
AILIT
Supercharged Freight Rail.
Replacing diesel with modular battery power.
AI-orchestrated. Cheaper. Cleaner. Resilient.

Christian Lind

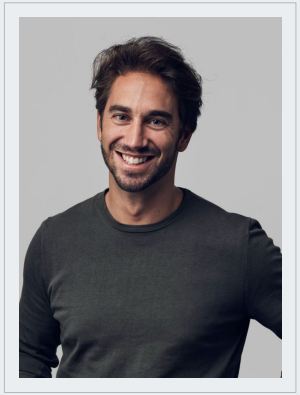
CO-FOUNDER & CEO

- ML/Software engineer at **Modulai**
- Master Thesis in **US Grid Modelling**
- Analyst at **J12**
- M.Sc./B.Sc in **Physics at KTH**

Juergen Wilder

CO-FOUNDER, PARTNERSHIPS

- CEO/BoD, **Knorr-Bremse Rail** (~$5B Rev)
- CEO/Chairman, **DB Cargo** (~$6B Rev)
- CEO, **Siemens Rail** Global (~$8B Rev)
- CEO, **Siemens Rail**, USA (Built up US plant)



Luca Banderet

CO-FOUNDER, STRATEGY/OPS

- Co-founder and GP **J12 VC** (raised ~$80m)
- Investor/VP at **EQT Ventures** ($2.2B AUM)
- Co-founder of fintech **NOWO** (IPO 2021)

Emil Tagesson

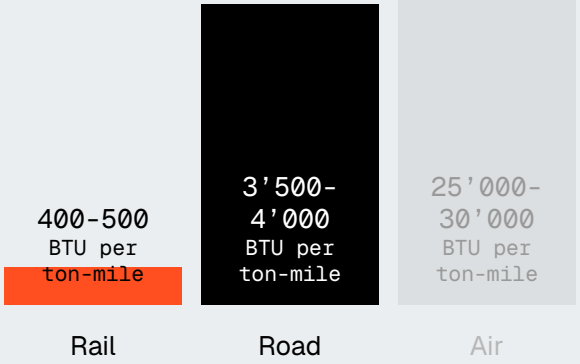
FOUNDING ENGINEER

- Powertrain Engineer at **Candela**
- Battery Systems at **Koenigsegg**
- Head of Powertrain at **KTH Formula Team**

+ Engineering team of 4

DB Cargo | SIEMENS | TESLA | Koenigsegg | northvolt | CANDELA | KNORR BREMSE

Rail Freight Will Always Be 7–10× More Energy Efficient Than Road.



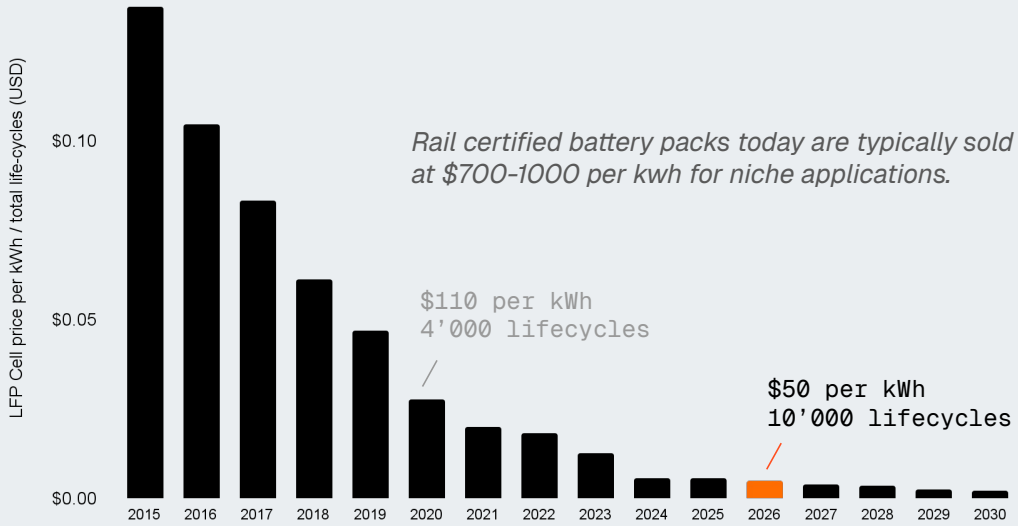
The Backbone of Industrial Freight: Rail Burns $15B Diesel.

