

emsys paving the way for renewables



**DIGITAL SOLUTIONS FOR
THE ENERGY TRANSITION**

Three companies, one goal: 100 % renewable energies

emsysgrid
services

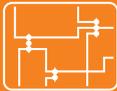
emsysvpp

energy & meteo
systems

One becomes three

energy & meteo systems GmbH has spun off its Virtual Power Plant and FuturePowerFlow (Redispatch 2.0) business areas into the newly founded companies emsys VPP GmbH and emsys grid services GmbH as of 1 June 2021 and is thus reacting to the dynamic developments in the energy sector and the increased demand for customized software solutions.

The business areas of power forecasts for wind and solar as well as consulting services for the international energy market will remain with energy & meteo systems GmbH. All three companies provide you with first-class IT products tailored to your individual needs. In combination with comprehensive services, these guarantee you a smooth and efficient integration of renewable energies into the electricity grids and energy markets.



Redispatch
2.0



Virtual
Power Plant



Energy
Forecasts



Consulting
Research

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„With the spin-off, we are giving our very successful business units more leeway and freedom. The three companies will of course continue to cooperate closely with each other, but they can also go their own ways in a diversifying market environment.“

Dr Ulrich Focken
Managing Director

„We are taking this important step in order to be even better equipped for the future challenges of the digital energy transition. This is also in the interest of our customers worldwide, whom we will be able to address in a more targeted manner in the future.“

Dr Matthias Lange
Managing Director

energy & meteo systems GmbH

**Forecasts and consulting –
Precise. Reliable. Competent.**

With its energy meteorological forecasts and differentiated consulting services, energy & meteo systems is one of the leading international providers of forward-looking services and IT products for the market and grid integration of renewable energies. Power traders, aggregators, grid operators as well as solar and wind farm operators on all continents rely on our digital solutions and in-depth expertise to manage the energy transition.

Energy forecasts worldwide

Wind and solar power forecast

Our accurate solar and wind power forecasts are key to reliably integrating fluctuating power generation into power grids and markets. Globally, we forecast the output of more than 300 GW of installed wind power and 180 GW of installed solar power, ranging from single farms to large port-

folios. For power traders, we provide forecasts for direct marketing, taking into account the new Redispatch 2.0 processes. For grid operators, we produce regional forecasts, grid node-specific forecasts and forecasts separated according to possible and actual power output.

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Solar power estimate in real-time

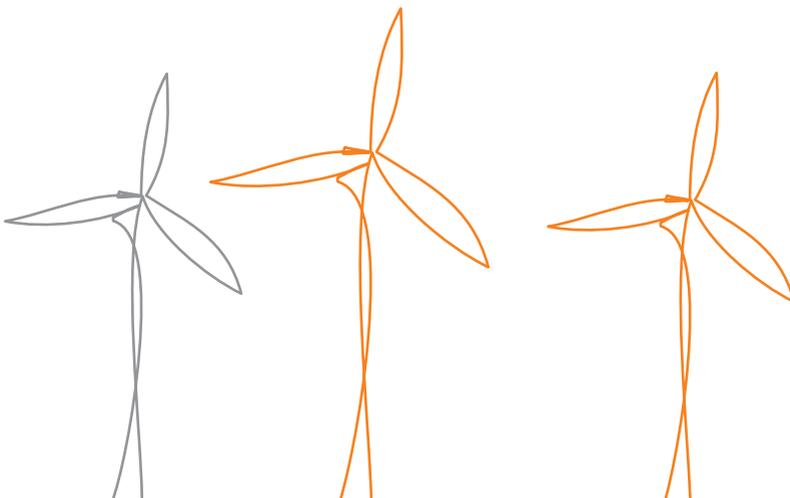
As a unique service, we offer the current solar power output in real time for many regions worldwide, for which we access live measurement data of several hundred thousand reference plants. In doing so, we also cover the numerous rooftop photovoltaic systems that are otherwise difficult to record. High-resolution satellite data are used to further optimize our solar power estimate.

