

WAVE ENERGY: The Up and Coming Sustainable Energy Source

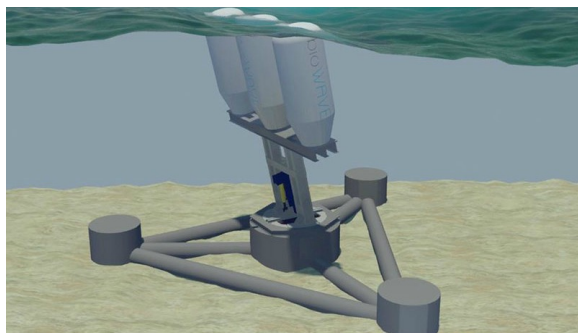
Posted on May 18, 2016 by [SAROS/EcoH2O Innovations, LLC](#).

Sustainable energy sources are being explored and developed as scientists, engineers, and researchers across the globe look for solutions to continued energy and water needs. Wind and solar power are renewable sources that have been thoroughly examined and implemented in a variety of avenues, such as [wind turbines](#) and [solar panels](#). Hydropower has been implemented as well in technologies such as [dams](#) and [water wheels](#). While these resources are proving effective in the search for clean energy options, attention has begun to shift towards the search for additional choices. *[photo c/o <http://www.power-technology.com/projects/pelamis/pelamis1.html>]*



Recently, much exploration has focused on the potential energy source found in the ocean. Wave energy and tidal energy “[are the next big wave](#)” according to global energy researchers. “[Worldwide potential for wave and tidal power is enormous](#)” especially in areas with coastlines that experience regular wave activity. Wave energy “[extracts energy from the surface motion of ocean waves](#)” while tidal energy “[converts energy from tides, or the continuous flow of water](#)” often found below the surface to create power. Both wave and tidal energy are [variable in nature but relatively calculable](#). Because waves are produced by wind and then travel across the ocean, their arrival is more predictable than wind energy. Whereas tidal energy is measurable years in advance as tides are controlled by gravitational pull.

To harness this power, a variety of [wave energy technologies](#) are implemented. These



include floats, buoys, and pitching devices that generate energy using hydraulic pumps; oscillating water column (OWC) devices that work nearer to the shoreline; and a tapered channel device that drives concentrated waves into a reservoir where the power is created by turbines. At this time, the majority of current wave energy projects use the float, buoy, pitching device technology. *[photo c/o <http://www.power-technology.com/projects/port-fairy-pilot-wave-energy-project/>]*

Many wave and tidal energy projects are still experimental pilot studies as researchers work to gain insight on how to effectively and efficiently channel this relatively new technology.

Many wave energy experiments are small-scale with future steps looking to explore their ability to increase in scope. In addition, there are concerns about the impact of ocean energy on local ecosystems as well as the cost of building expensive power plants. Regardless of these concerns, regulators in the energy sector see “[energy from the ocean is a valued part of the plan and that it is more predictable than wind or solar](#).” [photo c/o <http://www.power-technology.com/projects/perth-wave-energy-project/>]



Examples of wave energy ventures can be found across the globe. A [wave farm operating off the coast of Portugal](#) that operated from 2008-2009 was seen as “the world's first commercial wave energy project.” Portugal is seen as an ideal location to benefit from wave power as the country has large, powerful waves along its extensive Atlantic coastline. In February 2015, the [Perth Wave Power Project \(PWEF\)](#) began operation off the coast of Australia. Developed by Carnegie Wave Energy, the electricity generated by the project is “sufficient to power approximately 3,500 households.” South Korea and China are both viewed as ideal locations for wave energy projects, areas that could benefit greatly from the impact of the alternative “green fuel” source, with [Blue Energy](#) currently working on a tidal energy generating bridge across China’s Bohai Strait. Additionally, valuable research is

being gathered at [wave energy projects off the coast of Scotland](#), while plans for a [wave energy plant to be built in South Africa](#) are also underway. [In the United States, a wave energy project](#) is being developed off the Oregon coast. [photo c/o <http://www.nytimes.com/2015/04/23/business/energy-environment/catching-waves-and-turning-them-into-electricity.html>]



In addition to supplying electricity, some companies are exploring the use of wave and tidal energy to produce fresh water. Currently over 700 million people across the globe do not have access to clean water. Researchers

are looking for sustainable solutions to this pressing need. The [Carnegie Wave Energy project operating off the coast of Australia](#) not only makes electricity but also runs “a desalination plant that transforms seawater into about one-third of the [nearby Garden Island military] base’s fresh water supply.” In addition, [Eco-H2O Innovations](#) has built a desalination unit that desalinates ocean water using only the power of ocean waves. The [SAROS unit \(Swell Actuation Reverse Osmosis System\)](#) is designed to benefit smaller coastal and island communities facing water shortage issues that do not have the infrastructure to support large-scale desalination plants. These projects show the potential wave energy has for impacting social needs. [photo c/o www.sarosdesalination.com/]



Though wave energy is still largely experimental, it is now being viewed as a promising source of renewable energy. Wave energy research has lagged behind other renewable sources such as wind and solar power, but has made steady progress over the past decade. [Jason Busch, executive director of the Oregon Wave Energy Trust](#), a non-profit group dedicated to helping advance the industry, says, “In the course of 10 years we have gone from having zero wave energy technologies that are even remotely viable to having several in the water, and on the cusp of commercial viability.” A recurring message among wave energy experts is that “[wave energy is where wind energy was three decades ago](#).” Like all new technologies, large amounts of money, time and research will be necessary for wave and tidal energy to catch up to other renewable energy source technologies. “What is needed is a well-thought-out wave energy strategy by governments,” said [Tom Thorpe, founder of Oxford Oceanics](#), a wave energy consulting firm in Britain. “It’s not rocket science. It’s what the Danish government did with wind energy.”

Sherri Walker is a Communication Specialist and blogger for [SAROS/Eco-H2O Innovations, LLC](#).