

+ Introduction to
Zenobē -

ZENOBĒ

flux50
ENERGISING THE FUTURE

(Circulaire)Stationaire Batterij opslag in combinatie met hernieuwbare energie

Wat doen we ?

Hoe doen we het ?

2 voorbeelden

Zenobē ontwerpt, financiert, bouwt en opereert **battery-based services**.

Onze missie
Make clean power accessible.

1. Network Infrastructure

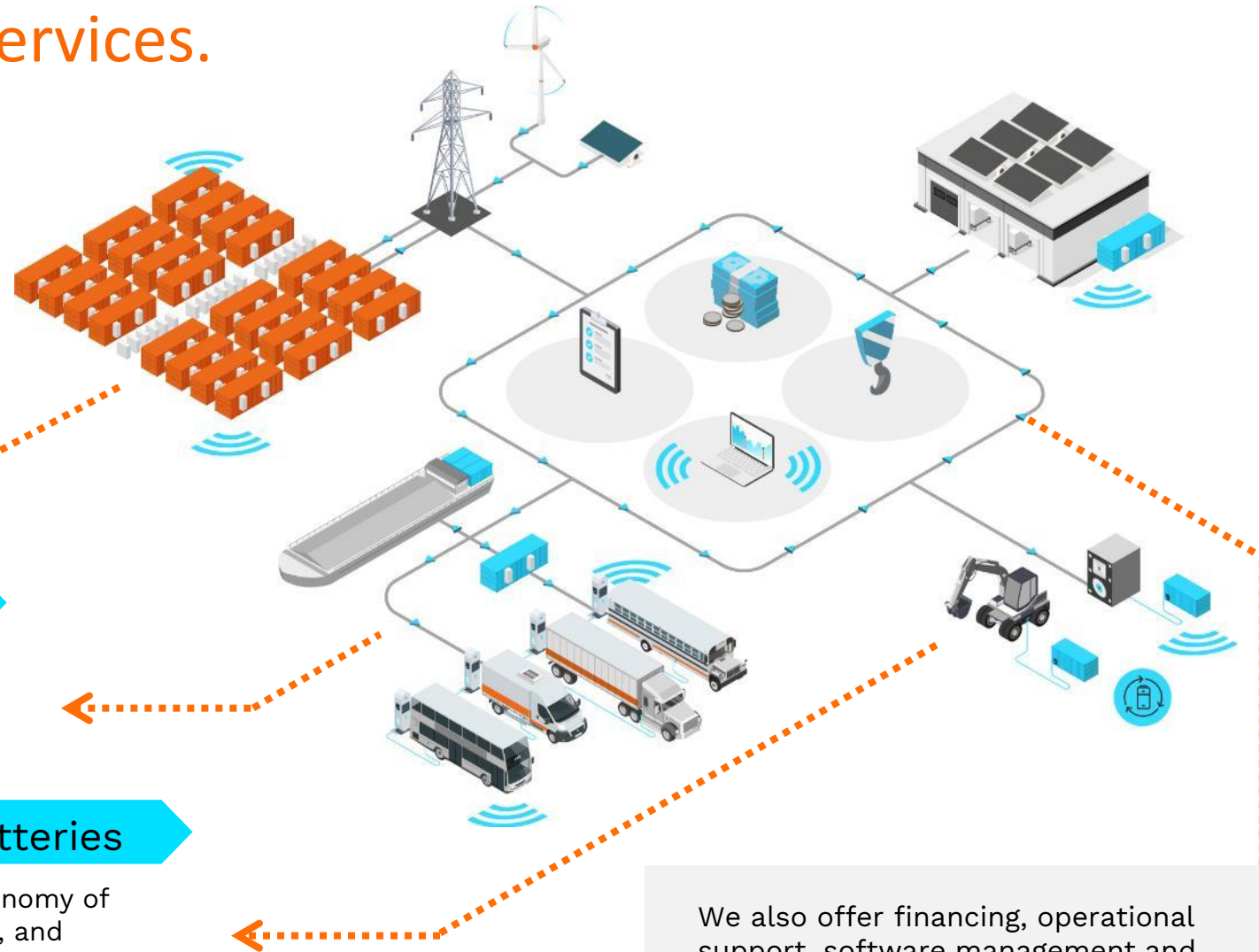
We develop, finance, build and operate grid-scale battery storage systems.

