

Aesir Technologies, Inc.

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



MEMBER UPDATE
2025



OVERVIEW

- **Summary information about the company**
- **Why Now**
- **Major programs update**
- **Data center gigafactory status**
- **NiZn manufacturing**
- **Lithium-Zinc – superior rechargeable battery LDES performance**



EXECUTIVE SUMMARY

Æsir Technologies

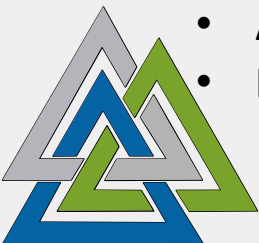
- Founded in 2021.
- AEsir was spun out of ZAF founded in 2011.
- Corporate office in Joplin, Missouri; R&D facility in Bozeman, Montana.
- \$50M+ raised to date to develop Nickel Zinc technology for aerospace, defense and critical infrastructure markets.
- Proprietary technology with over 25 patents issued; 4 pending; and 12 in process.

Æsir Nickel Zinc (NiZn) Batteries:

- **Powerful.** One of the highest power and energy densities of any battery system in its class.
- **Economic.** Long cycle life, low life-cycle cost.
- **Environmental.** Made of non-toxic materials that can be safely and easily recycled.
- **Safe** - Competing lead acid battery is toxic, and lithium ion batteries are toxic and can explode.

Reliability of NiZn

- **Navy Testing.** Tested and validated over 7+ years by NAVSEA for deployment in US submarine fleet.
- **Air Force.** Tested for 3+ years for ICBM silo UPS deployment.
- **Data Center UPS.** Commercially deployed for 5+ years in megawatt scale data center.



An Alternative Stationary-Storage Battery is Needed

Why Now?

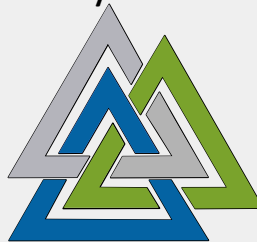
Three Current Megatrends Need AEsir's Battery

- Internet of Things/Artificial Intelligence/5G
 - Datacenter expansion to host the growth of the cloud is driving a significant increase in the demand for electricity.
 - Telecommunications includes data transmission.
 - Backup power is an essential component of the development of this infrastructure.
- Fossil Fuels Transition to Alternative Energy
 - Variability of alternative energy requires energy storage to offset intermittency.
 - The battery is the fuel tank of the future.
- The Electrification of the Drive Train (EVs)
 - The grid cannot withstand the charging requirements of EVs without energy storage to offset supply and demand.



Inflection Point: Traction with Key Customers Requires Capacity Expansion

- Department of Defense
 - US Navy: Several contracts awarded for NiZn batteries for the US nuclear submarine fleet.
 - US Air Force: Second phase of a contract for a backup system for the Minuteman III silo. The Sentinel will follow on to the MMIII.
 - US Army: Delivered prototype 6T battery. In negotiation for large quantity production intent.
- Datacenters
 - First NiZn backup power system installed in an operational datacenter in 2020 - 4+ years successful operations.
 - Backlog of 1.3 million batteries demand LOIs from five key suppliers to the datacenter industry.
 - MOU executed for Joint Venture to build gigafactory.



Aerospace Defense Markets

DOD Navy Underwater

- **Æsir NiZn tested and validated over 7 years at NAVSEA**
 - Æsir's NiZn batteries initial test performed on float for 4+ years representing approximately 11+ years of actual operation.
 - Æsir awarded contract for 1,100 Ah and hundreds of 150 Ah test cells.
 - Joplin plant now expanding under Submarine Industrial Base
 - Æsir awarded \$15.8M Phase 1 expansion contract



DOD Ground Base Vehicles – 6T Battery Format

Benefits of NiZn “6T” Battery

- More capacity to meet growing demand for power in vehicles.
- Significantly lighter weight than lead-acid (currently in ~ 80% of 700K vehicles).
- Longer shelf life
- Superior operating temperature range over both lead-acid and li-ion.
- Virtually no Safety issues.
- Æsir received DOD funding for NiZn qualification in military vehicles.
- Delivered first prototype for testing March, 2024, 2nd contract delivering March 2025 with follow-on qualification for NSN.



