



RECONNECT
ENERGY

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Intelligent Grids. Frictionless Markets

Private and Confidential



REConnect Energy - Intelligent Grids. Frictionless Markets.



AI for RE Rich Grids

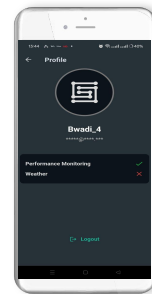
- Make grid integration of RE efficient
- Improve Project IRRs for RE Assets

Smart Grid Tech

- Enabling efficient grid operations
- Enabling RE rich Energy Grids

Energy transition for C&I

- Demand aggregation for C&I
- Least cost energy transition for C&I



Module	Key Features
RE Forecasting	AI based wind/solar/hybrid power forecasting – intra-day, day-ahead, week-ahead, plant availability update through mobile app
Scheduling	Energy dispatch data, logs, MIS
DSM Reporting	Financial analysis on revenue impact due to forecast errors
Weather forecasting	Weather forecasts – day-ahead, week-ahead, month-ahead
Asset Monitoring	Asset performance monitoring (recently added module, BETA ver.)
BESS – EMS	Central intelligence layer for operating the BESS System (Under development)

Module	Key Features
Forecasting	Renewables, Electricity Demand, Market Prices
Automated Dispatch	Energy scheduling as per applicable regulations
Deviation Accounting	Deviation and Settlement of energy scheduled
Optimal Dispatch	Electricity demand forecasting (intra-day, day/week/season ahead), Day-Ahead Spot (DAS) market provide forecasting
Billing & Settlement	Billing and revenue accounting as per applicable tariff regulation
AMI & Analytics	Head End System, Meter Data Management system led AMR

BESS Energy Management System - Overview

Central Intelligence Layer

EMS acts as the central intelligence layer for the Battery Energy Storage System - continuously monitoring grid conditions, battery parameters and load behaviour to automatically decide when and how the system charges, discharges or remains idle.

Safe Operation

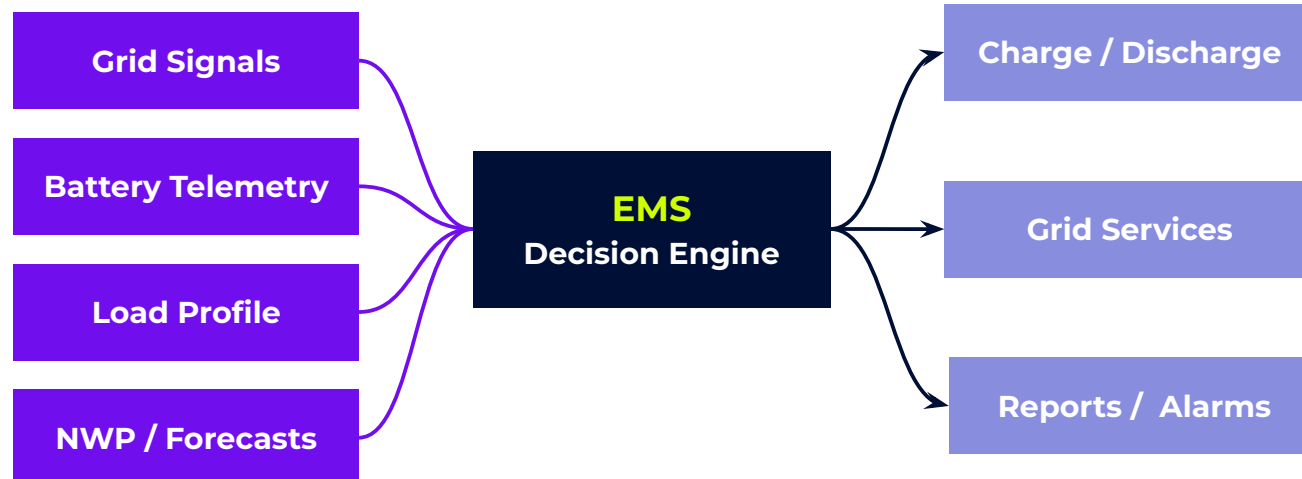
Cost Optimization

Peak Demand Reduction

Grid Support

Renewable Integration

Asset Longevity



Six outcomes the EMS is built to deliver



Safe operation

Stay within voltage, temperature, and charge limits at all times.



