



EnggInn Renewable: Revolutionizing Energy Access with Microgrids in India





Section 1- Problem Statement

Integrating multiple renewable energy is the need of the hour

The Energy Challenge: Integration of Renewable Energy

Integrating variable renewable sources of energy without adequate storage and grid flexibility can destabilize power systems, increasing the risk of grid failures and energy curtailment.

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India curtails more solar power as grid grapples with oversupply

By Rajesh Kumar Singh, Bloomberg • Last Updated: Nov 10, 2025, 01:48:00 PM IST

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Synopsis

India's power grid faces significant challenges absorbing a surge in solar installations, leading to record curtailment rates. This mismatch between daytime solar supply and inflexible coal power generation highlights the urgent need for energy storage solutions to integrate renewables and meet evening demand. The situation threatens the nation's clean energy goals.

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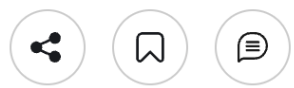
Curtailment on Supply-Demand Mismatch

India's power grid struggles to absorb soaring solar supply

On some days, as much as 40% of solar power output was denied access to the national grid. Curtailment measures the share of electricity generated but not delivered to consumers.

Bloomberg

Published On Nov 13, 2025 at 10:11 AM IST



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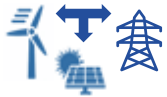
Unusual monsoon has led to curtailments due to grid stability concerns

The Energy Challenge in India: Grid Democratization



Intermittent energy feeding to grid

Renewable sources such as solar and wind generate variable power, unlike the steady output from thermal plants, challenging grid stability reliant on consistent supply. Moreover, smaller-scale industrial and residential systems frequently export electricity directly to the grid via net metering instead of local consumption.



