

Alan Pierce



Illustration courtesy Demi-Tek, Inc.

Fig. 1—Monitor electricity generator.

completely new piece of technology designed to harvest electricity from tidal energy?

If you chose the tidal-wave-generating technology, you have correctly identified the topic for this month's column. Although it might look like a military vessel, the *Monitor*, a new hybrid electric gener-

ator produced by Demi-Tek, West Caidwell, NJ, harvests electricity from ocean waves and swells. It is 60' long by 40' wide and, in boat builder's terminology, has a 12' draft. A single *Monitor* built to the above measurements can generate 500 kilowatts of electricity at about half the cost of fossil-fuel-generated power. This is enough electricity to meet the needs of approximately 500 homes.

At the writing of this column, Demi-Tek has the full support of the mayor of Asbury Park, NJ, to test the *Monitor* 300 feet off shore from the Asbury Park Pier. Before testing can begin, the Asbury Park City Council, Coast Guard, Army Corp of Engineers, and the Environmental Protection Agency must all approve the testing. Testing was scheduled to begin around September 1998. The *Monitor* was towed into position and then anchored to the ocean floor by six Seaflex cables that expand and contract under the force of the ocean currents (Fig. 2). These cables are attached to special helical screw anchors. Each anchor is designed to support a 140,000-lb. load. The Seaflex cables and helical screw anchors (Fig. 3) have already proven their effectiveness under stormy weather conditions on large oil rigs.

To generate electricity, the *Monitor* must keep a constant flow of water in just one direction through its turbine. At the same time that the tidal flow energizes the blades of the turbine, it pushes the *Monitor* to-

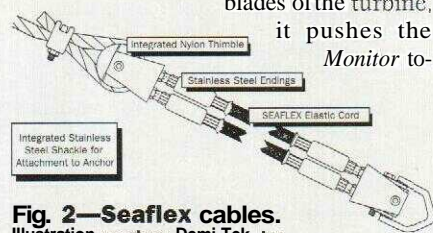


Fig. 2—Seaflex cables. Illustration courtesy Demi-Tek, Inc.

ESI standard screw pile foundation

drawing no. 961126

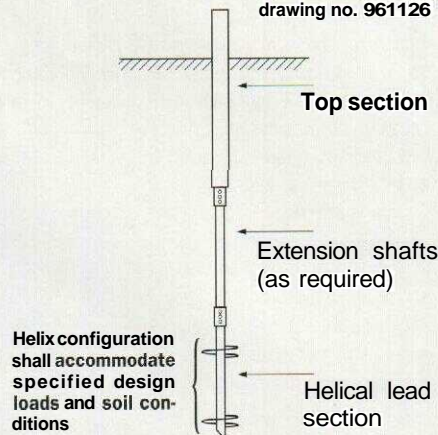


Fig. 3—Helical screw anchors.

Illustration courtesy Demi-Tek, Inc.

ward the beach. The energy that pushes the *Monitor* is transferred to the Seaflex cables. They stretch, absorbing the energy of the water as they come under tension. When the wave crests, the release of energy stored in the stretched cables pulls the *Monitor* back toward the sea. With each wave cycle, the Seaflex cables absorb energy as they stretch and release energy as they return to their non-tensioned size. This action causes the water to continue to rush through the *Monitor* in just one direction. The electricity is transferred from the two marine generators through a buried cable. You can learn more about the *Monitor's* technology by visiting the company's web site at www.demitek.com on the Internet. **TD**

Recalling the Facts:

1. What advantage does this technology hold over the production of electricity through the burning of fossil fuels?
2. Describe how the *Monitor* keeps the water flow in one direction.
3. What do you think are some of the safety considerations that each government agency will consider before approving the testing of the *Monitor*?

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Electricity from the Sea

THE illustration of the *Monitor* (Fig. 1) doesn't provide a point of reference that would indicate the size of the vessel. Are you looking at a stealth submarine, alien spaceship, Darth Vader's helmet (from the next *Star Wars* trilogy), or a

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