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Energy Architect

Energy Management System (EMS)

Continuously monitors all energy sources, grid conditions, and system demand, adjusting control strategies in real time to maintain optimal performance.

Manages when to store or discharge energy based on real-time system data, while continuously monitoring system health and reacting to unexpected events to maintain safe and reliable operation.

Full control with the Energy Architect (EMS)

The Energy Managemenet System (EMS) is optimizing power infra-structure. Turning your battery energy storage into a profitable and flexible energy asset.

Cybersecure foundation

Pixii Energy Architect is built on a secure Linux-based platform with advanced communication protocols and strong cybersecurity measures. It ensures safe remote access, protects data integrity, and guarantees resilient operation, making it a trusted core for both on-grid and off-grid energy systems.

Autonomous control

The EMS delivers fully autonomous coordination of power sources and loads. By monitoring system health, grid conditions, and energy flows in real time, it ensures reliable and effi-cient performance under all operating conditions.

On-grid optimisation

Pixii Energy Architect maximizes the value of energy storage by combining cost-saving services such as peak shaving, PV self-consumption, and load shifting with revenue-generating applications like frequency regulation, voltage support, and arbitrage.

It dynamically adjusts charging and discharging based on forecasts, demand, and market signals to secure the best financial and operational outcome.

Off-grid resilience

For off-grid and weak-grid envi-ronments, the system intelligently manages batteries, renewables, and gensets. By prioritizing solar and battery use and running generators only when required, it reduces fuel consumption, extends equipment lifetime, and ensures uninterrupted supply to both critical and non-critical loads.

Coordinated services and revenue

The EMS balances primary battery applications with income-generating services to enhance reliability, prevent conflicts, and protect battery health. By stacking services and enabling participation in energy markets or integration with Virtual Power Plants, Pixii Energy Architect turns energy storage into a secure, efficient, and future-proof asset.

Highlights

- Advanced cybersecurity
- Autonomous operation
- Optimized efficiency
- Revenue generation
- Off-grid resilience
- Future-proof scalability

Key functions

- Peak shaving
- PV self-consumption
- Frequency & voltage support
- Arbitrage

The Energy Managemenet System (EMS) is connected through the Pixii Contoller and Pixii Cloud.

Pixii Energy Architect

Platform	
Operating system	Secure Linux-based
Programming environment	IEC 61131 compliant (CODESYS)
Architecture	Modular, scalable, supports multi-site

Security	
Data protection	Encryption & secure remote access
Network protection	Logical network segregation, managed Ethernet switch
Compliance	Follows industry cybersecurity standards

Communication and connectivity	
Supported protocols	Modbus TCP, MQTT, DNP3, REST API, OCPP
External integration	Building EMS, VPP aggregators, market signals via Modbus TCP

Control and functions	
Primary control	Real-time load monitoring and system health supervision
Battery applications	Peak shaving, PV self-consumption, load shifting, arbitrage
Grid services	Frequency regulation, voltage support, balancing
Generator integration	Autonomous management for hybrid/off-grid

Scalability	
I/O capacity	Supports hundreds of I/O points
Expansion	Flexible deployment for single or multi-site systems

Resilience	
Offline capability	Autonomous local operation if cloud access is lost
System redundancy	Ensures continuous operation across multiple energy sources

Typical use cases

Commercial EV charging operators & fleets
Optimize charging, ensure vehicles are efficiently charged and ready.

Renewable energy integrators
Manage renewable inputs, backup power, and EV charging through advanced control and optimization.

Grid operators (DNSP/DSO)
Balance grid loads, expand local capacity, and provide backup power during peak demand.

Facility and property managers
Manage and monitor energy use in large buildings and commercial sites with EV infrastructure.

Pixii Energy Architect EMS