X1WIND
Disrupting Offshore Wind

Development of an innovative Single Point Mooring System to reduce the LCoE

Alex Raventos – X1WIND

About X1WIND

Backed by InnoEnergy, leading European investor in cleantech technologies

Senior Team Members

Carlos Casanovas
Co-founder & CTO

- Previously, dynamic analysis engineer at ADWEN (Siemens Gamesa)
- Solutions development engineer at Bluewater
- Drive Train & Dynamics group Technical Leader (Alstom Wind)
- Mechanical engineer (UPC) and M.Sc. by MIT, where he conceived X1 Wind.

Alex Raventos
Co-founder & CEO

- Previously, offshore renewables consultancy & fund raising (Inn2Grid & Bluewater)
- Head of industry and economics department at WavEC.
- Industrial engineer (UPC), post-graduate studies at MIT-Portugal and GSP at Singularity University

Santi Canedo
Senior Engineer

- 18 years of experience in wind industry
- Previously, lead engineer at GE (Heliade X mechanical development)
- Technical Leader & Principal engineer at Alstom Wind (Heliade 6MW)
- Mechanical engineer at Ecotecnia (ECO 3MW yaw and pitch)
- Mechanical engineer (UPC)

Our mentors:

Antoni Martinez Technical Advisor

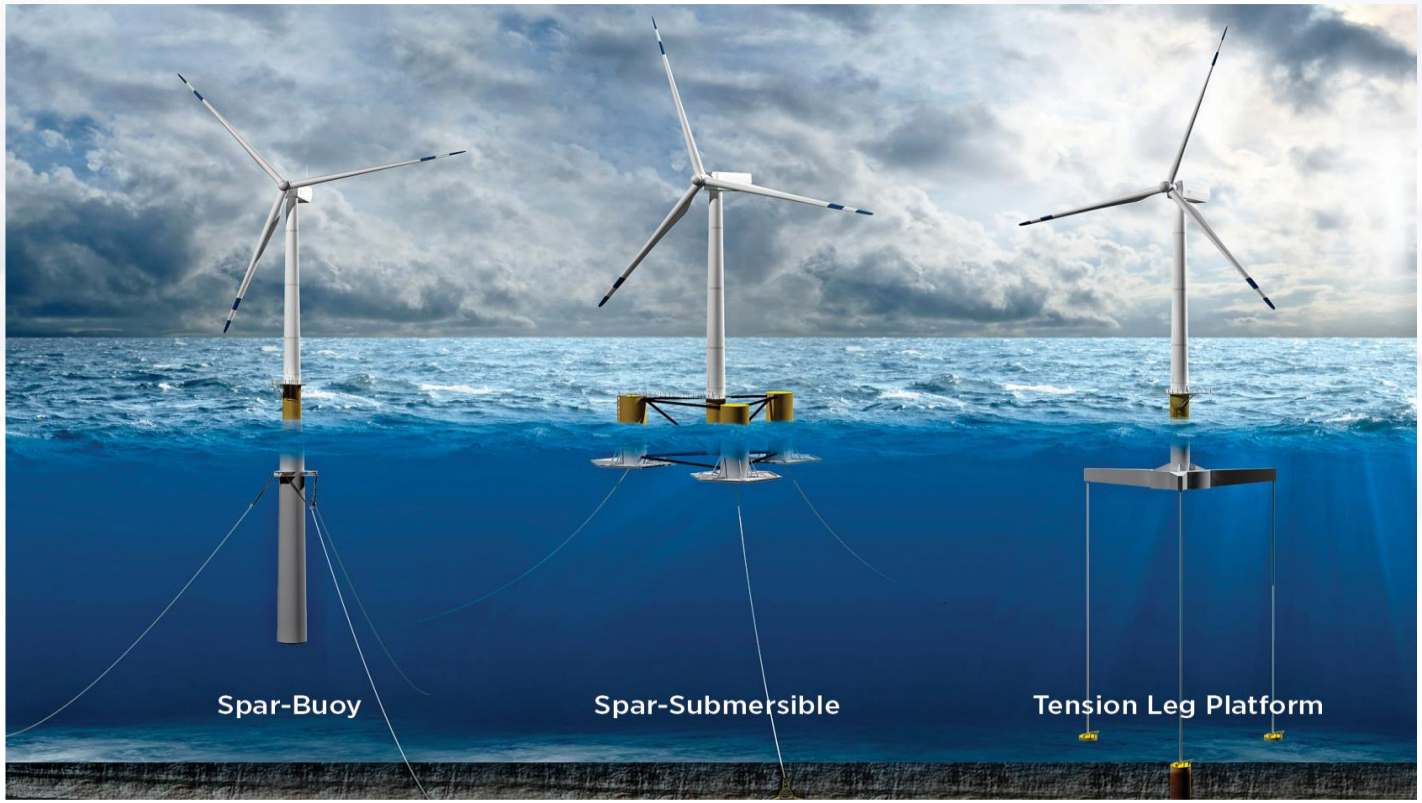
35 years in wind industry, co-founder of Ecotecnia (sold to Alstom / GE), EWEA Senior VP, IREC Director, Innoenergy CTO)

