

Virtual Power Plant

Report on the Greek market and a case study of Optimus Energy's renewable energy market integration using the emsys VPP solution

Felix Arnold
MBCSE, 12.05.2025

Agenda

- Introduction of Optimus Energy
- Introduction of emsys VPP
 - The Virtual Power Plant service
- Starting cooperation on VPP and forecasting
- Special characteristics of the Greek market
- Use cases of the VPP for Optimus Energy in the Greek market
 - Renewable curtailment
 - Balancing power services with renewables
- Achievements to date

Introduction of Optimus Energy

Optimus Energy is the #1 renewable energy aggregator in Greece. Since its foundation, the company paved a remarkable journey, achieving a clear lead over its competitors.

Producers

1400+

More than 1400 independent renewable energy producers in Greece trust Optimus Energy

MW

4000+

The installed capacity of our portfolio exceeds 4000 MW, making it the largest in the country

RES Plants

2900+

More than 2900 individual RES plants are currently represented in the energy market

Market Share

52%

Optimus Energy remains the leader among all private renewable energy aggregators in Greece

Services of Optimus Energy

Optimus Energy aims to unlock the full potential of renewable energy assets and storage systems.



Direct market participation

Market access for merchant or FiP RES assets with competitive representation fees and no hidden charges



Power Purchase Agreements (PPAs)

PPAs for subsidy free RES assets to capture optimal value in the market and PPAs for corporate buyers



Balancing Market participation

Access to our Dispatchable RES Portfolio for reserve provision to the TSO



Grid scale battery storage optimization & route-to-market

Optimization services of battery storage facilities and hybrid storage-RES plants



Demand-Response services

Optimization of industrial load to benefit from the Balancing Market

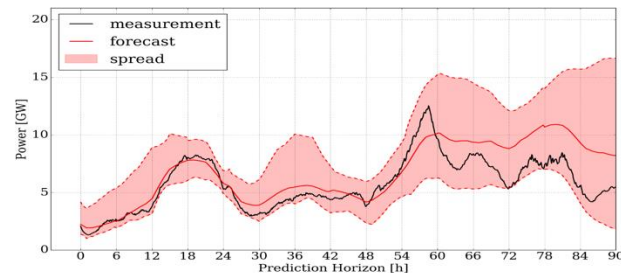


emsys: IT solutions for traders, grid and plant operators

- Founded in 2004
- Based in Oldenburg, Germany
- ~230 employees

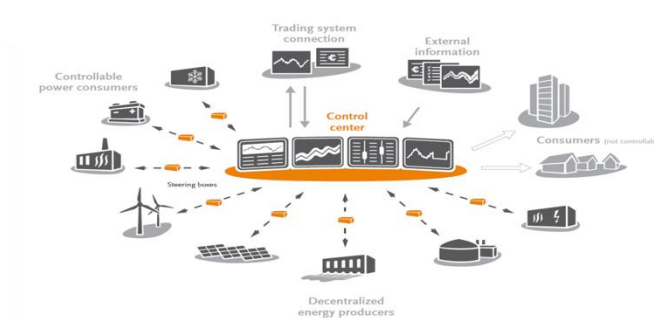


Power Forecasts



- Leading international provider of **solar and wind power forecasts (>600 GW)**
- Single plants, portfolios, balancing areas, markets

Virtual Power Plant



- Digital aggregation of renewable energy plants and other assets
- Monitoring, remote-control and trading of electricity production
- Market-leading SaaS solution in Europe **aggregating > 100GW** installed capacity

