



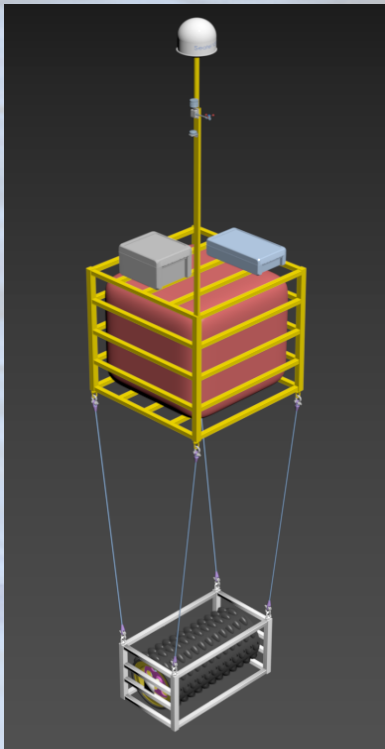
MODULAR OCEAN OBSERVATORY

Modular Ocean Observatory with Unmanned Vehicle recharging capability is powered by the WaveSurfer wave energy conversion technology.

WaveSurfer Modular Ocean Observatory unit consists of two modular platforms, a floating on the surface modular equipment platform and a below-the-surface modular wave energy converter based on the proprietary WaveSurfer technology.

WaveSurfer system is wave direction neutral and operates across a variety of wave heights and periods.

Ocean Observatory's modular design of both platforms, above-the-surface float with installed equipment and below-the-surface power generating wave converter, allows practically unlimited use in scientific research, meteorological, ocean-monitoring and defense applications.

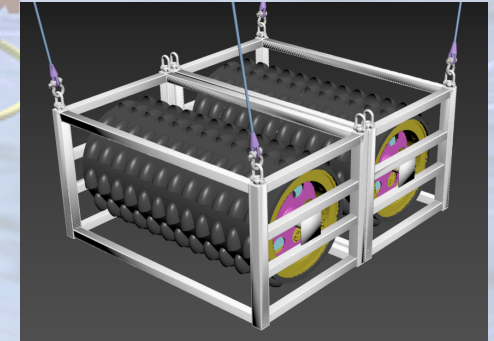


WaveSurfer wave energy converter is a reliable, inexpensive and efficient off-shore system, that contains no expensive or complex parts, lubricants, high precision hydraulics or air pumps, everything that makes other systems more expensive, vulnerable to destructive forces of nature and potentially environmentally unsafe.

Because of its easy-to-assemble design each unit can be cost effectively transported and installed anywhere in the world. Units can be built in any combination of the modules, based on the end user's needs and the wave climate at the specific installation location. It is one of the main advantages of the proposed system.

WaveSurfer is designed to operate in harmony with waves rather than attempting to resist them.

WaveSurfer wave energy converter is extremely ecologically friendly. It contains no lubricants, dangerous chemicals or hazardous liquids.



WaveSurfer wave energy conversion technology utilizes finite depth of ocean waves and drag force of water.

Motion of water beneath the surface decreases exponentially with depth. No matter how violent wave action is on the surface, water at a depth of one-half wavelength $L/2$ (wave base) and below is motionless.

WaveSurfer Ocean Observatory comprises two bodies, (1) moored to seabed or connected to a vessel buoyant body with installed equipment and (2) suspended from it fully submerged power unit consisting of rotor and electric generator. The submerged body is held at a depth of around one-half wavelength, where the water is motionless. Both bodies can be of modular design with any combination of the number of modules on and below the surface.

The buoyant body rises with each wave dragging the attached submerged body upward through the region of motionless water until a wave reaches its crest. As the wave falls, the gravity drags the said submerged body downward through the same region of motionless water until the wave reaches its trough.

This up and down motion through a region of stationary water causes rotation of the rotors due to water resistance force (drag force). Variable geometry rotor buckets are shaped to move thru water with minimum resistance in one direction (drag coefficient $C_D - 0.09$) and with maximum resistance in the opposite direction (drag coefficient $C_D - 2.0$).

Rotation is transmitted to an electric generator installed on the submerged body. Generated electricity is then delivered to a desalination unit via cable.

The upper floating body consists of a Syntactic or Polyurethane float encased within a protective load-bearing metal or composite frame. The below-the-surface power generating unit consists of a hollow rotor with a generator inside. The rotor is also encased within a load-bearing metal or composite frame.