

PARTNERS



Spectral Enterprise B.V.
spectral.energy

PROJECT

EU Programme:

Horizon 2020 Innovation Action

Coordination:

City of Amsterdam

Partners:

29 partners, 10 countries

European grant:

19.6 M€

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🌐 [AtelierH2020](https://www.linkedin.com/company/atelierh2020)

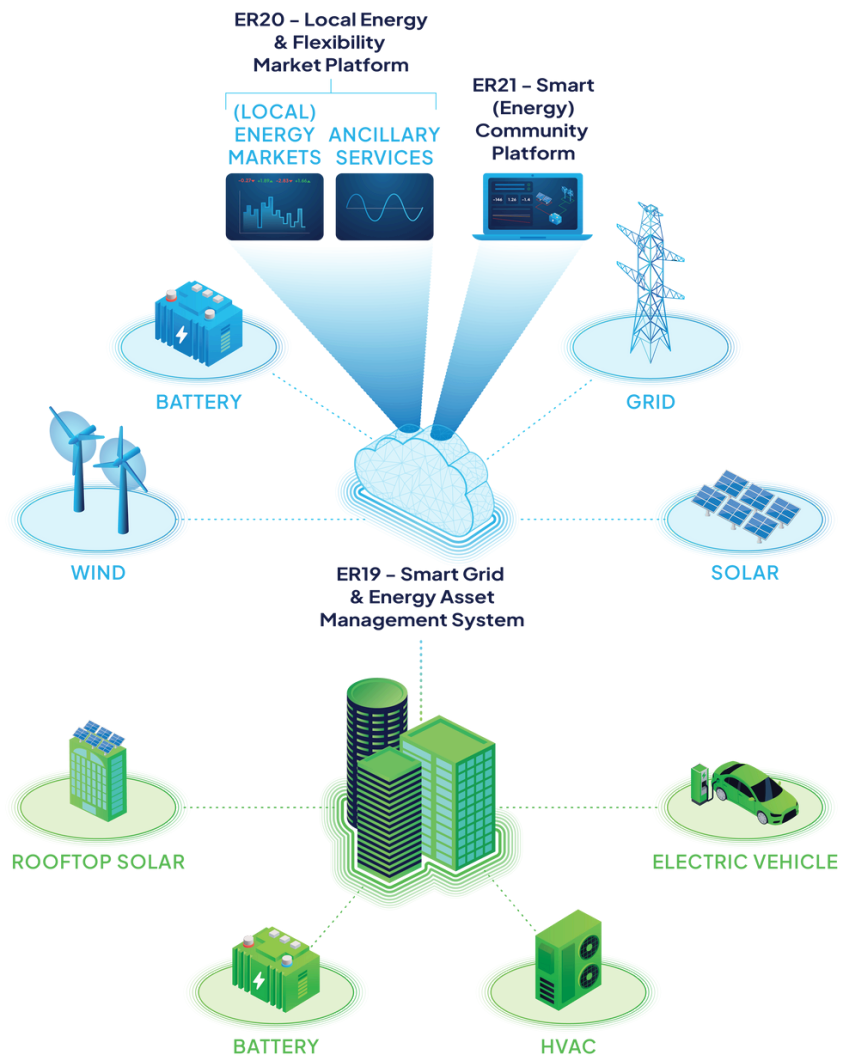
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Advanced Energy Management System with Integrated Energy Market Services

Result in a nutshell

The development of a software platform that unlocks the flexibility of various types of assets, provides valuable insights via a dashboard and utilizes the flexibility on various energy markets, thereby creating additional revenue streams for the asset owner(s).



Demonstration site

Republica - Amsterdam

- >20.000m² of (commercial) real estate
- One grid connection
- Rooftop solar
- Battery
- EV chargers
- ATES + addition storage
- HVAC optimization



Detail on result

Technical aspects:

Advanced Energy Management System with Integrated Energy Market Services:

- Technology and market party agnostic software platform
- Integrate with a variety of assets and protocols; including batteries, RES, HVAC (via BMS) and EV chargers
- Redundant design for high reliability (both gateway and software)
- Integration with trading system of Dutch TSO (TenneT) and DSO's congestion management platform
- Support of day ahead, imbalance, aFRR, FCR and local market trading and services
- Imbalance price forecast
- Dynamic merit order of assets
- Orchestration and optimization of virtual pool of assets; for grid capacity management and market services
- Advanced dashboard for monitoring and insights

Republica Demonstration:

- Optimization behind one combined grid connection
- Peak load management (congestion) and trading optimization (day ahead, imbalance and ancillary services)
- Administration of consumption and production for all users

Advantages:

- Robust platform
- One stop shop
- Higher ROI on assets by means of value stacking (providing access to and optimization for different market services)
- Valuable insights in energy streams and performance of the EMS and the assets
- High level of flexibility; platform support all types of assets and can integrate with all market parties

Challenges:

- Keeping the assets library up-to-date due to lack of standardization. Additional work to integrate with new brands and types of assets
- Different energy market set up throughout Europe. Adjustments required before being able to use the platform outside of the Netherlands
- Alignment with various parties required for local integration with assets and data network. Process is time consuming and a hinder for scalability

Further development

Potential for further development:

- Support of other energy markets like mFRR (manual Frequency Restoration Reserve)
- Adaptation for market regulations in other EU countries (Belgium and Germany already in progress)
- Support of more types of assets
- Further standardization, providing self-service features for resellers

Potential areas of applicability:

- Focus on application with larger assets and grid connection >500kW
- Most market traction from big utility companies and RES investors
- First steps of expanding the service area from the Netherlands to Germany, Belgium and Poland