2. Fleet Electrification

Zenobē provides end-to-end electric vehicle and software solutions for fleet operators

3. Second Life Batteries

We support the circular economy of batteries – upcycling, reuse, and recycling.



We also offer financing, operational support, software management and construction to help de-risk our battery storage and fleet electrification offerings.

Our unique platform covers both power and transport



Network Infrastructure

Our grid-scale battery storage systems prevent renewable energy waste, delivering key services to ensure access to clean, reliable and affordable electricity. We have:

- 430 MW live and in construction sites with a goal for >3.5GWh by 2026
- World-leading capabilities in transporting renewable power
- The 1st directly connected battery systems on the GB transmission network
- Planned investment of >£1bn into advanced battery solutions to address transmission challenges



Second Life Batteries

We are experts in electric vehicle battery repurposing.

- Second-life battery business in Europe
- World-leading knowledge in residual value



Analytics & Software

Proprietary software and strong analytics capabilities power our offers, ensuring efficiency throughout the lifecycle

- Team of 52 dedicated specialists



Fleet Electrification

Our end-to-end electrification offering is accelerating the switch to zero-emission fleets across the world, removing risk and offering a clean alternative to diesel today. We have:

- The #1 e-bus platform in the UK, Australia and New Zealand
- c.25% market share in the UK and c.30% in ANZ
- >1,000 electric buses, coaches and trucks supported globally
- Electrified over 75 depots to date



Network Infrastructure

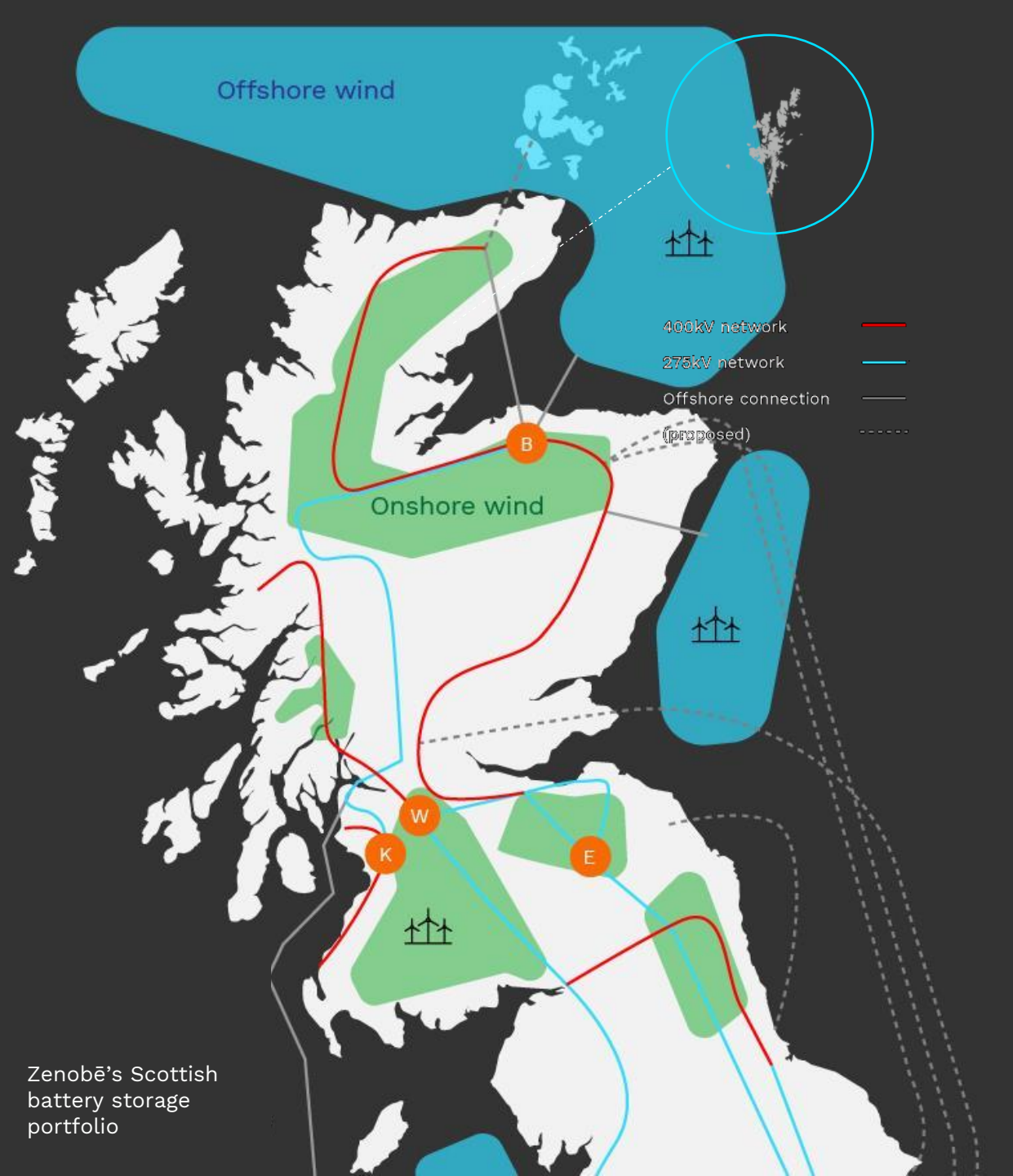
Maximising the uptake of renewable power on the grid



