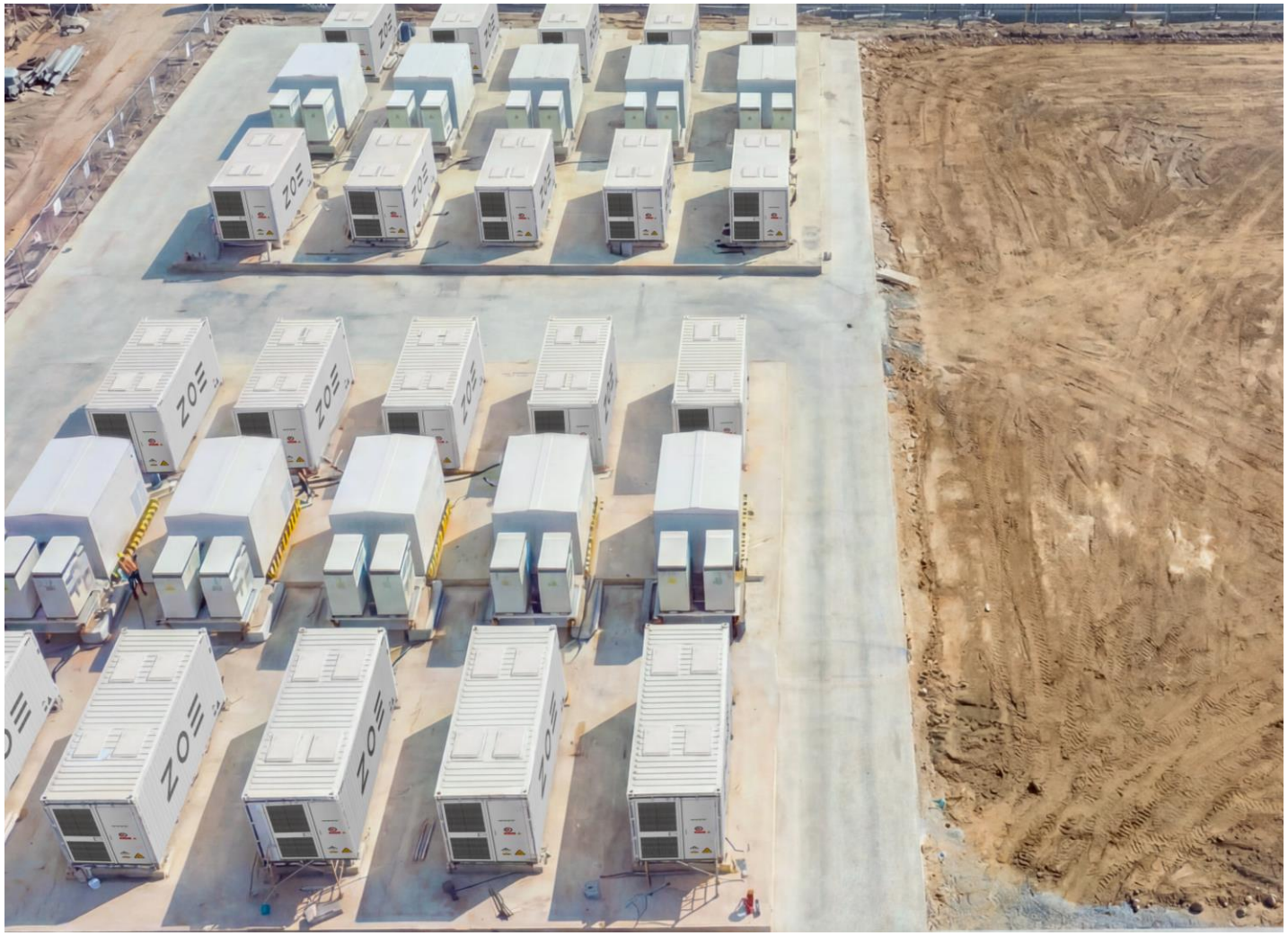
Benchmark Cases

World-Leading Tier 1 Provider of Integrated ESS Solutions

Case Study



Utility-Scale
Energy Storage Power Station
Grid-Side ESS

Eastern Europe

70MW/140MWh/Z BOX-P 5000

Project Background:

- Grid instability and power security risks in the region.

