



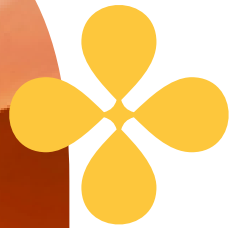
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Arkle



WATT MATTERS 2026


WEEKLY MEMBER SPOTLIGHTS





ARKLE ENERGY

 TELANGANA

 EST. 2023

 BATTERY STORAGE

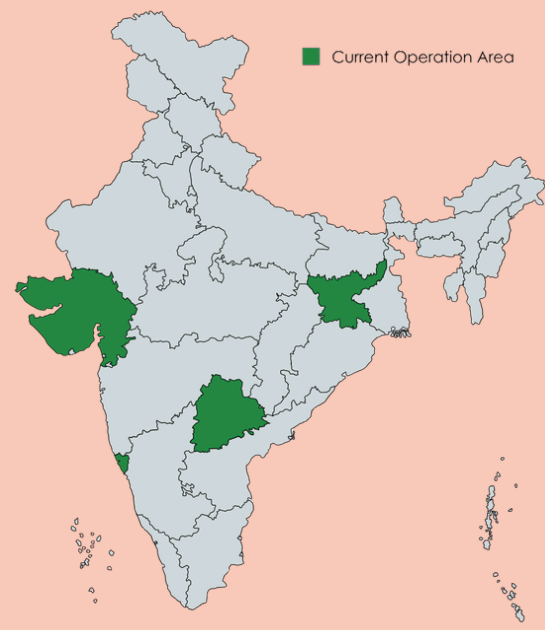
ABOUT

Started in 2023 by two young founders - R. Jeevith Reddy, and Varad Manoj Latkar, Arkle Energy Solutions is an energy storage startup focused on advancing long-duration energy storage for a renewable-powered future. The company develops economical and sustainable redox flow battery systems for the Long Duration Energy Storage (LDES) market.

Built on vanadium flow battery technology, Arkle's solutions are easily scalable and designed to operate for over 20 years with no capacity degradation, helping address the durability and reliability challenges associated with renewable energy integration. Through these innovations, the company aims to strengthen India's clean energy infrastructure and accelerate the transition to round-the-clock renewable power.

Current Operation Areas

Jharkhand, Goa, Hyderabad, Gujarat



Map. Current Operation Area

TECHNOLOGY

Arkle Energy Solutions is developing vanadium redox flow battery (VRFB) systems designed for long-duration energy storage applications. Unlike conventional lithium-ion batteries, vanadium flow batteries use a water-based electrolyte stored in external tanks, allowing energy capacity and power capacity to be scaled independently.

This architecture enables systems to deliver 4–32 hours of storage, making them suitable for applications requiring reliable and extended backup, such as renewable integration, telecom infrastructure, industrial power systems, and grid support. The chemistry also offers high durability and operational stability, with the electrolyte retaining full usable capacity for over 20–25 years without significant degradation.

Because the electrolyte is non-flammable and non-toxic, the technology reduces fire risks and safety concerns commonly associated with other battery chemistries, making it well-suited for critical infrastructure and long-term deployments.

Unique Value Proposition (USP)

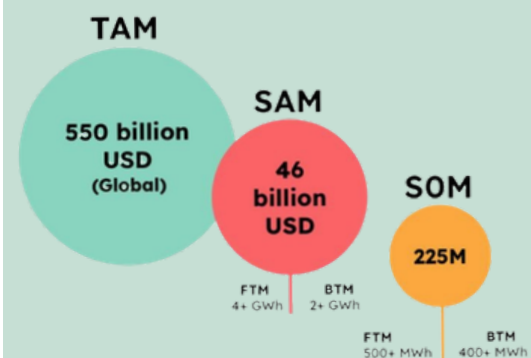
Arkle's core differentiation lies in building long-duration energy storage systems engineered for decades of operation rather than short replacement cycles.

- **Long asset life:** Vanadium flow batteries maintain capacity over 20–25 years with minimal degradation, reducing lifecycle replacement costs.
- **Independent scalability:** Energy storage duration can be increased simply by adding more electrolyte, without replacing the power components.
- **Improved safety:** The aqueous electrolyte is non-flammable, eliminating thermal runaway risks associated with conventional lithium-ion batteries.
- **Circular chemistry model:** The vanadium electrolyte retains residual value at the end of the system's life and can be reused or recycled, improving overall project economics.

Together, these features position Arkle Energy Solutions to support reliable, long-duration storage for renewable-heavy power systems and critical energy infrastructure.



Market Potential



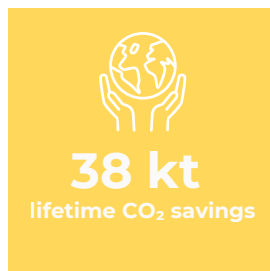
IMPACT

Arkle Energy Solutions aims to drive the transition to a reliable, low-carbon energy system by enabling long-duration energy storage that supports clean, affordable, and resilient power.

- Enables rapid renewable integration and 24×7 clean energy.
- Supports decarbonisation, with potential to avoid ~1 Gt CO₂ by 2030.
- Creates jobs and economic opportunities, with potential to create 1000+ jobs (100 MWh ≈ 1,000+ jobs).
- Advances rural electrification and reliable energy access.
- Promotes safe, sustainable, and circular energy systems.

Proven performance in plain numbers:

- <0.5% annual degradation (Industry average: ~2.5%)
- 20,000 proven cycle life (Industry average: ~6,000 cycles)
- 38 kt lifetime CO₂ savings (Industry average: ~12 kt)



Way Forward

Over the next 12 months, Arkle Energy Solutions is planning to focus on scaling stack manufacturing, deploying MWh-scale systems across multiple applications, and reducing costs through process optimization and manufacturing efficiencies. The company will also actively engage with government and institutional programs to accelerate the adoption of long-duration energy storage solutions. In the longer term, Arkle aims to expand its manufacturing capacity toward a gigawatt-hour-scale facility while exploring export markets. As the company scales, it expects to contribute to industrial growth by creating skilled engineering and manufacturing jobs, strengthening domestic supplier ecosystems, expanding installation and service networks, and localizing high-value energy storage technologies —supporting both India’s clean energy transition and economic development.



Alignment with SDG Goals



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