Why do we need grid-scale battery storage?

The rapid uptake of renewables creates challenges for the Electricity System Operator looking to provide **clean, affordable and reliable power**.

The Challenge	The Benefits
<p>Renewables create technical and cost challenges for today's network:</p> <ul style="list-style-type: none"> • Power stability • Managing power line constraints • Balancing power flow demand & supply <p>As a result, offshore wind will be severely curtailed by 2026, passing these costs onto consumers.</p>	<ul style="list-style-type: none"> • Ensuring low carbon, reliable and affordable network • Avoiding expensive, time-consuming grid upgrades • Reduce dependence on power from fossil fuel generation • Saving CO₂ towards the path to net zero • Helping to lower bills for consumers. • Comprehensive end to end support • Track record of successful projects • Bespoke designs and operation



Zenobē **firsts**



We've developed...

- The first and only batteries to provide fast reserve in the UK
- The first batteries in the world to be used for reactive power services
- Europe's largest (100MW) battery
- First transmission-connected battery in Scotland
- The first batteries in the UK to manage transmission constraints directly with the Grid System Operator
- First battery in next generation of balancing service: Dynamic Containment
- Amongst the first batteries in the world to provide stability services

Electric fleets
Accelerating fleet electrification



The key challenges:



High capital requirements for upfront costs and battery replacement



Insufficient power supply both to and within the depot to support service delivery



Unpredictable operational costs due to new technology and energy market volatility