Project Highlights:

- Provides fast-response frequency regulation and ancillary grid services.
- Enhances grid resilience and reduces reliance on imported or external energy sources.

Case Study

Utility-Scale
Energy Storage Power Station
PV + ESS

China

60MW/120MWh/Z BOX-P 5000

Project Background:

- Intermittent renewable energy generation leads to grid fluctuations and power security risks.

Project Highlights:

- Smooths renewable energy output.
- Provides frequency regulation and ancillary grid services for grid stabilization.

Case Study

Utility-Scale
Energy Storage Power Station
Grid-Side ESS

Eastern Europe

3.45MW/10MWh/Z BOX-P 5000

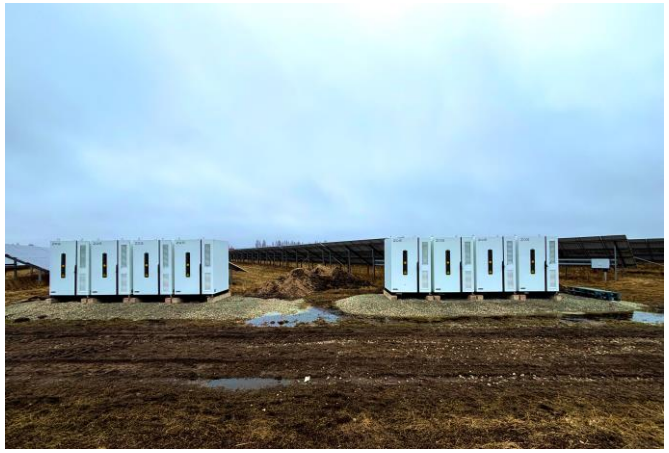
Project Background:

- The regional grid faces challenges such as insufficient frequency regulation capability and declining voltage stability.

Project Highlights:

- Millisecond-level fast frequency response, effectively smoothing grid fluctuations
- Enhances regional power supply resilience for greater grid stability

Case Study



Distributed
Energy Storage Power Station
PV + ESS

Estonia

5.375MW/10.75MWh/Z BOX-C 215

Project Background:

- Solar curtailment and low self-consumption due to intermittency, plus poor compensation for exported power.

Project Highlights:

- Maximizes PV self-consumption to reduce reliance on grid electricity.
- Stores excess solar for self-use during peak price hours, avoiding low-value exports and boosting economic returns.

Case Study

Distributed Energy Storage Power Station

PV + ESS + Diesel Hybrid

Gambia

215kWh/430kWh/Z BOX-C 215

Project Background:

- Weak grid with frequent outages and high diesel dependency.
- High fuel costs and environmental impact from diesel generators.

Project Highlights:

- Reduces diesel generator runtime through PV+storage integration, lowering fuel consumption and emissions.
- Provides stable and reliable power supply to the weak grid, improving energy access and cost efficiency.

