

Investment Memo: Carbo Energy Storage C-Corp

Executive Summary

Carbo Energy Storage C-Corp is a Delaware-based pre-seed company revolutionizing large-scale energy storage with innovative technologies that eliminate reliance on rare earth minerals. Our proprietary redox flow batteries repurpose waste salts from desalination processes and utilize CO₂-derived graphene in supercapacitor batteries, transforming industrial waste into efficient, sustainable energy storage solutions. This approach not only enhances sustainability but also contributes to the circular economy by giving waste materials a second life.

The global battery energy storage market is projected to reach **\$31.2 billion by 2026**, growing at a **CAGR of 22.8%**. With signed letters of intent in Argentina and Colombia and two pilot projects in advanced discussions, Carbo Energy Storage is poised to capture a significant share of this rapidly expanding market.

We are seeking a **\$4 million** investment to fund research and development, scale up manufacturing, and expand our commercialization efforts, including establishing a European-based team to penetrate key markets.

1. Company Overview

Founded in **2024** by **David Alejandro Trejo Pizzo**, Carbo Energy Storage aims to become a global leader in sustainable, large-scale energy storage solutions. Although newly incorporated, our technical team has dedicated over **three years** to developing our groundbreaking technology.

Milestones Achieved:

- **Chemical Formulations:** Successfully tested four formulations to repurpose waste chemicals into electrolytes for redox flow batteries.
- **Patent Progress:** Filled patents for electrolyte transformation and innovative energy storage architectures for grid integration.
- **Market Traction:** Secured letters of intent with companies in Argentina and Colombia; two pilot projects in advanced technical discussions.

2. Mission and Vision

Mission: Provide reliable, cost-effective energy storage solutions that drive a cleaner and more sustainable future.

Vision: Leverage innovative redox flow technology and repurposed waste materials to create accessible, efficient energy storage systems worldwide.

3. Problem Statement

The transition to renewable energy is hindered by the intermittent nature of sources like solar and wind, and the lack of efficient, scalable energy storage solutions. Current batteries often depend on rare earth minerals, posing environmental concerns and supply chain risks.

Moreover, industrial waste—such as brine from desalination and CO₂ emissions—poses significant environmental challenges. Improper disposal leads to ecological damage, while CO₂ contributes to climate change.

4. Solution

Carbo Energy Storage offers breakthrough energy storage solutions by:

1. **Redox Flow Batteries Using Desalination Salts:** Transforming waste brine from desalination plants into electrolytes for redox flow batteries.
2. **Supercapacitor Batteries with CO₂-Derived Graphene:** Utilizing captured CO₂ emissions to produce graphene for high-performance supercapacitors.

Key Benefits:

- **Sustainability:** Reduces reliance on rare earth minerals and mitigates environmental impact of industrial waste.
- **Safety:** Designed with rigorous safety standards, minimizing operational risks.
- **Durability:** Offers an operational lifespan exceeding **20 years**, ideal for large-scale applications.

Our technology enables the storage of excess renewable energy, enhances grid stability, and improves ROI for renewable investments.

5. Market Opportunity

Total Addressable Market (TAM):

- **Global Battery Energy Storage Market:** Projected to reach **\$31.2 billion by 2026**, growing at a **CAGR of 22.8%**.

Serviceable Available Market (SAM):

- **Utility-Scale Energy Storage:** Expected to reach **\$15 billion by 2026**, driven by renewable integration and grid stability needs.

Serviceable Obtainable Market (SOM):

- **European Utility-Scale Energy Storage:**
 - Projected to reach **\$5 billion by 2026**.
 - Aggressive renewable targets and supportive policies.
 - **Goal:** Capture **1%** of the European SOM within four years, targeting **\$50 million** in revenue.

6. Go-to-Market Strategy

Target Customers:

- Utility companies
- Renewable energy developers
- Industrial facilities
- EV charging operators

Phase 1: Pilot Projects (Months 1–12)

- **Deploy Pilots:** Implement projects with existing LOIs in Argentina and Colombia.
- **Demonstrate Value:** Showcase performance and reliability in real-world settings.
- **Optimize Technology:** Collect data for continuous improvement.

Phase 2: European Expansion (Months 13–24)

- **Establish European Team:** Build a commercialization team in Europe.
- **Strategic Partnerships:** Collaborate with utilities and grid operators.
- **Market Penetration:** Focus on regions with high renewable adoption.
- **Brand Visibility:** Participate in industry events and conferences.

7. Business Model and Traction

Revenue Streams:

1. **Sales of Energy Storage Systems:** Direct sales to utilities and large energy consumers.
2. **Energy Arbitration:** Operating energy storage facilities to participate in energy markets.
3. **Maintenance Services:** Ongoing support for installed systems.

Traction Highlights:

- **Letters of Intent:** Secured with companies in Argentina, Colombia and France.
- **Pilot Projects:** Two in advanced technical discussions.
- **Funding:** Received **\$120,000** from Techstars and **\$250,000** in bootstrap funding.