Diesel-electric rail caveats:

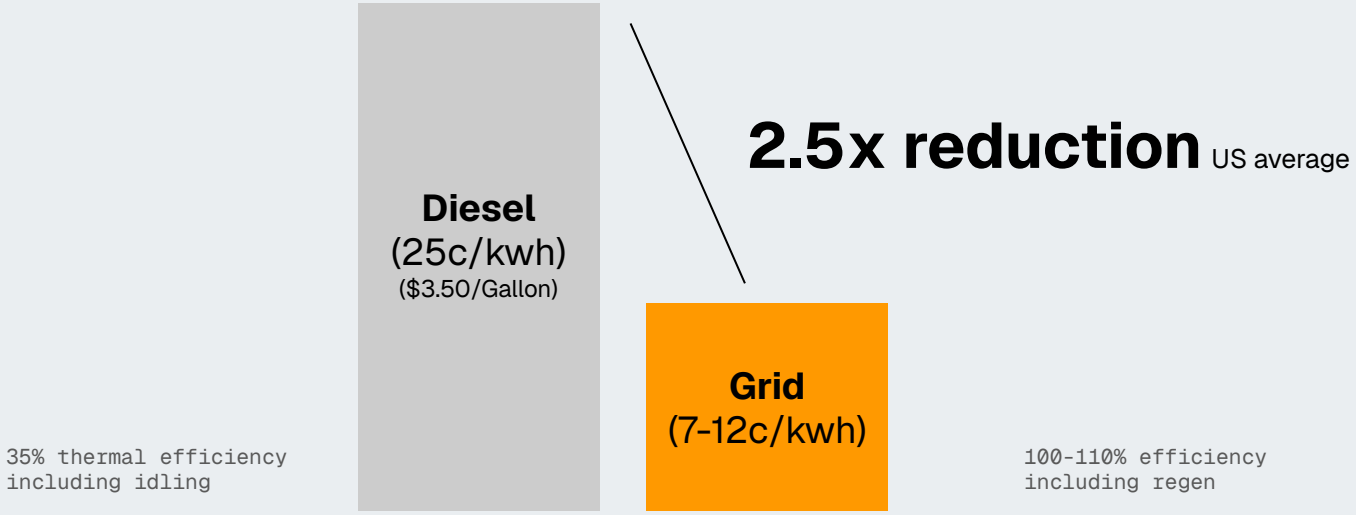
- Low energy efficiency, 30-35% diesel to wheel
- Expensive maintenance
- No regenerative braking
- High air pollution due to old locomotive fleets
- CO_2 emissions and regulatory costs
- High noise level

Why Now — Batteries Crossed the Cost Threshold.

Battery cells are now dramatically cheaper, more durable, and safer. Unlocking a step change in economics.



