

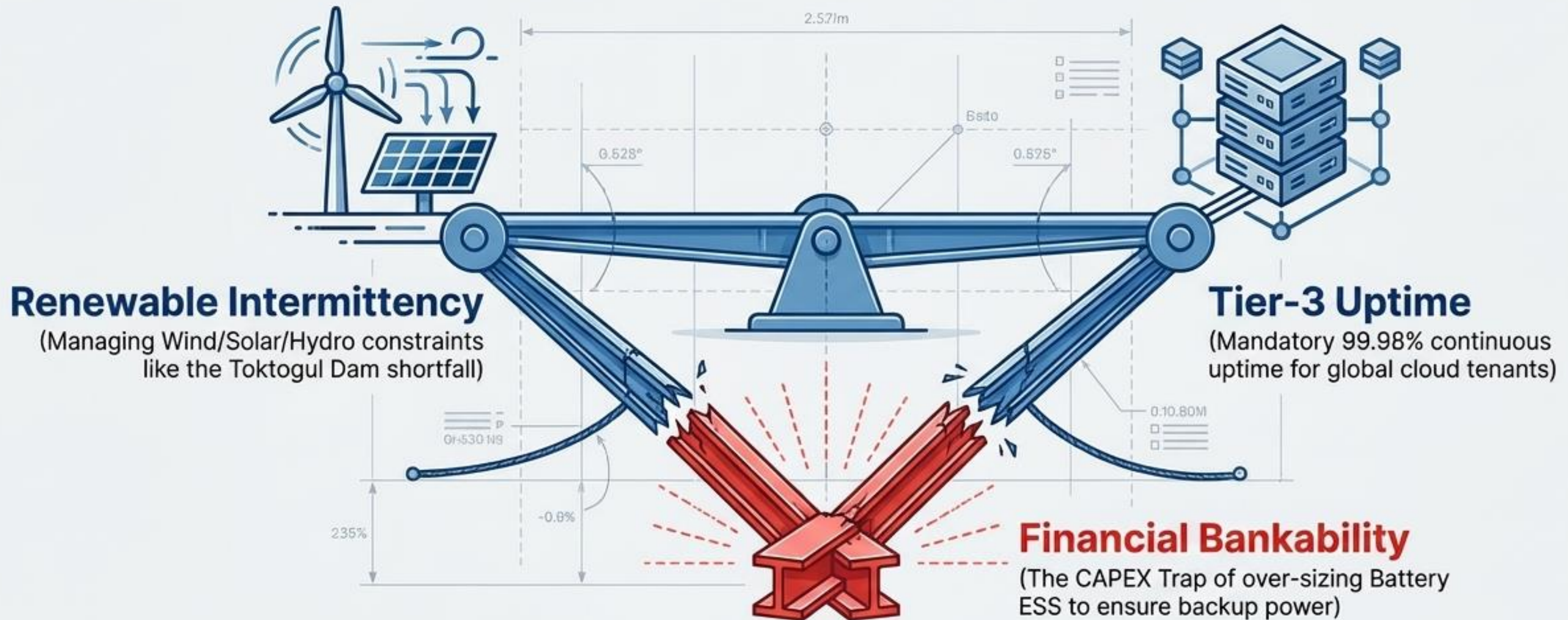
Digital Twins : Data center with Renewable Energy

