

swb Erzeugung, Germany – Bremen CHP plant

REFERENCE CASE



A revenue-adding transition – Bremen switches from coal to gas

In Bremen, public utility swb Erzeugung is paving the way for renewable generation by replacing an old coal-fired combined heat and power (CHP) plant with flexible gas generation. Powered by the latest Wärtsilä technology, the new CHP gas engine power plant offers heat and flexible baseload in the winter and shaves peaks in energy demand in the summer, all the while making great economic sense for its owners.

Public utility swb provides the city and region of Bremen with energy, heat, natural gas, drinking water, Internet, and telephone services. In close partnership with its home region, swb contributes to the German transition to a low-carbon, nuclear-free economy by investing in renewable energy-enabling gas technology. To convert its energy generation to natural gas, swb has turned to Wärtsilä and its consortium partner, energy provider Uniper, for a 105 MW flexible gas engine power plant. When delivered in mid 2022, the new power

plant will decrease swb's CO₂ emissions by up to 75%, helping the state and city of Bremen in achieving its environmental goals.

– Efficient and sustainable power and heat generation is extremely important, both for our company and for the German energy sector in general. We are going to replace an outdated coal burning plant with a modern, clean, reliable and extremely efficient solution, which will provide the flexibility needed today, says **Jens-Uwe Freitag**, Chief Executive Officer of swb Erzeugung GmbH & Co. KG, Bremen.

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“High efficiency and operational flexibility are essential to meet the needs of the rapidly developing energy market, and these requirements are completely fulfilled by the Wärtsilä 31SG engine. Together with our consortium partner, we are delivering a modern, reliable, and very high-quality solution.”

Pekka Tolonen, Wärtsilä Energy Business Director, Europe

KEY DATA

CUSTOMER:

swb Erzeugung GmbH und Co KG

CONSORTIUM LEADER:

TYPE: Wärtsilä CHP flexible gas engine power plant

OPERATING MODE: Flexible baseload in wintertime, flexible peak load in summertime

GENSETS: 9 x Wärtsilä 31SG

TOTAL OUTPUT: 105 MW

OUTPUT FOR DISTRICT HEATING: 93 MW

FUEL: Natural gas

SCOPE: EPC

LIFECYCLE SOLUTION: A 3-year Guaranteed asset performance agreement with an option for seven more years

DELIVERY: Mid 2022

for the Bremen power plant is German and the warranty handling will be done by Wärtsilä in Germany, explains **Hauke Sassi**, Sales Manager Energy Agreements, Service Sales Africa and Europe, Wärtsilä.

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The Bremen CHP power plant will be run by 9 Wärtsilä 31SG gas engine generating sets and a Wärtsilä heat recovery system. The W31SG represents the latest engine design with the highest electrical efficiency and fuel economy on the market. While the Bremen plant will be fuelled by natural gas, the W31SG engine offers fuel flexibility for future needs.

'Flexibility' being the key word in its cutting-edge technology, the Bremen plant can be run at any load with outstanding performance in both CHP- and power-only mode. With its modular design and easy ramp-up, the power plant quickly responds to market demand and can produce as much power and heat as needed. The modular design also significantly reduces the plant's maintenance time and costs, improving its availability and reducing the need for spare parts.

The Bremen CHP power plant will be connected to the district heating network of the city of Bremen and will also feed electricity to the German grid to balance out renewable power generation. During the heating period from October to April, the plant will be used for flexible baseload, district heating and heat storage. In the summer, the Bremen plant provides flexible peak load and heat storage. As the plant will be connected to the grid, its outstanding efficiency and flexibility also offers swb the economic benefit of being able to produce electricity whenever demand and prices are high.

— High efficiency and operational flexibility are essential to meet the needs of the rapidly developing energy market, and these requirements are completely fulfilled by the Wärtsilä 31SG engine supported by a lifecycle solution. Together with our consortium partner, we are delivering a modern, reliable, and very high-quality solution, says **Pekka Tolonen**, Wärtsilä Energy Business Director, Europe.

We develop and deliver solutions and services to help our customers maximise performance and profitability throughout the asset lifecycle.

A TAILORED LIFECYCLE SOLUTION

The Bremen power plant is delivered under an EPC contract with a Wärtsilä Guaranteed asset performance agreement valid for three years. swb has the option to extend the agreement for seven more years of shared maintenance between swb and Wärtsilä. The Wärtsilä Guaranteed asset performance solution guarantees the performance of the engines and auxiliary equipment and comprises all maintenance services including spare part supply. Part of the contract is also training swb personnel, who will transfer from the replaced coal power plant. Safe plant operation is further supported by Wärtsilä's digital technologies, such as asset diagnostics as well as remote monitoring and analysis.

This is the third ca 100 MW CHP power plant Wärtsilä delivers to Germany. Wärtsilä has a strong presence in Germany with 1.300 employees across nine locations in the country. To swb's advantage, Wärtsilä's German service unit is located in Hamburg, only a little more than 100 kilometres from Bremen. The plant will be taken care of by local experts in Germany supported by Wärtsilä's global organisation and Wärtsilä Expertise Centres:

— In our large workshop in Hamburg, we are able to overhaul all the engine components. The agreement manager

THE CHALLENGE	WÄRTSILÄ'S SOLUTION	BENEFITS
Demand for flexible heat and energy generation to balance renewable energy sources.	Multi-unit Wärtsilä CHP power plant with high operational flexibility.	Flexible generation, allowing efficient heat and energy production at any load.
Commitment to environmentally friendly and profitable gas generation to replace old coal-fired power plant.	Wärtsilä 31SG engines with the highest efficiency and fuel economy on the market.	Reducing environmental footprint and lowering total cost of ownership.
Requirement for quick response to the volatile day-ahead and intraday electricity markets.	Ultra-flexible gas engines, capable of reaching full load within a few minutes.	Maximising revenue with power plant capable of being dispatched exactly as needed.
Need to ensure power plant performance and optimise its maintenance.	A 3-year Wärtsilä Guaranteed asset performance agreement, including all maintenance services and remote support.	Guaranteed engine and auxiliary equipment performance and optimised maintenance costs.