Cost optimization

Charge cheap, discharge expensive. Energy arbitrage on autopilot.



Peak demand reduction

Cut demand charges by supplying battery power during load peaks.



Grid support

Stabilize voltage, frequency, and power quality at the POI.



Renewable integration

Absorb surplus solar / wind instead of curtailing it.



Asset longevity

Intelligent C/D control extends battery life and warranty compliance.

Core EMS Functionalities - 1



Real-Time Monitoring and Situational Awareness

A unified view across all connected systems.

SOC, V, I, P, Q, Frequency, Charge / Discharge status, Grid / Island mode, and Auto / Manual mode



Battery State of Charge and Health Awareness

Battery health (cell/module/rack), HVAC status and Fire protection Status.

By monitoring long-term usage patterns, the EMS helps extend battery life and ensures compliance with performance guarantees.



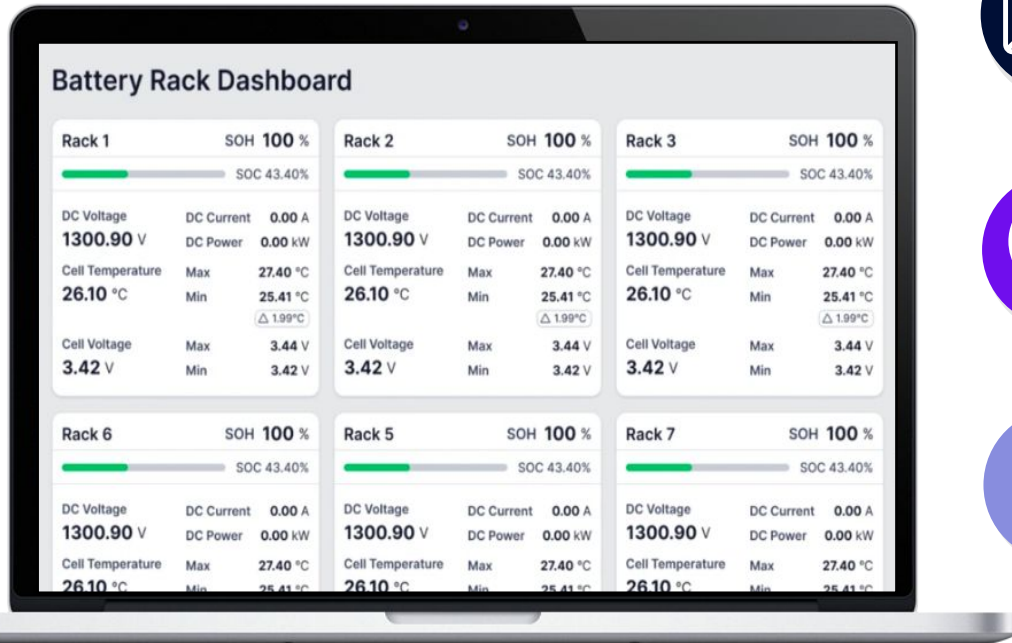
Visual Power Flow Representation

Full BESS layout, Power flow indication and Breaker status (Open/Close)



