



TOTAL COASTAL PROTECTION

Elemental Innovation

Frequently Asked Questions about HALO Wave Attenuators

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Table of Contents

Elemental Innovation Overview.....	3
Frequently Asked Questions.....	4
Effectiveness/Track Record.....	4
Cost.....	4
Warranty.....	4
Maintenance.....	4
Anchors	4
Life Expectancy.....	5
Portability.....	5
Vandalism	5
Alerting Crafts/Jet skis/Boats	5
Permitting	5
Marine Growth.....	6
Shifting Sediments	6
Environmental Benefits.....	6
Ice	6
Erosion/Beach Replenishment	6
Storms/Riptides	7
Insurance.....	7
Property Values	7
Colors	7
Competitive Advantages	8
Additional Questions	8

Elemental Innovation Overview

A leading engineering firm, Elemental Innovation (EI) provides total coastal protection through our modular, eco-friendly, HALO™ tunable wave attenuators.SM

HALO systems outperform conventional technologies for less than half the cost. In fact, HALO is the only modular attenuator capable of reducing a wave's height by 80%. By absorbing rather than deflecting the force of waves, HALO works with nature to:

- Dissipate waves and wakes
- Prevent sand erosion
- Promote sand accretion
- Provide a security zone against covert ingress and egress

Proven Results, Proven Performance

Before founding EI, Justin Bishop designed the WhisprWave® wave attenuator, which has been successfully deployed for five years in multiple locations across the United States. After selling the WhisprWave, he developed more advanced technology and designed the HALO system. The HALO can reduce a wave's height by twice as much as the WhisprWave. In fact, the HALO can reduce the heights of waves above 5 seconds by an unprecedented 80%.

This publication includes the most Frequently Asked Questions that we have received about our HALO wave attenuators. If you have questions that are not addressed in this publication, or for more information, please visit us at www.elementalinnovation.com, contact sales@elementalinnovation.com or call us at 973.227.0145.

Frequently Asked Questions

Effectiveness/Track Record

How effective is the HALO?

The HALO is the only portable wave attenuator that effectively and economically reduces the heights of very long period waves up to 10 seconds by 50%. It reduces waves of up to five seconds by 80%.

What is the track record of the system in other installations?

The HALO was designed based on learning and experience Elemental Innovation gained in the design and deployment of our previous technology WhisprWave®, which has been deployed in Lake Ontario for four years, at the Naval Amphibious Base in Norfolk, Virginia and in the Thames River in Connecticut with excellent results.

The HALO system has undergone similar and more comprehensive laboratory testing than other systems currently in use, including the WhisprWave®. HALO's proven results are well documented by two independent university laboratory tests and a video of HALO in action is available.

Cost

What does HALO cost?

The cost of installation depends on the specific site but is often less than half the cost of conventional technologies, with limited maintenance. Please contact us and we will assist you with a cost estimate and answer any questions.

Warranty

Is there a warranty?

All HALO units receive a five year limited warranty on parts and labor.

Maintenance

What maintenance does the HALO require?

Based on experience with our previous technology WhisprWave® but using improved materials, HALO should require little or no maintenance.

Anchors

How is HALO anchored?

Anchoring is accomplished on a case-by-case basis; however, in all situations, proven marine-grade components are used. Depending on the location and application pilings, we can use screw anchors, MANTA RAY® anchors, or dead weights to anchor the HALO into the seabed.

Life Expectancy

What is the life expectancy of HALO units?

25 years or more.

Portability

How portable is HALO?

If conditions warrant, HALO can be moved or repositioned within days. Approximately 250 linear feet of HALO can be installed per day with competent soils and good weather.

Can HALO be towed to another location? Is HALO easy to take out of the water?

The HALO can easily be moved to another location, either by towing it with a small boat or by disassembling it and having it moved to its new location.

The HALO can be removed from the water in the same manner as a boat is removed by using a boatlift or by disassembling it either in the water or on land and then moving it to a storage location. The HALO can be left outside if needed.

Vandalism

What is the potential for vandalism?

Most of the unit will be submerged with very little freeboard. While the potential for vandalism is always present, it would require a great deal of effort to damage the system.

Alerting Crafts/Jet skis/Boats

How do we alert boaters to the presence of the system so they do not drive over it? What about at night? What will the U.S. Coast Guard and Army Corps require to warn of the danger?

To warn approaching crafts of any hazard, the HALO can be marked with a sign and a variety of sensors including solar strobe unit.

We have jet skis running past our marina; what can HALO do?

HALO will eliminate any wake from jet skis and can be positioned to create wake-free zones for boaters.

Boats need room to maneuver; how do boats get past HALO?

HALO is well marked and can be deployed in a staggered formation to allow boats to pass freely between sections.

Permitting

What are the permitting requirements for the HALO?

