

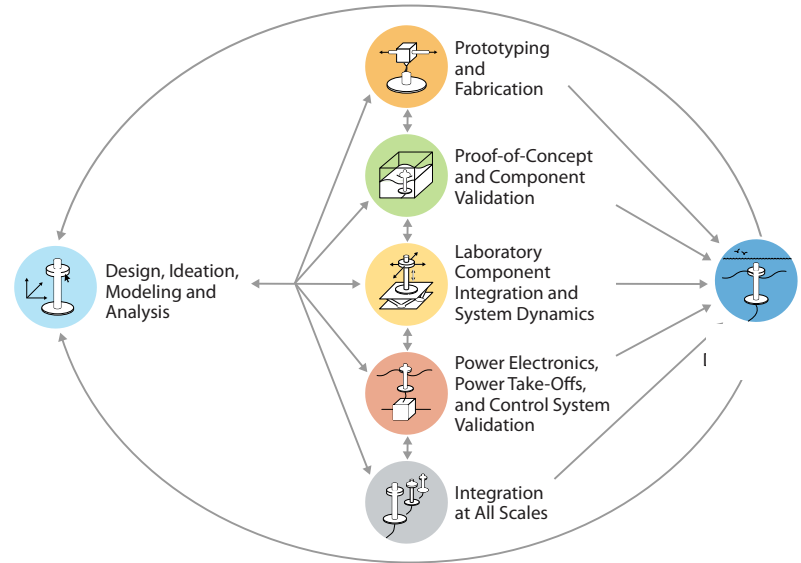
NREL Facilities Accelerate Marine Energy Technology Development

NREL Water Power Design and Validation Life Cycle Phases

Once marine energy device developers have a theoretical design in mind, it's time to transform that idea into a commercially ready device. For that, they can turn to experts at the National Renewable Energy Laboratory (NREL).

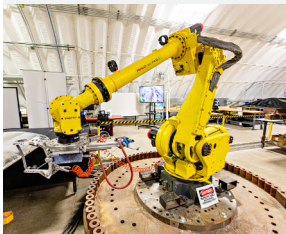
- NREL's marine energy researchers have extensive experience moving technology ideas from prototype manufacturing through laboratory and field validation.
- The lab's facilities cover five phases of the validation life cycle to ensure marine energy technologies can survive harsh open-water environments.

From prototype fabrication to grid integration at all scales, NREL offers end-to-end marine energy device design and validation capabilities.

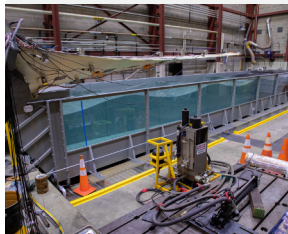


The Composites Manufacturing Education and Technology (CoMET) Facility

expedites marine energy device **prototyping** using 3D printers for rapid design iteration and **fabrication** using composite materials that can endure longer in salt water and generate more energy.



The **Wave Tank** simulates the ocean environment and its wave conditions so technology developers can **validate their small-scale devices and components** before scaling up to larger sizes. This speeds up the development process and saves developers money.



The **Large Amplitude Motion Platform** provides a dry, controlled environment to **assess the dynamic behavior of small and large marine energy prototypes**, adding a valuable tool to NREL's theory-to-ocean support continuum and further helping technology developers optimize their marine energy systems.



The **Dynamometer and Structural Validation Laboratories** mimic everything from ocean waves to miniature grids—like microgrids and nanogrids—offering a safer, cheaper, controlled, and lower-risk environment to **validate drivetrains, control and power take-off systems, and power electronics** for wave and current energy devices over a range of capacity ratings.



The **Advanced Research on Integrated Energy Systems (ARIES) Platform** uses grid emulators to demonstrate how marine energy devices can **safely connect to electric power systems**—from microgrids and nanogrids to national-scale grids—while maintaining grid stability and reliability.



Learn More

Explore how NREL's Flatirons Campus facilities can help expedite marine energy technology development. Contact Rebecca Fao at Rebecca.Fao@NREL.gov.