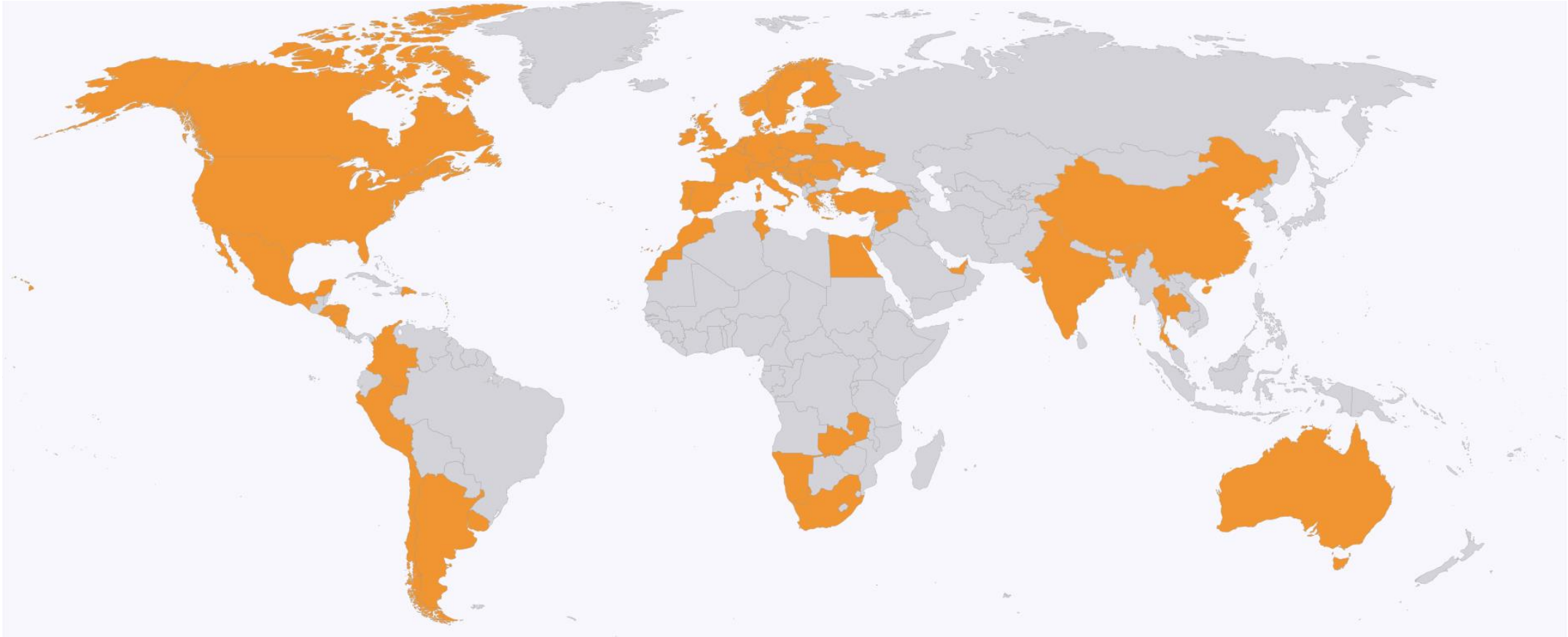
FuturePowerFlow



- IT platform for grid operators
- Forward-looking congestion management
- Preferred solution in Germany for Redispatch processes

