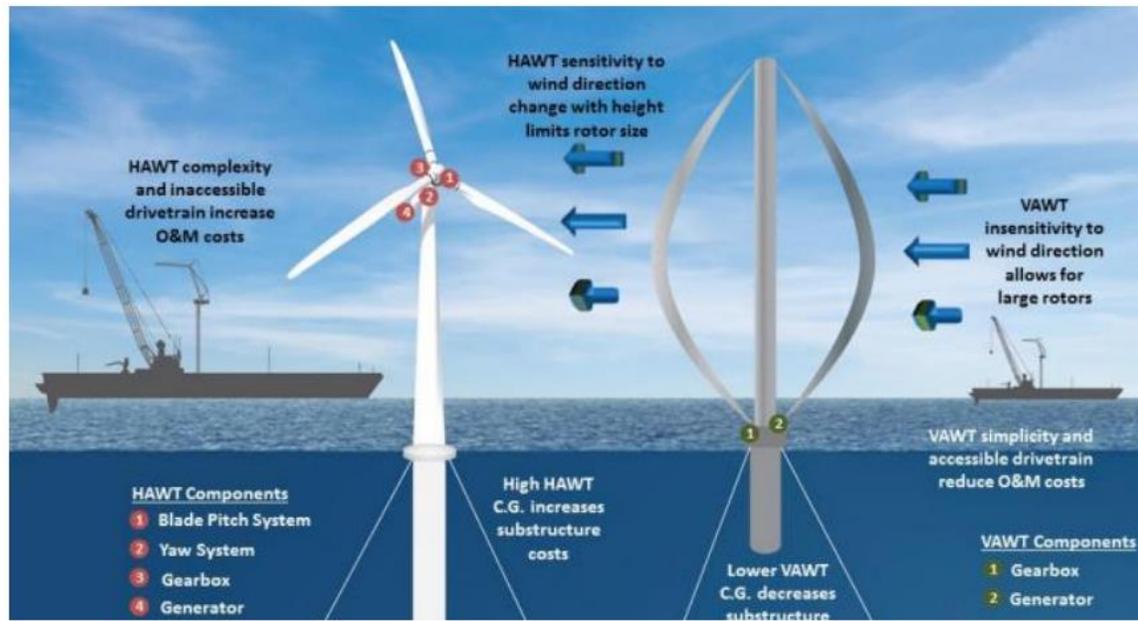


Fig. 3: HAWT vs VAWT showing main components

VAWT advantages

- **Easier and cheaper to maintain:** simpler access reduces downtime and lifecycle costs
- **More stable design:** lower centre of gravity improves reliability in harsh offshore conditions
- **Higher energy density:** reduced wake effects allow turbines to be placed closer together
- **Scalable and cost-reducing:** large-scale demonstrators cut LCOE with simpler foundations and manufacturing
- **Enables new design innovation:** advanced blade, structural, and mooring address fatigue and load challenges

VERTIGO Project's Aim

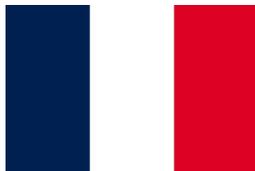
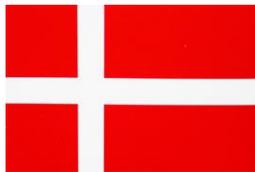
“to address the **key challenges** faced by floating offshore wind turbines today, **offering a solution** that is not only **more efficient** and **cost-effective** but also **simpler to operate** compared to state-of-the-art floating wind turbine technologies”

VERTI-GO Project Overview and Key Facts

- **Grant Agreement No.** 101235735

- **Participants:**

- 11 partners from 9 European countries



- **Coordinator:** University College Cork (Ireland)



University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

- **Duration:**

- 48 months (1 Oct 2025 – 30 Sept 2029)

- **Project budget:**

- **Total Budget:** € 20.9 Million

- **EU Funding Budget:** € 15.0 Million

Consortium Partners

sub
connected

SEATWIRL®



NEXT FABRICATION



BUREAU VERITAS SOLUTIONS
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UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh



Greenov
Innovate To Protect Oceans



edp



PNO INNOVATION



Reliability & Safety Technical Centre



ZORLUENERJI

OBJECTIVES



1. Develop and validate a **2 MW floating VAWT** (85–100 €/MWh LCOE) at an 8 km offshore site (200 m depth) to operate for 15 months for data collection and optimisation of O&M (20% downtime reduction)