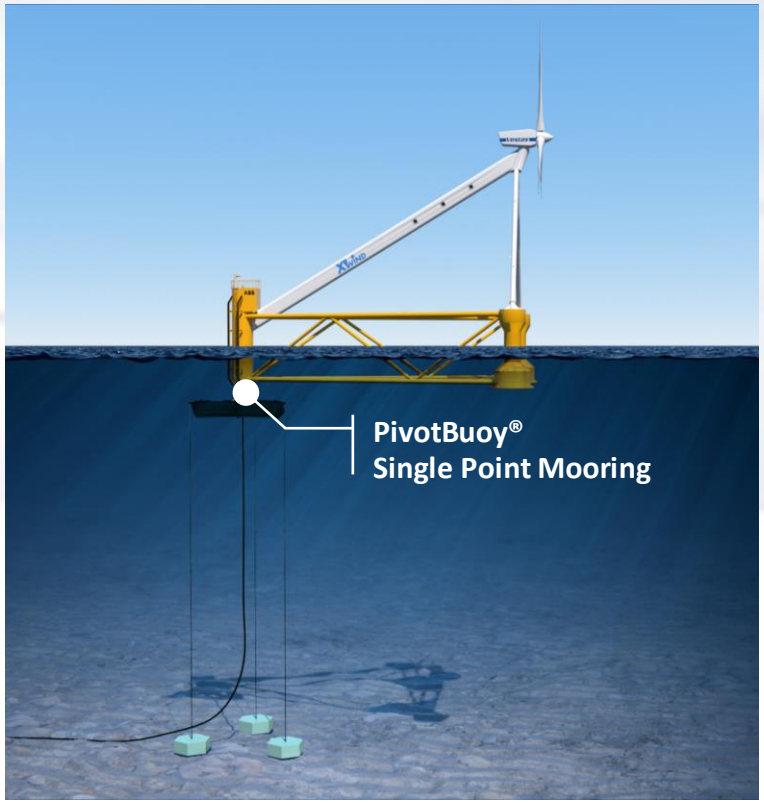
Guillermo Briones Strategy Advisor

40 years in wind energy sector, developing 1000MW in Spain at Terranova (sold to Acciona), Enermed / Eurovento, ENDESA