ICBM Silo Ground-Station Backup Power

Benefits of NiZn for Air Force

- Longer life-cycle
- More energy dense
- 20-year untended shelf life
- Æsir performed and delivered on a \$1.4 contract award.
- Currently under Phase II contract for \$1.78M
- 550 Minuteman III silos are planned to be replaced with 600 of the new Ground Based Strategic Deterrent missiles (the Sentinel)



Aircraft Batteries

Benefits Over NiCd: Maintenance-Free OPEX Reduction Opportunity

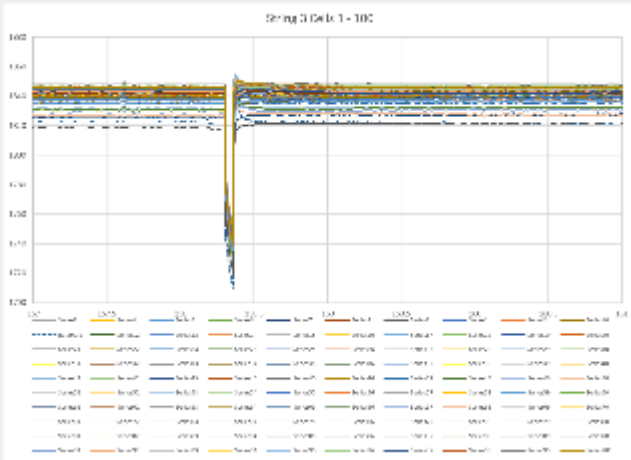
- Performance improvements and reduced maintenance cost over NiCd and less acquisition cost than Li-ion.
- Opportunities identified and being pursued
 - Interest from A320 operator—8,000+ A/C world-wide and NiCd & NiZn charges alike.



LARGE SCALE COMMERCIAL BATTERY DEPLOYMENT

Atlanta Data Center

- First NiZn battery uninterruptible power system (UPS) in a Data Center in the world
 - Installed Q1 2020 – 7MW UPS
 - Over four years successful operation – several grid interruption events have occurred.
 - Resulted in letters of commitment for over 1.3M data center batteries from seven data center suppliers.

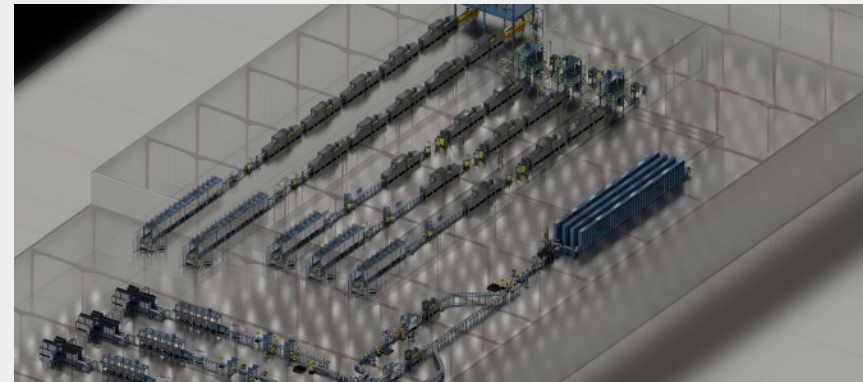


Voltage profiles of 100 cells during float and load

Gigafactory Update



- JV negotiations underway
- About 90% of the sources stack has been committed.
- Industrial Engineering 95% complete.
- Plan for a Q2 2025 start.



