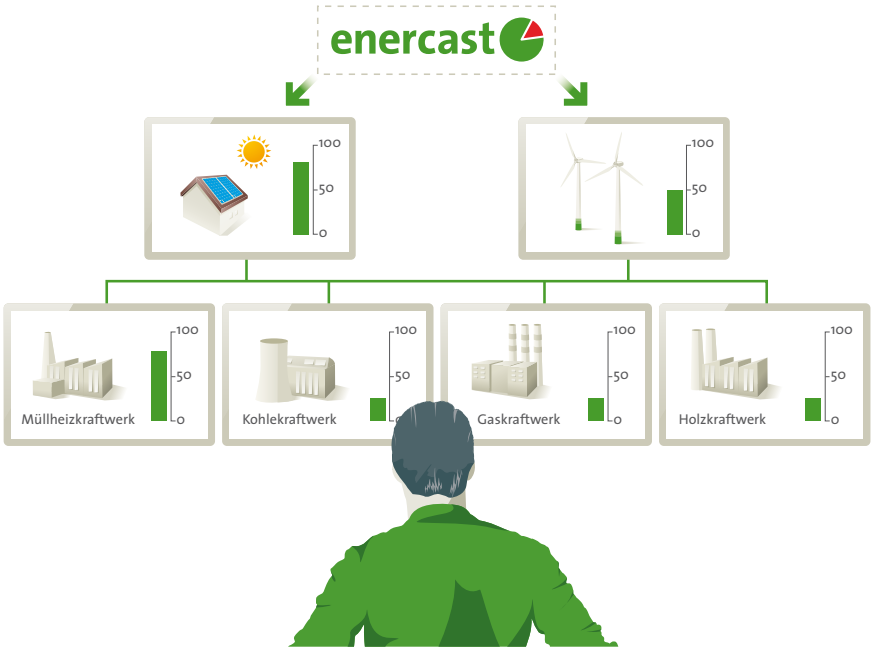
Städtische Werke Aktiengesellschaft

Photovoltaics- and wind power forecasts for the optimization of plant operation

By employing precise feed-in forecasts for photovoltaics- and wind power, the Städtische Werke AG can improve plant operation schedules to such an extend that the demand from the up-stream network is reduced, the sum of avoided network fees is optimized and the loss-of-mains is minimized.



Added value for grid operators and producers

- network stabilization and load schedding
- less loss-of-mains
- reduction of fuel demands in adjustable power plants

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Challenge

The impact of the energy from photovoltaics- and wind power plants on network operation and stability is continuously increasing. The Städtische Werke AG participates in fostering the regional pv- and wind power generation. As a consequence, energy transfers between the respective network levels are affected. With its 20 MW in installed photovoltaics power and 15 MW installed wind power, Städtische Werke AG is confronted with the challenge of keeping the network balanced.

At low levels of sun radiation and very little wind, the feed-in from pv- and windpower is relatively low. At these conditions, Städtische Werke AG wants to balance the missing energy in the network with the help of its generation system, which consists of multiple adjustable combined heat and power plants, some of which produce renewable energy. If, on the other hand, feed-in quantities are high, the power plant activity should be reduced.

Optimal plant scheduling, with regard to the pv- and wind power feed-in quantities, should also optimize the sum of „prevented network fees“. At peak times up to 160 MW are demanded as maximum mains supply. Goal-oriented scheduling, under the consideration of the pv- and wind power feed-in, can reduce the maximum mains supply to140 MW. The supply from the upstream networks can be reduced by 20MW in the process and the fees to upstream networks are reduced. Plants contributing to the reduction receive so-called „prevented network fees“.

Prevented network fees: in general, there is a compensation for the incurred network fees of the superior network structure. Additionally, there is also a compensation for the prevented demand. Prevented demand is derived from the highest mains supply, at the network level into which the plant feeds power, and the highest demand. The two peek values don’t necessarily occur simultaneously, but in the framework of the computation of the prevented network fees, the difference between these two values, constitutes the prevented mains supply. The latter is distributed over the energy producers who fed in at the respective voltage level.

Solution

Städtische Werke AG employs enercast GmbH’s day-ahead area forecasts for the photovoltaics plants, which are installed in the network area, and plant-specific day-ahead power forecasts for the wind power plants. This allows the determination of the anticipated electricity that will be generated by the plants in the network area, on the subsequent day.

With the help of the enercast forecasts, the application of the firm’s own power plant park can be optimized and the demand from the upstream network remains low. If the forecast predicts that the generation of pv- and wind power is sufficient to the cover energy demand, then photovoltaics and wind support, that only small amounts of energy are taken from the upstream network. In this scenario, the power plants don’t have to generate as much energy and fuel is conserved. If the forecast predicts low generation of renewable energy, power plants can be connected to meet the demand.

To support these processes, Städtische Werke AG obtains power forecasts for solar- and wind power from enercast. These forecasts are precise to the quarter of an hour. „By relying on enercast power forecasts, we can employ our power generation park much more systematically. We actively contribute to network stabilization and shape the local energy transition. Additionally we can save six-digit sums in costs. “, states Samuel Kramann, portfolio manager at Städtische Werke AG.

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Samuel Kramann
Portfoliomanager at
Städtische Werke AG Kassel

Kunde | Städtische Werke AG

Städtische Werke AG, which is based in Kassel, is a local energy provider. It supplies inhabitants and companies in Kassel with gas, electricity and district heating. Städtische Werke AG is a subsidiary of the Kasseler Verkehrs- und Versorgungs-GmbH, which holds 75,1 % AG's capital assets. The remaining 24,9 % are owned by Thüga.

In 2012 a turnover of approximately 408 millionen Euro was generated. The turnover encompasses the sale of 1.077 GWh electricity and 4.445 GWh gas, and furthermore heating- and energy services. Since the 1st of April, and retroactive to the 1st of January 2011, obligatory legal separation of network and sales operations is completed. The sales operations for electricity and gas stay with the parent company Städtische Werke AG, while

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the responsibility for the technical management of the electricity-, gas-, and water networks, the water procurement, street lighting and telecommunications has been transferred to the newly founded Gesellschaft Städtische Werke Netz + Service GmbH. Since the 1st of January 2013 the Kasseler Fernwärme GmbH (KFW) operates under the name Städtische Werke Energie + Wärme GmbH and is therefore a further subsidiary.

www.sw-kassel.de

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convincing

With its forecasting services fort he energy sector, enercast GmbH is one of the 365 „Selected Landmark 2012“.

The WRG (Wirtschaftsförderung Region Göttingen) conferred Enercast GmbH with the Innovation Award 2011. Enercast GmbH came in third in the services category.

The web service enercast placed third for the Innovation-IT Award 2011 in the category industry software which is awarded by the Initiative Mittelstand.

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