Each state or governing body is different; in general, though, the appropriate Municipal, State, and Federal authority must be approached to provide permitting for installation. These authorities can include the Coast Guard, Army Corp of Engineers, State Department of Environmental Protection, and the local municipality. Elemental Innovation will assist in acquiring the necessary permits for a HALO installation.

Since the HALO is not a permanent or fixed structure, permitting becomes much easier than with conventional structures. The HALO is also an environmentally friendly system.

Marine Growth

Will marine growth (barnacles, algae, etc.) affect performance?

Marine growth may occur on the underside and other parts of the HALO that are constantly submerged in water. However, this will not influence the overall buoyancy of the attenuator in any way, shape, or form.

Shifting Sediments

How will the system be affected by the shifting of the sediment over the years? If the slope angle and depth of water change, will the HALO system need to be fine-tuned or altered?

HALO is adjustable in place if need be; if the attenuator brings balance to a shoreline, it may not be necessary to alter it, though the option is always there.

Environmental Benefits

What are the environmental benefits of the HALO?

Since HALO filters water flow instead of blocking it, it can be tuned to block out only harmful waves allowing the natural flushing of harbors.

HALO Ocean units are tuned to filter out erosive waves and permit accretionary waves to pass through the system to accumulate sand. Because the HALO does not prevent the littoral drift of sand while protecting a beach, you are not starving one beach to protect another. The HALO also acts as an artificial reef for wildlife.

Is this Attenuator an eyesore? What about the fish?

HALO is composed of non-toxic materials, and can be manufactured in a variety of colors to either blend in or stand out. The majority of the unit is submerged, and acts as an artificial reef, an excellent shelter for fish and birds.

Ice

How will ice and the freezing of the water affect the HALO system? Are there other durability issues?

We have found that the HALO system can remain on station year round without any adverse affects. In certain locations, anchoring methods can be altered or other methods employed to equip the system for its environment.

If the ice thaws and it dissipates into the water level, you can leave HALO in all year. However, if there are large blocks of heavy flow ice moving around that would severely damage stationary structures, moving HALO is necessary as the ice will tear out and wash away any structure.

Erosion/Beach Replenishment

Our town's beach is disappearing; what can be done quickly?

A HALO wave attenuator can be deployed within days to protect beaches, as long as the necessary permits have been received.

We replenished our beach but it is still eroding; what can HALO do about it?

The HALO can be installed in conjunction with beach nourishment to extend the life of a beach fill.

Where is our beach? All we have are bulkheads and no sand; what can HALO do?

The attenuator can be positioned to accrete (increase) sand in front of bulkheads as well as to reduce any undermining of the bulkhead.

While it protects our beach, will it damage others?

The HALO is tethered to the seabed, allowing the natural littoral drift of sand between beaches, unlike conventional technologies that sit on the seafloor and disrupt natural eco systems. Because we can tune the HALO, we are able to eliminate any damage to adjacent beaches.

If they ever put sand on our beach, what will happen to HALO?

HALO is designed to be portable. When deployed to protect your beachfront, it can be easily redeployed to accommodate any planned replenishment projects.

Storms/Riptides**Storms wreak havoc on our beach; will HALO survive?**

HALO is designed to withstand hurricane forces with winds over 100mph and wave heights exceeding 20ft. HALO will protect beaches from severe wave action.

High storm waves can damage our harbor and boats; besides wakes, can the HALO stop storm waves?

HALO can be positioned to eliminate any damaging storm waves; it has been designed to reduce the height of ocean storm waves by 80%, more than twice that of other wave attenuators.

We have dangerous riptides but love to swim; can HALO stop the riptides?

The HALO wave attenuator can eliminate dangerous riptides and even provide a safe refuge for tired swimmers.

Insurance**The insurance is very high or non-existent for beach homes; how can HALO help?**

It may be possible to qualify for lower cost home insurance with an installed HALO wave attenuator system.

Property Values**My property value fluctuates with each severe storm; how can HALO help?**

HALO will provide a stable shoreline to help build beaches and increase property values.

Colors**What colors do HALO units come in?**

White

Safety Orange

Forrest Green

Black

Navy Blue

What is the size of a HALO?

The size of the HALO structure depends on the area to be protected; harbors could use structures as small as 10 feet long, whereas ocean site units can be as long as 36 feet. Each HALO panel's dimensions are 4'x8'x1'. Each panel weighs approximately 105lbs and is buoyant.

Competitive Advantages**How is HALO different from the competition?**

The closest we come to direct competition is our previous invention the WhisprWave® which is capable of reducing the heights of waves up to 5 seconds by 40%. HALO is the only modular composite attenuator that is capable of reducing the heights of waves above 5 seconds over 80%, twice as much as the WhisprWave®. The only other structure capable of such dissipation is a rock breakwater that can be four times as expensive as a HALO, quite unsightly, and not environmentally friendly.

Additional Questions**Have a question that we haven't answered?**

Contact us and we'll gladly answer it. Please email sales@elementalinnovation.com or call us at 973.227.0145.