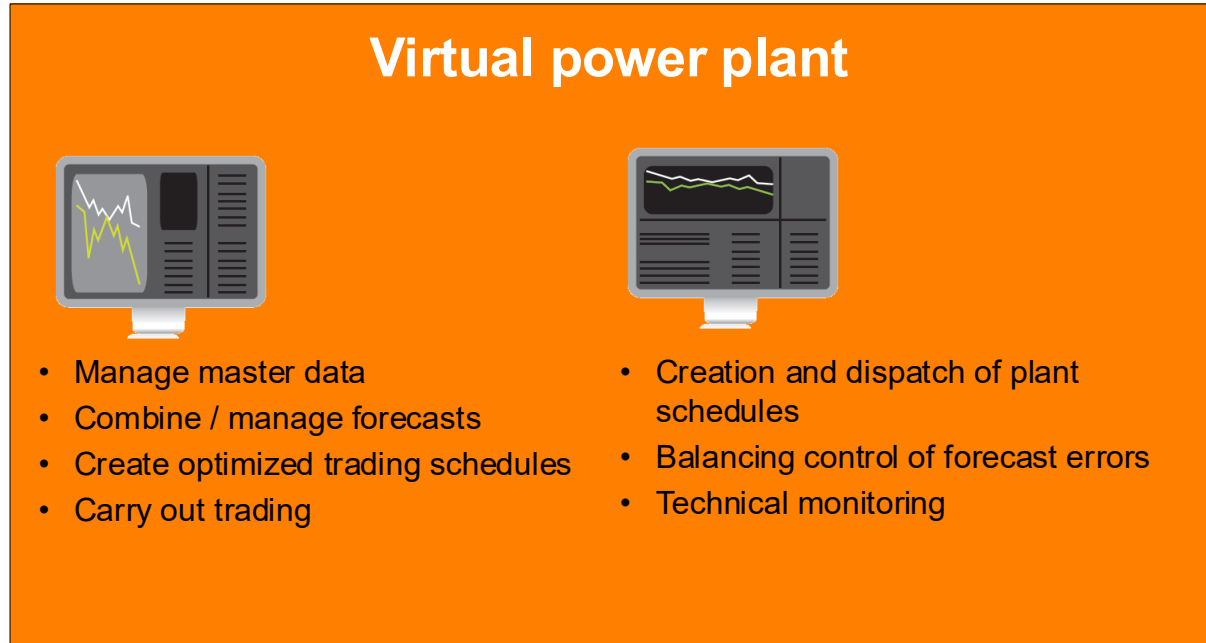
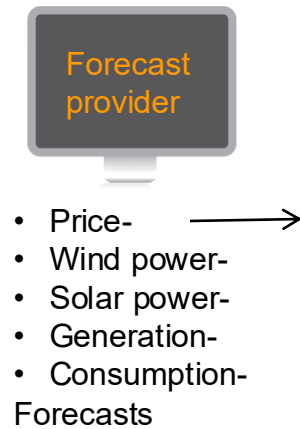
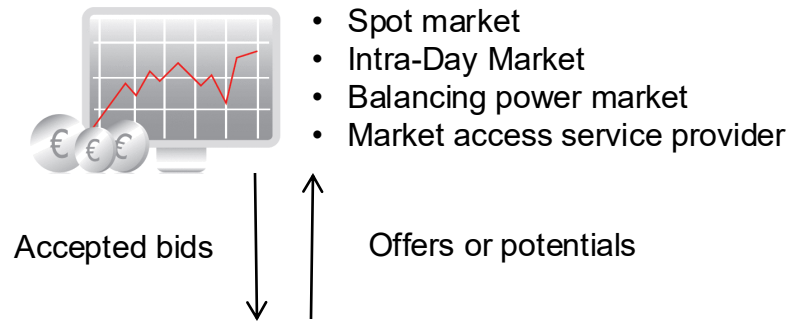
About energy & meteo systems, emsys VPP and emsys Grid Services

International activities

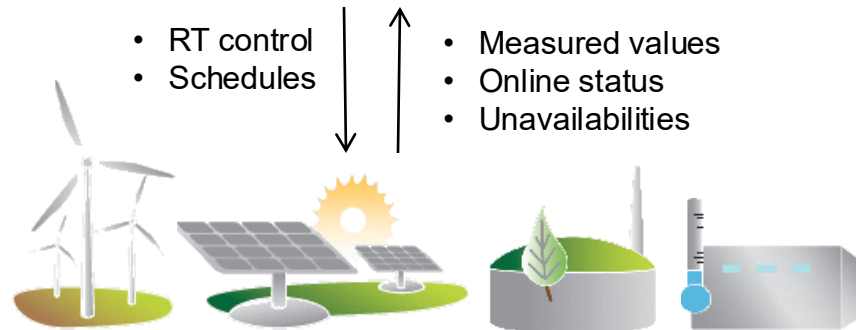


We are currently forecasting around **340 GW** of wind capacity and around **280 GW** of solar capacity

emsys' understanding of the VPP



- scheduling
- Real-time data (e.g. for balancing power pool)



Virtual power plant for renewables trading under development in Greece

Optimus Energy has announced a virtual power plant for renewables trading on the Greek wholesale electricity and balancing market. Work is already underway, with Germany-based emsys VPP connecting over 3,500 solar and wind power plants in Greece to its software suite.

