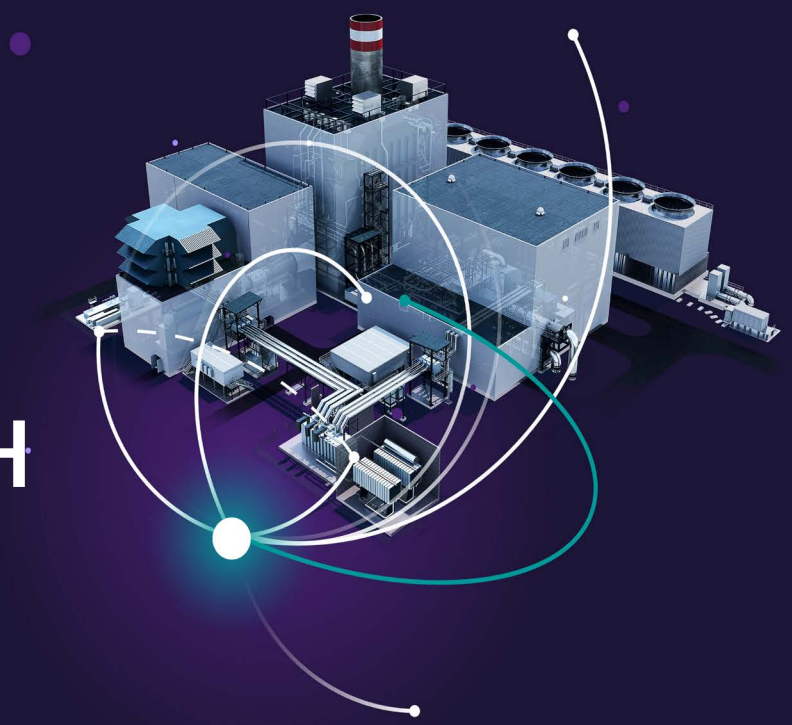
SIEMENS energy

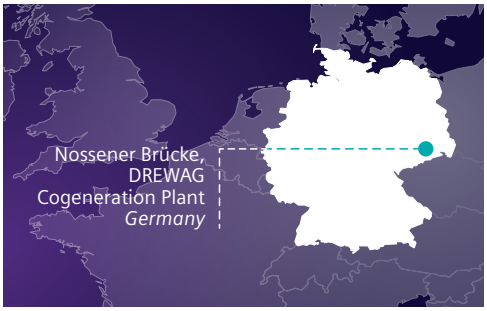
# DREWAG – Stadtwerke Dresden GmbH

## Coordinated unit control for more flexibility



### The Plant

The Cogeneration plant Nossener Brücke is operated by DREWAG, the local utility company for the city of Dresden in Germany. With an output of 1,700 GWh/a, this combined heat and power plant provides up to 80% of the district heat supply to the city. The plant comprises three SGT-1000 (V64.3) Siemens Energy gas turbines with down-stream heat recovery steam generators. The plant is in operation year round and regular plant outages are not scheduled. In general the heat requirements of the customers in the heat network essentially determine the operating mode of the plant. In addition the capabilities of optimized operation that are offered by the use of a thermal storage module are also employed.




With **Unit Control** from the **Omnivise portfolio** plants operated under heat extraction control can also satisfy the **flexibility requirements** of the **power market.**

### The Task

The objective is to equip the plant for the marketing of system services so that both primary and secondary frequency response could be marketed in future. Additional restrictions result from the gas load management plan for the avoidance of gas purchase peaks. The stress on the gas turbines shall also be kept at a low level. In addition a low-stress control concept for district heat balancing had to be elaborated and implemented.

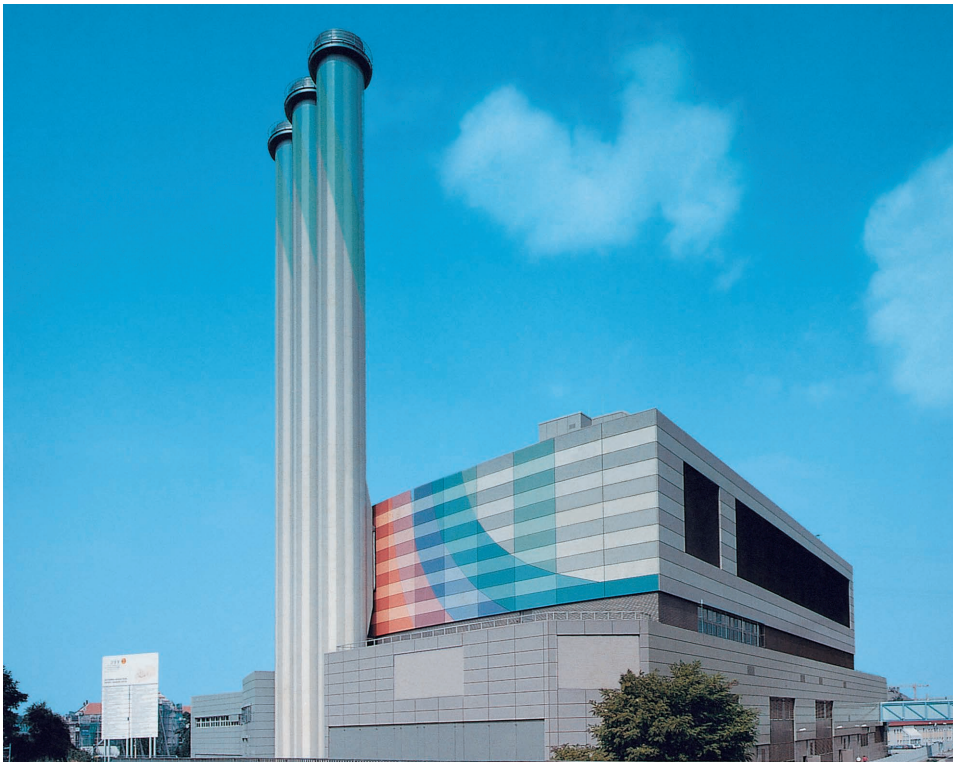
### The Solution

Adjusting the steam turbine inlet valve is a proven method in coal-fired power plants and has been applied in a combined-cycle power plant for the first time in this project. This concept involves using the main steam system as a steam storage module which the steam turbine can use to implement fast load changes. In this case, the gas turbines are only operated slowly and with low plant stressing as a consequence. Siemens Energy implemented a coordinated unit control which matches the output of the gas turbines with the steam turbine.

The latter has been retained and the pressure set-point has been piloted such that the steam turbine throttles and generates the required output in the event of a primary frequency response (PFR) event. Siemens Energy Performance Optimization models are used here which calculate the throttling and the dynamic pressure characteristic in the event of a primary frequency response event based on the gas turbines that are in operation and the required PFR quantity. With the future-proof Siemens Energy Unit Control, plants operated under heat extraction control can also satisfy the flexible requirements of the power market.

## The Result

- **Increased plant efficiency**
- **Flexible adaptation to the regulations of the power market**
- **Increased flexibility making the plant future-proof**



**„The new coordinated unit control has proven successful in practice, permitting a dynamic operating mode which can be adjusted in line with the requirements but which is nevertheless stable and incurs low stresses. The implemented capabilities and the increase in flexibility have future-proofed the plant and enabled it to adapt better to changing market conditions.“**

Axel Pechstein, Power Plant Manager, DREWAG - Stadtwerke Dresden GmbH

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