A Data-Driven Framework for 100% Renewable AI Infrastructure

Jazzson PARK | CEO, SESU. AI



The Trilemma of Green Data Centers

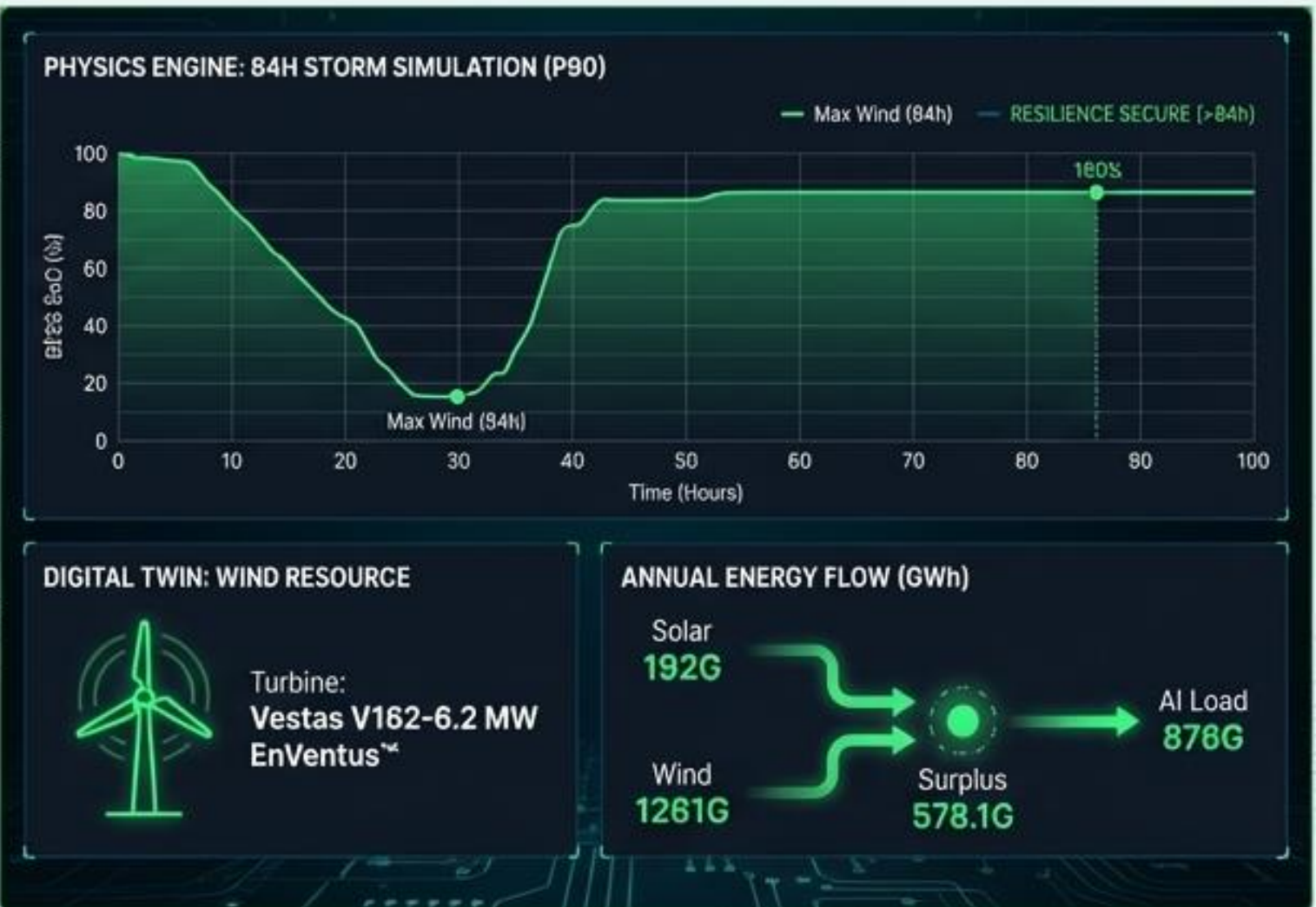


Proven in Extreme Climates: The Patagonia AI Factory



Stress-Test Parameters:

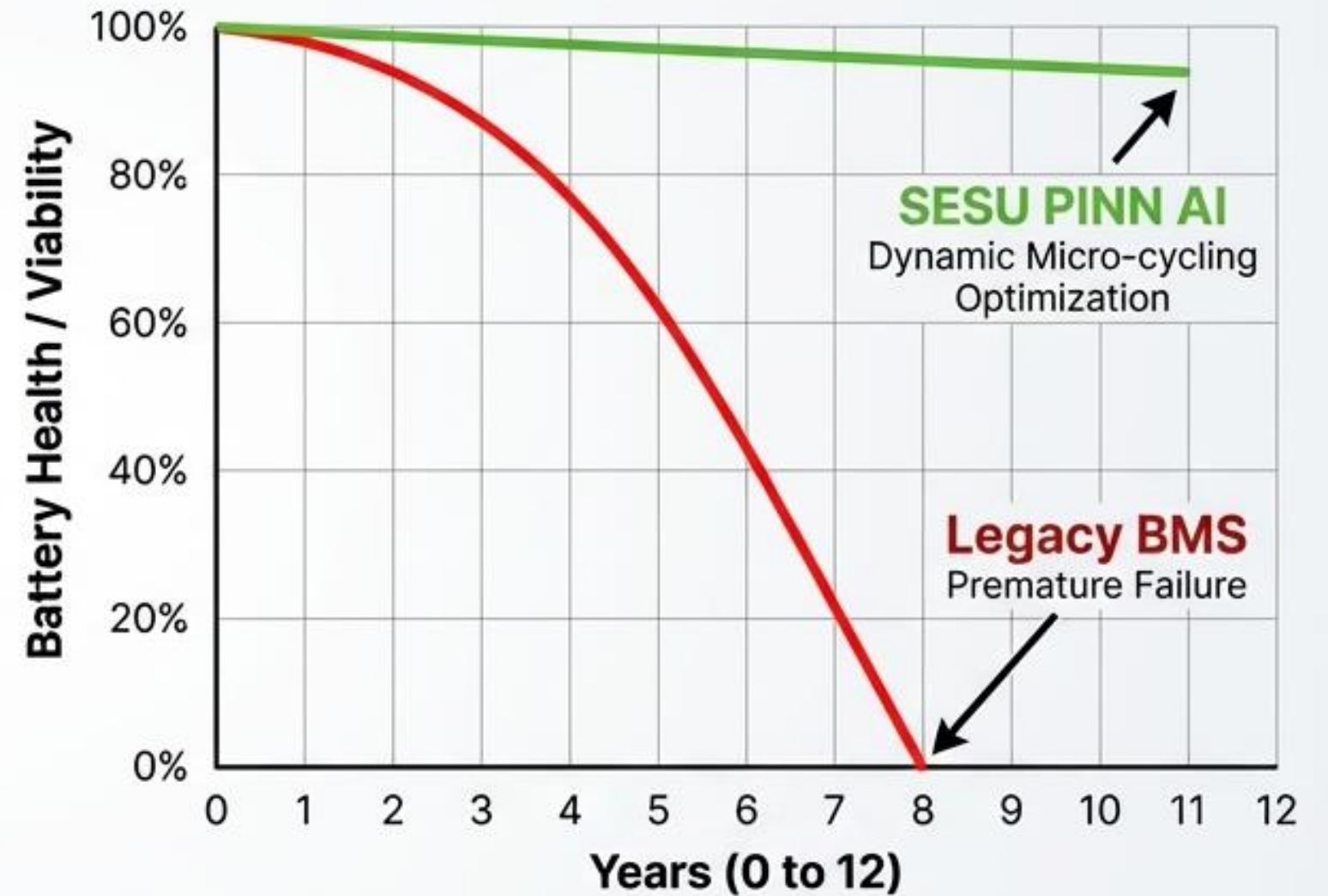
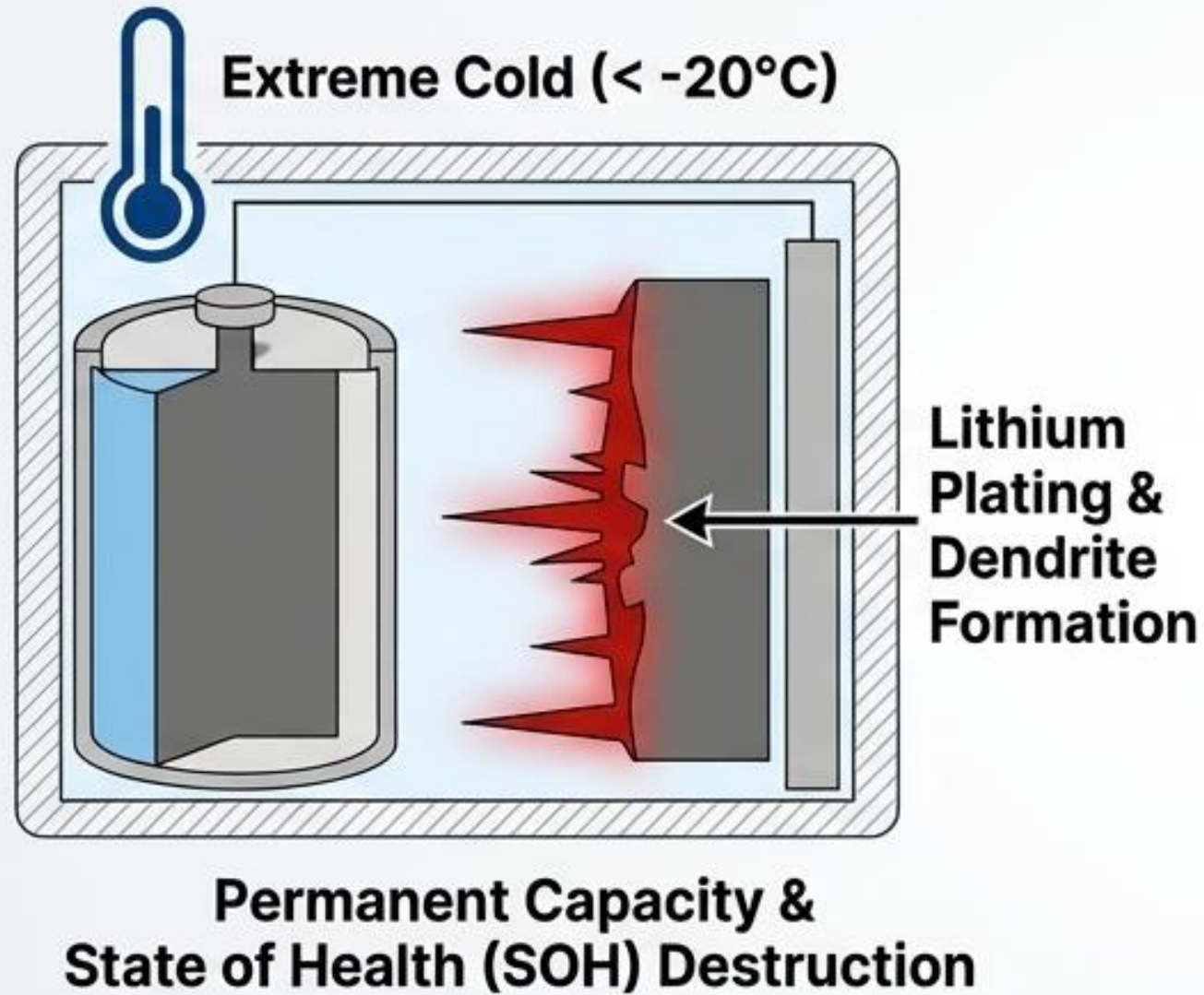
- **Scenario:** 50-Year Worst-Case Climate Event
- **Simulation:** 84-Hour Severe Winter Storm
- **Outcome:** 100% Continuous Backup Power Guaranteed