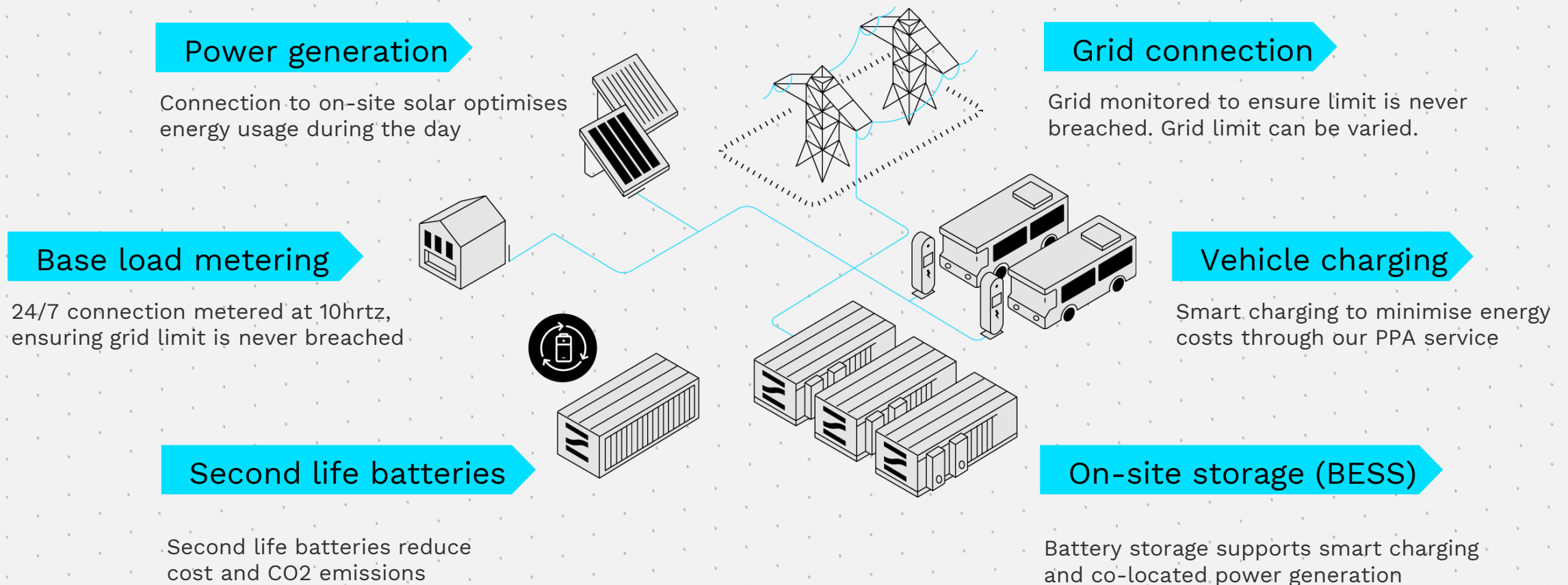
Our full turnkey offering

An **end-to-end, fully managed service** to remove the challenges of electrification, supported by finance for infrastructure, buses and bus batteries.



Maximising power across all assets

Our software enables operators to take control of their power. You can capture, store, and distribute power as you see fit - all while running hyper-efficient operations.