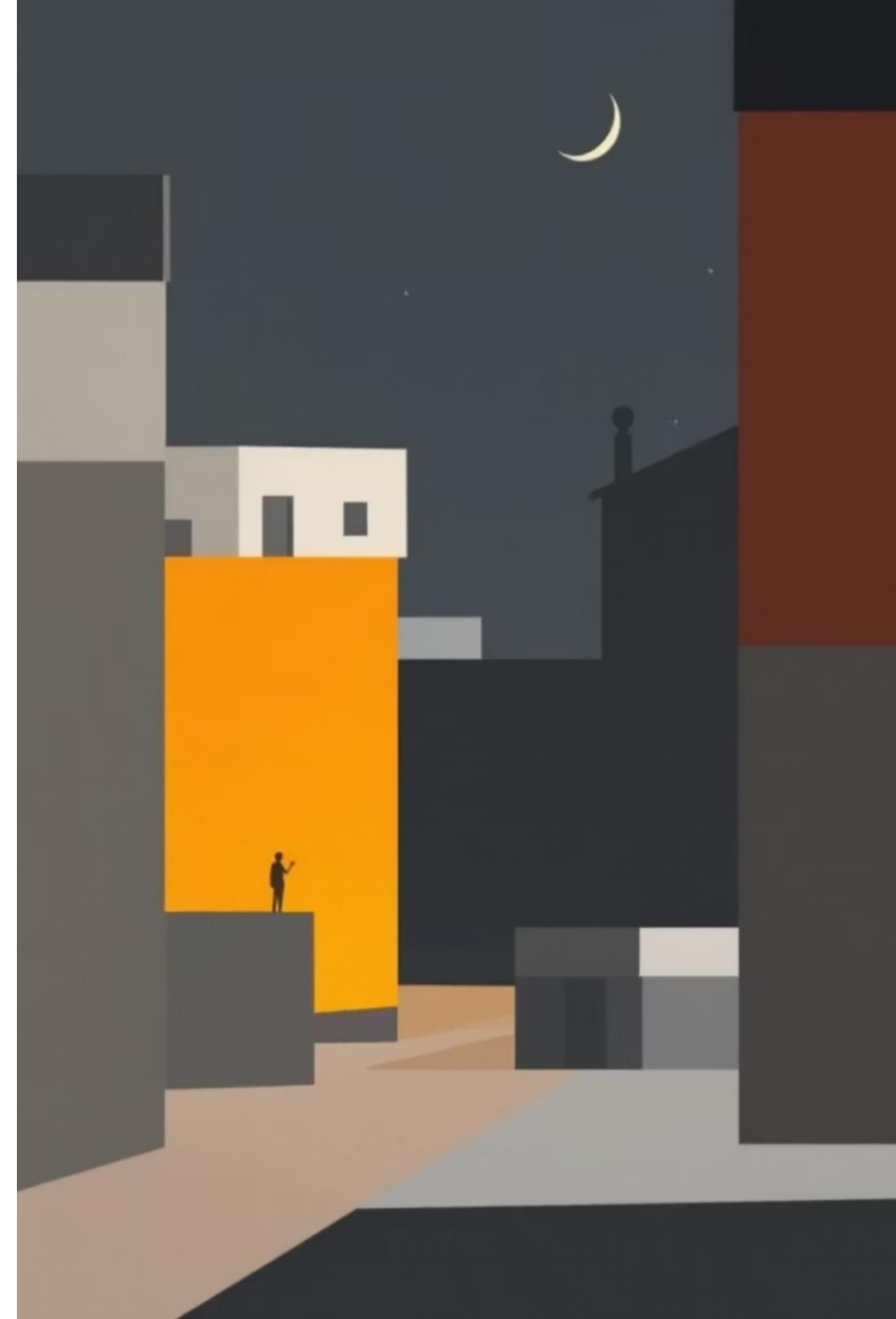
Integration Complexity

Integrating variable energy sources such as solar and wind, which have fluctuating power outputs and capacities, alongside round the clock power sources like hydropower or thermal energy, presents significant technological challenges. The rapid expansion of renewable energy installations has further intensified this issue.



Low BESS penetration

India currently has less than 1 GWh of installed Battery Energy Storage System (BESS) capacity, against the current demand of 82.37 GWh by 2026-27 and which is expected to grow to 411.4 GWh by 2031-32 as per MNRE.



What are existing solutions?



Net metering

In the most common arrangement, the plant feeds all electricity into the grid, while consumer infrastructure draws steady power from it.

- **Advantage:** Straightforward setup
- **Disadvantage:** Strong dependence on the grid
- **Supply Type:** Variable & Intermittent



Behind the meter

Infrastructure must consume the entire electricity output in this configuration, with no power exported to the grid.

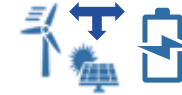
- **Advantage:** Independence from the grid
- **Disadvantage:** No means to capture surplus energy
- **Supply Type:** Variable & Intermittent



Solar + BESS

Tailored to infrastructure needs, this configuration optimizes solar generation and balances energy storage with consumption.

- **Advantage:** Flexibility to address any sudden energy demand or surplus
- **Disadvantage:** Larger projects require substantial land area
- **Supply Type:** Constant & Continuous



Solar + Wind + BESS

This configuration suits continuous power demand where balancing supply and demand requires greater flexibility.

- **Advantage:** A self-sustaining ecosystem meets steady power needs
- **Disadvantage:** Limited availability of integration expertise
- **Supply Type:** Constant & Round-the-clock



Section 2- Our Solution

Smart Microgrids combining multiple Renewable Energy & BESS

Microgrid- The Future of Energy Infrastructure



EnggInn Smart Microgrids

A localized energy system integrating distributed and variable renewable generation and battery storage, with smart controls that optimize constant power delivery in real-time.



Flexible Operating Modes

Smart Microgrids produce a steady supply of renewable energy locally, which can be used to power industries, water treatment facilities, residential areas, off grid hinterlands or can even be fed directly into the grid without causing any disruptions.



