FSC TECH

Engineered Marine and Estuarine Protection System

SeaHive®

Dissipates Wave Energy While Creating Habitat

Laboratory Tested to Category 5 Hurricane Conditions

UNIVERSITY OF MIAMI

DESIGNED BY UNIVERSITY OF MIAMI

Extensive research documented by National Cooperative Highway Research Program (NCHRP) Report IDEA-213, with the assistance of FDOT, up to Category 5 Hurricane conditions.

- **A COST-EFFECTIVE ECO-ENGINEERING ALTERNATIVE**

  The SeaHive® system provides an efficient alternative for the protection of the transportation network and the built environment in coastal communities that can be tuned for both low and high energy areas.

- **LESS WAVE REFLECTION AND HIGHER WAVE ENERGY DISSIPATION**

  Laboratory tests on SeaHive® models have shown that the system provides better protection against storm surge and wave action than traditional coastal protection structures such as vertical seawalls and trapezoidal submerged breakwaters. Perforations on the side faces of SeaHive® units form interconnected channels allowing water flow under surging or breaking waves and dissipating wave energy through turbulence.

- **HABITAT CREATION**

  Its potential for biocompatibility and habitat creation is provided by its faceted perforated geometry and the use of ecofriendly materials, for a versatile and protective green engineered system.

- **FSC STRUCTURAL INNOVATION**

  The adoption of the FSC Reinforcing Technology, with the very innovative way of using FRP, provides SeaHive® a long corrosion free service life and fosters industrialized production processes, with reduced cost and a lower carbon footprint.

FSC TECH

Engineered Marine and Estuarine Protection System

SeaHive® Design

THE OBJECTIVE OF THE SeaHive® PROJECT

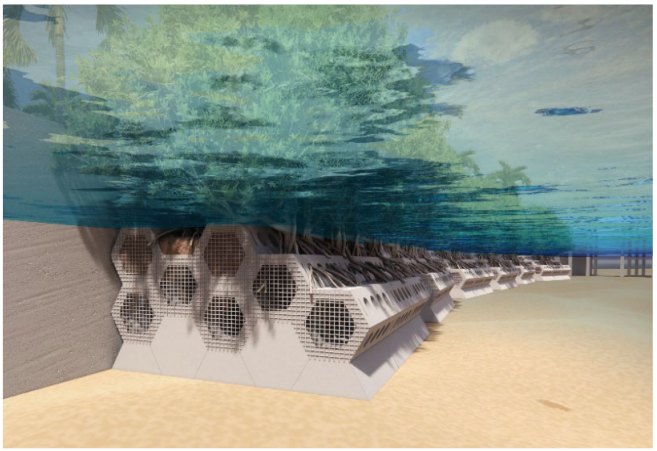
There are two objectives of the SeaHive® project, the first was to research and develop a sustainable estuarine and marine revetment system that provided coastal storm protection while enhancing marine habitat.

The second objective was to create a design that could enable the elements to be mass produced on existing dry cast production machinery readily available in the precast market. This significantly lowers the overall cost of the system while providing long term product life. Together the two objectives provide the maximum value to project stakeholders.

HEXAGONAL SHAPE

Interlocking of hexagonal units provides an inherent stability under wave action and they maximize the volume for a given amount of material, similar to a beehive. This is why hexagonal units were selected for the system design.

Multiple units can be joined together into one unit which is a SeaHive® Cluster for enhanced placement ease and speed.



HYDRODYNAMIC PERFORMANCE TESTING

System design testing focused on the hydrodynamic performance of a group of SeaHive® units starting with the testing of a vertical SeaHive® wall section in the University of Miami SUSTAIN wind/wave tank. For this phase of the testing, the analysis was conducted on the basis of the water-level measurements as they allow to characterize the performance of the system through estimates of wave reflection and wave-energy dissipation.

The comparison of the reflection coefficient between the vertical SeaHive® system model with a solid vertical wall model revealed that the SeaHive® system model significantly decreased wave reflection while also dissipating more energy. Tests conducted on horizontal SeaHive® system configurations revealed that the system performs also well in other contexts riprap to submerged breakwater/reef applications.

HABITAT CREATION

The geometry of the system mimics nature providing passage for dissipating water energy within the structure. The structural complexity of the system combined with the use of biophilic materials also increases the potential of the system for habitat creation.

Marketed by FSC under license to the University of Miami
FSC Technologies LLC
4779 Terrasonesta Dr, Davenport FL 33837 USA - tel +1 (321) 355-9523 +1 (705) 207-9990
R&D Branch: via V. Veneto 52, 43046 Rubbiano PR, Italy - tel +39 338 052 5728 +39 333 470 4829
info@fsc-tech.com - www.fsc-tech.com