**Pleuger Industries dives deep into the future of renewable energy storage with global partners**

*Backed by US and German governments, PLEUGER, Fraunhofer IEE, and Sperra unleash the untapped power of the ocean for renewable energy storage*

**01 November 2024, Miami, FL** – Pleuger Industries (PLEUGER), a leading innovator in submersible motor pump technologies, announces its pivotal role in advancing subsea energy storage with the StEnSea (Stored Energy in the Sea) project. Since the project's early development in 2012, and in partnership with Fraunhofer IEE and Sperra, PLEUGER’s expertise in submersible pump systems is helping facilitate a new era of renewable energy storage solutions.

The StEnSea project, initially conceived by the German Fraunhofer Institute, seeks to revolutionise long-duration energy storage by adapting the principles of pumped storage hydropower for subsea environments.

The project utilises a unique approach to energy storage by placing hollow concrete spheres on the seabed at depths of 600 to 800 meters. When electricity demand
is low, these spheres are emptied of water using PLEUGER’s specially designed submersible pumps to store potential energy. During peak demand, water is allowed to flow back into the spheres, turning the pumps into turbines that generate electricity. This innovative method mirrors the functionality of traditional pumped storage hydropower but adapts it for the subsea environment, leveraging ocean pressure to store and release energy efficiently.

A comprehensive GIS analysis of coastal marine areas has revealed numerous potential locations for deploying this technology globally, including off the coasts of Norway, Portugal, the US East and West Coasts, Brazil, and Japan. The technology is also suitable for deep natural or artificial lakes, such as flooded open-pit mines, further expanding its application potential.

This ambitious initiative addresses the urgent need for scalable, efficient energy storage solutions that can integrate renewable energy sources, stabilise power grids, and reduce reliance on fossil fuels. By leveraging PLEUGER’s custom pump systems, the project is set to deliver a groundbreaking, modular subsea pumped hydroelectric storage system that stores energy invisibly beneath the ocean’s surface.

**Significant international support**

The StEnSea project has received substantial financial backing from both the U.S. and German governments, highlighting its significance and the confidence of its potential global impact. The U.S. Department of Energy Water Power Technologies Office (WPTO) has awarded the project $4,000,000, a testament to the importance of developing innovative energy storage solutions that can support the country's renewable energy goals. In addition, the German Ministry for Economic Affairs and Climate Action (BMWK) has committed €3,700,000, showing the critical role of international collaboration in advancing sustainable technologies.

*“The global energy transition demands transformative, scalable solutions, and Pleuger is leading the way. Our ‘Stored Energy in the Sea’ project aligns with our strategy to expand in renewables, advancing ocean-based technology that redefines sustainable energy. Kudos to our brilliant engineers, whose expertise drives these cutting-edge solutions.”*
*said the former* ***CEO of Pleuger Industries, Anton Schneerson.***

**Advancing technologies for a more sustainable future**

PLEUGER has been involved with StEnSea since its inception, contributing to the development of the first prototype with a specially designed underwater pump. Now, with this substantial funding and international partnership, the project is scaling up to include a 10-meter prototype capable of generating 0.5 MW of power at depths exceeding 600 meters.

*“Pumped storage power plants are particularly suitable for storing electricity for several hours to a few days. However, their expansion potential is severely limited worldwide. Therefore, we are transferring their functional principle to the seabed – the natural and ecological restrictions are far lower there. In addition, the acceptance of the citizens is likely to be significantly higher,"* explains **Dr. Bernhard Ernst, Senior Project Manager at Fraunhofer IEE**.

The technical challenges of operating at such depths are formidable, requiring robust engineering and precision. PLEUGER’s specialist pumps are designed to operate efficiently under extreme pressures and in harsh environments, providing reliable energy generation and storage in a compact form factor. This makes them ideal for the modular and scalable design envisioned for StEnSea, capable of deployment near coastal cities around the world.

**Transforming energy storage globally**

Beyond its technical prowess, the potential impact of the StEnSea project is profound. By deploying energy storage systems offshore, we can avoid many of the land-based challenges associated with traditional pumped storage hydro, such as environmental impact and land use conflicts. This offshore solution also avoids reliance on critical materials required for battery storage, making it a more sustainable option for the future.

