ETIPOCEAN

European Technology & Innovation Platform for Ocean Energy

# ETIP Ocean R&I Workshop:

# Design and validation of wave and tidal energy systems

## Conclusions

### Wave – improvement of PTO and control systems

**Key topic areas:**

- Performance (power capture and power conversion)
- Reliability
- Cost

**Integration:**

- Flexibility – physical and control compatibility
- Avoiding early design freeze – numerical modelling, tank and rig testing
- Ways to facilitate collaboration – IP – test centres
- Collaboration – consistent metrics and key parameters
- Advanced control strategies and ability to demonstrate

### Tidal – improvement of blades and rotors

- **Scaling up:** Many tidal stream technology developers are focusing on scaling up devices, to increase energy capture and reduce LCOE. As blade lengths increase, computational modelling and blade testing programmes play an important part in understanding the blade loads and long-term performance.
- **Materials:** Materials such as composites and infused thermoplastics are being investigated which could improve blade reliability and survivability, as well as sustainability and end of life requirements.
- **Data sharing:** The importance of continued sharing of research and lessons learned between research institutions and technology developers was highlighted, highlighting the need for platforms such as ETIP Ocean!

### System Reliability in the Offshore Environment

- **Risk reduction approaches:** standard techniques used in other sectors (FMECA, VMEA….), minimising components that can fail, keeping it simple.
- **Practical experience and lessons-learnt:** reliability should be considered from design stages (safety factors, design certification…), components: prepared for commercial use and massive production, analyse meteoceanic conditions in detail, to do onshore as much as possible, collaboration with experts in marine operations.
- **Common and priority research topics:** data collecting and sharing, sharing experience from failures, appropriate testbenches for rigorous testing before going offshore, development and testing of common components for wave, tidal, offshore wind (mooring, connections….).