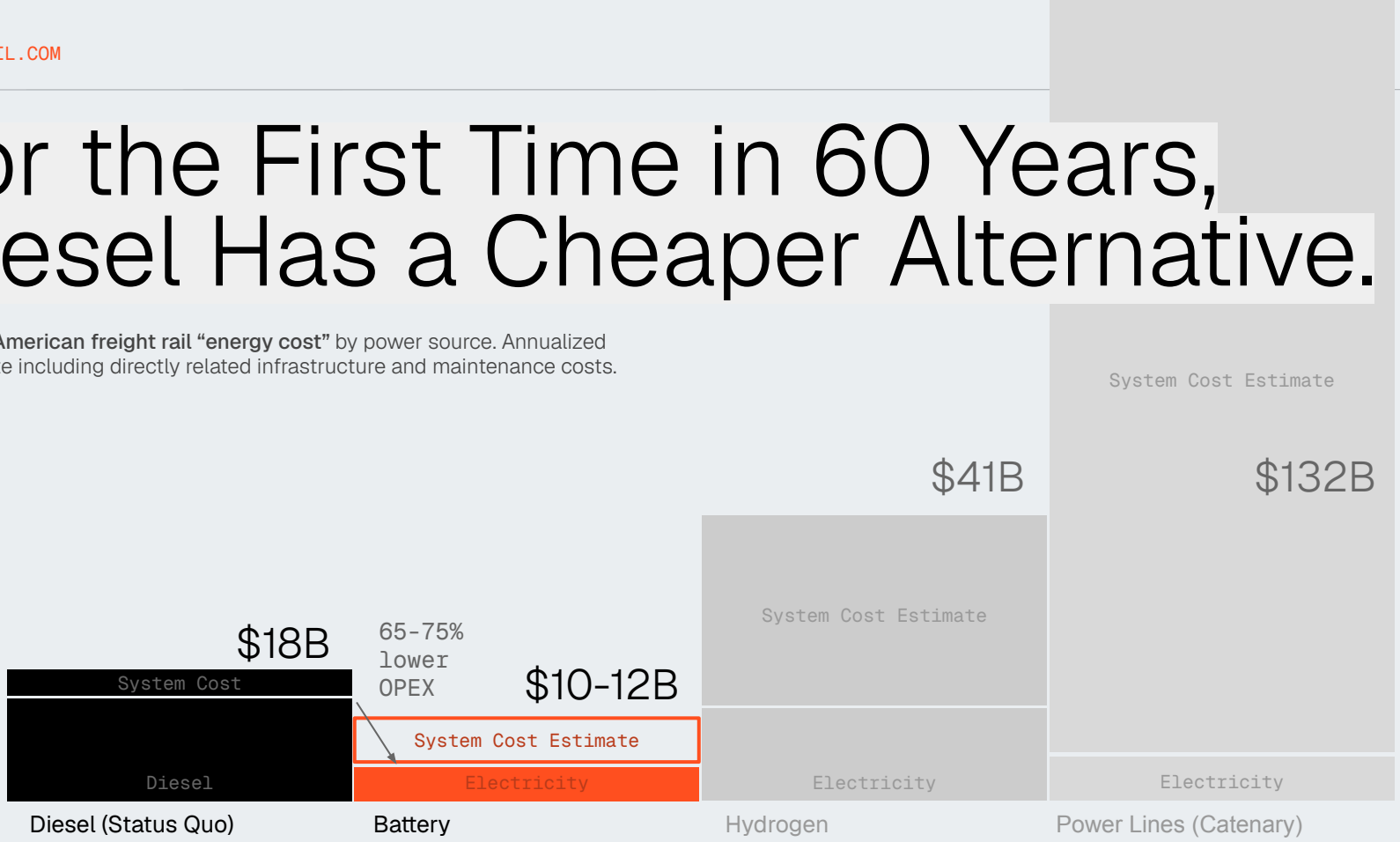
Grid power cuts rail traction energy costs ~2.5x versus diesel



Cost per kWh rail traction

For the First Time in 60 Years, Diesel Has a Cheaper Alternative.

North American freight rail "energy cost" by power source. Annualized estimate including directly related infrastructure and maintenance costs.

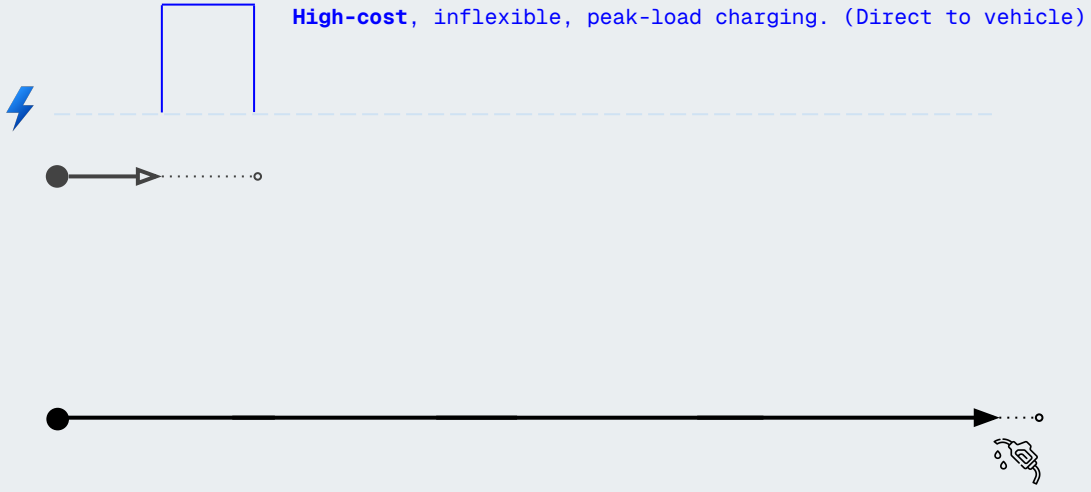


Fixed-Battery-Locos Struggle with Range, Uptime, and Grid Constraints.

Making them not feasible for the vast majority of operations.