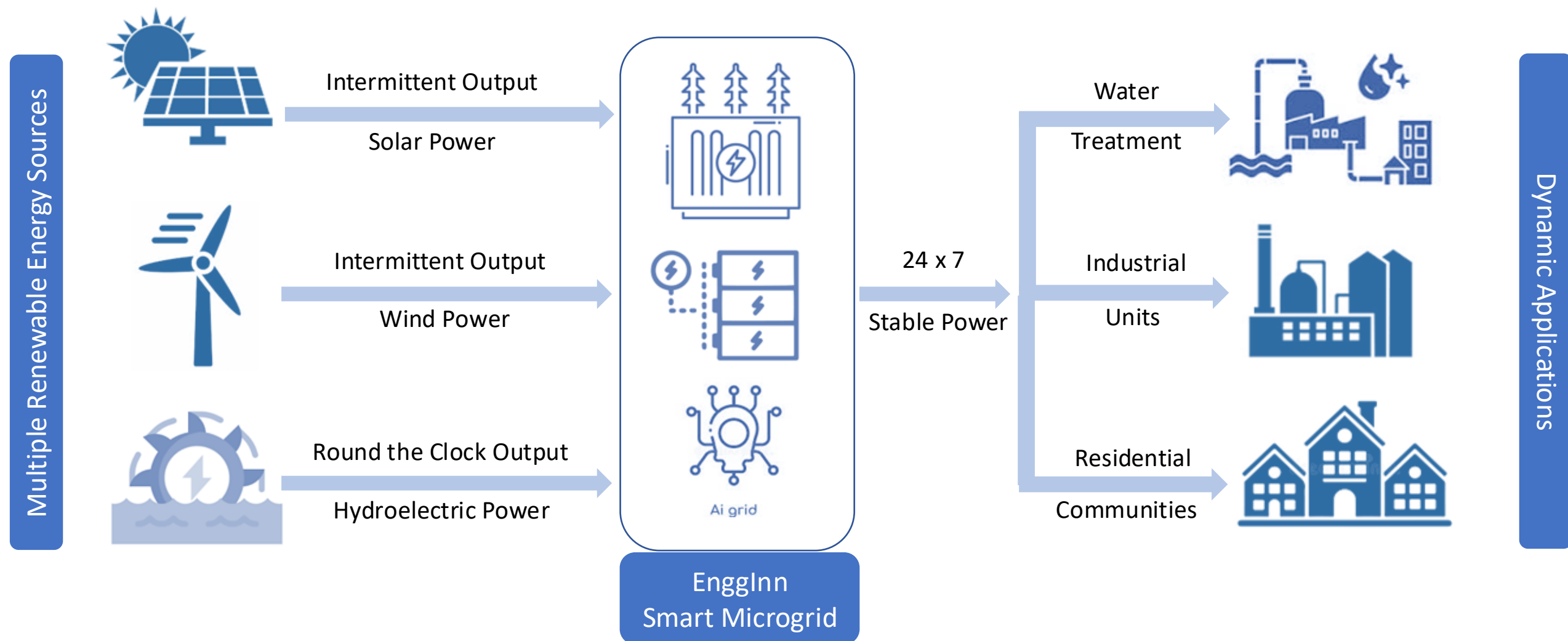
Tailored for India

Enables integration of solar, wind, wave, biomass, and storage technologies specifically designed for rural, semi-urban communities or industrial area with varying energy needs. This setup can even be retrofitted in existing power plants for enhanced savings and seamless power.

