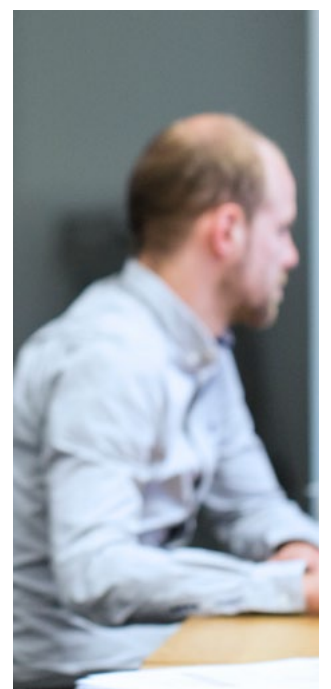


# SHAPING THE NEW ENERGY WORLD

A Virtual Power Plant for the distributed energy future.



# THE POWER OF **MANY**

## Connected by Europe's largest Virtual Power Plant

The transition to renewable energies has turned the energy sector upside down: The role of small, decentralized power generators is becoming increasingly important as they replace conventional large-scale power plants. These new players do not follow the rules of the traditional energy industry. Volatile sources of energy - such as wind and photovoltaics (PV) - can only be used when they are available, which in turn impacts the role of electricity consumers. As energy becomes more decentralized, our Virtual Power Plant (VPP) provides solutions: Our central control system aggregates and coordinates countless plants to ensure a reliable energy supply. In our Next Pool, we already network more than 13.000 power-generating, power-consuming and power-storing units - and thus provide capacities to stabilize the power grid. As a certified electricity trader, we also trade electricity on various European exchanges such as the EPEX SPOT and EEX - pushing the market integration of renewable energies.

With our VPP-as-a-service solution, we share our expertise with third parties, because the energy transition can only succeed with "The Power of Many."