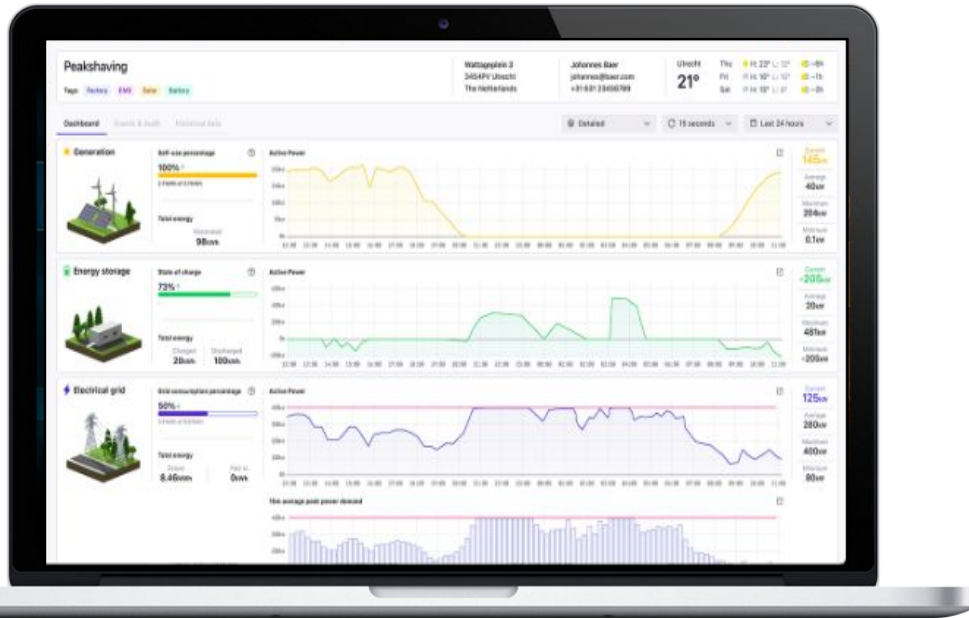
Frequency Regulation and Fast Grid Support

Continuous Grid frequency monitoring. When frequency deviates beyond acceptable limits, the EMS automatically responds by adjusting battery power output.



Note: Images provided are for representative purpose only.

Core EMS Functionalities - 2



****Note: Images provided are for representative purpose only.****



Peak Demand Management

EMS predicts upcoming peak demand using historical data and real-time consumption patterns. When a peak is expected, the EMS Automatically discharges the battery to reduce grid draw



Renewable Energy Integration and Curtailment Reduction

When excess renewable energy is available and cannot be exported to the grid, the EMS directs the battery to absorb surplus power instead of curtailing generation.



Market Participation Support

For systems connected to electricity markets or demand response programs, the EMS schedules battery operation based on price signals and grid conditions.



Load Leveling and Demand Smoothing

Excess energy during low-demand periods is stored, and the stored energy is used during high-demand periods.

High Level Architecture

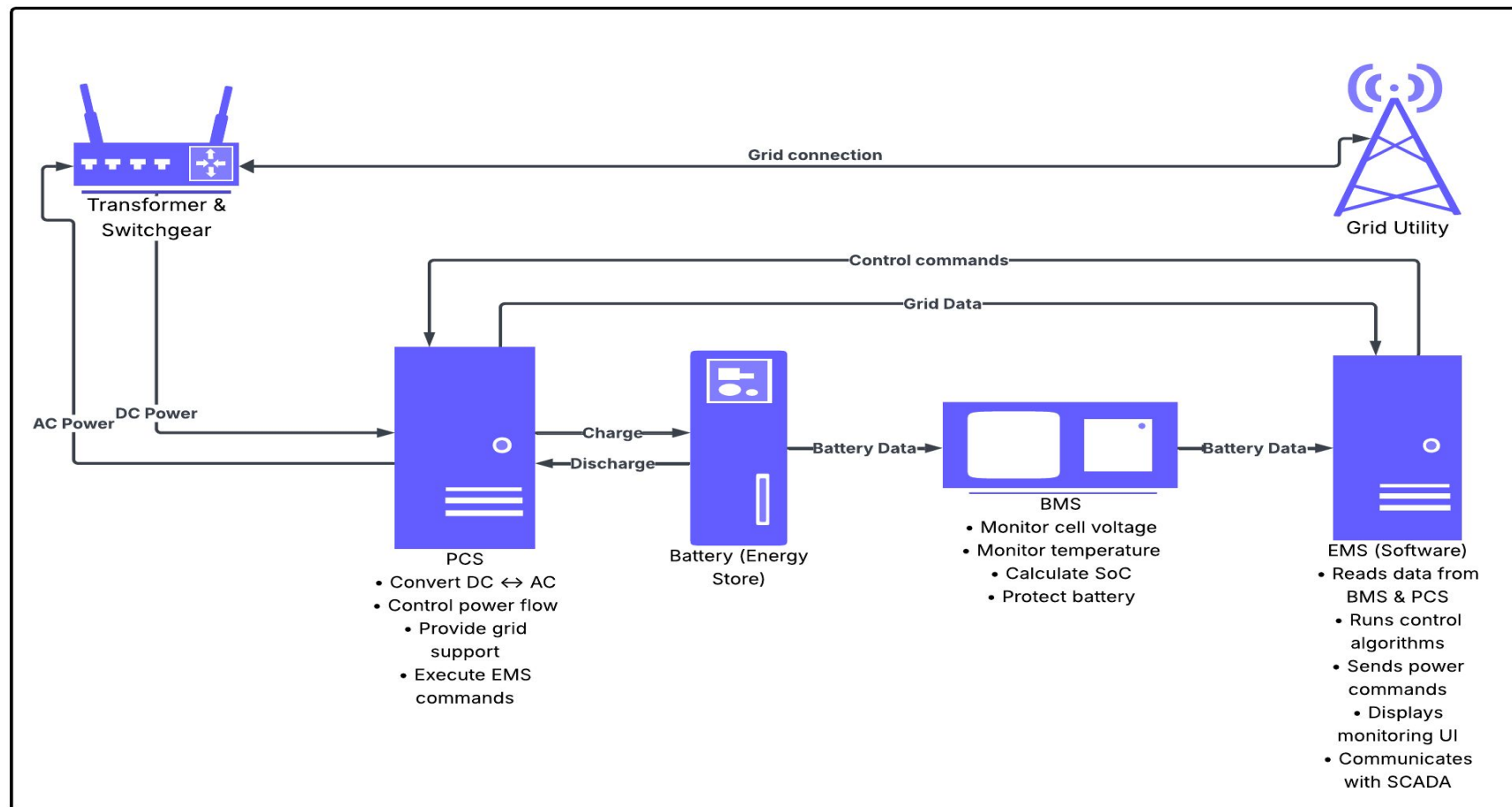
Forecasting & Optimization (AI Layer)
Generation, load, price, and SoC forecasts