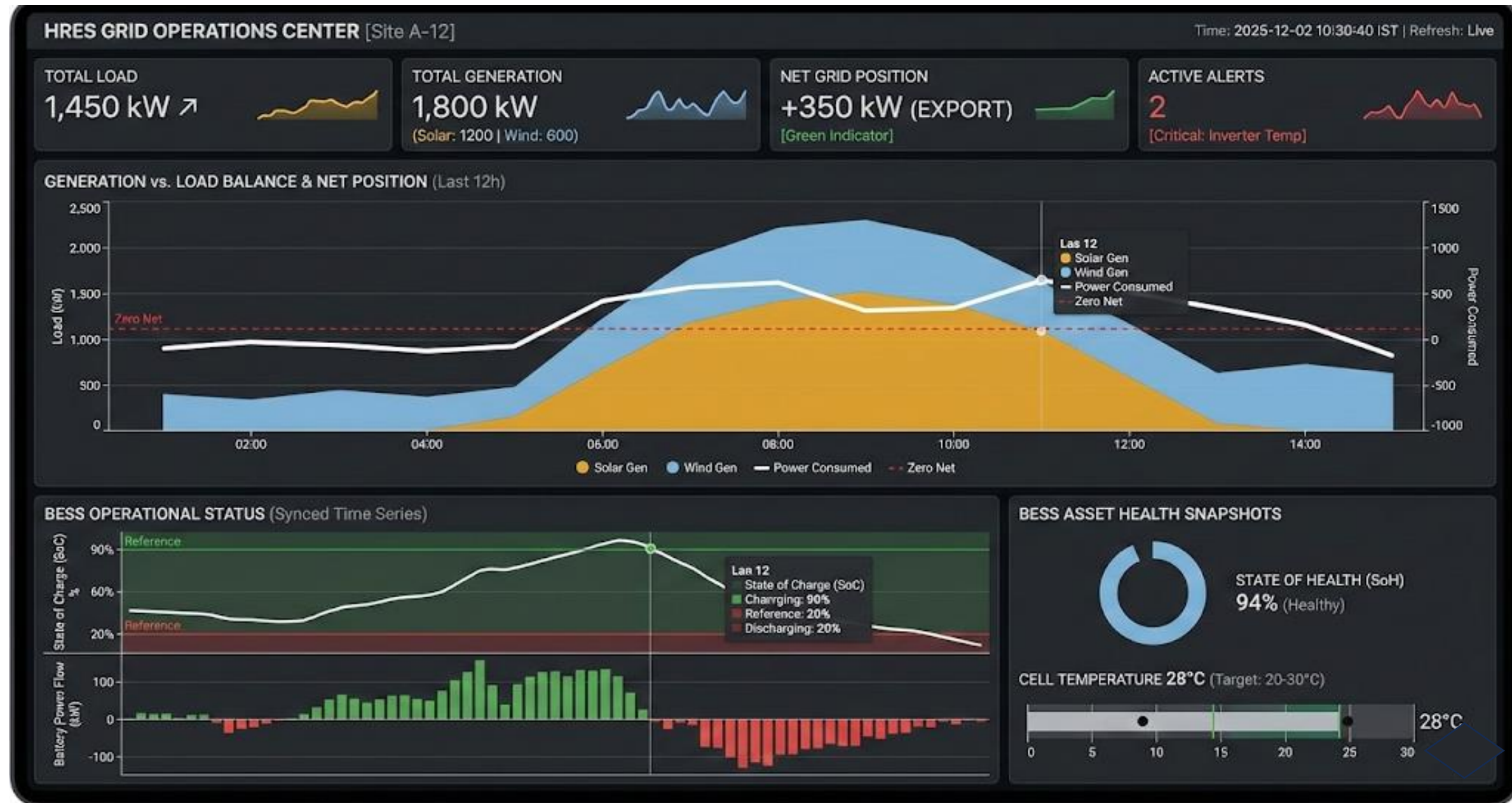


How does EnggInn Smart Microgrid work?

The AI-powered EnggInn Smart Microgrid receives electricity from multiple renewable sources, manages variable frequency power outputs, stores excess energy, and provides 24x7 stable electricity based on dynamic demand.



AI enabled Energy Management System: Dashboard View





Section 3- Applications & Target Market

Precision solution based on infrastructure energy requirements & power usage profile

What are some Applications of Microgrid?



Industrial Fixed Cost Reduction

- Contracted demand sets industrial facilities' fixed monthly grid charges, separate from usage charges.
- These fixed charges typically account for 30%–35% of the electricity bill.
- In Andhra Pradesh, the rate is Rs. 475 per unit, with a Rs. 900 per unit penalty for exceeding peak demand.
- Our advanced smart microgrid reduces contracted demand through peak shaving, significantly lowering fixed costs.



Community Potable Water Supply

- Remote coastal, island and mountain regions in India face limited access to safe drinking water.
- Our microgrids can integrate local renewables to power community water treatment and RO plants.
- These systems can serve local tribes, communities and other residents.
- They can also supply cheaper round-the-clock power to educational institutions, hospitals and local government offices.



Technological Integrating Renewable Energy

- Growing renewable energy adoption makes integrating multiple sources more challenging.
- Night-time and adverse weather can disrupt renewable energy supply.
- Our microgrid solutions enable factories and communities to integrate energy from multiple sources with storage solutions.
- They also help facilities manage supply effectively using AI enabled smart Energy Management System as demand fluctuates.

What is our Target Market?



MSMEs, Industrial Parks or SEZ

Medium and small-scale industries, as well as industrial clusters such as technology parks, industrial zones, and special economic zones (SEZs), which are seeking to decrease their reliance on the power grid and lower their electricity expenses.

