

# Europe Virtual Power Plant Market: Focus on Application, Product, and Country Analysis - Analysis and Forecast, 2025-2035

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## Abstracts

The Europe virtual power plant market is projected to reach \$5,368.8 million by 2035 from \$1,221.0 million in 2024, growing at a CAGR of 14.48% during the forecast period 2025-2035. The market for virtual power plants (VPPs) in Europe is expanding because to the fast growth of distributed energy resources, the growing reliance on software-enabled grid flexibility, and the mounting challenges to system dependability brought on by electrification and intermittent renewable energy. VPPs are becoming a scalable and quick-to-deploy solution that combines rooftop solar, battery storage, EV chargers, smart appliances, and industrial loads into dispatchable capacity as European utilities and grid operators look to postpone costly network improvements. With the use of mixed-asset VPPs and demand response, distributed generation is anticipated to drive technological adoption. VPPs are positioned as a crucial part of Europe's adaptable, decarbonized power systems due to favorable EU policies, growing grid stress, and regulatory fragmentation and cybersecurity concerns.

## Market Introduction

The market for virtual power plants (VPPs) in Europe is expanding rapidly as the continent moves closer to decentralized, low-carbon energy systems. European power grids are facing increasing demands for flexibility and dependability due to the growing use of renewable energy, the extensive electrification of transportation and heating, and the quick growth of distributed energy resources. By digitally combining resources like rooftop solar PV, battery storage, electric vehicle chargers, smart appliances, and flexible industrial loads into a single, dispatchable resource, virtual power plants solve these problems. In order to improve grid balancing, increase resilience, and postpone capital-intensive network improvements, utilities, transmission and distribution system

operators, and energy aggregators are implementing VPPs.

As Europe gets closer to decentralized, low-carbon energy systems, the market for virtual power plants (VPPs) is growing quickly. Due to the rapid expansion of dispersed energy resources, the widespread electrification of transportation and heating, and the expanding use of renewable energy, European power grids are under increasing pressure to be flexible and reliable. Virtual power plants address these issues by digitally merging resources such as rooftop solar PV, battery storage, electric vehicle chargers, smart appliances, and flexible industrial loads into a single dispatchable resource. Utilities, transmission and distribution system operators, and energy aggregators are using VPPs to enhance grid balancing, boost resilience, and delay capital-intensive network upgrades.

### **Market Segmentation:**

#### Segmentation 1: by End User

Industrial

Commercial

Residential

#### Segmentation 2: by Technology

Distribution Generation

Demand Response

Mixed Asset

#### Segmentation 3: by Source

Renewable Energy

Energy Storage Systems

## Cogeneration

### Segmentation 4: by Region

Europe: Germany, France, U.K., Italy, and Rest-of-Europe

### Europe Virtual Power Plant Market trends, Drivers and Challenges

#### Market Trends

Rapid growth in distributed energy resources (DERs), particularly rooftop solar PV and behind-the-meter battery storage across residential and commercial sectors

Increasing adoption of software-driven energy management platforms enabling real-time aggregation, forecasting, and dispatch of distributed assets

Rising participation of electric vehicles and smart charging infrastructure as flexible grid resources

Expansion of local flexibility markets and ancillary service participation for aggregated DERs across EU member states

Growing role of energy aggregators and digital energy service providers partnering with utilities and grid operators

Integration of AI and advanced analytics to optimize asset performance, price signals, and grid balancing services

#### Market Drivers

High penetration of intermittent renewable energy creating demand for fast, flexible balancing solutions

Strong EU decarbonization and energy security targets supporting demand-side flexibility and distributed generation

Pressure on TSOs and DSOs to defer grid investments while maintaining reliability and resilience

Falling costs of solar PV, battery storage, and smart energy devices improving VPP economics

Policy support for demand response, capacity markets, and flexibility services across major European economies

Increasing digitalization of power networks and rollout of smart grid technologies

## Market Challenges

Fragmented regulatory frameworks and varying market rules across European countries limiting scalability

Cybersecurity and data privacy risks associated with aggregated customer-owned assets

Uneven smart meter and grid telemetry penetration across regions

Limited customer awareness and engagement, especially among residential and SME segments

Complex interoperability and standardization issues across devices, platforms, and grid operators

Uncertain or evolving revenue models in some flexibility and ancillary service markets

## How can this report add value to an organization?

**Product/Innovation Strategy:** This report provides in-depth insight into evolving virtual power plant (VPP) technologies and aggregation models, enabling organizations to align their product strategies with emerging grid needs. It examines innovations such as AI-driven DER orchestration, advanced forecasting algorithms, bi-directional EV

charging, IoT-enabled device control, and grid-aware optimization engines that enable real-time coordination of distributed energy resources (DERs). These advancements are reshaping the VPP landscape by improving flexibility, reducing grid congestion, and enabling automated participation in energy, capacity, and ancillary service markets. The report highlights how modular VPP platforms, capable of aggregating batteries, solar PV, smart appliances, industrial loads, and EV chargers, offer scalability and adaptability across residential, commercial, and industrial applications. By identifying key technology trends, regulatory enablers, and competitive product benchmarks, the report supports R&D planning, platform development, and long-term innovation road mapping for stakeholders in energy markets.