Optimus Energy launches emsys VPP-powered Virtual Power Plant to trade renewable energy in Greece

Wholesale Electricity and Balancing Market in Focus: Optimus Energy Relies on the Virtual Power Plant of Emsys VPP for the Greek Market

Oldenburg, Germany / Athens, Greece – Optimus Energy, a leading Greek aggregate energy supplier, has announced its partnership with German technology provider Emsys VPP to supply its Virtual Power Plant (VPP) to the Greek wholesale electricity and balancing market.

Optimus Energy Launches Virtual Power Plant to Trade Renewable Energy in Greece

Optimus Energy συνεργάζεται με την emsys VPP για την ανάπτυξη εικονικού σταθμού παραγωγής ενέργειας

(Montel) Greek company Optimus Energy will use a “substantial portion” of its 4 GW portfolio by way of a virtual power plant to help balance the grid and limit curtailments of green power during times of surplus.

Reporting by: [Dalibor Dobrić](#)
09 Apr 2025 | 12:18

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Optimus Energy is contracted the German service provider emsys VPP to supply its Virtual Power Plant (VPP) to the Greek wholesale electricity and balancing market.

Optimus Energy συνεργάζεται με την emsys VPP για την ανάπτυξη εικονικού Σταθμού Παραγωγής Ενέργειας (Virtual Power Plant – VPP)

Optimus Energy επέλεξε τη γερμανική εταιρεία emsys VPP για την ανάπτυξη εικονικού Σταθμού Παραγωγής Ενέργειας (VPP)

Επιχειρήσεις

11:43 Τετάρτη 9 Απριλίου 2025

Η Optimus Energy συνεργάζεται με την emsys VPP για την ανάπτυξη εικονικού σταθμού παραγωγής ενέργειας

Η Optimus Energy κατέχει ηγετική θέση στην ελληνική αγορά, εκπροσωπώντας μερίδιο 50% του Προγράμματος Αγοράς (Market Schedule) σταθμών ΑΠΕ



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OPTIMUS ENERGY LAUNCHES EMSYS VPP-POWERED VIRTUAL POWER PLANT TO TRADE RENEWABLE ENERGY IN GREECE

Optimus Energy has contracted the German service provider emsys VPP to supply its Virtual Power Plant (VPP) to the Greek wholesale electricity and balancing market.

Optimus Energy taps emsys VPP to supply its Virtual Power Plant to the Greek wholesale electricity and balancing market.

Greek aggregate energy supplier Optimus Energy has announced its partnership with German technology provider Emsys VPP to supply its Virtual Power Plant (VPP) to the Greek wholesale electricity and balancing market.



Image courtesy emsys

With a portfolio of nearly 4GW of solar and wind power, Optimus Energy holds a leading market position in Greece, representing 50 % of the renewable capacity traded under the feed-in premium (FiP) scheme or through merchant participation, nationally.

According to Optimus Energy in a release, the collaboration enables the company to leverage a software-as-a-service (SaaS) solution, widely used by energy companies across Europe to maximise the value of their renewable energy portfolios in short-term energy markets.

Commenting in a release was Stella Zacharia, CEO of Optimus Energy, stating that the collaboration with emsys VPP leverages their industry-leading software solutions and extensive international expertise, which are instrumental in

Optimus Energy Launches emsys VPP-Powered Virtual Power Plant To Trade Renewable Energy Across Greece

By S.S. Dev • 14th April 2025

Like 4

Optimus Energy and emsys VPP take a step toward optimizing renewable energy in Greece

Optimus Energy implements an innovative solution with emsys VPP to market renewable energy in Greece.