Asset Specifications:

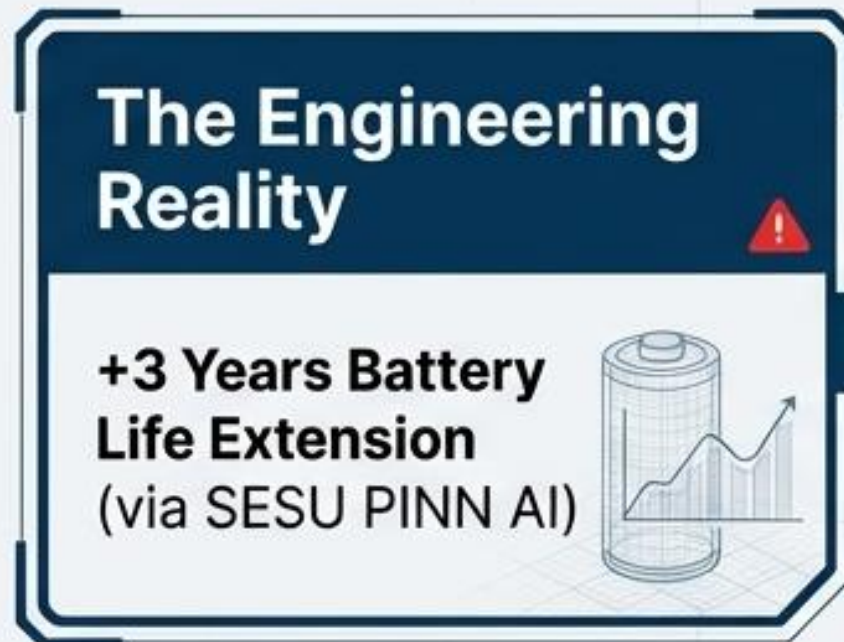
- 300MW Onshore Wind (Vestas 6.2MW Turbines)
- 400MWh BESS Integration