Case Study

Critical Load Backup with STS

ESS + STS

Sweden

1.075MWh/Z BOX-C 215 + 800kW STS

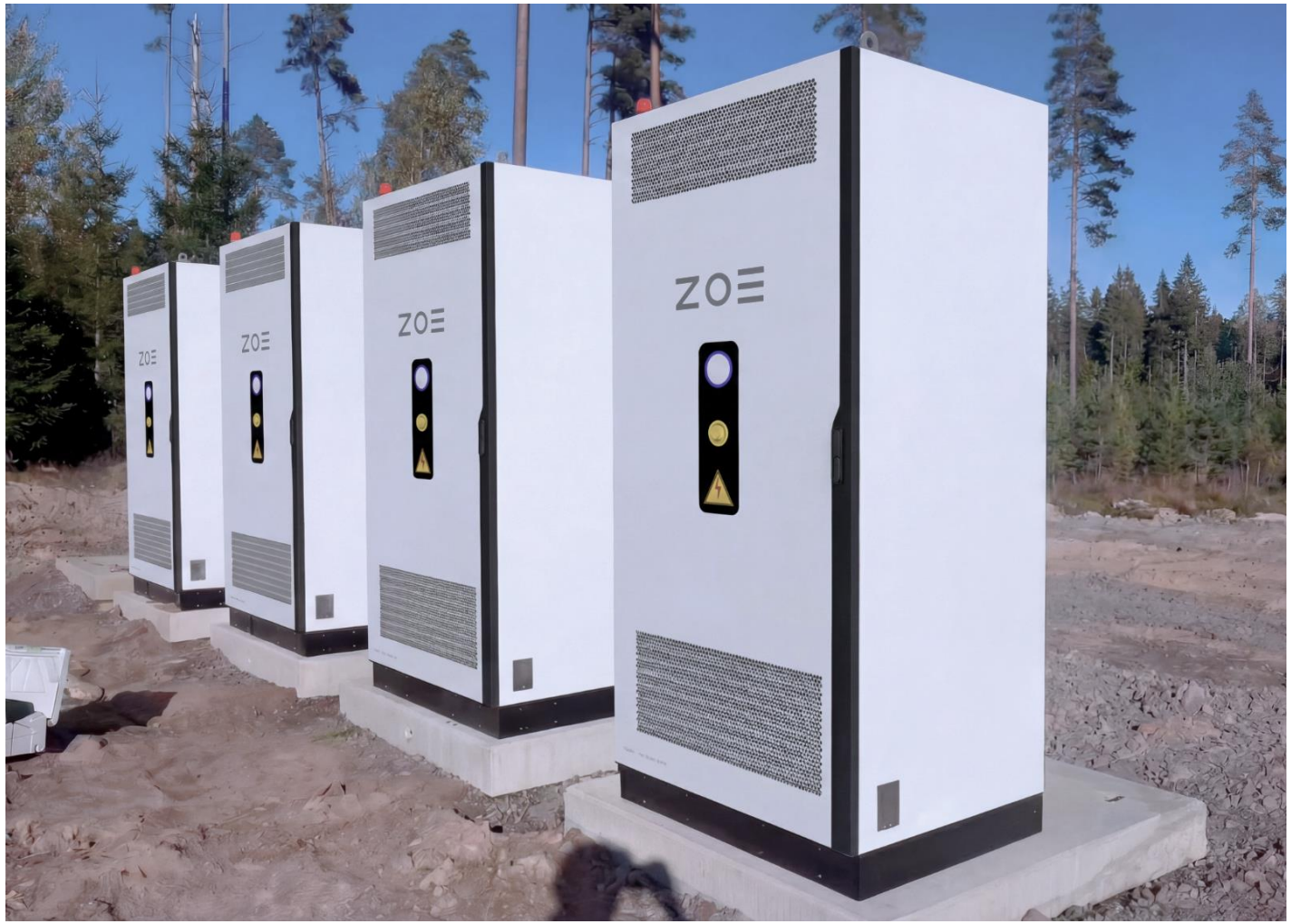
Project Background:

- Factory requires uninterrupted power for critical loads to avoid production losses.
- Grid instability or outages can cause significant downtime.

Project Highlights:

- Ensures seamless power supply to critical loads via fast-transfer STS (Static Transfer Switch).
- Delivers reliable backup power to maintain factory operations during grid disturbances.

Case Study



Black Start & Temporary Backup

ESS

Mexico

0.522MWh/1.044MWh/Z BOX-C 261 PLUS

Project Background:

- Need for temporary backup power to support critical loads during grid outages.
- Conventional backup solutions lack coordinated black-start capability.

Project Highlights:

- Enables one-click simultaneous black start of all units, restoring power autonomously without external grid support.