**Growth/Marketing Strategy:** The Europe virtual power plant market presents significant growth opportunities for utilities, technology developers, aggregators, and hardware manufacturers. Key strategies shaping this market include large-scale DER aggregation programs, strategic partnerships between utilities and tech firms, expansion of residential and commercial battery orchestration, and geographic scaling of pilot programs into full commercial deployments. Companies are increasingly investing in AI-based optimization, smart meter integration, EV charging control, and advanced demand-response capabilities to enhance VPP performance and unlock new revenue streams. The growing need for grid flexibility, rising penetration of distributed generation, and regulatory support are accelerating market adoption across Europe and emerging economies. These developments enable new customer acquisition models, demand-side monetization, and expanded platform offerings across multiple end-user segments.

**Competitive Strategy:** The report profiles key players in the VPP ecosystem, including aggregators, DER technology providers, battery and inverter manufacturers, demand-response specialists, and advanced analytics firms. The competitive landscape includes strategic partnerships, utility collaborations, multi-region deployments, hardware–software integration initiatives, and grid services contracts. This analysis enables stakeholders to identify high-growth market segments and refine their competitive positioning through technology differentiation, geographic expansion, regulatory alignment, and customer-side innovation. As VPPs become increasingly vital for grid stability and decarbonization, competition is intensifying around orchestration sophistication, data intelligence, interoperability, and the ability to scale DER aggregation across diverse markets and regulatory frameworks.

## **Key Market Players and Competition Synopsis**

The companies that are profiled in the Europe virtual power plant market have been selected based on inputs gathered from primary experts, who have analyzed company coverage, product portfolio, and market penetration.

**Some of the prominent names in the market are:**

Statkraft AS

Next Kraftwerke GmbH

Enel X S.r.l.

Flexitricity

sonnenGroup

Octopus Energy

EDF Energy

This report can be delivered in 2 working days.

## Contents

Executive Summary  
Scope and Definition

### **1 MARKET: INDUSTRY OUTLOOK**

- 1.1 Trends: Current and Future Impact Assessment
  - 1.1.1 Rapid Growth of Battery-Based VPP Participation
  - 1.1.2 Expansion of VPPs into EV Charging and Mobility Ecosystems
  - 1.1.3 AI-Enabled Forecasting and Autonomous Demand Flexibility
- 1.2 Supply Chain Overview
  - 1.2.1 Value Chain Analysis
  - 1.2.2 Market Map
- 1.3 Pricing Forecast
- 1.4 Patent Filing Trend (by Country and Company)
  - 1.4.1 Patent Filing Trend (by Country)
  - 1.4.2 Patent Filing Trend (by Company)
- 1.5 Market Dynamics
  - 1.5.1 Market Drivers
    - 1.5.1.1 Growing Penetration of Distributed Renewable Energy
    - 1.5.1.2 Regulatory Push for DER Aggregation and Grid Services
    - 1.5.1.3 Rising Grid Stress and Reliability Demands
  - 1.5.2 Market Challenges
    - 1.5.2.1 Fragmented Interconnection Standards and Grid Protocols
    - 1.5.2.2 Limited Consumer Awareness and Participation Incentives
    - 1.5.2.3 Cybersecurity, Data-Privacy, and Operational Risk Concerns
  - 1.5.3 Market Opportunities
    - 1.5.3.1 Utility Partnerships for Grid Modernization
    - 1.5.3.2 Monetization of Residential and Small Commercial Flexibility
    - 1.5.3.3 Integration of VPPs with Microgrids and Community Energy Systems
- 1.6 Regulatory Landscape
  - 1.6.1 European Union: Harmonized Cross-Border Framework
  - 1.6.2 U.K.: Third-Party Aggregator Model
- 1.7 Stakeholder Analysis
  - 1.7.1 Use Case Analysis
  - 1.7.2 End Users and Buying Criteria
- 1.8 Comparative Analysis of Different Types of Virtual Power Plants (VPPs)
- 1.9 Case Studies

- 1.9.1 Next Kraftwerke (Germany – EU's Largest VPP)
- 1.9.2 Eneco CrowdNett (Netherlands)

