



Request for Property Tax Abatement for
Submarine Industrial Base Augmentation in Joplin, Missouri

Æsir Technologies, Inc.

# ÆSIR TECHNOLOGIES, INC.

*When **MISSION CRITICAL ENERGY STORAGE** is more than just a tag line.*

# Lead Acid Batteries are Causing Problems for the Military and the Danger of Lithium-Ion Fires Prevent its Adoption in Many Applications



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The guided missile submarine USS Ohio (SSGN 726) stops for a personnel boat transfer / Getty Images

Nickel Zinc Battery - Supply Chain Resiliency Report

- US Navy is the first in line looking to Nickel-Zinc batteries as the next-generation solution
- US Air Force and US Army also adopting
- Congress is pushing for readiness

**Amendment to H.R. 2670**

**National Defense Authorization Act for Fiscal Year 2024**

**Offered by: Mr. Alford**

In the appropriate place in the report to accompany H.R. 2670, insert the following new Directive Report Language:

Nickel Zinc Battery - Supply Chain Resiliency Report

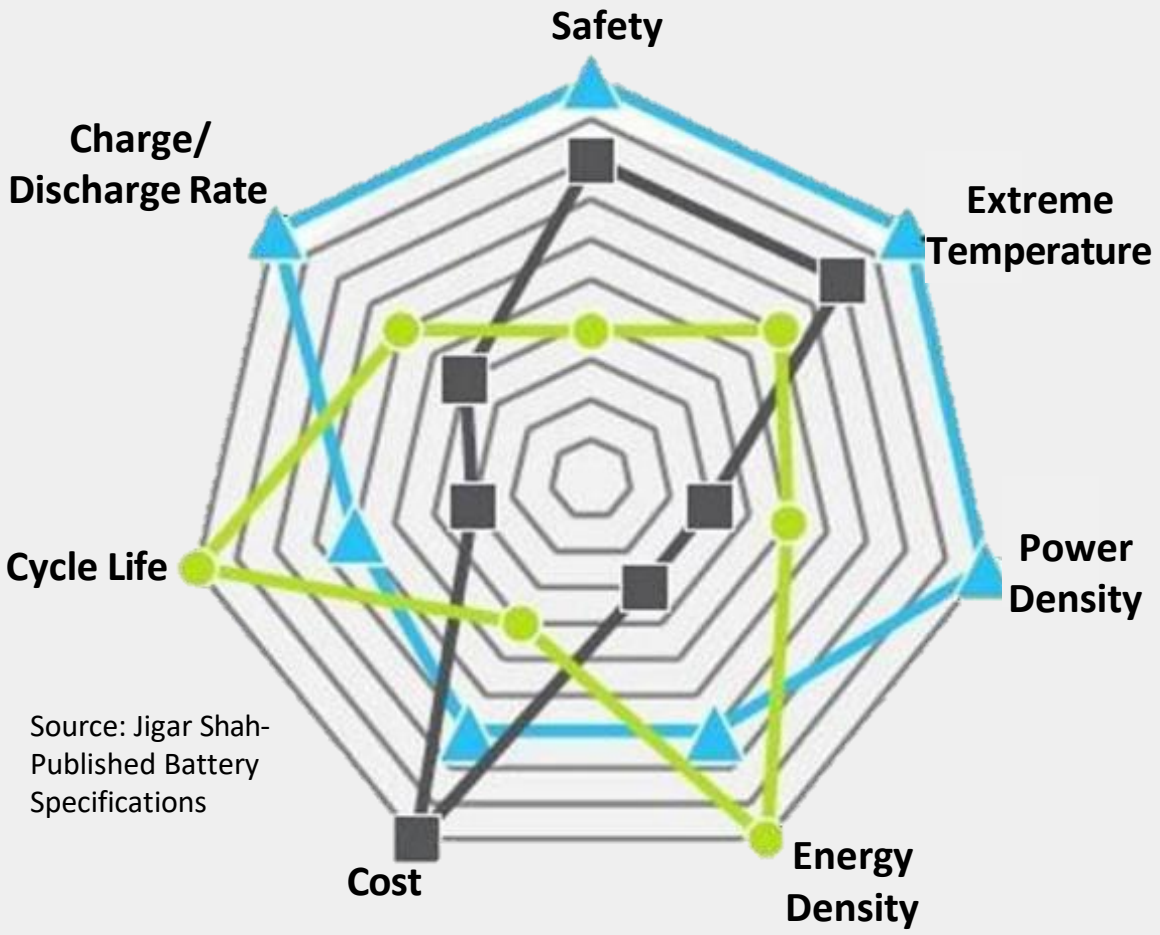
The committee has supported the Navy's need to develop the Nickel Zinc (NiZn) battery chemistry for its VA-Class submarines (VCS). The committee continues to recognize that the development has demonstrated promise for improving diminished VCS readiness rates currently being taken out of service to replace underperforming batteries. The committee also recognizes that NiZn chemistry represents a technology that can be domestically on-shored and can bypass Chinese supply chains. To prevent any additional VCS readiness delays, the committee also recognizes the need for investments in fiscal year 2024 in the domestic NiZn battery production base to ensure full rate production capacity will be achieved upon the Navy's planned completion of Research, Development, Test, and Evaluation at the end of fiscal year 2024.