*Hendrik Sämisch und Jochen Schwill*  
Founders and CEOs

**13.930**

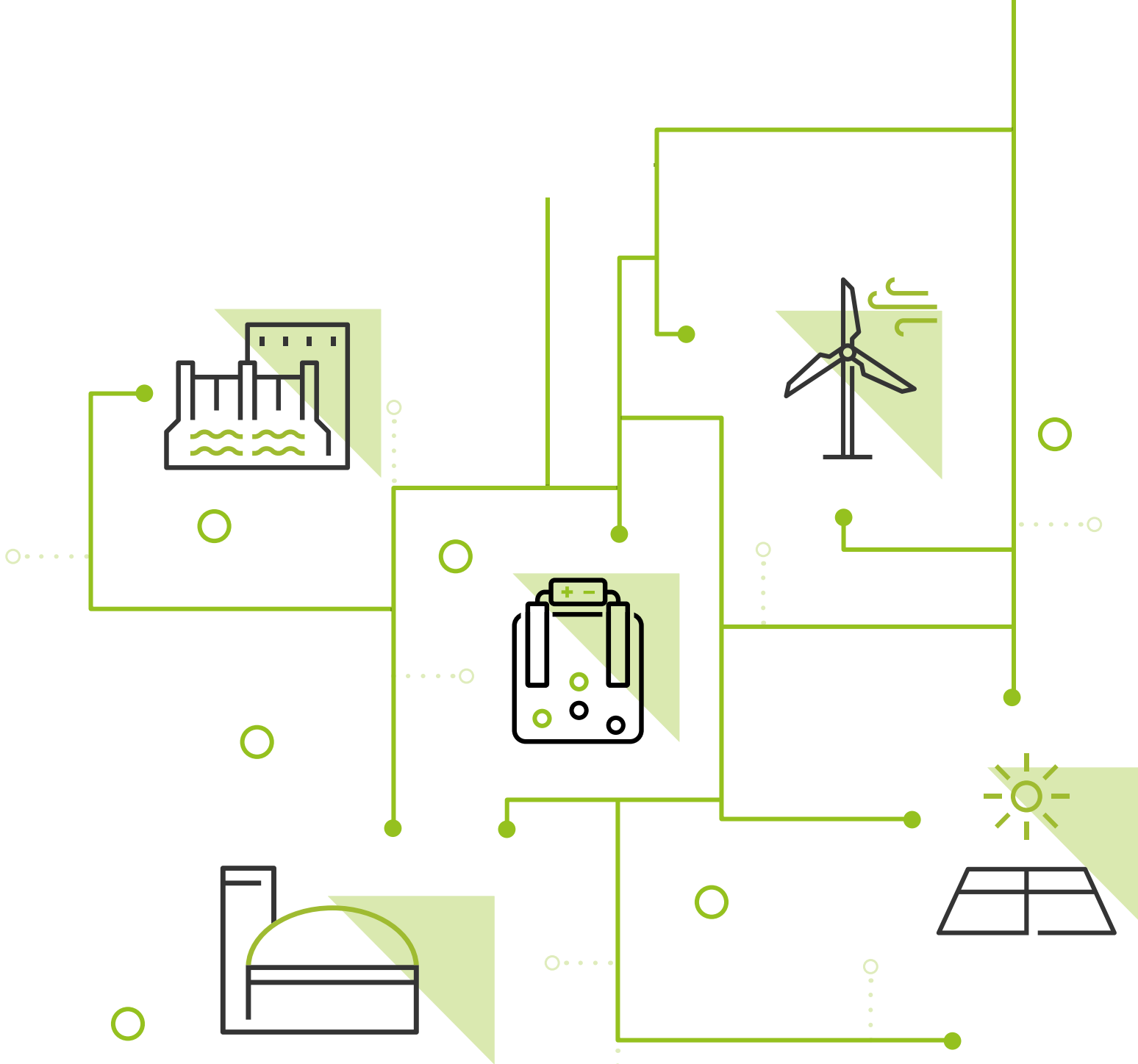
units are  
networked in our  
Virtual Power Plant

**10**

Our VPP operates  
in 10 European  
countries

**17**

different technologies  
are part of the  
Next Pool



## Team Renewables

The networked assets of our Virtual Power Plant create a strong team of perfectly-harmonized players: If wind or PV production is low on a given day, we ramp up production from flexible sources in our Next Pool, such as bioenergy or CHP plants. If wind or PV feed-in exceeds forecasted levels, the same flexible plants can scale back in production. Alternatively, our networked power consumers, battery storage units, or electrolyzers can increase their power consumption.

There is no doubt that this well-choreographed dance provides larger benefits to the entire energy system: We stabilize the power grid by aligning generation and consumption with actual demand. By using the Next Pool to also provide balancing control, we add even more stability to the grid. Of course, participating in the Next Pool also pays off for the networked operators and consumers. The revenue they generate on the electricity markets stems directly from their participation in the Virtual Power Plant.

### Next Pool Assets

- › Battery storages
- › Bioenergy plants
- › CHP plants
- › Electricity consumers
- › Emergency power generators
- › Hydropower plants
- › Power-to-X systems
- › PV systems
- › Wind power plants

# PORTFOLIO

## Revenue stream for asset operators, a stable grid for all

Electricity from renewable energies is not only the smart ecological choice, it also makes economic sense. Together with our customers, we demonstrate the competitive viability of renewables on a daily basis, while also providing stability to the power grid.

### Power trading

As one of Germany's largest traders of renewable energy, we bring renewables to various power exchanges and support plant operators in all aspects of trading their energy. With us, flexible energy producers and consumers can take advantage of fluctuating prices on the exchanges, producing or consuming electricity when the prices are best for them. Not only does this lead to higher revenues or reduced energy costs for our partners, but it also relieves the grid. Additional revenue potential is available to customers who take part in the balancing energy market. Electricity producers, consumers, and storage facilities use the Next Pool to provide balancing energy, which compensates for fluctuations in the grid. And we always know how to utilize each asset to achieve the best possible results thanks to our electricity traders and specifically-tailored algorithms.