## **2 REGION**

- 2.1 Regional Summary
- 2.2 Europe
  - 2.2.1 Regional Overview
    - 2.2.1.1 Driving Factors for Market Growth
    - 2.2.1.2 Factors Challenging the Market
  - 2.2.2 Application: End User
  - 2.2.3 Product: Technology
  - 2.2.4 Product: Source
  - 2.2.5 Europe (by Country)
    - 2.2.5.1 Germany
      - 2.2.5.1.1 Application: End User
      - 2.2.5.1.2 Product: Technology
      - 2.2.5.1.3 Product: Source
    - 2.2.5.2 U.K.
      - 2.2.5.2.1 Application: End User
      - 2.2.5.2.2 Product: Technology
      - 2.2.5.2.3 Product: Source
    - 2.2.5.3 Italy
      - 2.2.5.3.1 Application: End User
      - 2.2.5.3.2 Product: Technology
      - 2.2.5.3.3 Product: Source
    - 2.2.5.4 France
      - 2.2.5.4.1 Application: End User
      - 2.2.5.4.2 Product: Technology
      - 2.2.5.4.3 Product: Source
    - 2.2.5.5 Rest-of-Europe
      - 2.2.5.5.1 Application: End User
      - 2.2.5.5.2 Product: Technology
      - 2.2.5.5.3 Product: Source

## **3 MARKETS - COMPETITIVE BENCHMARKING & COMPANY PROFILES**

- 3.1 Competitive Landscape
- 3.2 Company Profiles

### 3.2.1 Statkraft AS

#### 3.2.1.1 Overview

#### 3.2.1.2 Top Products/Product Portfolio

#### 3.2.1.3 Top Competitors

#### 3.2.1.4 Target Customers

#### 3.2.1.5 Key Personnel

#### 3.2.1.6 Analyst View

#### 3.2.1.7 Market Share, 2024

### 3.2.2 Next Kraftwerke GmbH

#### 3.2.2.1 Overview

#### 3.2.2.2 Top Products/Product Portfolio

#### 3.2.2.3 Top Competitors

#### 3.2.2.4 Target Customers

#### 3.2.2.5 Key Personnel

#### 3.2.2.6 Analyst View

#### 3.2.2.7 Market Share, 2024

### 3.2.3 Enel X S.r.l.

#### 3.2.3.1 Overview

#### 3.2.3.2 Top Products/Product Portfolio

#### 3.2.3.3 Top Competitors

#### 3.2.3.4 Target Customers

#### 3.2.3.5 Key Personnel

#### 3.2.3.6 Analyst View

#### 3.2.3.7 Market Share, 2024

### 3.2.4 Flexitricity

#### 3.2.4.1 Overview

#### 3.2.4.2 Top Products/Product Portfolio

#### 3.2.4.3 Top Competitors

#### 3.2.4.4 Target Customers

#### 3.2.4.5 Key Personnel

#### 3.2.4.6 Analyst View

#### 3.2.4.7 Market Share, 2024

### 3.2.5 sonnenGroup

#### 3.2.5.1 Overview

#### 3.2.5.2 Top Products/Product Portfolio

#### 3.2.5.3 Top Competitors

#### 3.2.5.4 Target Customers

#### 3.2.5.5 Key Personnel

#### 3.2.5.6 Analyst View

- 3.2.5.7 Market Share, 2024
- 3.2.6 Octopus Energy Ltd
  - 3.2.6.1 Overview
  - 3.2.6.2 Top Products/Product Portfolio
  - 3.2.6.3 Top Competitors
  - 3.2.6.4 Target Customers
  - 3.2.6.5 Key Personnel
  - 3.2.6.6 Analyst View
  - 3.2.6.7 Market Share, 2024
- 3.2.7 EDF Energy
  - 3.2.7.1 Overview
  - 3.2.7.2 Top Products/Product Portfolio
  - 3.2.7.3 Top Competitors
  - 3.2.7.4 Target Customers
  - 3.2.7.5 Key Personnel
  - 3.2.7.6 Analyst View
  - 3.2.7.7 Market Share, 2024

## **4 RESEARCH METHODOLOGY**

- 4.1 Data Sources
  - 4.1.1 Primary Data Sources
  - 4.1.2 Secondary Data Sources
  - 4.1.3 Data Triangulation
- 4.2 Market Estimation and Forecast

## List Of Figures

### LIST OF FIGURES

Figure 1: Europe Virtual Power Plant Market (by Scenario), \$Million, 2025, 2030, and 2035

Figure 2: Europe Virtual Power Plant Market, 2024 and 2035

Figure 3: Market Snapshot, 2024

Figure 4: Virtual Power Plant Market, \$Million, 2024 and 2035

Figure 5: Europe Virtual Power Plant Market (by Application), \$Million, 2024, 2030, and 2035

Figure 6: Europe Virtual Power Plant Market (by Technology), \$Million, 2024, 2030, and 2035

Figure 7: Europe Virtual Power Plant Market (by Source), \$Million, 2024, 2030, and 2035