Therefore, the committee directs the Secretary of the Navy to submit a report to the House Committee on Armed Services and Senate Committee on Armed Services by December 1, 2023, on the need for investment in Nickel Zinc battery production base. The report should include the following information:

(1) The Navy's need to develop the Nickel Zinc battery chemistry for its VA-Class submarines;
(2) Importance of domestic Nickel Zinc battery chemistry and its role in reducing the United States' reliance on Chinese supply chains;
(3) The need for the Navy to ensure full rate production capacity will be achieved upon Navy's planned completion of Research, Development, Test, and Evaluation at the end of fiscal year 2024.

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# Nickel-Zinc Batteries Outperform Lead-Acid/Safer than Li-ion




Source: Jigar Shah-Published Battery Specifications

- Five-years' successful testing by the US Navy
- Three-years' successful testing by the US Air Force
- Nearly four-years' operation in a data center
- Recent testing for the US Army

# Competitive Landscape

- Currently no other US-based manufacturing capacity
- ZincFive competes in the commercial markets
  - Chinese manufacturing disqualifies them for DoD
- There is a submarine alliance between Australia, the United Kingdom, and the USA (AUKUS)
- PMB Defense, an Australian company, will likely be the nickel-zinc supplier to Australia/UK

- The actual competitor is the possible continuation of lead acid by Enersys and Stryten
  - Lead-acid will be discontinued
    - Increasing power & energy requirements of next generation systems
    - New lead-acid batteries are sealed and last half as long as vented

- Barriers to entry
  - Momentum of Lead-Acid – History (Customers are realizing they need more power.)
  - Exuberance of Lithium-Ion – Newness (Customers are realizing they safer power.)
  - Manufacturing Capacity for Nickel-Zinc

# Rechargeable Battery TAM ~$150B

- US Defense Market
  - 66 US Submarines - ~$40M/yr
  - 500 Minuteman III Missiles - $5M/yr
  - 700,000 US Army Ground Vehicles - $80M/yr
- US Aircraft - ~$40M/yr
  - Commercial – 5,800
  - Business Jets – 13,800
- US Critical Infrastructure
  - Data Centers - $6B/yr
  - 5G Telcom - $6B/yr

Æsir has already secured many early adopters.

Our ideal customers are those who view battery failure as serious impediment to their mission success.

# Go-to-Market Strategy

- Build a pilot facility – Completed
- “Seed the market” with Sample Batteries Proving the Technology
  - Completed with DoD
  - In progress for Critical Infrastructure
- Scale the Factory
  - Cathode – Completed
  - Anode – In Progress (supported by DoD ManTech contract)
  - Automation for Assembly – Future Expansion
- Expand Product Line
  - G31 – Completed
  - Data Center Format – Completed
  - HR8 and other Formats – Future Expansion
  - Aircraft Battery STC

# A Jasper County Tax Exemption Would Reinforce our Decision to Expand in Joplin

- Expanding 16,000 square feet onto our existing 33,000 square feet




## Investment Required

| Source | Amount |
|---|---|
| Aesir | $14,000,000 (’24-’29) |
| DoD | $40,000,000 (’24-’26) |
| Total | $54,000,000 |

## Jobs Created

| Job Title | # of New Jobs | Annualized Wage of New Job |
|---|---|---|
| Mfg Technician | 250 | $38,000 |
| Mfg Supervisor | 30 | $74,000 |
| QC/QA | 20 | $57,000 |
| Engineering | 30 | $79,500 |
| Mgmt/Sales/Admin | 20 | $85,000 |
| **Total** | 350 | $16,945,000 |
| **Average Wage** | | $66,700 |

# Q&A

Ægir Technologies, Inc.

# THANK YOU

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