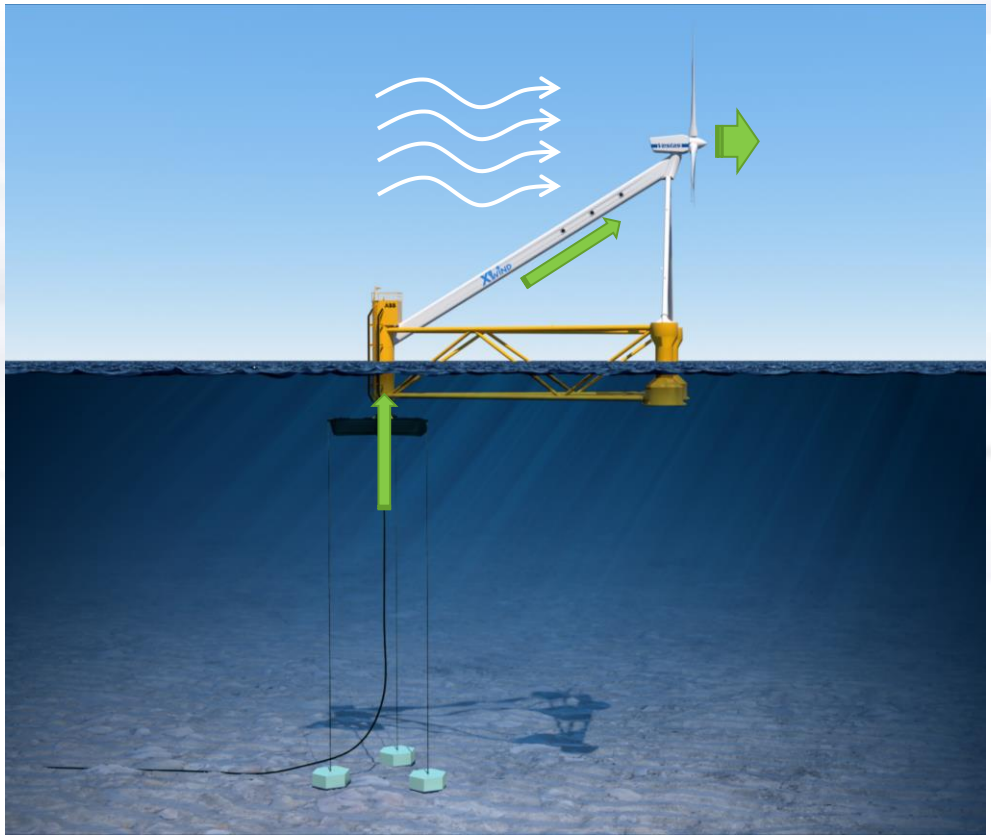
What is PivotBuoy®:

An innovative single point mooring system to reduce the cost of Floating Wind





How it works?



Less steel
Structure lowers bending moments, TLP reaction

Easy to Install
Full assembly at Port, installed with local vessels

Reliable
Use of passive systems, downwind configuration

Scalable
From 50m to more than 500m water depth

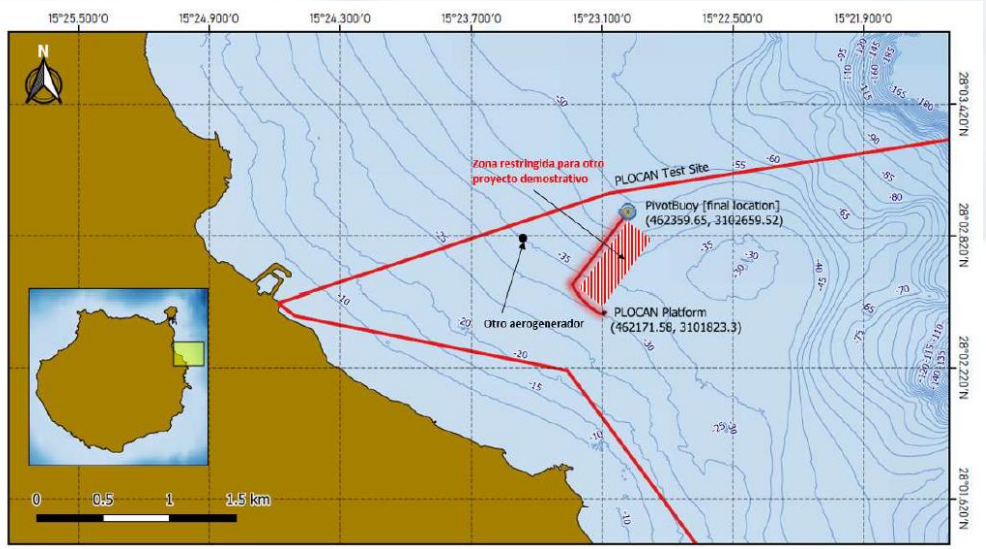
Lower footprint
30x30m vs. 900x900m in catenary systems