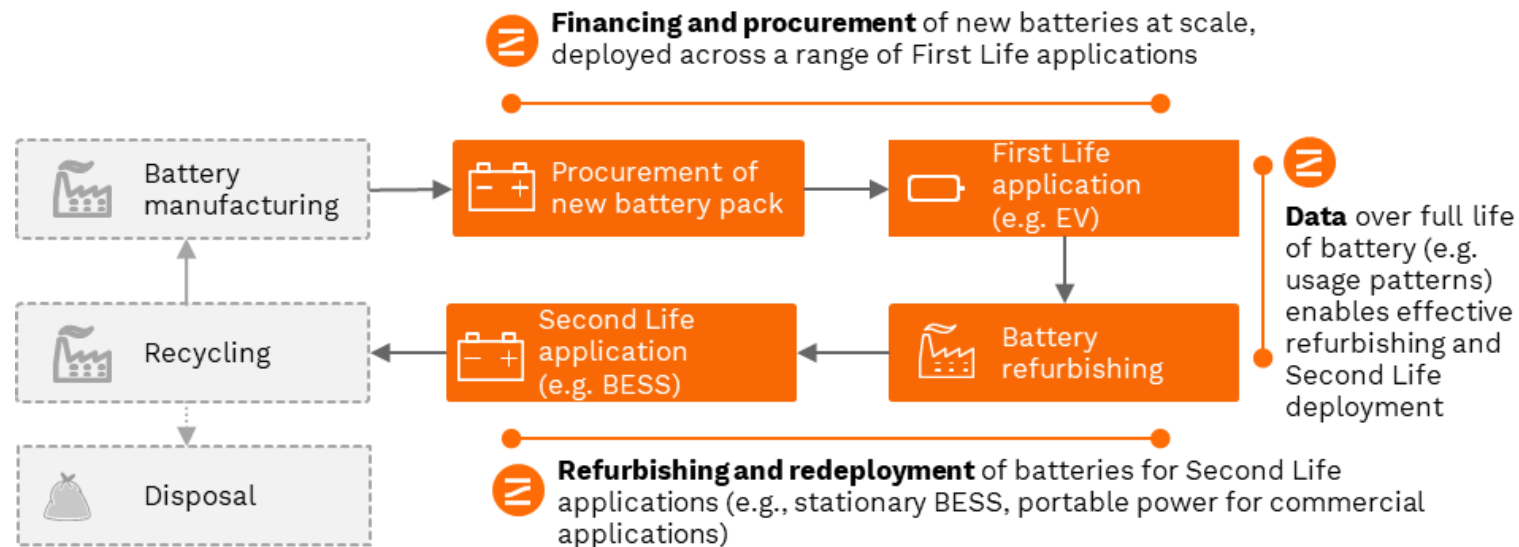
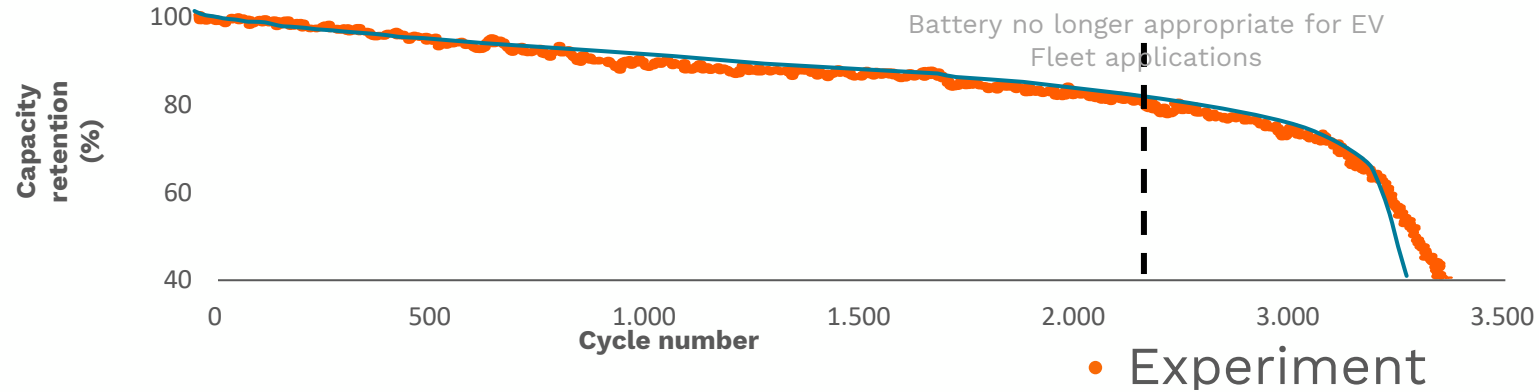


Second-life Batteries

Extending battery life and value in second-life applications



What is a second-life for EV batteries?



Creating a circular economy for EV batteries



Energyskid



Powerskid

1. First life on EV



2. Repurposed for 2nd life

Battery removed from vehicle when it can no longer fulfil route requirements



4. Raw materials used to manufacture new batteries

2nd life systems can generate value by being used to provide clean portable power, before eventually being recycled to make new batteries for new vehicles

3. Recycled when no longer useful

Instead of recycling, batteries are repurposed and combined to be used in 2nd life applications

