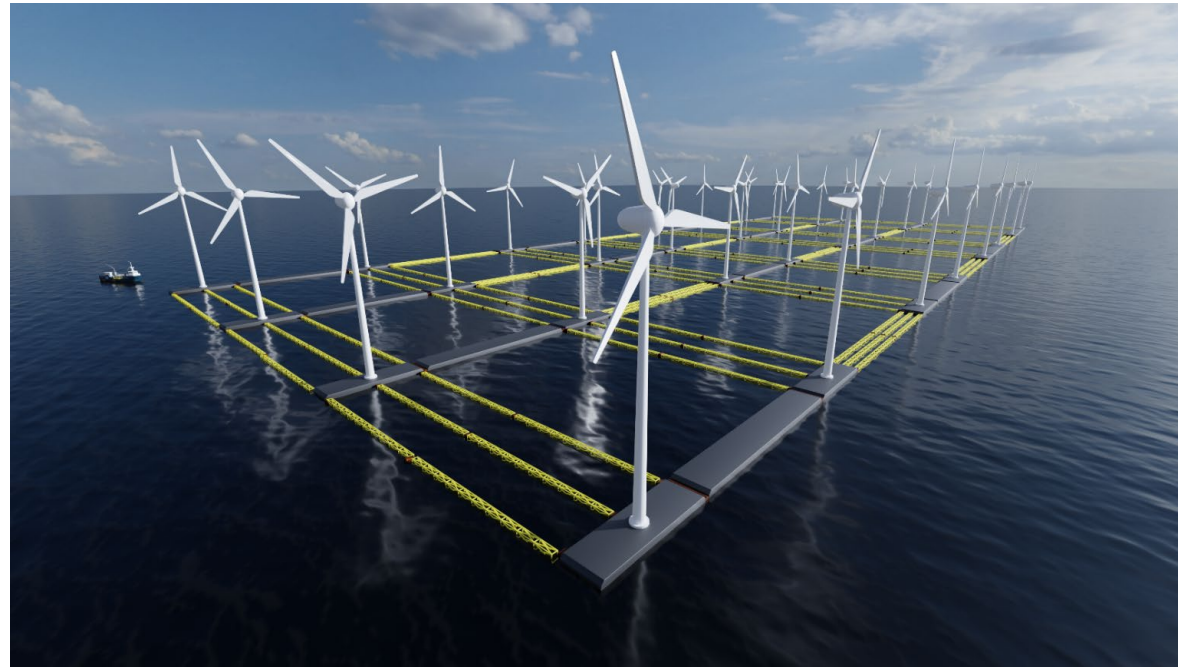


# Supergen ORE WS5: Dr Abel Arredondo-Galeana

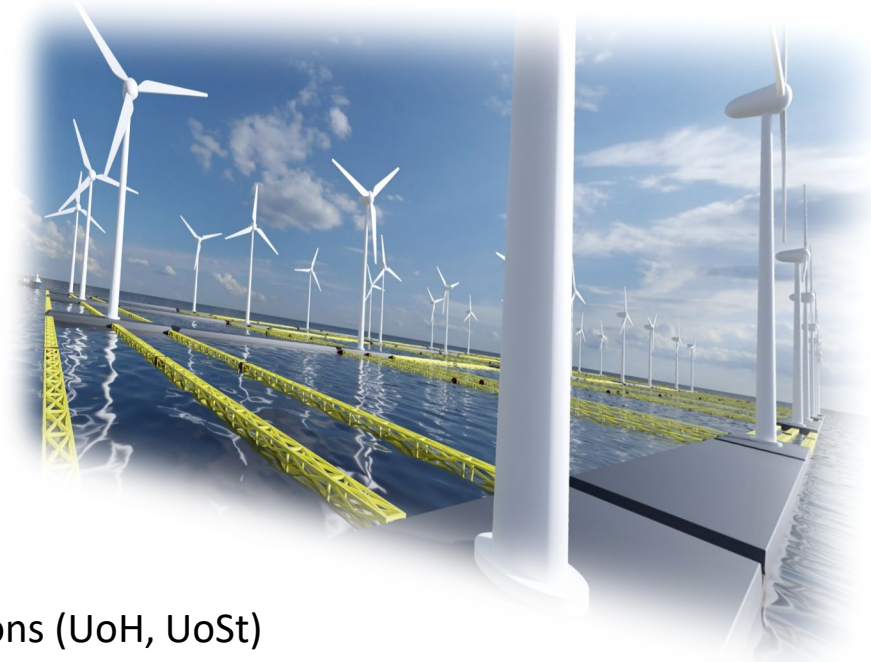
## Future ORE systems and concepts

24 April 2024



## Phase 2: WS5 Future ORE systems and concepts

- ❑ Power density:
  - Recommendations for design of multi-turbine VLFS (UoSt)
  - Hybrid and co-location solutions (UoP, UoA)
  