Water Treatment Plant or Desalination Units

Water treatment plants or isolated desalination units serving rural, or semi urban communities from hinterlands, coastal communities, islands, or mountainous terrains which are looking for reliable and constant power supply.



Residential Communities, Educational Institutes & Healthcare centers

Urban, Semi-urban or rural residential communities which are looking for reliable and constant power supply and want to decrease their reliance on the power grid and lower their electricity expenses.



Section 4- Business Model, Value Addition, Achievements & Fund requirement

Application & Value chain focused Pay-As-You-Go model



Business Model: Sustainable & Scalable Revenue Streams



Application & Value Chain Focus

Delivering comprehensive solutions like 24/7 potable water access to communities using renewable energy microgrids, solving multiple problems with integrated offerings



Pay-As-You-Go Model

Affordable energy subscriptions via mobile wallets enable financial inclusion, removing upfront cost barriers and creating predictable recurring revenue streams



B2B Partnerships

Strategic collaborations with local enterprises, NGOs, and government entities for microgrid installation, maintenance contracts, and long-term service agreements



Carbon Credits Monetization

Additional revenue through verified carbon credits from renewable energy generation and measurable emissions reduction, aligning profit with environmental impact

Value Addition: AI-Driven Smart Microgrid Platform



Hybrid Energy Integration

Seamlessly combines multiple renewable sources—Solar-Wind, Solar-Wind-Biomass, Solar-Wind-Wave—leveraging pre-existing local energy resources for optimal generation mix



AI-Driven EMS Optimization

Advanced algorithms optimize EMS by balancing solar generation, battery storage, and real-time demand patterns, maximizing efficiency and ensuring 24/7 power availability



Contracted Demand Reduction

Comprehensive system integration allows BESS to perform peak shaving, reducing Contracted Power Demand and fixed connection costs that can constitute 30–35% of the total power bill.



Predictive Intelligence

Remote monitoring and predictive maintenance capabilities reduce system downtime and slash operational costs by 30%, ensuring sustainable unit economics



Application-Oriented Solutions

Tailored configurations for specific use cases like microgrid-powered desalination or water purification systems that address multiple community needs simultaneously



Rapid Deployment Design

Modular hardware architecture enables quick installation and effortless scaling across diverse geographical and climatic conditions throughout India



Founding Team

Dr. Purnima Jalihal

Founder & CTO

Ex-Director of NIOT and former Head of Energy & Fresh Water Group at NIOT, bringing decades of renewable energy research and implementation expertise. Winner of prestigious IEC 1906 Awards 2026 (only one from India), Uehara Prize 2019 and Vishwakarma Medal in 2006.

Keshav Srihara

Founder & CEO

Serial entrepreneur with 12 years of business experience across India and US markets, driving business growth and market expansion.

Ankit Kumar Rai

Head of Strategy

Strategy consultant with 10 years in risk and strategy consulting, bringing Big 4 rigor to business planning and execution

Sai Karthik

Head of Operations

Serial entrepreneur with 10 years of hands-on experience in India's renewable energy sector, specializing in scaling operational excellence

Achievements & Capital Requirements

Achievements till now

System Design: System design underway and simulations ongoing for multiple renewable energy integration using BESS system.

Computational Models: Statistical and Financial models developed to test multiple renewable source integration and contracted power and peak demand reduction

Industrial proposal: Order to setup a 500kWp Solar behind-the-meter pilot plant in AMTZ campus on PPA basis for a period of 25 years is in advanced stage of finalization.



Fund Requirement: Rs. 40 lakhs

Grant usage for Software & LLM model (30%), Team expansion(50%) and business development(20%), which will help us in pilot project.



Revenue: Rs. 1.5 Cr by Q3-2027

Projected revenue with 30% gross margin demonstrating strong unit economics and sustainable business model



Break-Even: Q2-2028

Clear path to profitability with disciplined capital deployment to fill existing market gap.

Join Us to Power India's Energy EnggInn



Transformative Impact

EnggInn is poised to revolutionize rural electrification with scalable, clean, and affordable microgrids that change lives



Massive Opportunity

Together, we can unlock economic growth, reduce emissions, and improve the lives of millions across underserved India



Partner With Us

Phone: 9444399824/ 9871839885

Email: purnima.mj@gmail.com
rai218ankit@gmail.com



Thank You!