8. Intellectual Property

Patent Portfolio:

1. Redox Flow Batteries Utilizing Desalination Salts

- **Innovation:** Patent-pending process to repurpose desalination brine into electrolytes.
- **Advantages:**
 - **Cost-Effective Materials:** Abundant and inexpensive source of electrolytes.
 - **Environmental Impact:** Reduces harmful brine discharge into oceans.
 - **Supply Chain Security:** Mitigates reliance on scarce minerals.

2. Supercapacitor Batteries Using Graphene and CO₂

- **Innovation:** Method for producing graphene from captured CO₂ emissions for supercapacitors.
- **Advantages:**
 - **CO₂ Utilization:** Transforms greenhouse gas into valuable material.
 - **Enhanced Performance:** Improves energy density and charge/discharge rates.
 - **Sustainability:** Aligns with carbon reduction initiatives.

Trade Secrets:

- **Chemical Formulations:** Proprietary electrolyte compositions.
- **Manufacturing Processes:** Advanced techniques for electrode and electrolyte production.

Our robust IP strategy creates significant barriers to entry and positions us favorably in the market.

9. Operations

Manufacturing:

- **Strategic Partnerships:** Collaborate with established manufacturers for scalability.
- **Quality Assurance:** Implement rigorous quality control protocols.
- **Supply Chain Management:** Diversify suppliers to mitigate risks.

Research and Development:

- **Continuous Innovation:** Ongoing R&D to enhance product offerings.
- **Academic Collaborations:** Partner with universities for cutting-edge research.

Sustainability Practices:

- **Waste Reduction:** Core focus on utilizing industrial waste.

- **Regulatory Compliance:** Adherence to environmental standards and best practices.

10. Financial Projections

Year 1 (2024–2025):

- **Revenue:** \$500,000 from pilots and initial sales.
- **Expenses:** \$2 million (R&D, manufacturing setup, team expansion, marketing).
- **Net Loss:** -\$1.5 million

Year 2 (2025–2026):

- **Revenue:** \$5 million from increased sales and energy arbitration.
- **Expenses:** \$3 million (scaling operations, R&D, marketing).
- **Net Profit:** \$1 million

Year 3 (2026–2027):

- **Revenue:** \$15 million
- **Expenses:** \$8 million
- **Net Profit:** \$7 million

Goal: Reach \$50 million in revenue by Year 4, capturing 1% of the European SOM.

11. Competitive Landscape

Competitors:

- **ESS Inc.:** Iron flow batteries; higher costs, material reliance.
- **Invinity Energy Systems:** Vanadium flow batteries; volatile vanadium pricing.

Carbo Energy's Competitive Advantages:

- **Material Abundance:** Utilizes readily available waste materials.
- **Environmental Impact:** Addresses energy storage and waste disposal simultaneously.
- **Innovative IP:** Proprietary technologies with strong patent protection.

12. Team

Leadership:

- **David Alejandro Trejo Pizzo (Founder & CEO):**
 - **Background:** Electrical engineering, economics, and nanoelectronics.
 - **Experience:**

- **Nydro Energy FZ-LLC:** Founded and successfully exited Nydro Energy, which operated in the Middle East and North Africa (MENA) market, focusing on grid management software.
 - **Academic Roles:** Professor and researcher of nanoelectronics at **UCAECE** and the **University of Buenos Aires**, contributing to academic advancements and mentoring future engineers.
 - **Recognition:** Named **MIT Innovator Under 35** in Latin America in 2020. Visiting lecturer at KIT, Beijing Institute of Technology.
- **Floran Sarrano (COO):**
 - **Background:** Finance professional with extensive experience at **AXA** in France and the MENA region.
 - **Specialization:** Financial operations, strategic planning, and international business development.

Our team's combined expertise in engineering, research, finance, and international markets positions Carbo Energy Storage for rapid growth and success in the global energy storage industry.

13. Impact

Environmental Benefits:

- **Waste Reduction:** Repurposes industrial waste materials.
- **Emission Reduction:** Utilizes CO₂ in battery components.
- **Renewable Enablement:** Enhances viability and integration of renewable energy sources.

Societal Impact:

- **Energy Accessibility:** Supports broader access to reliable energy.
- **Economic Growth:** Stimulates job creation and technological advancement.

14. Fundraising and Use of Funds

Investment Sought: \$4 million

Allocation:

1. **Research and Development (\$1 million):**
 - Enhance battery efficiency and scalability.
 - Finalize and expand patent portfolio.
2. **Manufacturing Scale-Up (\$1.5 million):**
 - Partner with manufacturers.
 - Produce initial battery batches.
3. **Team Expansion (\$800,000):**
 - Hire key R&D and commercialization personnel.
 - Establish a European team.

4. **Marketing and Sales (\$500,000):**
 - Launch marketing campaigns.
 - Participate in industry events.
5. **Operational Expenses (\$200,000):**
 - Cover administrative and legal costs.

Additional Funding:

- **Debt Financing:** Secure loans to support large-scale production, optimizing capital structure.
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Conclusion

Carbo Energy Storage presents a compelling investment opportunity by addressing critical needs in the rapidly growing energy storage market. Our innovative technologies, strong IP portfolio, and experienced team position us to make a significant impact while delivering substantial returns to investors.