- ❑ Longevity and Resilience Design Philosophies:
  - Innovative cable designs for current and future floating wind designs (UoEx)
  
- ❑ Resilient onshore and support infrastructure
  - Recommendations on circular economy supply chain considerations (UoH, UoSt)
  - Manufacture and operation data and prognosis for through-life monitoring (UoH)
  
- ❑ Power Integration:
  - Assessment of impact of increasing OWF penetration on short circuit levels (UoW)
  - Control strategies of OWFs enhancing short circuit level of the power grid (UoW)



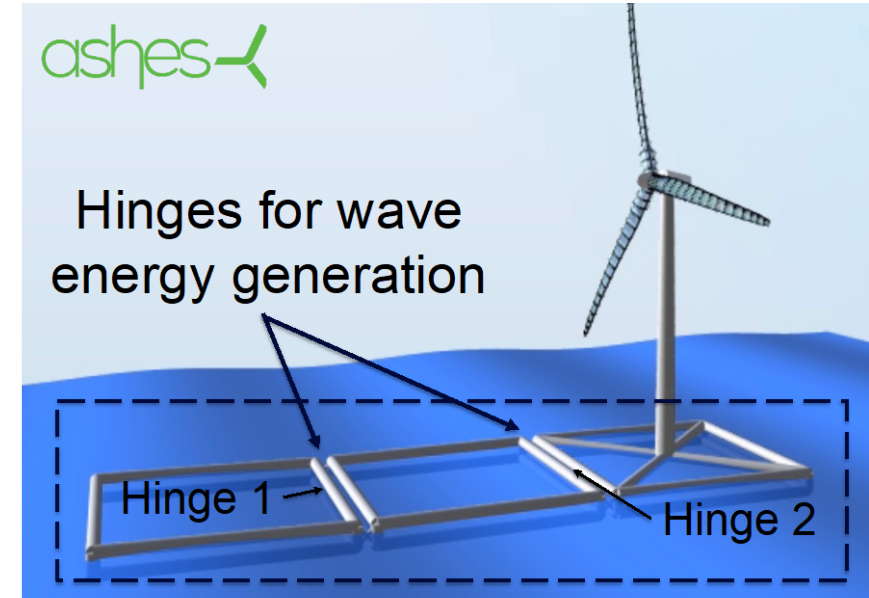
## Phase 2: WS5 Future ORE systems and concepts

### ❑ Power density test case:

- Design of VLFS (hinged raft WEC) coupled to – a 5MW turbine

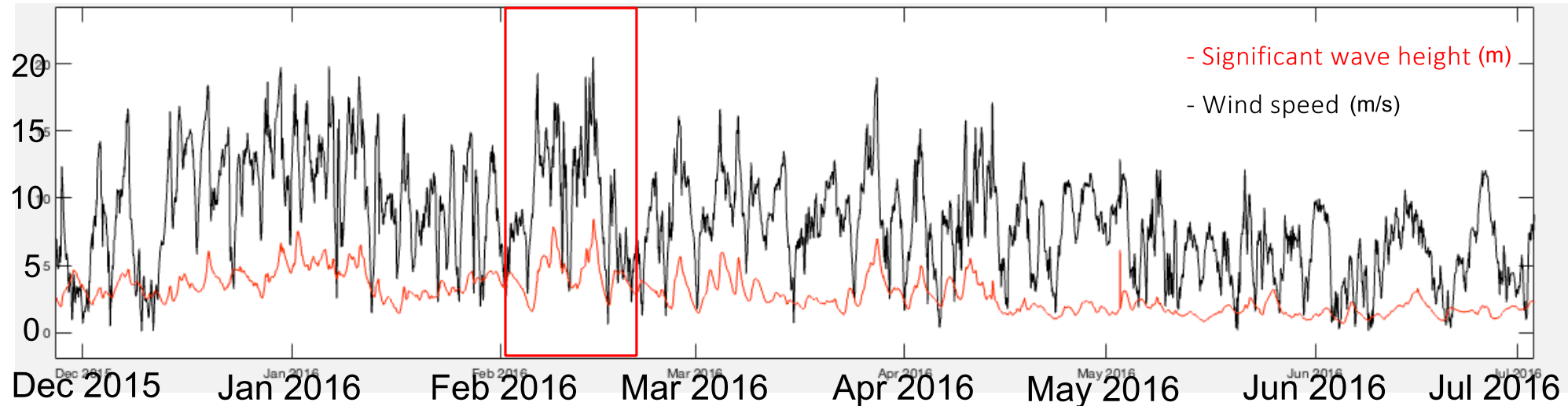
### ❑ Objectives:

- Understanding VLFS dynamics subject to wind loading
- Hybrid power generation from wind and wave to supply stable baseline for power generation



**Figure 1– Hinged very large floating structure (VLFS) with 5MW NREL wind turbine**

# Wind wave correlation



**Figure 3– Wind and wave metocean data from Villagro Sisagras, coast of Spain showing low correlation areas**



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