- › Power trading / PPAs
- › Balancing energy / demand response
- › Peak load operation

### Energy services

The transformation of the energy industry is accompanied by many tough challenges, but also new opportunities. With a modular product range, we support municipal utilities, energy suppliers, and balancing responsible parties in implementing and profiting from these opportunities. We provide access to all relevant energy markets, procure required electricity volumes or green electricity products, manage balancing groups, and minimize risks in portfolio management.

- › Access to the EPEX Spot Day-Ahead and Intraday Markets, control energy markets, and other international energy markets
- › Power trading and procurement
- › Balancing group and portfolio management
- › Trading platform NEXTRA
- › White Label solutions







We supply **10.613**  
MW of capacity to  
energy markets

**2600**  
MW of networked capacity  
are qualified for providing  
balancing energy

In **6** countries,  
VPPs are currently being  
built on the basis of our  
software solution NEMOCS

## VPP software-as-a-service

NEMOCS is a high-performance IT solution, that we offer to third parties for creating their own Virtual Power Plant. The platform allows users to monitor and control thousands of units, creating conditions for implementing a number of business cases. These range from monitoring and forecasting to providing balancing services and demand response. The main advantage for NEMOCS users is the powerful infrastructure, that has been put to the test in our own daily work and incorporates all the insights of our IT experts and energy traders.

- Networking and controlling decentralized energy producers, consumers, and storage facilities
- Live monitoring of performance, storage levels, and system availability
- Network signals, weather data, and market prices are processed within seconds



**2573**

assets were integrated into the Next Pool by our technical support in 2021 alone

**96**

times a day, every quarter of an hour, we optimize production and consumption of our flexible participants

**15.1**

TW/h of electricity were traded via our Virtual Power Plant in 2019

## Connection and technical support

We have our own specialists for integrating decentralized units into our Virtual Power Plant. Our technicians and electrical engineers take care of the remote-control connectivity and prequalification required of each unit for trading on the balancing energy market. For technical issues, our customers have our own in-house technical support team at their disposal.

- Connecting technical units to the Virtual Power Plant
- Analysis and troubleshooting of system errors
- Prequalification for providing balancing energy





# EXPERTISE

## Specialized knowledge replaces conventional thinking

All our expertise is concentrated at our headquarters in Cologne, Germany, where highly-specialized energy traders, IT experts, engineers, and energy economists work hand in hand. While this setup ensures that the VPP always runs smoothly, it has the added benefit of circumventing external service providers in core business areas. This keeps costs low and results in higher revenue for our customers.

## 24/7 trading

As one of the first traders of renewable energies, we have become a renowned specialist for European short-term markets. We were also the first company to provide balancing energy from renewables. Of course, our trading team is also active on all other relevant trading points - every hour of the day, every day of the week. One of our most important trading tools is the live feed-in and consumption data from approximately 10.000 MW of available capacity in our pool. Our forecasts are precisely refined with continuously-updated weather data from our own meteorological analyses and the latest stock market data.

- Short-term trading on Day-Ahead and Intraday markets
- Medium and long-term trading on the futures market
- Trading of balancing energy
- OTC trading and green power products

## VPP operation and software development

We are part of the digital energy revolution. As such, our IT department guarantees that all systems work reliably. Above all, this guarantee concerns our control system, which operates all processes in the Next Pool. Beyond that, we have also developed software solutions for the new energy industry. These include the customer portal MY POWER PLANT, the trading portal NEXTRA, and the VPP-as-a-service solution NEMOCS. The degree of automation, scalability, and performance of all solutions is optimized continuously during operation - to the benefit of all users.