By Ruth Arteaga on April 12, 2025



ΕΠΙΧΕΙΡΗΣΕΙΣ

Η Optimus Energy συνεργάζεται με την emsys VPP για την ανάπτυξη εικονικού σταθμού παραγωγής ενέργειας

OpenNet TV Corporate Brief Networking

Η Optimus Energy συνεργάζεται με την emsys VPP για την ανάπτυξη εικονικού σταθμού παραγωγής Ενέργειας (Virtual Power Plant – VPP)

Special characteristics of the Greek market so far



In 2024 first time that sell orders from RES portfolios in Day-Ahead market were not cleared.



No negative imbalance prices are allowed in Greek market.



TSO and DSO curtail in real time large amounts of RES for system stability.



Imbalances to RES portfolios created by curtailments are charged to market parties.



From Day-Ahead bidding, RES aggregators try to protect themselves by forecasting the level of curtailments.



There is no risk for leaving supply position unsold (due to low Day Ahead Prices).



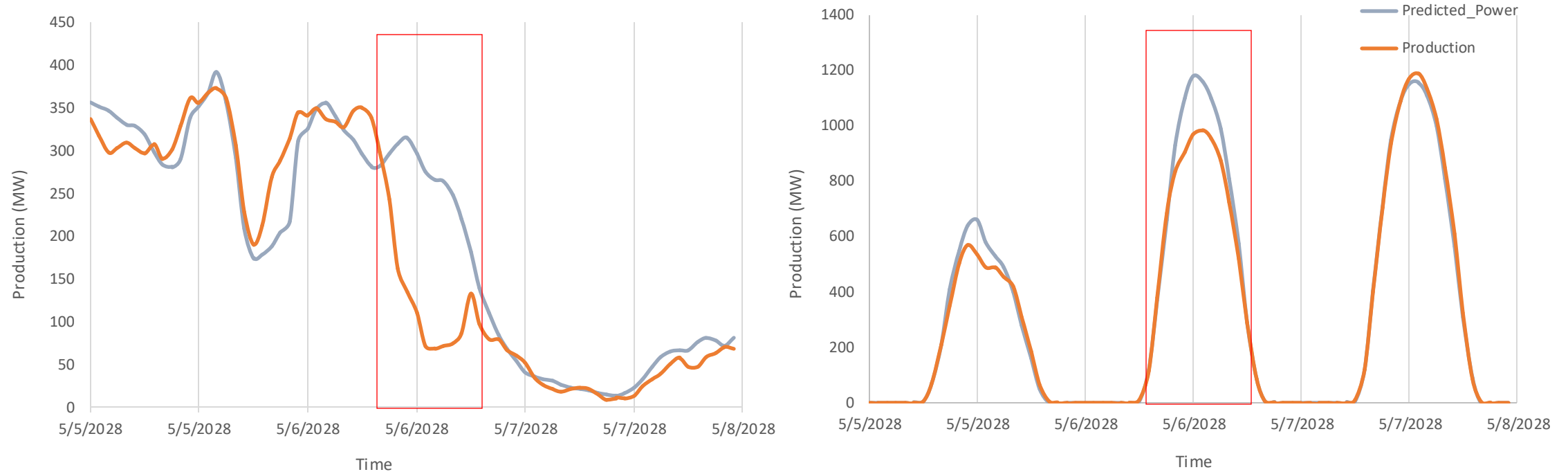
Not all power plants in aggregators portfolios are remote controllable for the TSO