State of The Art Battery Locomotives

Diesel Locomotives

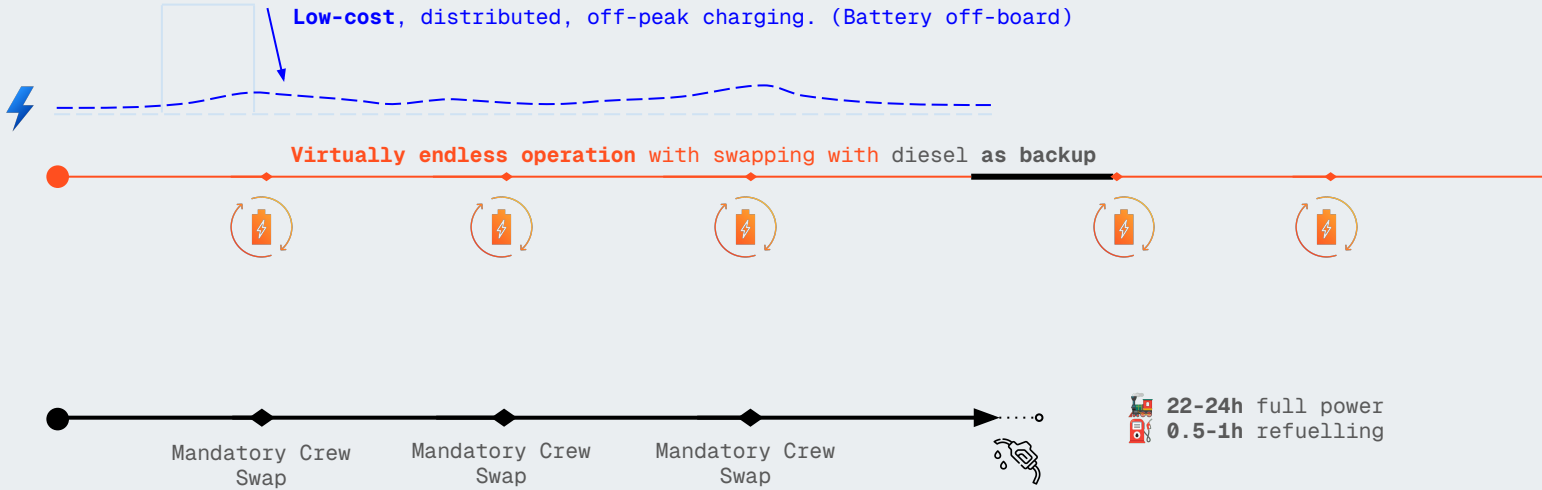


We Unlock Range, Uptime, and Grid Bottlenecks by Swapping Batteries.

Leveraging existing mandatory crew swapping stops for long-distance operations.

Ailit Battery Swapping Hybrid Solution

Diesel Locomotives



The Ailit Battery Platform: A Modular System For Locomotive Traction.

Ailit PowerPack
Capacity: 4.2 MWh
Envelope: 20ft container standard
Weight: 32.4 ton
Power: 1.6 MW (2000+ hp)
Voltage: Agnostic

Ultra Rugged Mobile Battery

Hot swappable megapack built to withstand the extreme rail constraints.

Extreme Redundancy

Architecture ensures continued operation even in failure mode.

Forever Compatible

New battery generations drop into the same platform without fleet rebuilds.

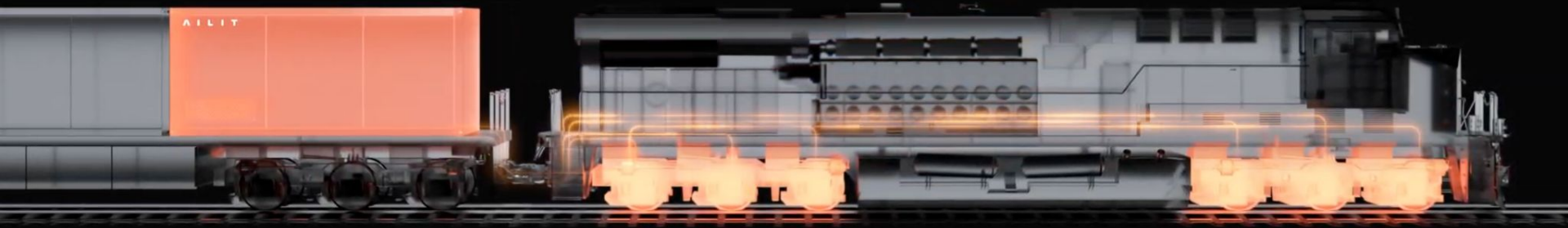
Designed for Replacement

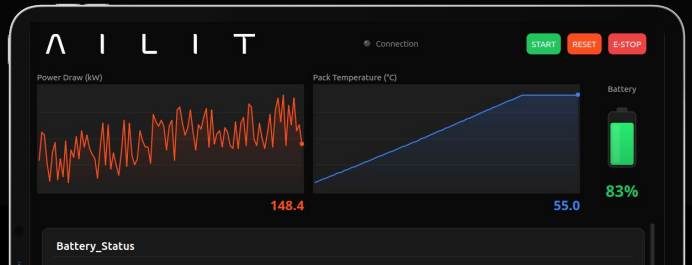
By design the battery system is simple to replace, maintain, and upgrade.