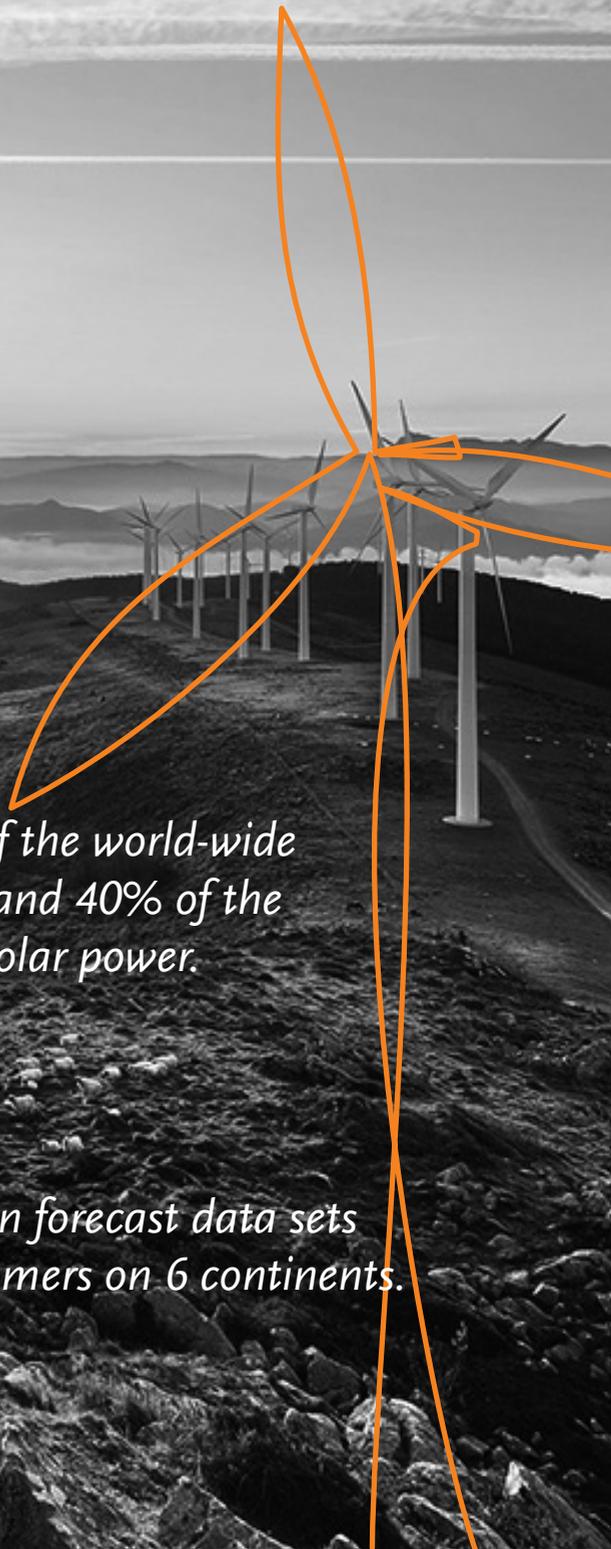
Consulting in the service of the energy transition

For more than 15 years, our technologies have set standards in the successful integration of renewable energies and at the same time testify to our proven expertise in this segment.

We advise different players in the global energy industry on the diverse challenges resulting from decentralized and variable power production. In doing so, we can draw on our years of practical experience as a leading provider of power forecasts as well as

our continuous research and development work on the digitalization of the energy transition. This also includes the development of grid load forecasts and virtual power plants for the intelligent control of power producers, storage facilities and energy consumers.





*We predict...
approximately 50% of the world-wide
installed wind power and 40% of the
world-wide installed solar power.*

*We deliver...
several million forecast data sets
daily to customers on 6 continents.*

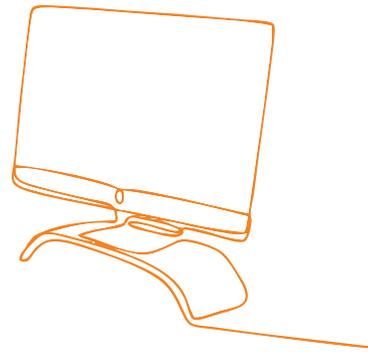
*We advise...
approximately 200 customers around the globe
on the market integration of their renewable
power plants.*

*...and more than 20 international
grid operators trust our predictions.*

emsysgrid.com

emsysvpp.com

energymeteo.com



emsys VPP GmbH

Virtual Power Plant – Key technology for distributed energy resources

emsys VPP is a pioneer in the development of Virtual Power Plants. Our sophisticated technology functions as a Software-as-a-Service solution and monitors, controls and markets plant portfolios with a total capacity of several gigawatts. Renewable and other decentralized generation plants are digitally connected in the same way as various types of storage and consumers in the Virtual Power Plant. This allows you to control a portfolio of different plants according to demand and market the energy profitably on international spot, intraday and balancing energy markets. In addition, the Virtual Power Plant covers the new grid management (Redispatch 2.0) processes with a focus on the role of the dispatcher.

