

Market-oriented operation of the CHP unit at the Mümmelmannsberg district heating network



PROJECT DETAILS

- 2 engines with 8.800 KW electrical power
- 3 gas boilers and one buffer storage
- 15km district heating with 7.100 households and 60 public properties

"The electricity markets are changing dramatically. To ensure that CHP remains viable for the future, it is important to integrate it more strongly into electricity trading. With dezera's technology, we can react to the dynamics in the market and achieve better prices in marketing."

DAVID NOTBOM PROJECT MANAGEMENT URBANA

OPTIMISED VS. HEAT-LED

URBANA is part of the GETEC Group, the leading provider of energy contracting and decentralised energy solutions in Germany.

Supported by several gas boilers, the two engines at the Mümmelmannsberg site supply Hamburg's surrounding district with heat.

Our goal was to enable automated optimisation of electricity marketing, while complying with technical restrictions of the plants, such as minimum running times, buffer capacity and, of course, the obligation to supply heat. At the same time, price peaks in the market should be used and negative prices avoided.

SCHEDULE OPTIMISATION THROUGH MACHINE LEARNING

To provide the best possible plant schedule for URBANA, we use a combination of special artificial neural networks and optimisation algorithms. The elementary basis for optimising the CHP is a reliable forecast of the heat consumption. For this task, a specialised neural network is trained that takes local weather forecasts into account.

SCHEDULE CREATION ON A QUARTER-HOUR BASIS

The intraday auction offers the possibility to market electricity in quarter-hour resolution. Our price forecast for the market provides the basis for optimally planning the operation of the engines for the following day. After the heat demand is forecast as a quarter-hour value, our algorithm creates the best possible plant schedule for all thermal generators at the site. The resulting electrical schedule is then sent directly to the URBANA electricity trader and traded.

Forecasts, schedule and measurement data of the energy system are visualised in the dezera customer portal. This ensures the monitoring of optimisation performance and marketing success.

MORE RELIABILITY THROUGH OPTIMISED OPERATIONAL PLANNING

Through trading optimisation, the economic efficiency of plant operation was significantly increased and the daily workload was reduced. The risk of high payments for balancing energy was minimised.

In the next step, optimisation in continuous electricity trading is to be implemented for the site, building on auction marketing.