

## FUNDING UNDERWATER TECHNOLOGY IN HAWAII

**ABOUT MAKAI OCEAN ENGINEERING, INC.** Makai Ocean Engineering was founded in 1973 as a diversified ocean engineering company focused on providing design engineering and development services. Today the company is a world-renowned think tank for ocean-related problems known for its innovative, fast, and thorough design solutions. Based in Waimanalo, Hawaii, Makai has around 25 employees.

**THE CHALLENGE.** Makai receives funding through the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR)—an extremely competitive process. To stay ahead of the competition, the company sought additional funding for three ongoing SBIR projects: Subsea Cable Laying Software, Underwater Vehicles, and Ocean Thermal Energy Conversion (OTEC). Innovate Hawaii, part of the MEP National Network™, stepped in to provide funding for these projects through its SBIR Matching Grant program.

**MEP CENTER'S ROLE.** When Makai's subsea cable laying software for commercial and government clients was in SBIR Phase 1, Innovate Hawaii provided a \$20,000 matching grant. The technology went on to Phase 2 and 3, and eventually became the world's number one commercial cable laying software. Next, Makai began working on underwater vehicles during an STTR Phase 1 grant with the University of Hawaii (UH), with another \$20,000 matching grant from Innovate Hawaii. This program has since brought in over \$5 million in follow-on related funding, producing an autonomous underwater vehicle that is capable of navigating with no human operator in the loop, and installing and burying subsea cables in the seafloor. Later, Innovate Hawaii provided \$325,000 in additional funding and Makai embarked on Phase 2 of the SBIR program.

Makai has a long and illustrious history in OTEC research and development. Its latest OTEC project went all the way through to SBIR Phase 3, and is now a direct contract with the Office of Naval Research, in partnership with UH's Hawaii Natural Energy Institute. This program is the reason Hawaii now has the world's largest operational OTEC power plant in the world. Innovate Hawaii awarded Makai with an "Office of Naval Research, Alternative Energy" matching grant of \$400,000 to continue development of its OTEC technology, specifically marine heat exchangers. Makai is now diversifying from a purely R&D provider into a heat exchanger manufacturer, creating additional engineering jobs. The company has a patent pending for a groundbreaking seawater heat exchanger, serving a market that is expected to grow to about \$4.6 billion by 2018.

**"The Innovate Hawaii Matching Grant program has enabled Makai Ocean Engineering to become a world-class R&D provider, bringing highly skilled engineers to the islands, and resulting in technology solutions that have a truly global impact."**

-Duke Hartman, VP of Business Development

## RESULTS



Brought in over **\$65** million in federal and private R&D money to the State of Hawaii



Hired **5** engineers with salaries averaging \$97,000 annually



Awarded with the prestigious SBIR Tibbetts Award

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