Case Study

Animal Husbandry

PV+ESS

Netherlands

525kW/1075kWh/Z BOX-C 215

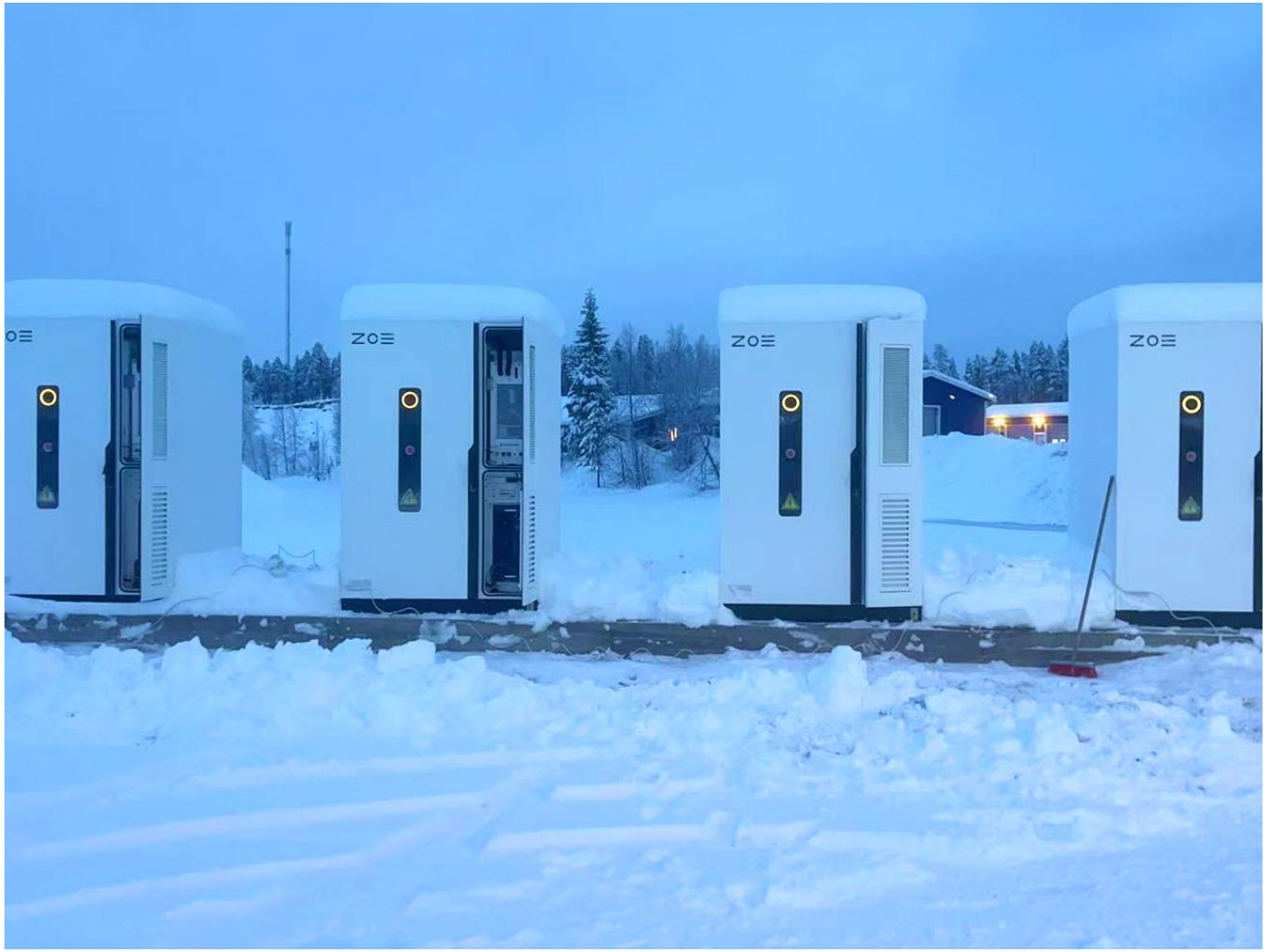
Project Background:

- Netherland's highly-developed livestock industry drives significant energy demand.
- Farms face high electricity costs and vulnerability to outages.