PivotBuoy Demo Project

- H2020 funded project to validate the PivotBuoy® system
- Prototype to be tested at PLOCAN **in a real environment**
- System **under construction,** installation in coming months
- **Consortium:** 9 industrial + R&D partners

PivotBuoy Project:

- Plocan test site (Spain)
- X30 platform (1:3 scale)
- 50m water depth
- 3 tensioned moorings + GBS
- Vestas V29 + ABB converter
- 20kV cable connection



Collaboration with: ABB

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°815159

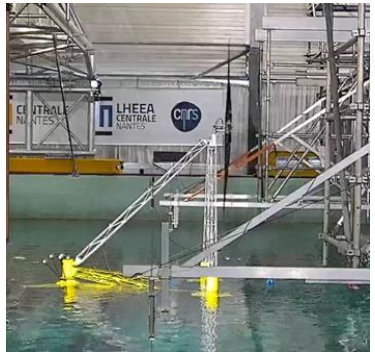
PivotBuoy® Design Evolution

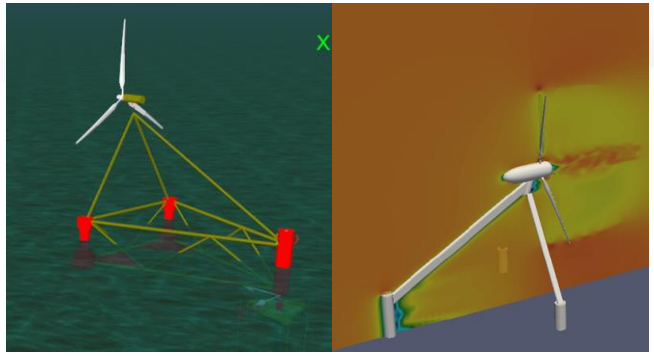
Lab validation
- 1:64 & 1:50 scale tests
- Stability
- Survivability
- Wind alignment

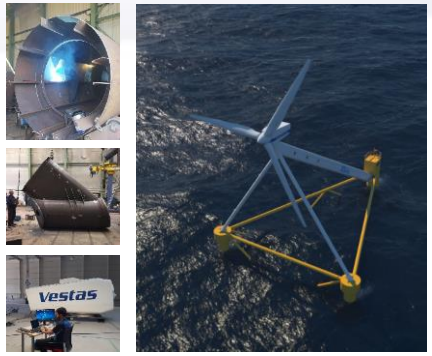
Design optimization
- Coupled analysis
- Structural optimization
- CFD modeling
- Fabrication & O&M aspects

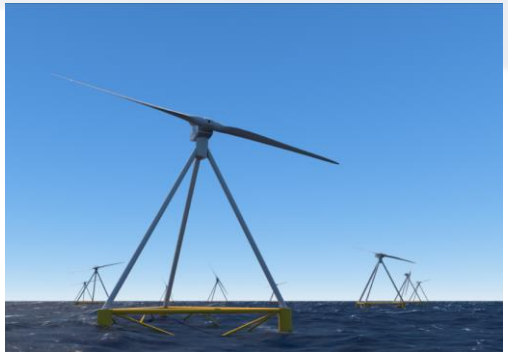
Part-scale demo
- 1:3 scale floater
- Vestas V29
- Validation of all subsystems
- Real conditions