2. Ensure **use \geq 25% recycled/low-carbon materials & \geq 50 wt. % EU-sourced components**, leading to 10% CAPEX/MWh reduction



3. Develop a **Digital Twin** using structural, aerodynamic, and weather models to improve design and reliability

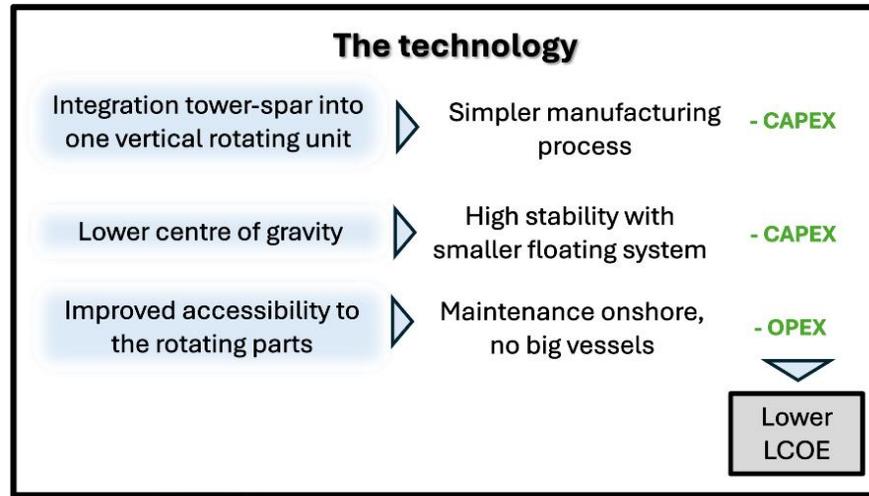
4. Conduct **environmental assessment** to achieve reduction of carbon footprint (15%) and noise (10%)



