



# Virtual Power Plant (VPP) & Aggregation

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# VPP & Aggregation



"A **Virtual Power Plant (VPP)** optimises, schedules, and dispatches aggregated assets to deliver grid services and participate in energy markets."

## Grid Balancing

Stabilizes frequency by coordinating distributed assets.

## Market Bidding

Enables automated participation in grid service markets.

## Real-Time setpoints

Sends fast charge/discharge commands fleet-wide.

"**Aggregation** brings together multiple distributed energy assets (BESS, PV, wind, EV chargers, industrial loads) into a single operational cluster."

## Unlock flexibility

Extracts available up/down regulation from each asset.

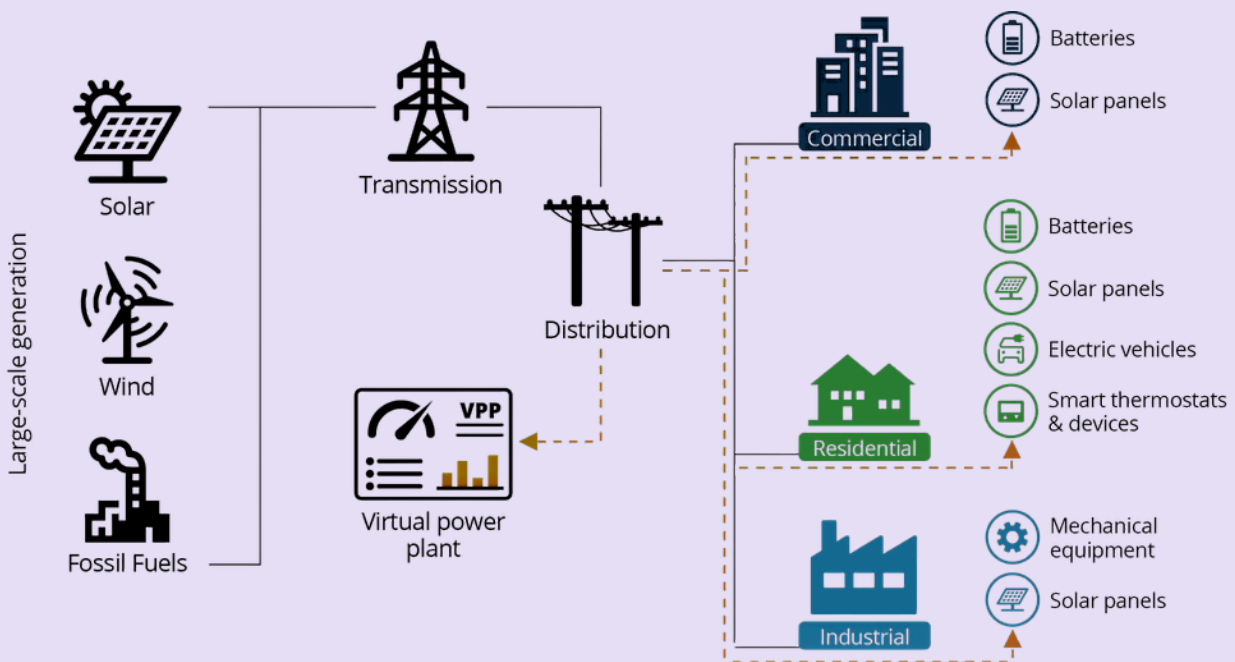
## Multi-Site Coordination

Operates multiple locations as one response unit.

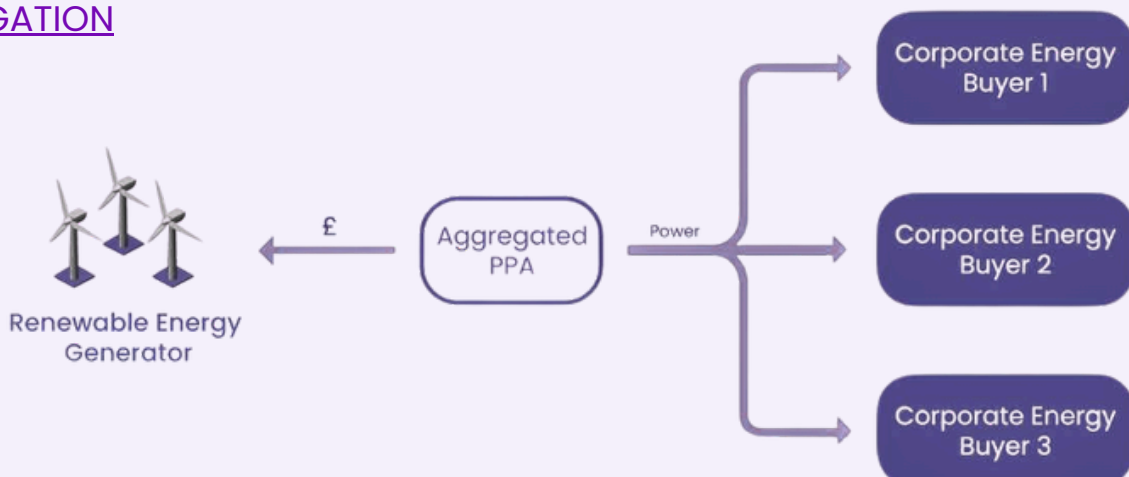
## Load-Generation Optimization

Balances renewables and consumption during deviations.

## VPP



## AGGREGATION



# PowerKonnekt Offers



## VPP

- 1. Real-Time Dispatch & Control:** Fast setpoint delivery, frequency response, and constraint management.
- 2. Market Participation Engine:** Day-Ahead, Intraday, aFRR, mFRR, FFR, Capacity Markets.
- 3. Forecasting Suite:** PV, wind, load & price forecasting for scheduling.
- 4. Optimization Engine:** SoC planning, renewable smoothing, lifecycle-aware operation.

## AGGREGATION

- 1. Multi-Asset, Multi-Brand Aggregation:** BESS, PV, wind, EVCS, loads, gensets - all integrated regardless of vendor.
- 2. Clustering & Pooling Logic:** Site-level, asset-level, or fleet-level grouping.
- 3. Flexibility Extraction:** Available load shift / charge / discharge potential identified in real time.
- 4. Cross-Site Coordination:** Optimizes power flows across multiple facilities or locations.

## CASE STUDY

**Project:** KEDEP  
**Size:** Total 1.12 MWh  
**Location:** Türkiye (İstanbul, Eskişehir, Denizli)

### Key Capabilities Demonstrated

- Multi-Site VPP operation in Real Time
- Unified Control & Dispatch
- Performance Tracking Across the Fleet
- Operational Intelligence on a Single Screen
- Peak Limiting, Load Following and Reactive Power Support



### Outcome

PowerKonnekt enables:

- Centralized visibility for distributed assets
- Faster operational decisions
- Stronger coordination between BESS and critical loads
- Investment Postponement in 3 residential districts
- A ready foundation for a scalable aggregation operation





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