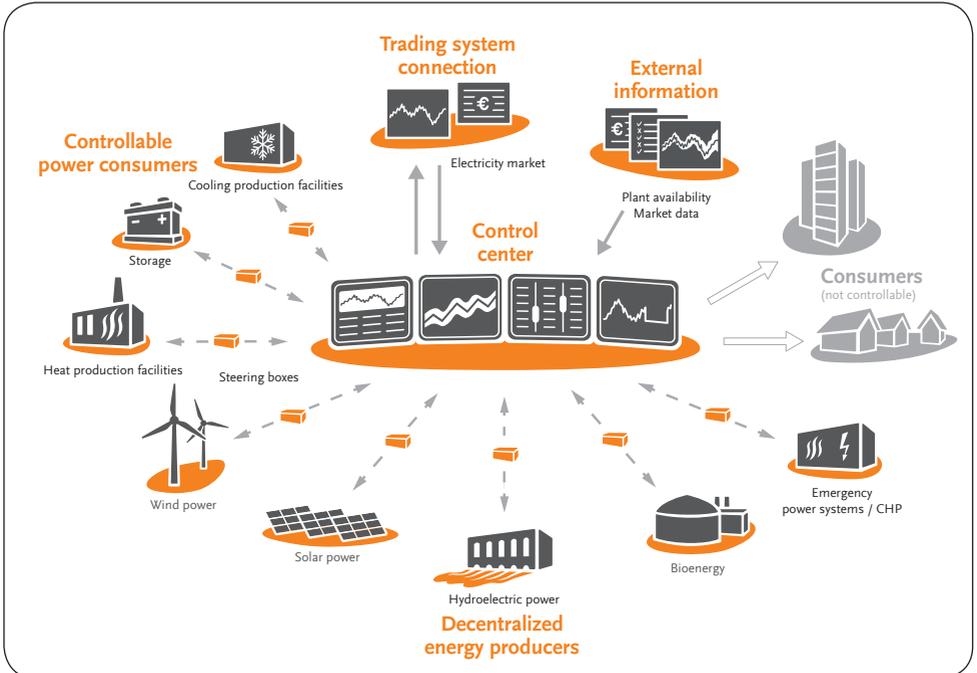
We are your partner for setting up your Virtual Power Plant

Power traders, aggregators, energy providers and grid operators already use our software to manage data from thousands of plants and control their feed-in. Our Virtual Power Plant is used in many international markets and can be flexibly adapted to the requirements of electricity markets,

users and existing IT environment. With us you get everything from one source and do not need your own IT infrastructure. We support you in all steps to build your individual Virtual Power Plant: from plant connection to remote control and trading of the power generated from your portfolio.

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Efficient integration of decentralized energy plants



Our Virtual Power Plant at a glance:

- Software-as-a-Service solution without costly own IT infrastructure
- Individual configuration of the Virtual Power Plant according to your needs
- Integration of precise solar and wind power forecasts if required
- Connection of various production technologies, storage systems and consumers
- Flexibly scalable: fast integration of new plants into your portfolio
- Real-time monitoring of all production data, load profiles and forecasts
- Direct marketing of renewable energies with implementation of remote control
- System Services such as primary (FCR), secondary (aFRR) and minute reserve (mFRR) power according to TSO requirements incl. dedicated lines to TSO
- Redispatch 2.0 processes with focus on: master and planning data, non-availabilities, Redispatch 2.0 activations, billing processes

emsys grid services GmbH

FuturePowerFlow – Modular platform for Redispatch 2.0

With the new IT platform FuturePowerFlow, emsys grid services GmbH offers grid operators an intelligent solution to successfully meet the requirements of grid management (Redispatch 2.0) and an increasingly decentralized energy system. The digital all-in-one solution processes large amounts of data, such as grid data, flexibilities, generation and load forecasts, and calculates the optimal utilization of grid resources. This enables grid operators to plan the use of flexibilities in a cost-efficient way to avoid forecasted grid bottlenecks.

Modular software solution for high flexibility

The specially developed redispatch system is based on a microservice architecture that uses flexibly deployable modules depending on requirements, connecting a wide variety of market players on a common platform. The system thus combines a high degree

of functionality, flexibility and security. The software is provided as Software-as-a-Service and operated for you. If required, it is also available on-premise. FuturePowerFlow can be used by grid operators of all voltage levels for their processes.

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Functional scope of FuturePowerFlow

FuturePowerFlow comprehensively covers the new Redispatch 2.0 processes. This includes grid state analysis and bottleneck determination taking into account forecast data as well as the determination of topology switching measures and dimensioning of redispatch measures. With our

extensive technology you can also implement communication and data exchange processes with other grid operators and the dispatcher (especially plant operators). The FuturePowerFlow platform fulfils the requirements of Connect+.

FuturePowerFlow in a nutshell:

- Powerful software for handling all Redispatch 2.0 processes
- Software-as-a-Service solution without costly own IT infrastructure
- Modular and flexible design according to your needs
- Open platform concept in transparent API design
- Numerous forecasts such as vertical grid load for individual grid connection points and substations or current carrying capacity forecasts for conductor cables
- Processing of movement data in a proactive grid state analysis
- Redispatch dimensioning under consideration of flexibility constraints
- Comprehensive market communication between various actors
- Standardized interfaces to numerous existing systems, such as control room software and EDM systems
- Balancing and billing

Always there for you

All companies offer you round-the-clock experienced and prompt IT support. The 24/7 on-call staff are trained for the respective customer system.

Security first

The companies guarantee high availability of their IT services. To ensure secure operation, the systems run parallel in independent data centers that are physically and network-separated. To ensure the high level of security all three companies operate information security management systems according to ISO/IEC 27001.

Learning from the product

Your employees receive user-related training from the respective company. Practical examples help to convey the use of the software in a realistic way.





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