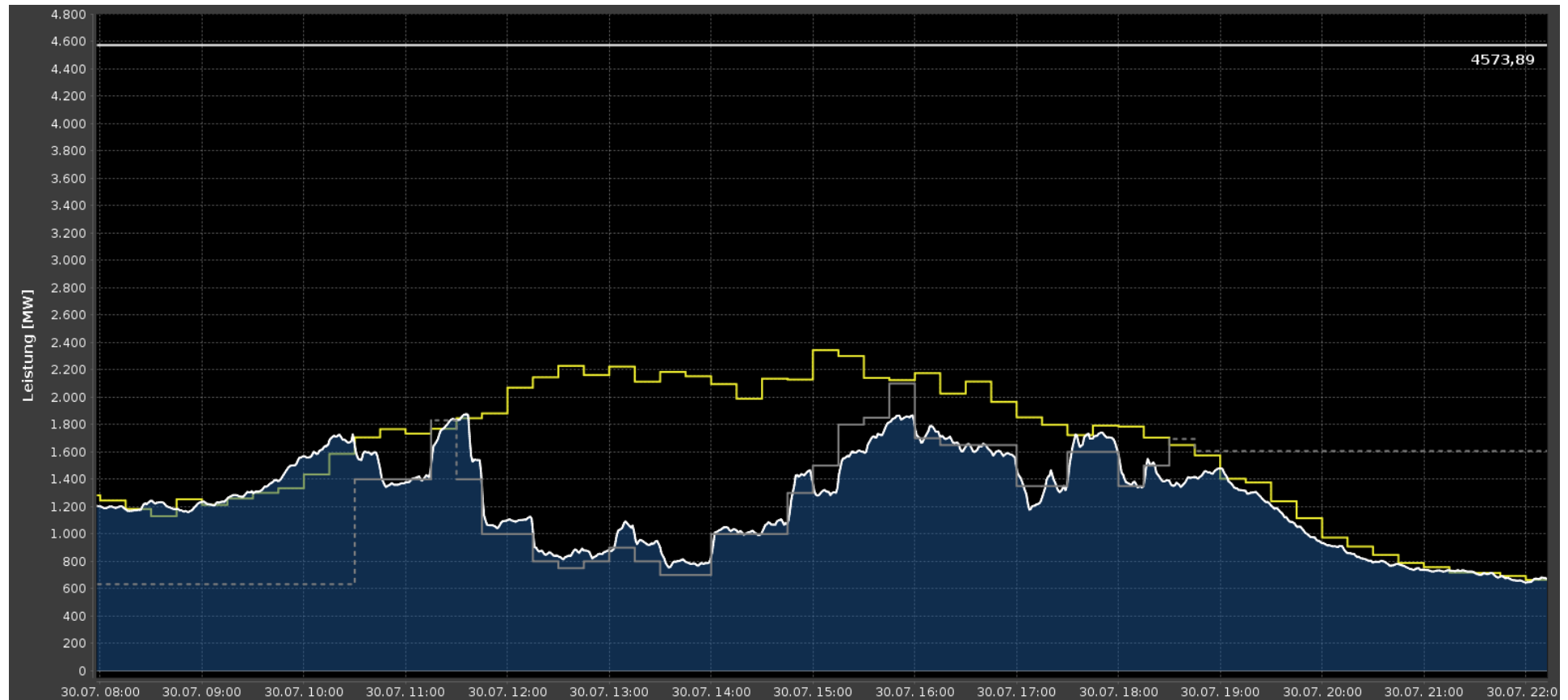
mFRR activation calculations are not suitable for RES aggregators