Figure 8: Virtual Power Plant Market Segmentation

Figure 9: Next Kraftwerke (Germany – EU's Largest VPP)

Figure 10: Eneco CrowdNett (Netherlands)

Figure 11: Germany Virtual Power Plant Market, \$Million, 2024-2035

Figure 12: U.K. Virtual Power Plant Market, \$Million, 2024-2035

Figure 13: Italy Virtual Power Plant Market, \$Million, 2024-2035

Figure 14: France Virtual Power Plant Market, \$Million, 2024-2035

Figure 15: Rest-of-Europe Virtual Power Plant Market, \$Million, 2024-2035

Figure 16: Strategic Initiatives, January 2022-August 2025

Figure 17: Data Triangulation

Figure 18: Top-Down and Bottom-Up Approach

Figure 19: Assumptions and Limitations

## List Of Tables

### LIST OF TABLES

- Table 1: Market Snapshot
- Table 2: Competitive Landscape Snapshot
- Table 3: Trends: Current and Future Impact Assessment
- Table 4: Market Map
- Table 5: Annual Average Pricing Forecast (2024–2035), \$/W
- Table 6: Drivers, Challenges, and Opportunities, 2024-2035
- Table 7: Comparative Analysis of Different Types of VPPs
- Table 8: Virtual Power Plant Market (by Region), \$Million, 2024-2035
- Table 9: Virtual Power Plant Market (by Region), MW, 2024-2035
- Table 10: Europe Virtual Power Plant Market (by End User), \$Million, 2024-2035
- Table 11: Europe Virtual Power Plant Market (by End User), MW, 2024-2035
- Table 12: Europe Virtual Power Plant Market (by Technology), \$Million, 2024-2035
- Table 13: Europe Virtual Power Plant Market (by Technology), MW, 2024-2035
- Table 14: Europe Virtual Power Plant Market (by Source), \$Million, 2024-2035
- Table 15: Europe Virtual Power Plant Market (by Source), MW, 2024-2035
- Table 16: Germany Virtual Power Plant Market (by End User), \$Million, 2024-2035
- Table 17: Germany Virtual Power Plant Market (by End User), MW, 2024-2035
- Table 18: Germany Virtual Power Plant Market (by Technology), \$Million, 2024-2035
- Table 19: Germany Virtual Power Plant Market (by Technology), MW, 2024-2035
- Table 20: Germany Virtual Power Plant Market (by Source), \$Million, 2024-2035
- Table 21: Germany Virtual Power Plant Market (by Source), MW, 2024-2035
- Table 22: U.K. Virtual Power Plant Market (by End User), \$Million, 2024-2035
- Table 23: U.K. Virtual Power Plant Market (by End User), MW, 2024-2035
- Table 24: U.K. Virtual Power Plant Market (by Technology), \$Million, 2024-2035
- Table 25: U.K. Virtual Power Plant Market (by Technology), MW, 2024-2035
- Table 26: U.K. Virtual Power Plant Market (by Source), \$Million, 2024-2035
- Table 27: U.K. Virtual Power Plant Market (by Source), MW, 2024-2035
- Table 28: Italy Virtual Power Plant Market (by End User), \$Million, 2024-2035
- Table 29: Italy Virtual Power Plant Market (by End User), MW, 2024-2035
- Table 30: Italy Virtual Power Plant Market (by Technology), \$Million, 2024-2035
- Table 31: Italy Virtual Power Plant Market (by Technology), MW, 2024-2035
- Table 32: Italy Virtual Power Plant Market (by Source), \$Million, 2024-2035
- Table 33: Italy Virtual Power Plant Market (by Source), MW, 2024-2035
- Table 34: France Virtual Power Plant Market (by End User), \$Million, 2024-2035
- Table 35: France Virtual Power Plant Market (by End User), MW, 2024-2035

Table 36: France Virtual Power Plant Market (by Technology), \$Million, 2024-2035

Table 37: France Virtual Power Plant Market (by Technology), MW, 2024-2035

Table 38: France Virtual Power Plant Market (by Source), \$Million, 2024-2035

Table 39: France Virtual Power Plant Market (by Source), MW, 2024-2035

Table 40: Rest-of-Europe Virtual Power Plant Market (by End User), \$Million, 2024-2035

Table 41: Rest-of-Europe Virtual Power Plant Market (by End User), MW, 2024-2035

Table 42: Rest-of-Europe Virtual Power Plant Market (by Technology), \$Million, 2024-2035

Table 43: Rest-of-Europe Virtual Power Plant Market (by Technology), MW, 2024-2035

Table 44: Rest-of-Europe Virtual Power Plant Market (by Source), \$Million, 2024-2035

Table 45: Rest-of-Europe Virtual Power Plant Market (by Source), MW, 2024-2035

Table 46: Company Market Share, 2024

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