Scaling-up
- Scale up design
- Learning transfer
- Certification
- Industrialization
- Cost reduction

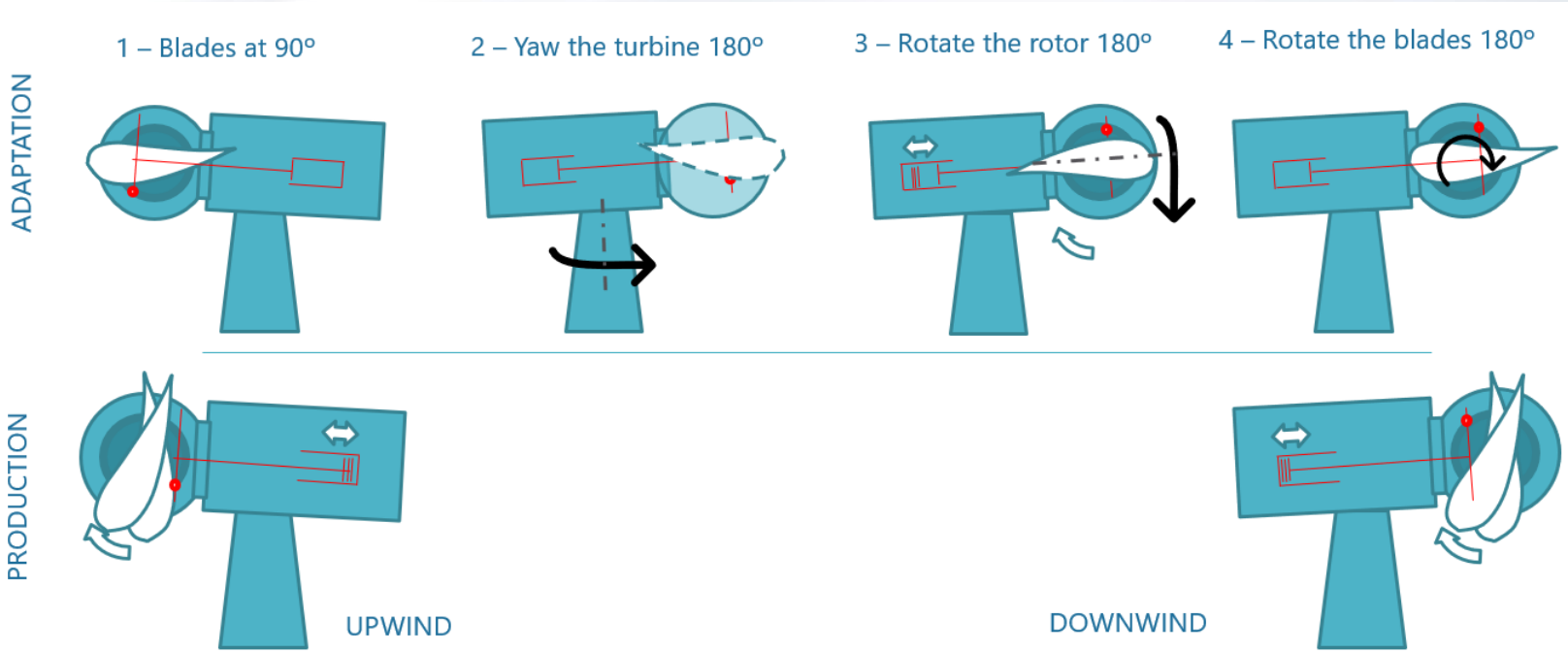








Downwind adaptation of a Vestas V29 turbine



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FOWT2020

Floating Offshore Wind Turbines

FLOATING WIND:
TRULY GLOBAL
DEFINITELY ACCELERATING

Thank you for your attention!

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