



## Fact Sheet Marzahn CHP plant

# The future is here

**The new Marzahn combined heat and power (CHP) plant in Berlin is one of the most efficient in Europe**

**Vattenfall striving for an energy generation without fossil fuels within one generation.** In Berlin, plant locations play a key role. Commissioned in 2020, the Marzahn combined cycle gas turbine (CCGT) CHP plant is a substantial component towards climate neutrality.

### A new-build with excellent efficiency

In 2009, Vattenfall committed itself to the state of Berlin in a climate protection agreement to halve its CO<sub>2</sub> emissions in the capital by 2020, compared to 1990 levels. We have succeeded in this. Our next target is to phase out coal from our operations by 2030. The new building in Marzahn of one of the most efficient CHP plants in Europe is an important step to achieve this goal.

The new plant delivers electricity and heat climate friendly and reliably to around 150,000 residences. Together with the likewise natural gas-fired CHP plant Klingenbergs it forms the backbone of the heat supply for the eastern part of Berlin, comprising a total of 450,000 households.

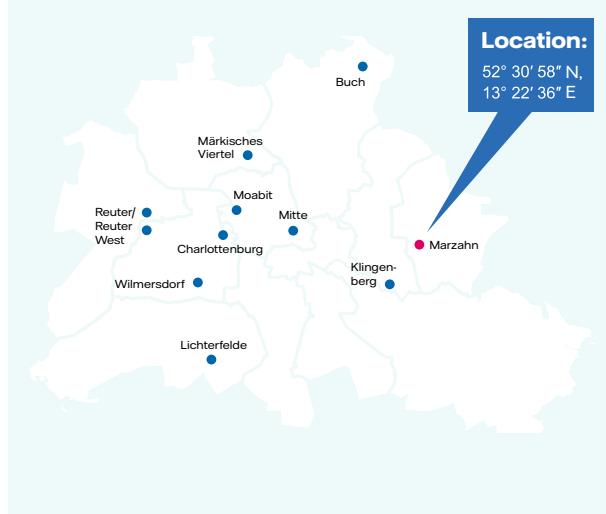
**Marzahn CHP plant is highly flexible and can quickly switch between full and partial loads.** This enables it to balance fluctuations, which repeatedly occur when feeding renewable energy into the electricity grid, and reliably secure the needs of urban heating customers.

To increase the efficiency of the plant, the fuel energy of the natural gas is simultaneously converted into electricity and heat. By this proven 'combined heat and power generation' (CHP) technology the plant achieves a fuel efficiency of up to 90%.

### Key figures CCGT plant:

Technology	combined heat and power (CHP)
Products	electricity, hot water for district heating
Fuel	natural gas
Thermal capacity	232 MW <sub>th</sub>
Electrical capacity	268 MW <sub>el</sub>
Commissioning	2020

### Berlin CHP plants:



## **Energy for Berlin's future**

The key parts for the plant constructed by Siemens were manufactured in Berlin or within a radius of around 300 kilometres. The centrepiece, the SGT5 2000E gas turbine, is from the Berlin-Moabit turbine factory. Switching components such as the vacuum circuit breaker and the generator switchgear came from Berlin-Siemensstadt. The steam turbine came from Görlitz, the generators from Erfurt, the transformers from Dresden and the low voltage switchgear from Leipzig. Only the medium voltage switchgear had to travel a relatively long way: it comes from Gebze in Turkey.



## Why natural gas?

Natural gas is an important bridging technology on the way to climate neutrality, because it emits considerably less CO<sub>2</sub> compared to coal combustion. In the medium to long term, natural gas can be replaced in a climate-neutral way through the increasing use of biogas, synthetic natural gas and hydrogen.

## Milestones

The area around the Marzahn CHP plant has a long tradition as a plant location. A predecessor plant was built in the early 1970s to cover the heating requirements of the fast-growing residential district. In 2010, Vattenfall decided to decommission this CHP plant as it no longer met the sustainable and environmental performance standards.



**A grid node brings electricity into the city**

Along with the new CHP plant, Stromnetz Berlin has built a new grid node at the site. It is comparable to the fuse box in a private household, though much higher amounts of electricity are involved.

The CHP plant feeds into the grid node. It distributes electricity to the sub-grid areas. The grid node also plays an essential role in connecting 50Hertz Transmission to the transmission grid.

In contrast to a network node, electricity in substations is transformed to a different voltage level.

## **Our experts for the new Marzahn CHP plant**

Torsten Melcher

→ torsten.melcher@vattenfall.de

In 2000, I started my training at Vattenfall to become an electronics engineer for energy on the industrial technology programme. After completing my studies and spending time at various stations in Thuringia, Lausitz and Hamburg, I spent three years working as a refurbishment project manager at Klingenberg CHP plant. Since January 2019, I have been the operations manager at Marzahn CHP plant.

