*FUTURE*wave

Project Description

In a land of drought, we celebrate Santa Monica with an exuberance of water. This public art installation acts as a spectacular local icon similar to an interactive Hollywood Sign while also generating carbon-neutral electricity through the use of wave energy conversion. A giant scrim, the structure is a framework of curvilinear elements that support a series of digital water curtains displaying an infinite variety of words, phrases and animated art. The design of the curvaceous skeleton is inspired by the undulating waves, the rolling Santa Monica Mountains, free-flowing music and jazzy art. The digital water curtains display a continuous program of messages and information, including time, tide, temperature, weather, etc. In addition, the digital water screen is interactive such that visitors on the Santa Monica Pier can send messages and play games that will be displayed on the screens. There is also a kinetic element that moves through the structure powered by wave power, namely “Inkie”, the Pacific Park mascot. It acts as a kind of “Where’s Waldo” feature that kids can search for and can interact with through their smartphones. Utilizing augmented reality Inkie will be the visitor’s primary guide to learning about the sustainable, carbon-neutral energy produced by the project. The evening LED colors of the structure combined with the high-tech digital displays, interactivity and the wave power will showcase Santa Monica as a global leader in developed a carbon-neutral community riding the *FUTURE*wave.

Technical Details

The project is powered by the use of an oscillating water column, a wave converting technology that is ideal to be constructed on a rocky shore (breakwater) in 10 meters of water depth. Consisting of a large wave capture chamber, the mechanism also includes an air turbine platform and an air chamber. Waves enter under a sunken lower edge that traps air in a piston style system, forcing air into the turbine. This pressure spins the turbine thus producing energy. As the waves retreat, air reenters the chamber from the other side of the turbine. At full capacity the system will be capable of producing 350 kW. Because the site is within seven miles of the Santa Monica Submarine Canyon which is over 1,000 feet deep, there is a unique opportunity to utilize a deepwater energy storage system.

The painted tube metal curvilinear framework is 625 meters long and ranges from 60 to 80 meters tall and supports five digital water curtains of 50 by 125 meters.

Environmental Impact

The environmental impact of oscillating water columns is considerably less than other ocean-based renewable devices and vastly cleaner than nonrenewables. The life cycle costs including construction, installation and decommissioning would be 24 grams of carbon dioxide. Having no underwater moving parts, the water columns are no threat to sea creatures. The structure would act as a artificial reef, thus increasing marine life in the area.