5. Engage stakeholders and build business models to support **commercialisation**

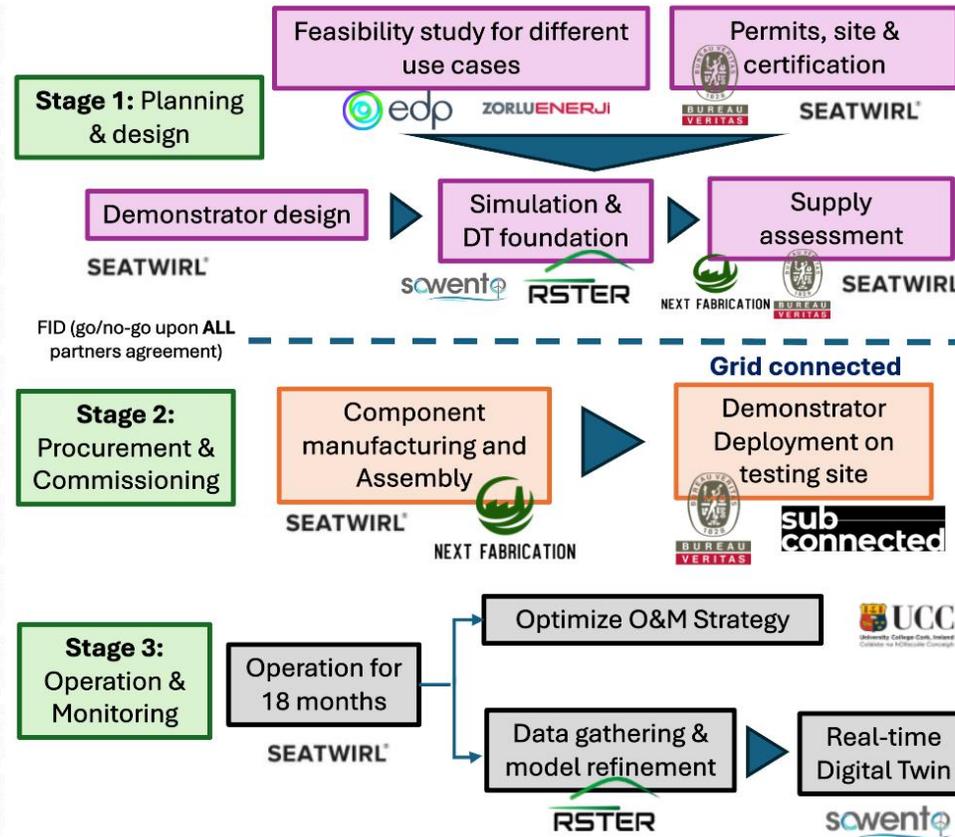
VERTI-GO

The VERIFI-GO concept

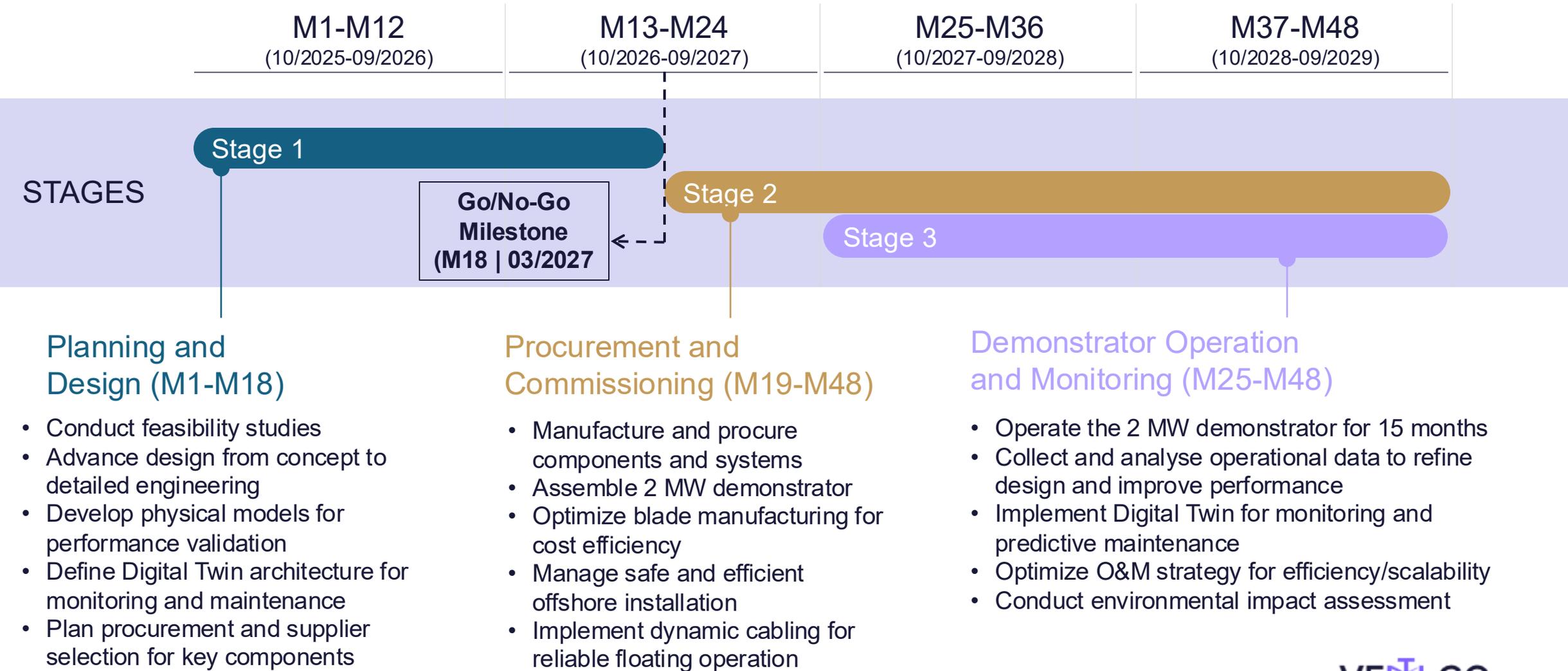


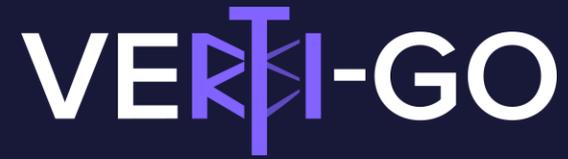
30kW prototype (TRL 5) in operation since 2015

Operating 2MW demonstrator (TRL 8)



Work Plan





Thanks for Listening!



<https://www.vertigo-project.eu/>



<https://www.linkedin.com/company/verti-go-project>



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