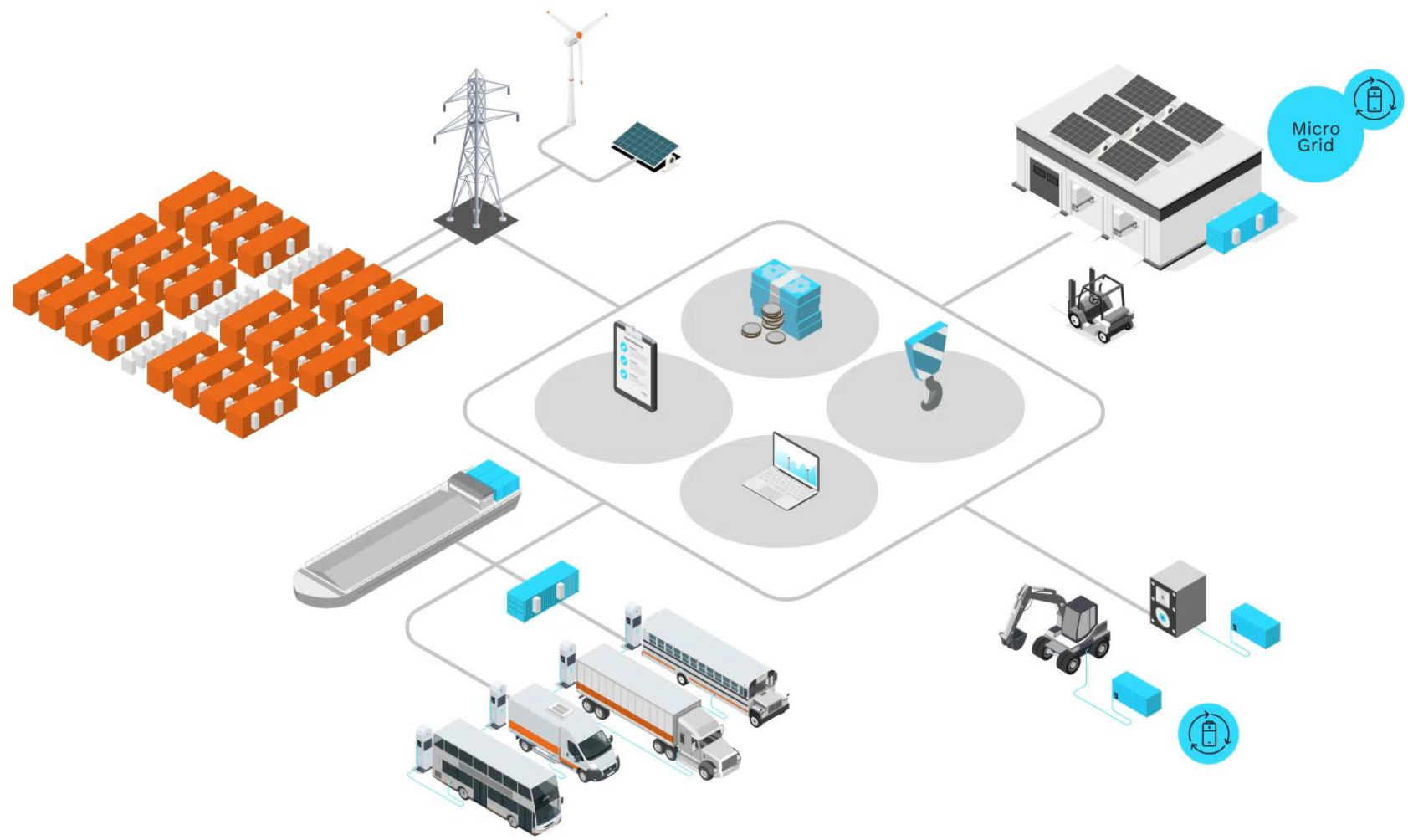




Case Studies



Wind + Zon + Batterij : Flexible walstroom



Cold Ironing 8 500DWT Cargo Ship Test

Port of Antwerp



- Waarom ?
 - Reductie van de CO2 uitstoot in de haven
- Waarom hier op Zuidnatie ?
 - Schepen hebben geen vaste ligplaats
 - Kost om vaste stroom connectie te maken is te hoog
- Waarom nu ?
 - Carbon Intensity Indicator
 - ETS
- Uitdaging :
 - You don't know what you don't know : voltage, power, frequency, connection, ...
- Belangrijkste cijfers
 - Verbruik per dag +/- 2.5MWh
 - Max vermogen 250kW (110kW base)



