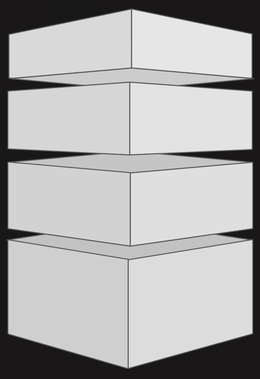
# Grid Guardian

## Renewable energy is unpredictable. Grid failures are **expensive**[1]. Grid Guardian monitors SSEN's live feeders in real-time, using **self-play AI** to predict failures before they happen—potentially saving millions in balancing costs.

| Traditional Tools | Grid Guardian |
|---|---|
| 🔴 Reactive | 🟢 Predictive |
| 🔴 Fixed rules | 🟢 Self-learning |
| 🔴 Blind to new patterns | 🟢 Continuously adapting |
| 🔴 High false alarms | 🟢 Under 3 false alarms daily |

**Powered by AZR**[2] — AI that teaches itself by generating and solving failure scenarios, then validating against real SSEN feeder data.



**Real-time Detection**
**Anomaly Detection Layer**
Flags irregular consumption patterns

**SSEN API**
**Live Grid Data**
30-min feeder measurements

**AZR Self-Play**[2]
**Self-Play Learning**
Generates failure scenarios & learns patterns

**UK-DALE & LCL**
**Training Datasets**
5,567 households validate realism

## Why Energy Partners **Need** This NOW?

**Cost Savings**
Early detection will save millions in grid balancing

**24/7 Monitoring**
30-minute updates catch issues traditional systems miss

**EU Compliance**
GDPR-compliant edge deployment

**Smart Operations**
Smart detection means fewer unnecessary truck rolls

## What Grid Guardian **Aims** to Deliver.

**Response Time**
Under 1 hour alerts

**Accuracy**
30%+ fewer missed failures

**Reliability**
Under 3 false alarms daily

**Deployment**
Edge-ready, 12MB footprint

## **Pilot with us**—apply the pipeline on real feeders & smart homes.

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[1] NESO Annual Balancing Costs Report 2025
[2] Absolute Zero Reasoner (AZR), arXiv:2505.03335, 2025