Overcoming the Physical Limit: Lithium Plating at Sub-Zero



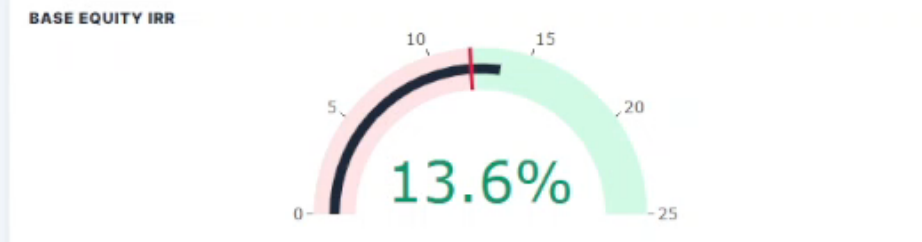
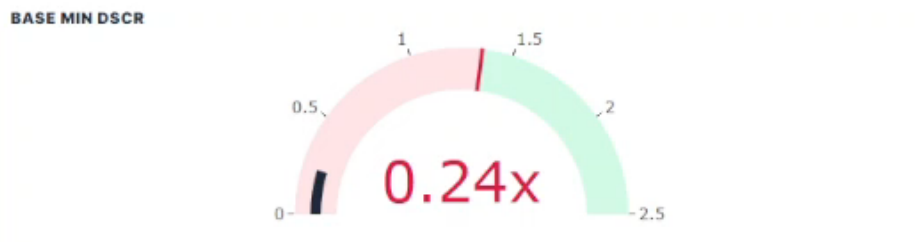
SESU Physics-Informed Neural Network (PINN) predicts plating signatures 2 weeks in advance, yielding a +3 Year Physical Life Extension.

Engineering Translates to Finance: Structuring Bankability



We mathematically engineered the risk out of the financial model.

⚠ Toktogul Dam Derating Alert
The water level of the Toktogul Dam, the heart of the national power grid, has dropped, reducing actual available capacity to 3.1GW. To prevent winter peak (3.6GW) blackouts, a 30% power import from KAZ/UZB is strictly mandated.
* Stabilized Occ. 85% & 10% CIT Applied.



PSOD Conclusion UNBANKABLE

✗ Unbankable: Legacy degradation triggers SLA downtime penalties, followed by a \$1.5M replacement shock in Year 8 (active tenor). Combined with high PUE, T&D penalties and CIT, BASE DSCR drops to default levels.

FINANCIAL & INFRA INPUTS

IT Load (Tier-3) **3.5 MW**

Facility CAPEX **\$4.0 M/MW**

BESS Capacity **10 MWh**

T&D Loss Penalty **20 %**

Cross-border transmission grid loss

Colo Lease (85% Occ.) **\$150**

ADB Loan Rate **8.5 %**

RUN 10,000 MCS

Year 8 Cash Flow Waterfall (\$M) Shock Impact (Rev - SLA Pen - OPEX - Energy - Tax - Debt - Shock = Net Cash)



15-Year Horizon: Debt Service & CFADS After 10% Kyrgyz CIT (Includes Asset Terminal Value at Y15)



Sensitivity Risk Analysis (Tornado) Impact on Base Equity IRR



BESS SOH Degradation Curve Capacity Fade drives SLA Penalties before Replacement