Wind + Zon + Batterij : Flexible walstroom



Hydrogen & Battery : Racing in the desert





Case Study

Extreme E - Batteries



- Zenobē provides 750kWh of second-life batteries, repurposed from electric vehicles to the Extreme E motorsport series.
- Enabled optimisation of generator use resulting in significant fuel savings across each event.
- Synchronise to intermittent grid connection and protect the event from brownouts.
 - Enabled groundbreaking event powered by a 100% renewable grid network in Uruguay
- Support the charging of several electric all-terrain racing vehicles.
- Performed in extreme locations from the heat and dust of desert to the cold of the Arctic
- Allowing innovative new technologies that support temporary clean power generation.

CATEGORY	REQUIREMENTS
Battery Type	2nd Life
Battery Size	100kW/150kWh
Fuel Saved	>30,000 litres already saved
Locations	Senegal, Greenland, Sardinia, UK, Uruguay & Chile

ZENOBĒ SOLUTION SUMMARY	
Emission Savings	✓
Portable unit	✓
Performed in extreme conditions	✓
Integrated with other infrastructure	✓

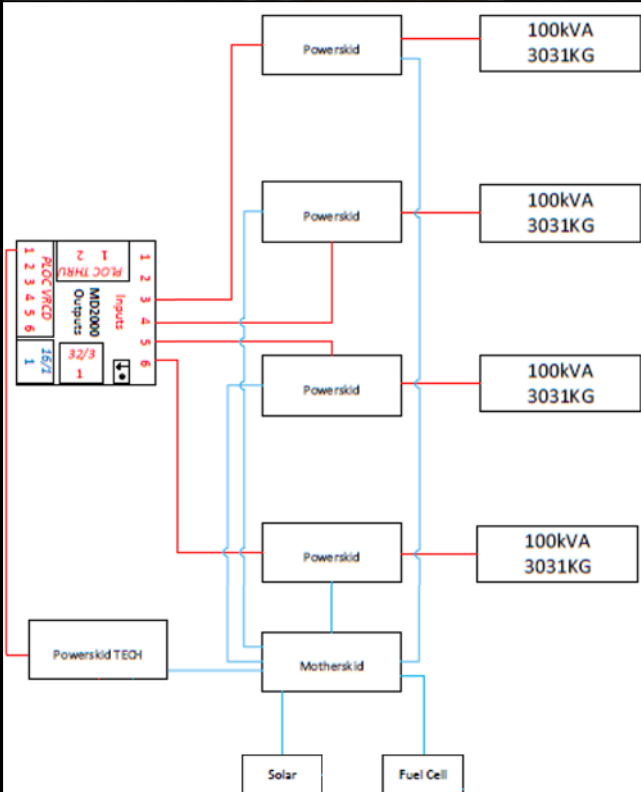


Case Study

Extreme E – DC Microgrid



- Zenobe provided DC PowerGrid and Solar DC Converter along with several second-life batteries to enable clean energy production on a temporary microgrid.
 - 150kW Hydrogen Fuel Cell successfully integrated into Microgrid
 - 45kW Solar Supported Fuel Cell Energy Supply
 - Synchronised and managed AC & DC Micro Grid with critical loads:
- Over 200kW DC generation.
- Average AC demand of over 200kW across race weekends.
- 400kVa HVO generator backup supply.
- Microgrid control and management performed in isolated and remote locations such as Sardinia and Chile.



CATEGORY	REQUIREMENTS
System Type	AC/DC Micro Grid
Fuel Cell Generation	5.1MWh per event
Solar Generation	1.5MWh per event
Locations	Sardinia & Chile

ZENOBĒ SOLUTION SUMMARY	
Emission free power	✓
Temporary & Portable Micro Grid	✓
Performed in extreme conditions	✓
Integrated with Innovative Technology	✓

Your Zenobe contacts



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