- Support and continued development of the VPP infrastructure
- Ensuring IT security and (automated) data exchange with customers and market partners
- Conception and further development of software solutions for the energy industry



ISO 27001:2013  
Management  
System

[www.tuv.com](http://www.tuv.com)  
ID 9108641732

The Information Security Management System (ISMS) of Next Kraftwerke is certified according to ISO/IEC 27001:2013 by TÜV Rheinland.





# TECHNOLOGY

## Thousands of units - connected in a highly-secure system

Using thousands of units to aggregate the equivalent capacity of several conventional power plants requires powerful technology. At the heart of the Virtual Power Plant is the central control system, where all processes converge. Our remote-control unit, the Next Box, ensures that commands from the control system are executed by the distributed units.

### Control system

The control system operates all processes in the Virtual Power Plant, automated via M2M communication. The continual data exchange between transmission system operators (TSOs), energy markets, power producers and consumers is highly encrypted. Our control system provides us with a wide range of information, including how much power is currently available in our VPP and how much balancing power we can offer. The control system also allows us to adjust all flexible power producing and consuming assets with an accuracy of 15 minutes, based on price signals from the Intraday market on the EPEX Spot. The redundant server structure ensures uninterrupted operation of the Virtual Power Plant at all times.

### Next Box

It may look inconspicuous, but it is the central link: Via a bidirectional, specially-secured GPRS connection, the Next Box connects the distributed assets to our control system. This allows us to operate all connected units like one single power plant. As soon as the Next Box is installed, it transmits all data directly to our control system and enables the unit to adjust operation based on electricity prices. Like all components of the highly-critical energy infrastructure, the Next Box complies with TSO transmission codes. These codes were developed together with the independent inspection certifier TÜV and comply with German Federal Office for Information Security (BSI) requirements.



# INSIGHTS

## From Ehrenfeld to the world

In 2009, we launched with our vision of the Virtual Power Plant in the Ehrenfeld neighborhood of Cologne. Today, we operate one of the largest VPPs in Europe, which includes branches in numerous European countries and contains the equivalent capacity of several conventional power plants. In our pursuit of a global energy transition, we continue to grow and move toward a secure supply of electricity generated entirely by renewable energy sources around the world.

## Spirit of research

Our company was founded upon university research. Even today, we remain involved in numerous research projects, initiatives, and corporate collaborations and maintain ties with the academic world. This spirit of research is what makes us who we are and ensures that we continue to work on new ideas rather than resting on our laurels.

## Awarded

Our concepts and products have received many awards in recent years:

- › Graduate of the Year, 2022
- › BNEF pioneers, 2020
- › Global Cleantech 100, 2020
- › Digital Champions Award, 2019
- › Financial Times 1000, 2017
- › Intersolar Award, 2017
- › National Energy Globe Award Germany, 2017
- › RGI Good Practice of the Year Award, 2016
- › eco Internet Award, 2016
- › Global Cleantech 100, 2015
- › Eurelectric Award, 2015
- › Nominated for the Hermes Award, 2015
- › German Energy Award, 2014





## Team spirit

Over the past 11 years, our team has expanded alongside our business, growing from two founders in 2009 to 206 employees in 2020. Although we employ specialists from completely different fields, they all have one thing in common: the joy of questioning convention and a burning desire for new ideas. There are plenty of opportunities to create and experiment, and numerous testing grounds for expending creative energy. We live and breathe team spirit, which is plain to see at our summer parties, family days, or even at lunch during the week.



**11**

years ago,  
Next Kraftwerke  
was founded

**206**

employees are  
helping us drive  
the energy transition

**33.5**

years is the  
average age of  
our team members



**future-oriented**

As part of the digital energy transition, we are shaping the future of the energy industry.

**balanced**  
With the aggregated capacity in our VPP, we balance fluctuations in the electricity grid.



**networked**

Networking thousands of units allows us to control them like one single power plant.

**cooperative**  
Together with the participants in the Next Pool, we create a new energy world.

**Cologne Headquarters**

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