MANUFACTURING TECHNOLOGY

Leveraging Lead Acid Equipment Processes

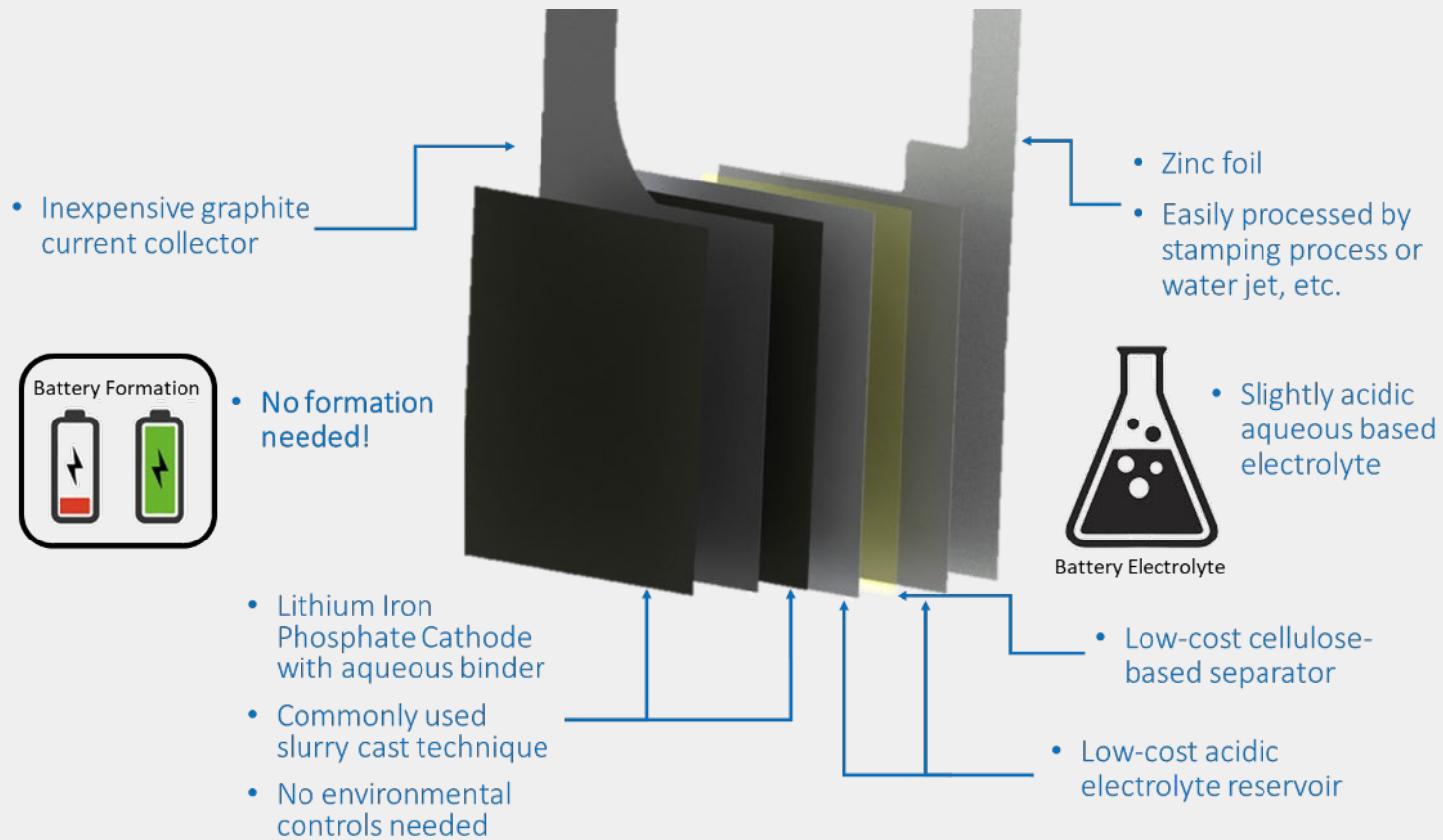
- Æsir designed battery to use lead-acid equipment and processes to manufacture
- Factory cost less than one-third that of Li-ion
- Partnered with Wirtz Manufacturing Company and Buss for electrode production
- Pictured automated cathode line





Esir is a multi-chemistry enterprise:
New Lithium-Zinc Initiative

LITHIUM-ZINC OVERVIEW



Battery Type	Lithium-Zinc
Cathode	LFP
Anode	Zn
Electrolyte	Slightly Acidic
Separator	Plant based
Current Collector (+,-)	C, Zn
Nominal Cell Voltage (V)	1.2
Energy Density (Wh/kg)	56
Specific Energy (Wh/L)	102
100% DOD Cycle Life	>1000
Safety	High
RoHS Compliant	Yes
Recyclability	Recyclable

- Cobalt and nickel free
- Non-flammable electrolyte
- Very long life
- Low-cost materials
- Low-cost manufacturing





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THANK YOU

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