

Generation of Hydrogen from Seawater, Powered by Solar PV, Leading to Cogeneration of Electricity and Potable Water

PAX



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Systems Command (NAVFAC)
www.navfac.navy.mil

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Other Potential Programs: NAVSEA,
MCSC, all other DoD branches for
operations and emergency response,
municipalities, rural and tribal micro grids,
and industrial and energy production sites

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THE CHALLENGE

Water and energy resiliency is critical to the military and beyond. Cost-effective solutions that can produce potable water from seawater and power from renewable sources will greatly enhance mission performance and bolster resiliency across DoD installations.

THE INNOVATION

PAX Scientific has developed a low-temperature process that purifies water in a simple, low-cost process, regardless of salinity content and contamination level. By combining photovoltaic energy and our distillation system with a hydrogen electrolyzer, our solution, PAX H₂(O), enables desalination and hydrogen production starting at small to mid-scale. Our technology is mobile and scalable with variable throughput handling capabilities. Initial Navy applications include on islands and in micro-grids. PAX H₂(O) applies to applications beyond potable water, including brine concentration and oil and gas operations.

THE NAVY BENEFIT

To achieve 100% mission continuity, the Navy has established a goal to ensure capability to operate off-grid for 14 days or longer by September 2025. PAX Scientific contributes to that goal with its renewable-energy powered system that produces potable water at one-third the cost of reverse osmosis. With many of its facilities on coastlines and islands, the Navy can benefit greatly from PAX's technology.

THE FUTURE

PAX H₂(O) can evolve to a modular, scalable, and highly efficient water distiller and hydrogen generator in a range of sizes. It can be utilized in industry as a small- to medium-sized water and hydrogen generator at the endpoint-of-use, like a small leisure port or a highway Hydrogen Refueling Station (HRS). PAX H₂(O) can also be utilized as a core military-grade system that is compact, robust, easy to handle, and deployable, aimed primarily at the DoD, to generate reliable power or distributed energy storage and potable water at remote bases. PAX H₂(O) could also be implemented at a utility-size complex for the use by a municipality, a commercial or military port, or be part of a micro-grid for rural communities. PAX Scientific is seeking strategic partners for pilot installations and manufacturing.

Innovation Center at 2022 Navy Gold Coast



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