Modular Architecture

Single standard building block that can be connected to fit any use case.

Compatible with Any Diesel-Electric Loco; Turning Them Battery Hybrid.





Hybrid.
Diesel generator as power backup.

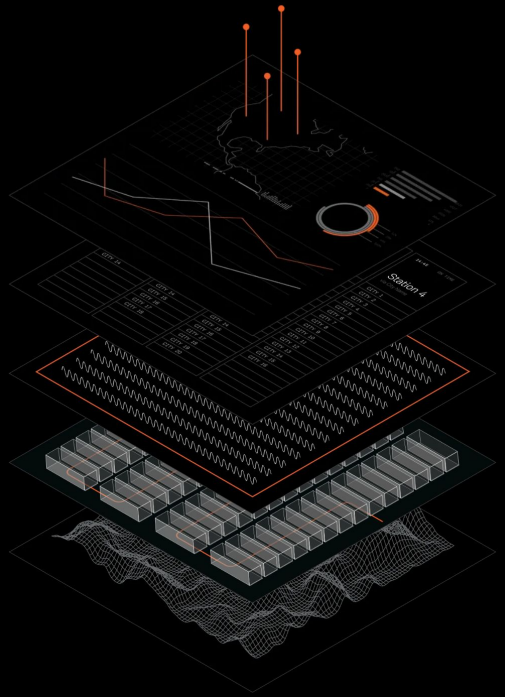
Minimal retrofit.
Leveraging existing electric motors.

Standard railcars.
Mounted on standard rail cars.

Pack-centric intelligence.
Software native energy system.

Existing crane standards.
Standard swapping operations.

Ailit OS Turns a Distributed Battery Fleet into a Smart Energy Network.



Ailit OS turns a distributed battery fleet into a self-optimizing energy network.
Continuous operations. Lowest cost. Stable grid. Cleanest energy.

L5 Operations

L4 Fleet

L3 Charging

L2 Batteries

L1 Grid

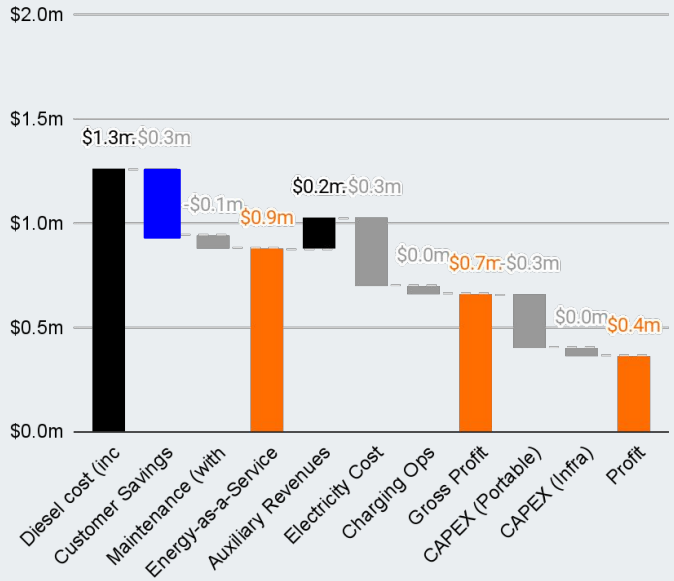
Our Vision: Powering the Continent-Scale Mobile Energy Network for Rail and Beyond.

10 GW of dispatchable power moving across the real economy.

Appendix

Energy-as-a-Service: 60-70% Gross and 30-40% Net Asset Margin at Scale.

Unit economics per mainline locomotive including charging infrastructure.



Key assumptions (at scale)

- **Operator gets 27-31% cost reduction** from energy and maintenance savings on diesel traction cost
- Diesel is assumed at $2.99 per gallon
- Electricity cost is at 0.07 USD (US large scale industrial level today)
- The assets are owned by an AssetCo with 6-8% interest rate capital cost (ex inflation)
- Battery packs are assumed to have a lifetime of 15 calendar years, and 10'000 cycles (feasible with current supplier)
- Charging infra is depreciated over 20 years
- Grid revenues per MW/MWh are projected much lower than today as market matures
- Subsidies (Grants, carbon or NOx Credits) are assumed zero