*“Our involvement in the StEnSea project underscores PLEUGER's commitment to innovation and sustainable energy solutions. With the significant support from both the U.S. and German governments, we are transforming energy storage and contributing to a future where clean energy is more accessible and reliable for everyone."*
said [**Sebastian Rose, Head of Engineering at Pleuger Industries**](https://www.pleugerindustries.com/en/company/leadership/sebastian-rose)

The global potential for subsea pumped hydroelectric storage is vast. With an estimated 7.5 terawatts and 75 terawatt-hours of net technical potential in U.S. waters alone, the technology developed in the StEnSea project could double the storage potential of onshore closed-loop systems. As the world transitions to a low-carbon economy, such innovations are critical to ensuring a stable and resilient energy supply.

**Continued commitment to renewable energy innovation**

PLEUGER’s involvement in the StEnSea project is part of a broader strategy to lead in the renewable energy sector. In 2023, Pleuger successfully delivered equipment for the Sunrise Wind project, a significant offshore wind farm initiative off the coast
of New York, in partnership with Nordic Flow and Ørsted. This project is set to provide 924 MW of clean energy, enough to power nearly 600,000 homes with 100% renewable energy, contributing significantly to New York's goal of building a carbon-free electric grid by 2040.With additional projects underway, including East Anglia 3 and Vanguard West, Pleuger continues to expand its presence in offshore renewable energy, showcasing the versatility and reliability of its underwater pump systems.

As PLEUGER prepares for future milestones, including the commissioning
of the Sunrise Wind platform and the assembly and testing of Vanguard West, the company remains committed to advancing sustainable energy technologies that support global energy transitions. With continued innovation and collaboration, PLEUGER is helping shape a future where renewable energy is abundant, reliable, and accessible for all.

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**About Pleuger Industries**

Pleuger Industries is a specialist design and manufacturer of submersible motors and pumps and a key player in the renewable energy sector.

Renowned worldwide across the energy, water and natural resources industries for reliability and outstanding longevity, PLEUGER's products are designed, engineered, and manufactured to solve some of the most demanding applications in the most challenging and harshest environments.

The engineering and manufacturing headquarters is located in Hamburg, Germany, with subsidiaries in Orleans, France, and Torrington, USA. Since 2018, PLEUGER Industries has been part of the Flacks Group, based in Miami, USA. Since then, under the strategic direction of the Flacks Group, Pleuger has transitioned into a leading player in the renewable and sustainable energy sector.

For more information, please visit [www.pleugerindustries.com](http://www.pleugerindustries.com) or contact:

<https://www.pleugerindustries.com/en/stensea>

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**About Sperra**

Headquartered in Colorado, with offices in California, New York, and Virginia, Sperra is dedicated to pioneering the next generation of renewable energy solutions through automated construction. The company is developing a suite of 3D printed concrete products, including wind turbine towers and anchors for floating solar, wave, and wind energy systems.

**About Fraunhofer IEE**

The Fraunhofer IEE, based in Germany, is one of the world’s leading applied research organizations. It plays a crucial role in the innovation process by prioritizing research in key future technologies and transferring its research findings to industry in order to strengthen Germany as a hub of industrial activity as well as for the benefit of society.

<https://www.iee.fraunhofer.de/de/themen/stensea.html#676345464>

**About the Water Power Technologies Office**

The U.S. Department of Energy Water Power Technologies Office supports research, development, demonstration, and deployment of innovative technologies to advance marine and hydrokinetic energy systems and hydropower. Learn more at [energy.gov/eere/water/water-power-technologies-office Pleuger, a leading innovator in underwater motor pump technologies, announces its pivotal role in advancing subsea energy storage with the StEnSea (Stored Energy in the Sea) project.](https://energy.gov/eere/water/water-power-technologies-office).

**About the Project**

<https://www.pleugerindustries.com/en/stensea>

**Official project title:** StEnSea 2 – Entwicklung und Offshore-Test einer neuartigen Pumpspeichersystems

**Project number (German: Förderkennzeichen):** 03EI4047A

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