

Pueblo company harnessing waves to develop affordable electricity

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A Pueblo company developing "game-changing" renewable energy by figuring out how to harness the power of ocean waves is gearing up to launch a two-year test run that's expected to lead to commercial development and local manufacturing jobs.

Atargis Energy Corporation features a small, six-person team in Pueblo. The company landed here after it was founded in 2010 by a group of U.S. Air Force Academy civilian researchers including Co-founder Stefan Siegel.

The company is working to develop innovative, lift-based technology to harness the energy of ocean waves to create affordable energy. While it may seem unusual that a company working on wave-based renewable energy is situated in land-locked Pueblo, Siegel jokes, "I like to say tongue in cheek that in the end Pueblo is equally close to both oceans."

It's Pueblo's history as a heavy manufacturing base with a qualified workforce armed with the skills needed to make the hardware that helped attract the company to settle here, said Freia Siegel, chief administrative officer and Stefan Siegel's daughter. She said one of the many hats she wears requires her to handle administration and human resources tasks, but she also is handy with a soldering iron.

"When we complete the first ocean prototype and move into the commercialization phase, we will probably deploy it in Europe because that is where the certified testing sites are," Freia Siegel told the Chieftain. "So the proximity to Denver International Airport is more critical than being somewhere along the coastline."

The CycWEC, as it is affectionately called, uses cycloidal wave energy conversion below the water surface to generate power. It is noiseless technology that can convert up to 95% of the power in every ocean wave into affordable electricity.

"Fundamentally, wave energy, unlike other renewable energy sources such as wind or solar, is a very consistent resource. So the waves are always on 24 (hours), 7 (days), 365 days a year," she



Pueblo's Atargis has developed the CycWEC which uses cycloidal wave energy conversion below the water surface to generate power.



The Atargis executive team (from left) Bill Hartman, board member; Freia Siegel, chief administration officer; Stefan Siegel, chief technology officer; and Michael Egan, chief executive officer. PHOTOS BY ATARGIS ENERGY CORP.

explained.

"Waves are predictable in advance so we can pretty much precisely forecast how much power our device is going to produce. The reason this is a game changer for the grid is that wind doesn't blow consistently and sun doesn't shine at night," Freia Siegel explained.

The cost to manufacture the CycWEC device makes it acceptable for power generation, too, she said.

While other wave energy companies rely on water surface level buoyancy or drag-based technology that, "basically buoys the bob up and down on the ocean surface," Atargis is using hydrofoil lift technology that works below the surface so the top of the device will be about 18 feet under the surface at all times.

dian investor, the company is set to launch a two-year tank test involving a 1:15 scale model of the CycWEC.

"We will be testing in a tank at a wave facility which is basically a swimming pool with two wave makers on either side so you can simulate various ocean states. We are kicking off our 24-month wave tank testing campaign in order to validate," the device, Freia Siegel said.

"It is exciting but it also is a lot to handle for a small team. We are very grateful to finally have the funding in place as, truth be told, this project got delayed time and time again because we couldn't find the necessary funding," she explained.

Atargis is the only company to receive the full \$500,000 Colorado grant this cycle because the company qualifies in two subcategories, she said. The company had tried three previous times to obtain the grant.

Freia Siegel said she oversaw the grant application this year, spending most of the month of February, including weekends, to "craft a compelling narrative about how the company can bring benefits to Colorado through jobs and capital investment."

"I am very happy and we are very fortunate to get the grants," Freia Siegel said.

"It helps us fill in the missing pieces with our research for the next two years," Siegel said.

The state's Advanced Industries Accelerator Program "plays an important role in that success, supporting research institutions and startups as they discover and commercialize new, life-changing technologies while creating good-paying jobs for Coloradans," said Michelle Hadwiger, global business development director for the state. "These grants also have a proven history of aiding recipients in attracting additional third-party investment critical to helping them grow."

To learn more, check out the business's website at atargis.com.

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"We have two rotating hydrofoils that work to cancel out waves, so that the same way that your noise-canceling headphones cancel out sound waves, we cancel out ocean waves with our device which allows us to be very efficient," she explained.

When built to full-scale size, the CycWEC device will be 180 feet wide and cover a footprint of about 300-by-300 feet, Freia Siegel said.

Two-year test to get underway

Thanks to nearly \$2 million in Department of Energy funding and a recent \$500,000 Colorado Office of Economic Development and International Trade Early-Stage Capital and Retention grant, as well as the help of a Cana-