Energy Management System (Control)
Real-time decisions: charge / discharge / idle. Grid-code compliance.

BMS / PCS / SCADA (Equipment)
Inverters, switchgear, protection.

Battery Hardware
Cell racks, cooling, fire safety.

How EMS, BMS & PCS work together



The flow shows battery data and AC/grid data feeding the EMS, control commands from the EMS to the PCS, and power flow loops for charge/discharge between battery, PCS, transformer, and grid.

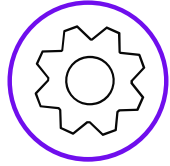
- The BMS monitors cell voltage, temperature, and state of charge (SoC) and provides battery data to the EMS
- The PCS converts between DC and AC, controls power flow, and handles charging/discharging between the battery and the grid.
- The EMS reads data from the BMS and PCS, runs control algorithms, issues power/control commands, provides a monitoring UI, and communicates with SCADA.
- Transformer & Switchgear interface AC power between the PCS and the Grid Utility

Application Features



Monitoring Dashboard

1. Key System level parameters
2. Forecast data like Price and Demand
3. BMU level dashboard for monitoring parameters of individual units.
4. Grid Frequency, Voltage & Power monitoring



Schedule configuration

1. Displays Automatic Schedules generated based on Optimization logic
2. To Manually include Web based inputs or upload schedule files



Energy Arbitrage panel

1. To predict and provide recommendations for charging and discharging using various arbitrage strategies like time of use, RTM, DAM etc.
2. Manual Override functionality to be provided



Configuration Page

To set various parameters like dead bands, Droop settings, Alarms etc. which are required for the various use cases of the EMS



Human Machine Interface

Single line diagram which would show the flow of electricity of the BESS system in real time



Alarms display

1. To Include various Events alarms
2. High Priority Alarms to be displayed as a pop up with an Acknowledge option which will only disappear once acknowledged

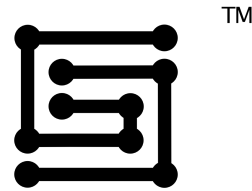


Reports

To set various parameters like dead bands, Droop settings, Alarms etc. which are required for the various use cases of the EMS

Connected to Grid?

you may need



GRIDConnect
Driving Decisions Digitally

Thank You!