



WAVE ENERGY PRIZE

Glossary of Terms

Absorbed Power – The hydrokinetic to mechanical power conversion. It is product of the dynamic (forces, pressures, torques, etc.) and kinematic (velocities, flows, rotational velocities, etc.) parameters for a hydrokinetically excited device.

Adaptive system control – control of overall system state typically conducted at longer time scales (not wave by wave), excluding controls of power converting forces (e.g. configuration, orientation, ballasting).

Capture Width – The power absorbed from the waves by the device in kW divided by the incident wave energy flux per meter crest width in kW/m.

CapEx – Capital Expenditure

Controllability with fast wave by wave control – deterministic control of WEC in millisecond time scale for adaptation to instantaneous and predicted observable signals.

Controllability and adaptability with slow sea state by sea state control – stochastic control of WEC hour time scale for adaptation to sea state.

DOE – U.S. Department of Energy

Force Flow – The way forces and load penetrate the system.

Information Flow – The way information (operations condition, system condition).

LCOE – Levelized Cost of Energy

Linear Resistive Damping – A control strategy in which the kinematic and dynamic sides of absorbed power are linearly proportional to one another through a constant resistive term. The value of proportionality (i.e. the resistive term) can be changed on a sea state by sea state basis.

MASK – Maneuvering and Seakeeping Basin, at the Naval Surface Warfare Center, Carderock, Md.

OpEx – Operational Expenditure

Power Flow – The way power flows through the system.

PTO Control - direct control of power absorption via control of PTO force or PTO motion directly within the power conversion chain.



Representative Power Take Off (PTO) – Primary mechanism used to control hydrodynamic power absorption and to convert the absorbed power to useful power. This may include multiple power conversion steps. In hydrodynamic model testing this system is often represented solely with respect to its influence on the primary power absorption and conversion step. Often a simple e.g. linear relationship between the dynamic and kinematic components controlling the power absorption is used.

System Adaptability Supporting Availability – E.g. significant system adaptation capability to different sea condition with respect to improving availability incl. survivability; e.g. change of position or orientation or shape to improve survivability during survival conditions.

Total Surface Area – Total surface area (m^2) at full scale is identified as all structural surface area that is subject to loading and/or is inherent to the production of power. For this prize, only surface areas that define the profile of the device are considered (i.e. it is not the surface area of all components that are needed to physically construct a device, like the underlying girders and stiffeners).

- Included are structural surface areas below and above the water line when the system is installed with the mooring attached and in still water
- Included is the station keeping mechanism
- Not included are anchor lines

TPL – Technology Performance Level

TRL – Technology Readiness Level

Wave Farm Infrastructure – non WEC device – E.g. interconnectors of device umbilicals, cables to shore, grid connection, and anchoring system

WEC – Wave Energy Converter