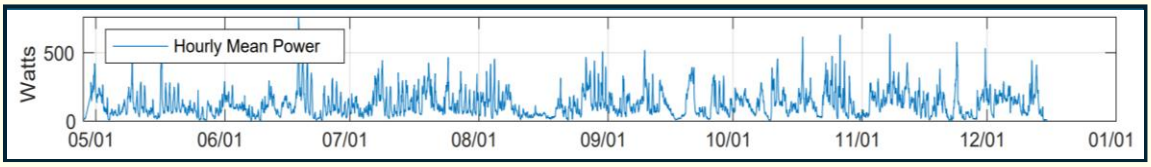
The Monterey Bay Aquarium Research Institute has developed a complete wave-energy conversion system and autonomous under-water vehicle charging station. Currently this system is deployed in Monterey Bay supporting AUV operations and on-buoy oceanographic instrumentation.

MBARI Wave-Energy Converter

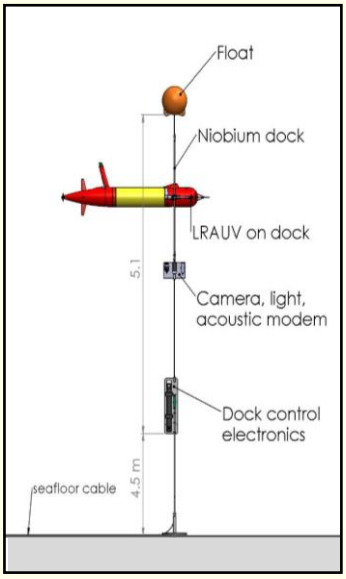


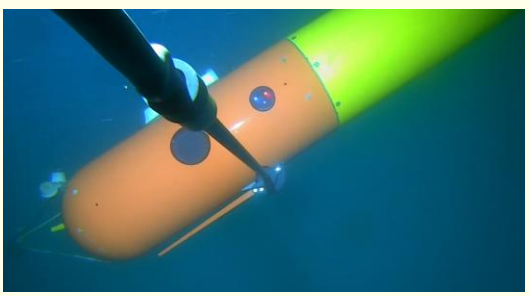
- Designed for year-round deployments
- Point-absorber design with submerged anti-heave plate. Anchored in place with a two-point mooring.
- 225 Watt average energy capture through the range of seasons. Includes an on-buoy 10kW-Hr battery (300V), on-buoy network with shore-connection, and compute infrastructure.
- Custom power-conversion electronics to allow reliable autonomous handling of varied conditions and storms.
- Power and communication network extends to seafloor via an electro-mechanical mooring cable.
- Deployed dozens of times in Monterey Bay since 2010.
- Currently supporting an Imaging Flow CytoBot on board the buoy, and a sub-sea autonomous underwater vehicle dock on the seafloor.



Autonomous Underwater Vehicle Docking

- NiobiCon™ based AUV docking rod mounted on the sea-floor and connected to a power source via sea-floor cable. 500W charge and 1Mbit/Second communications capability.
- Developed and deployed by MBARI in collaboration with Northrop-Grumman.
- Nightly AUV docking demonstrated for one-month straight in 2026.
- Powered by solar dock and/or the MBARI wave-energy buoy via electro-mechanical mooring cables.







MBARI Monterey Bay Aquarium Research Institute