Curtailments by TSO in Greek market

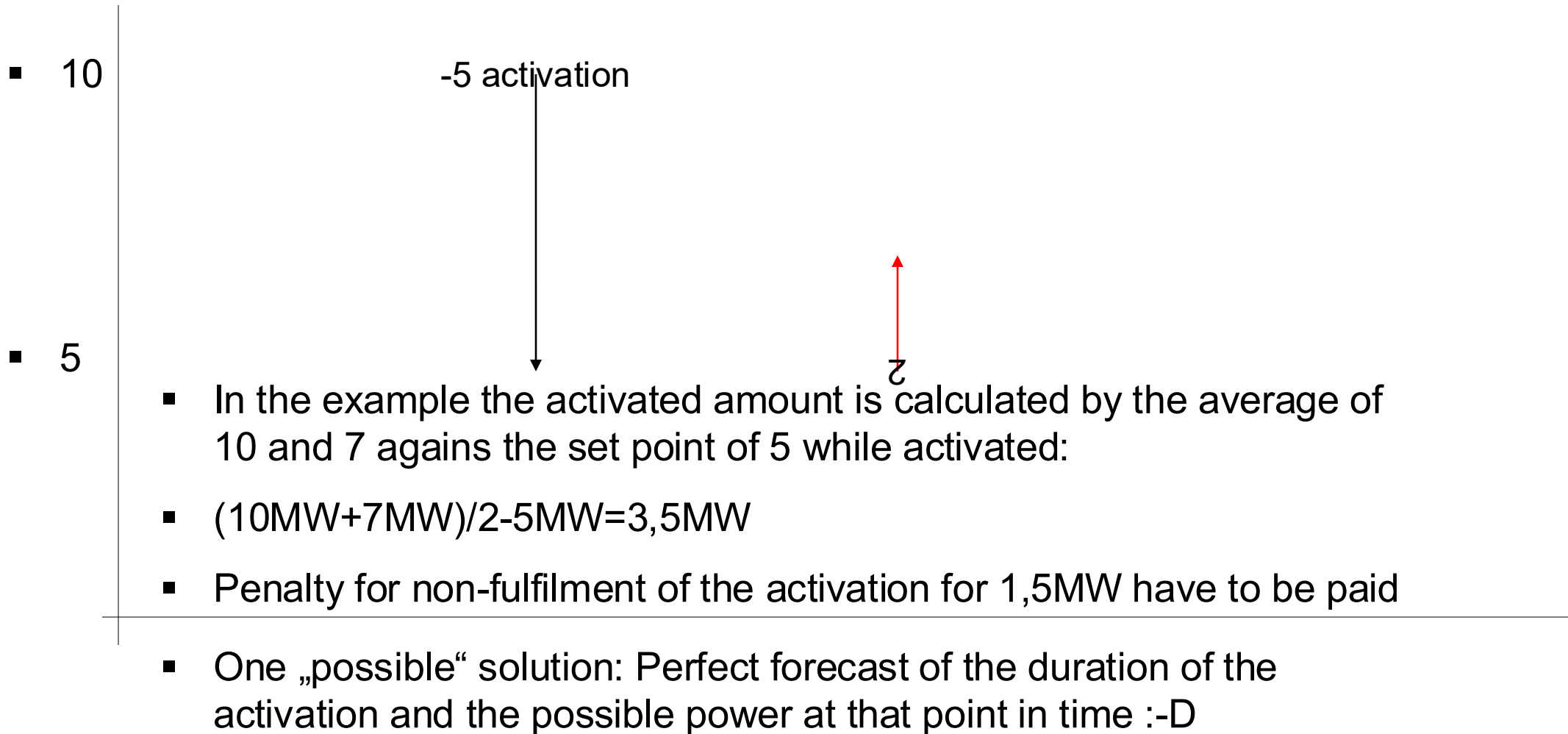
Curtailment risk is already materialized due to low or negative residual load



