

Salgenx Turns Zinc Dendrites Into Power: A Breakthrough in Saltwater Flow Battery Efficiency

By engineering electrode and electrolyte chemistry, Salgenx redefines zinc dendrites into a performance advantage for next-generation energy storage.

MADISON, WI, UNITED STATES, October 20, 2025 /EINPresswire.com/ -- [Salgenx](#), a pioneer in advanced saltwater flow battery systems, has announced a major breakthrough in zinc battery design: the ability to harness dendrite growth for improved performance.

For decades, dendrites—needle-like metallic formations that develop during charging—have been considered a leading cause of short circuits and battery failure. But the engineering team at Salgenx has found a way to use dendrites as a functional energy-storage mechanism, improving plating efficiency, current distribution, and overall system reliability.

“Instead of fighting dendrites, we decided to work with them,” said Greg Giese, CEO of Salgenx. “By shaping the electric field and electrolyte flow, we guide zinc to deposit exactly where it’s beneficial—turning a weakness into a strength. The result is a safer, more efficient, and longer-lasting saltwater battery.”



Salgenx Saltwater Battery with no Lithium

The new Salgenx cell architecture uses 3D titanium or carbon foam anodes and sacrificial collector meshes that attract zinc growth in predictable zones. These structures act as dendrite farms, capturing and redepositing zinc in a controlled cycle.

This approach achieves:

- Higher coulombic efficiency through increased surface area and reduced overpotentials.
- Improved safety by isolating dendrite growth away from separators.
- Extended lifespan through self-leveling and controlled stripping cycles.
- Simplified maintenance with re-usable collector meshes that can be periodically re-dissolved or cleaned.

By managing growth direction, density, and cycling, Salgenx converts dendritic behavior into a self-organizing microstructure that enhances current flow and durability.

Engineering and Electrolyte Innovations

The Salgenx zinc-saltwater electrolyte uses a carefully balanced zinc chloride solution with organic leveling additives to promote stable plating. Pulse-charge control—brief high-current nucleation followed by steady growth and short reverse leveling—creates uniform, reusable zinc layers.

“Our technology doesn’t eliminate dendrites,” the company explained. “It uses them as active participants in the charge-discharge process. Every dendrite becomes a conductor, not a contaminant.”

A New Path for Grid-Scale Storage

Salgenx’s saltwater flow battery systems are already known for their zero-lithium chemistry, fire-safe operation, and scalable architecture. By adding dendrite-guided optimization, the company takes another step toward high-performance, sustainable energy storage for renewable grids, data centers, and industrial users.

This breakthrough offers a path to lower-cost manufacturing, simplified recycling, and significantly longer cycle life compared to conventional zinc or lithium systems.

About Salgenx

Salgenx develops advanced saltwater flow battery systems and integrated renewable power solutions designed for large-scale grid storage, industrial, and desalination applications. The company’s mission is to enable sustainable, closed-loop energy systems that transform waste heat and renewable energy into long-term economic and environmental value.

Salgenx systems are designed for grid stabilization, renewable integration, and industrial energy management, offering a revolutionary alternative to lithium-ion and vanadium redox systems.

Contact: Greg Giese / President greg@salgenx.com

<https://salgenx.com>

Gregory Giese
Salgenx LLC
+1 608-238-6001
greg@salgenx.com

This press release can be viewed online at: <https://www.einpresswire.com/article/859819004>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2025 Newsmatics Inc. All Right Reserved.