Shaping the new energy world
profitable • digital • sustainable
WHO WE ARE

A Virtual Power Plant for the energy transition

In 2050, a minimum of four out of five kilowatts of energy produced in Germany will come from renewable energy sources – ideally, every kilowatt will be produced sustainably. Renewable energy is on the rise, and not only in Germany: In 2013, the number of new power plants based on renewable energy sources was larger than the number of new conventional power plants.

This gigantic global transformation toward decentralized, small-scale power plants will render large-scale power plants obsolete.

The challenge: intelligently coordinating and controlling these new, decentralized power generators and consumers to guarantee a reliable energy supply. This is where our Virtual Power Plant comes into play. Today, our system controls more than 4,200 power producing and consuming units. These include biogas, wind, and solar power plants.

With a total capacity of more than 2,800 megawatts, we do more than help balance fluctuations in the power grid. Using our 24/7 power trading floor, we also trade power on various European power exchanges (such as EPEX Spot or EEX) and help find the best price for producers and consumers alike. We prove that renewable energy sources are not only the right choice ecologically, but also economically. Together, with all the Virtual Power Plant participants, we are shaping the energy landscape of the future – with reliable power production from 100% renewable energy sources.

Hendrik Sämisch and Jochen Schwill, Founders and Directors of Next Kraftwerke GmbH
How the Next Pool works

An energy supply based on weather-dependent energy sources needs to reliably balance fluctuation. This is exactly what our Virtual Power Plant, Next Pool, is designed to do. It networks and controls power producers and consumers. But how does this work? Imagine a cloudy day with little sunshine for solar parks: our aggregated biogas plants pitch in and increase their production. Alternatively, imagine a day with more wind than expected: our networked consumers benefit from lower prices and consume more power. If the grid frequency drops too low and becomes unstable, a group of networked assets kicks in and provides power within seconds.
Assets and clients in the Next Pool

- Renewable Energy Assets
- Gensets
- Batteries
- Gas CHPs
- Power consumers > 100,000 kWh
- Utilities
- Grid operators
WHAT THE NEXT POOL OFFERS

Higher revenues for the participants – a stable grid for everyone

Power does not always have the same price. On the power exchanges, the price for power changes more than 96 times each day. Power producers and consumers can profit from these fluctuations in price with the help of the Virtual Power Plant. As aggregated units networked in the Next Pool, the pooled resources are large enough to participate on the various power markets. But how does that work in practice?

Here’s an example: owners of biogas plants adjust their production according to current prices on the power exchange: production goes up when the price is high, and goes down when the price is low. This makes economic sense, but it also strengthens the role of the power producer within the power system.

Large-scale power consumers that can flexibly adjust consumption also benefit from fluctuations on the power market: they increase consumption when power market prices are low, and reduce consumption when prices are high.

In addition, participating on the control reserve markets offers opportunities for increased revenue: Power producers and consumers can offer flexibility via a Virtual Power Plant to level out grid frequency fluctuations. These units actively support the energy transition by balancing the volatile feed-in of renewable sources such as solar and wind.

Thanks to our power traders and the specially-developed algorithms in our Virtual Power Plant, we always know which assets can be used for optimal performance. This information is automatically transmitted to the assets using the Virtual Power Plant’s control system.

One of the 4,257 participants of the Virtual Power Plant: Gerd Clasen, Production manager KBB Biogas GmbH & Co KG, Kirchlinteln
Multiple experts under one roof

The Next Kraftwerke headquarters houses all departments necessary for a smart dispatch of networked assets: IT, control and communication systems, the power trading floor, customer relations, and sales. These processes are essential for seamlessly running a Virtual Power Plant, but this full-service approach is also one of the reasons many power producers, consumers, and utility companies have been working with Next Kraftwerke for years. No one speaks to an anonymous hotline when getting in touch with us. You’ll always reach a dedicated contact at Next Kraftwerke.

By foregoing external service partners, we are closer to our clients and keep overhead low. This means more revenue for our clients. For example, we do not rely on an external power trader that would collect market access, trading, or balancing fees.

With our in-house trading floor, we can provide a wide array of services to our clients: we offer direct access to the day-ahead and intraday markets on the EPEX Spot and the control reserve market as well as other European power markets. Every day, our highly-qualified power traders aim for the best possible results for our customers. Furthermore, we support utility companies, energy providers, and balancing group managers with their tasks. Live feed-in and consumption data of more than 4,200 assets in the Virtual Power Plant form the foundation for detailed forecasts. In addition, continuously-updated weather data from our own meteorological analysts complement our forecast.
Products and services

- Market access
- Control reserve
- Flexible power rates
- Power trading
- Portfolio management
- Balancing group management
- Demand Response
For maintaining the best possible control over our Virtual Power Plant, we take care of all operative processes ourselves. In addition to key technological components developed by us, operation of the Virtual Power Plant is completely managed by Next Kraftwerke.
Thousands of units – digitally connected on a highly-secure system

There is a lot of technology involved when we aggregate thousands of small-scale units to match the capacity of two or three large-scale conventional power plants. We could throw around buzzwords such as industry 4.0, digitalization, or cloud computing, but our approach boils down to a basic concept: we organize and analyze vast amounts of data to efficiently control power production and consumption, while remaining economically viable and offering sensible services to the grid.

At the heart of the Virtual Power Plant is the control system, which is entirely maintained and serviced by our own system engineers. The control system automatically exchanges data with all assets via M2M communication. The continual data exchange between the control system, grid operators, and the assets is highly encrypted. A redundant server infrastructure guarantees the Virtual Power Plant is free of interruption.

Our control system allows us to always know how much capacity is available in our Virtual Power Plant and how much flexibility we can offer to the control reserve market. Furthermore, the control system enables us to adjust all flexible power producing and consuming assets every fifteen minutes, depending on pricing signals from the intraday market on the EPEX SPOT. For connecting the assets to our control system,

we use the Next Box. Once installed, it sends all monitoring data to our control system and implements a price-optimized – and therefore revenue-optimized – schedule of operation for the asset.
WHAT WE’VE ACHIEVED

Facts and figures

- Total capacity of the Virtual Power Plant: > 2,800 MW
- Connected assets: > 4,200
- Trading volume (2016): 10.2 TWh
- Founded: 2009
- Branches: 11
- Employees: 135
- Sales (2015): 273 Million euros

Awards

- Finalist Intersolar Award, 2017
- Good Practice of the Year Award, 2016
- eco Internet Award, 2016
- Global Cleantech 100, 2015
- Eurelectric Award, 2015
- Nominated for Hermes Award, 2015
- Finalist EY Entrepreneur of the Year 2015
In 2009, we started in Cologne’s Ehrenfeld neighborhood with our vision of a Virtual Power Plant. Today, we operate one of the largest Virtual Power Plants in Europe with a total capacity equivalent of two nuclear power plants. We continue to grow as we pursue the goal of a global energy transformation that makes ecologically and economically-viable power production a reality.

From Cologne and into the world
WHERE TO FIND US

Would you like to learn more about the Virtual Power Plant, our services, and projects? Don’t hesitate to contact us. We look forward to hearing from you.