Project Highlights:

- Stores low-cost off-peak power, discharges during peak/outages to reduce costs, ensure daily operation and protect livestock.
- Integrates solar power and enhances energy self-sufficiency

Case Study



Automotive Proving Ground

ESS+EV Charging

Sweden

525kW/1075kWh/Z BOX-C 215

Project Background:

- Deployed at a major European automotive cold-climate testing base.
- Delivers grid frequency regulation (FCR/FFR) services via Checkwatt.

Project Highlights:

- Reduces grid-side electricity costs by 30–40% through peak shaving and energy arbitrage.
- All system components are validated to start, operate, and perform under extreme cold Arctic conditions.

Case Study

Arbitrage + Fast Frequency Reserve

PV+ESS

Estonia

1050kW/2150kWh/Z BOX-C 215

Project Background:

- Estonia C&I sectors urgently require stable power and cost-effective energy solutions.

Project Highlights:

- PV+ESS solution boosts self-consumption rate and reduce energy cost
- Generates revenue via peak/off-peak arbitrage, demand response, carbon trading, and grid services.

Case Study

Green Industrial Park

PV+ESS+Hydrogen

China

40MW/80MWh/Z BOX-H 372

Project Background:

- High energy demand of industrial park requires stable and efficient power supply.
- Excess PV electricity available for value-added utilization.

Project Highlights:

- ESS smooths PV fluctuations, ensuring reliable power for energy park enterprises.
- Surplus electricity powers hydrogen production, cutting 300k+ tons CO_2 annually.

Case Study

Aluminum Foil Plants

PV+ESS

China

11MW/22MWh/Z BOX-H 372

Project Background:

- Requires reliable power supply since precision equipment is highly sensitive to voltage fluctuations/power interruptions.
- High electricity costs due to continuous production demands.

Project Highlights:

- Prevents production halts by stabilizing voltage and bridging short outages.
- Leverages peak-valley electricity price differences to cut costs and boost corporate competitiveness.

Case Study

Food Processing Industry

ESS

China

1.023MW/2.046MWh/Z BOX-C 186

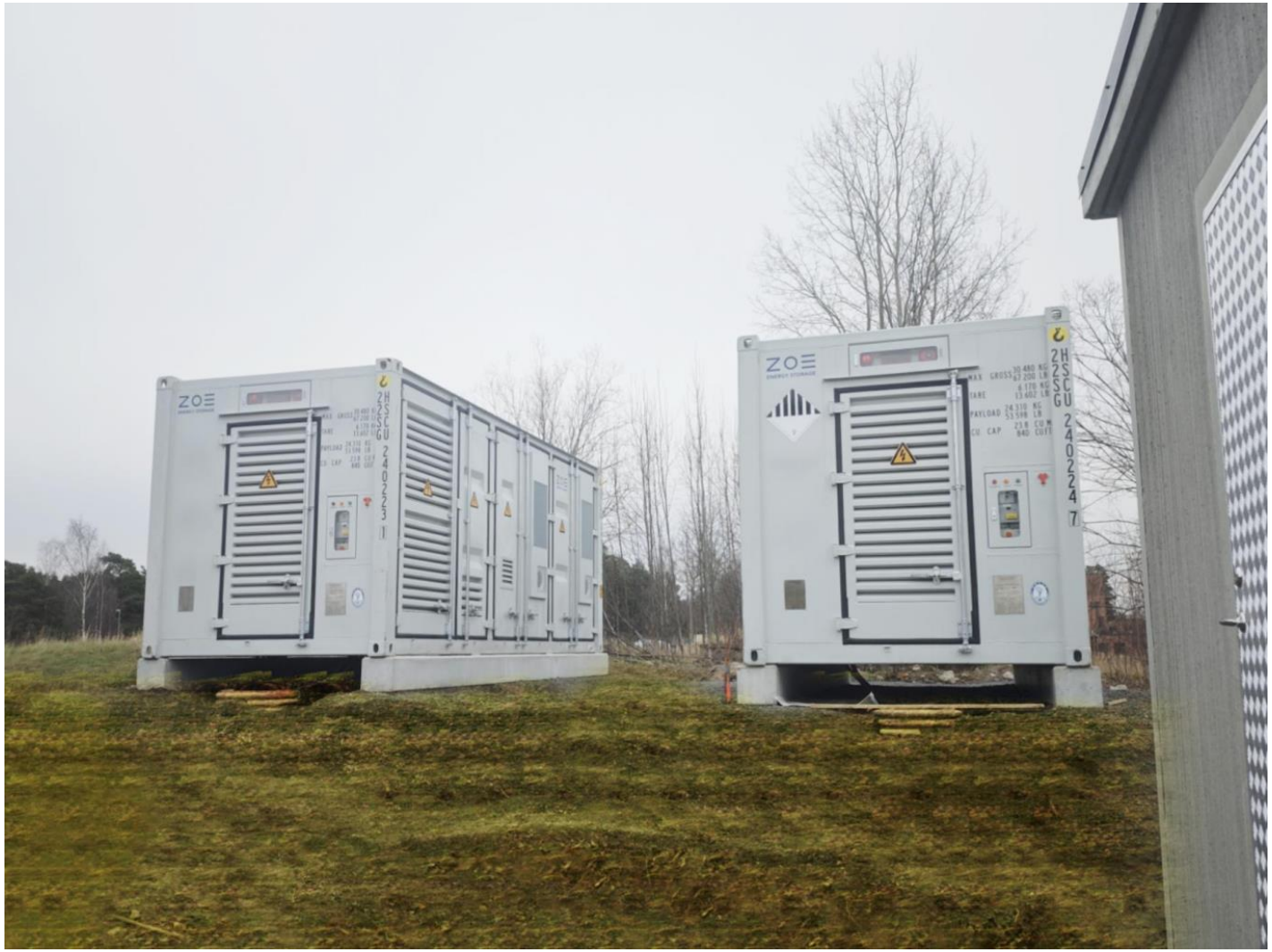
Project Background:

- Automated production lines require uninterrupted, stable power.
- Power deficit during peak demand periods.

Project Highlights:

- Support food production factory with electricity capacity augmentation.
- ESS supplements power during peak demand, ensures production continuity and exploits electricity price differences for cost savings.

Case Study



Fast Frequency Reserve

ESS

Sweden

2.52MW/2.626MWh/Z BOX-P 1300

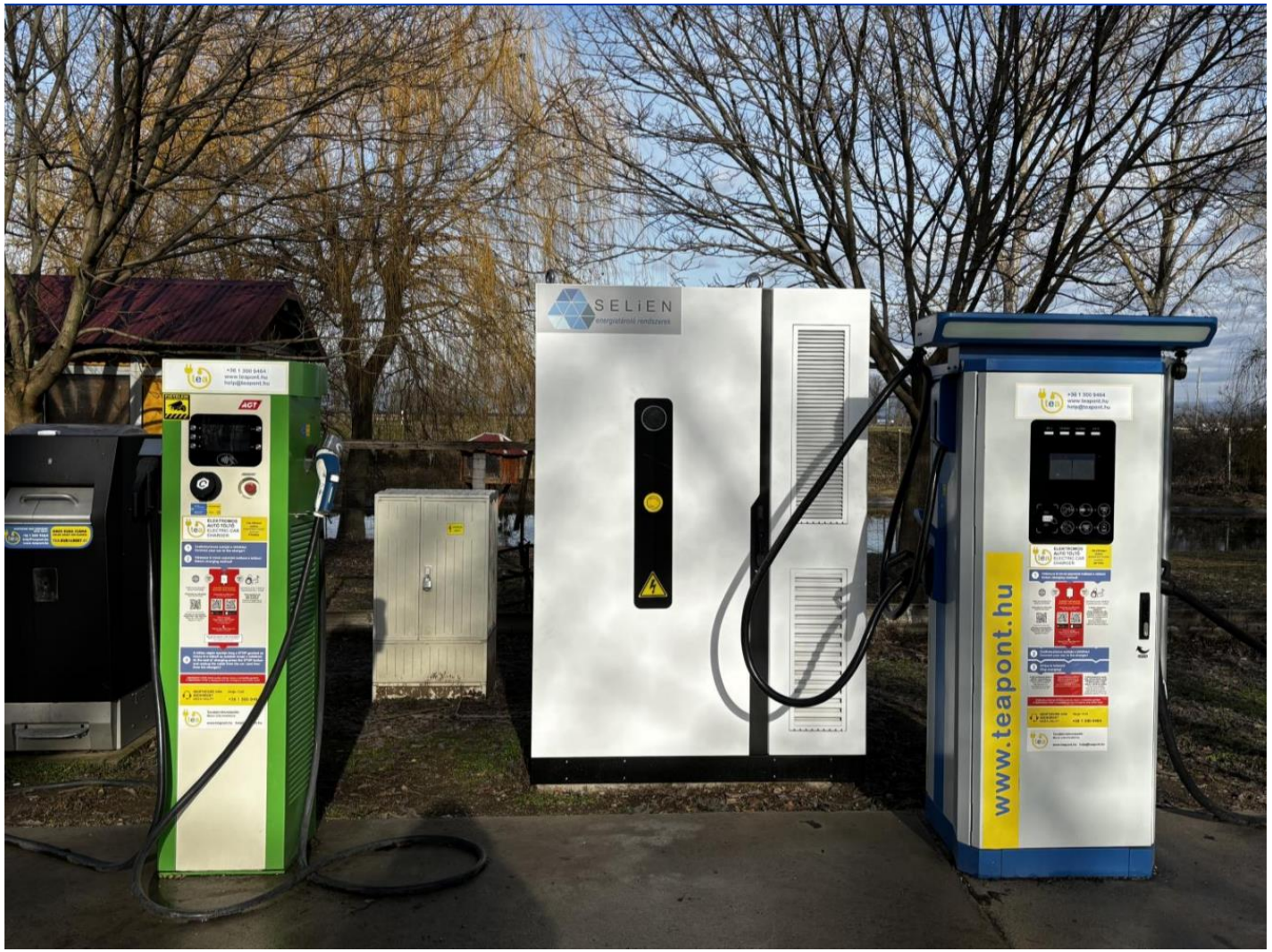
Project Background:

- Rising renewable share increases grid frequency instability risks in Sweden.
- Electricity market demands rapid-response frequency regulation services.

Project Highlights:

- Millisecond-level response to grid fluctuations via real-time charge/discharge.
- Optimize revenue by providing high-value frequency regulation services.

Case Study



Arbitrage + Capacity Augmentation

PV+ESS+EV

Central Europe

105kW/215kWh/Z BOX-C 215

Project Background:

- PV+ESS+EV/ESS+EV demand surge necessitates scalable, reliable power solutions.

Project Highlights:

- Enhances PV consumption rate, smooths power fluctuations and improves system reliability.
- Uses peak-valley electricity price differences to cut operating costs and boost economic viability.
- Enables charging station to achieve energy capacity augmentation.

Full-Scenario Applications

30+ Countries

70+ Cities

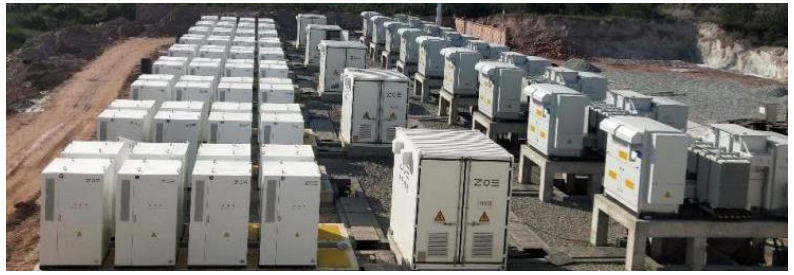
100+ Industries













ZOE

Meaning “Life" in Greek

Energy for Life

Every living entity in the universe represents a form of stored energy. ZOE originates from a profound focus on life - it is when energy assumes an orderly form that life comes into being. We witness each collision between life and the cosmos, subtle yet profoundly awe-inspiring; an interaction that is, in essence, a coupling of one form of energy with another.

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