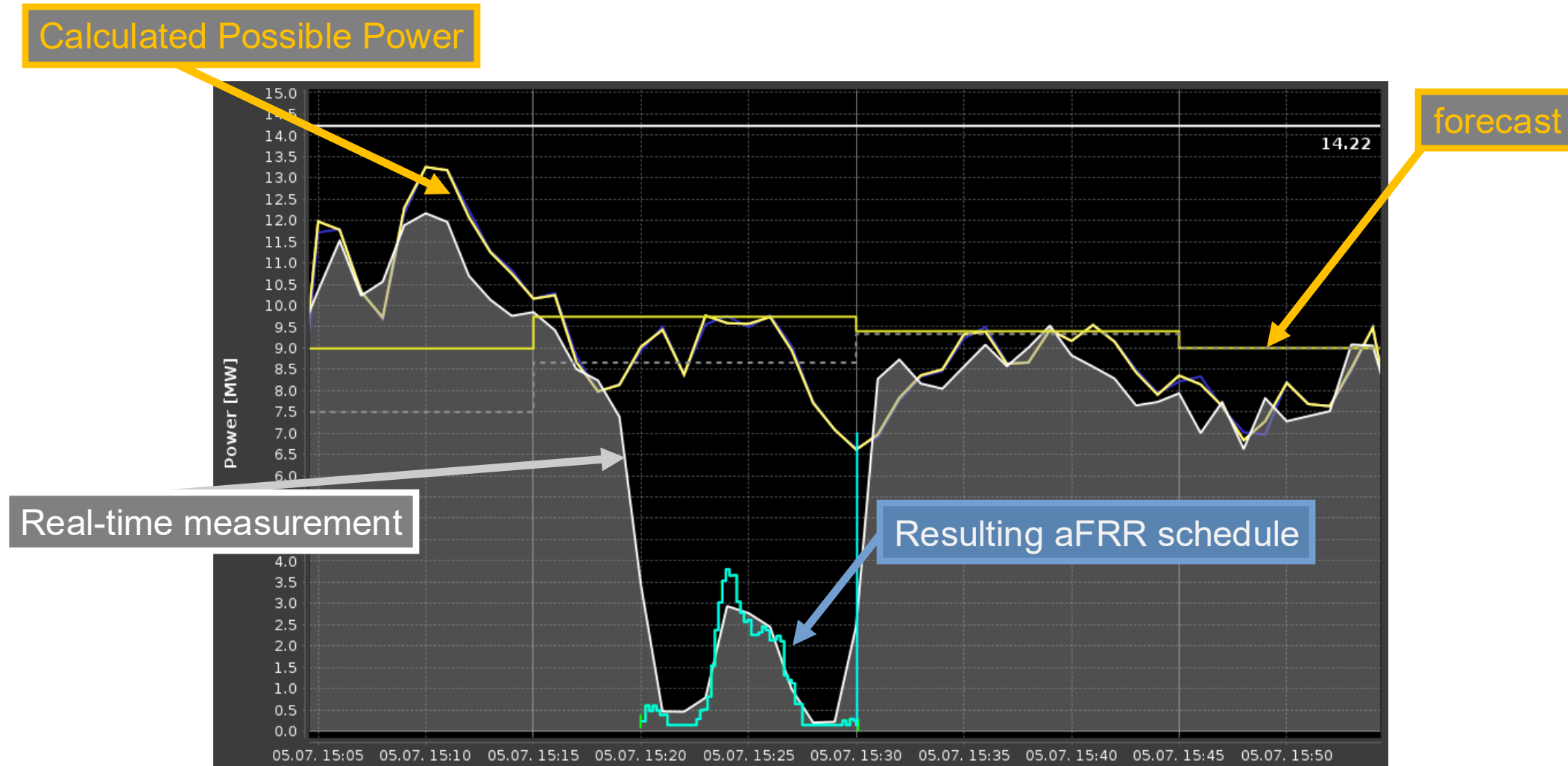
Use case 1: Curtailment of a renewable portfolio



mFRR activation calculations in Greece are not suitable for RES



Use Case 2: mFRR/aFRR from wind power plants using a VPP



Achievements to date

- Setup of the VPP and optimised renewable forecasting for 3000+ power plants in Optimus Energys portfolio
- Connected hundreds of assets in the first months
- Did remote control tests for the connected assets
- Validated the first wind farms for balancing power services
- Presented the method to provide mFRR / aFRR with renewables using the possible power reference calculation to IPTO

Vielen Dank für Ihre Aufmerksamkeit!

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