

The U.S. Navy's top partner for producing oxygen systems for its nuclear submarines asked Enginasion for help.

In 1965, the US Navy recruited Treadwell to design and build the first oxygen-generating system for the crews of its nuclear submarines. Treadwell has been working with the Navy continuously ever since. Recently, Treadwell asked Enginasion for help with a new microprocessor controller and software suite for a new generation of oxygen generators.

"We trust Enginasion," says Mark Pfeffer, Vice President of Development for Treadwell. **"They have helped considerably, assisting us in meeting the Navy's increasingly stringent specs while maintaining the extreme reliability and cost-effectiveness of our equipment."**

Clients of Enginasion include "big" and "little" companies in the Industrial, Medtech, Military, and Pharmaceutical sectors—some of whom have in-house engineering resources while some do not. Enginasion has helped clients to design and build hardware and software that monitors, measures and controls mechanical and electrical systems.

Treadwell challenged Enginasion to enhance the world's finest oxygen-generating system for the crews of nuclear subs.



Benefits of the Enginasion Solution

- Reduced control systems size by 90%.
- Reduced control systems costs by 40%.
- Interactive graphical user interface.
- Unique training simulator.
- Transformed the operator's experience.

Treadwell Corporation has been partnering with the U.S. Navy, continuously, for more than 40 years.

OVERVIEW: Enginasion specializes in solving the most difficult automation problems, applying ingenuity, in-depth understanding of physical phenomena and materials, and wide-ranging expertise in digital and analog electronics, software, user interfaces, networks, fluid controls, motion control systems and measurement techniques.

CLIENT: After the Korean War, the US Navy searched for a private US company with the technical capabilities to design and build an Electrolytic Oxygen Generator (EOG) to provide breathing oxygen for the crew of its newly developed class of nuclear submarines. For this critical application, the Navy needed a contractor who could handle the technical, manufacturing, reliability and field support challenges. The US Navy recruited Treadwell and has been partnering continuously with Treadwell for more than five decades.

CHALLENGE: Nuclear-powered subs can cruise underwater at full power for years, as their engines do not need air. Their crews, however, do. Hence the need for Electrolytic Oxygen Generators that decompose water molecules into hydrogen and oxygen gases. The oxygen is used for crew life-support. Treadwell asked Enginasion to design a smaller, more user-friendly and more cost-effective system controller for its Low Pressure Electrolyzer (LPE) that serves the US's Seawolf, SSGN and Ohio classes of submarines.

SOLUTION: Advantages of the Enginasion controller include full automation of GUI prompts for required operator actions; built-in diagnostics; data & trend analysis and software interlocks; reduced cost; elimination of over 12,000 parts; and less noise. The Enginasion partnership is an integral part of Treadwell's continual upgrading of its oxygen generators for extended life, lower life cycle costs, and superior reliability.

What the experts are saying...



Mark Pfeffer

Vice President, Development
Treadwell Corporation

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Michael Patruski

Engineering Manager
Treadwell Corporation

"The reason Treadwell relied on Enginasion is because their engineers think out of the box, yet devise cost-effective and reliable solutions."



David Bonneau, BSEE

Founder and CEO
Enginasion

"Treadwell is an invaluable partner to the United States Navy. We are extremely proud to be working with Treadwell and our country's nuclear submarines."