MWM
Energy. Efficiency. Environment.

The Energy Bunker in Lübeck

"We have been using MWM gas engines since 2012. So far, we have purchased 11 gensets from Mannheim with a total electrical output of about 17 MW for the modernization and operation of our cogeneration network for the district heat supply of Lübeck and the vicinity. The 11th and most recent of them has just been installed at a rather unusual location", says Fred Schmeyers, Head of Heat Supply at the municipal utility provider Stadtwerke Lübeck. What he is talking about is a graded round bunker from 1941 in the borough of St. Lorenz-Süd, which was transformed into a cogeneration power plant that goes live in 2017.

Fred Schmeyers,
Head of Heat Supply

The regional energy supplier Stadtwerke Lübeck operates the city's district heat network in different subnetworks. About €30 million have been invested in the development and modernization of decentralized cogeneration power plants and district heat lines. The district heat network comprises 14 combined heat and power plants, two more are planned.

Round Bunker Becomes Cogeneration Power Plant

The most recent project is the former air-raid shelter on Töpferweg in St. Lorenz-Süd. Some of the special issues faced by the developers included the fact that the bunker is a graded building and its outer walls, which are made of bricks and reinforced concrete and have a thickness of 2.5 m, had to be penetrated in order to make room for the cogeneration power plant. "The statics represented a major challenge. Massive ceilings and walls had to be torn down", remembers project supervisor Björn Ruschepaul.

An MWM TCG 2020 genset with 20 cylinders and a power-to-heat plant with a thermal output of 2500 kW form the core of the plant, which supplies 1,200 households in the borough of St. Lorenz. Apart from the engine, burner, and boilers, the system comprises two water tanks with a total storage capacity of 110 m³.

The entire process from the planning to the completion of the cogeneration power plant in the Bunker on Töpferweg took about 18 months, especially because it was not easy to find a suitable place for a cogeneration power plant in the densely developed borough of St. Lorenz-Süd. By using the round bunker, a suitable location has been found that is approved by the population and that combines the use and preservation of a historical structure with modern energy and heat supply.

Fred Schmeyers goes on: "We believe in the performance, high efficiency, and reliability of the engines from Mannheim. The MWM Service Center Berlin provides technical support. With full maintenance contracts for all cogeneration power plants, we ensure high availability of our gas gensets, whose average operating time amounts to 6,500 hours a year. As we use the same genset types at all our cogeneration power plant sites, our engineers have even learned to perform minor maintenance and repair tasks themselves. All 10 engines run very reliably and the 11th will follow in 2017."

Project with Special Challenges

Photo: Stadtwerke Lübeck GmbH

Stadtwerke Lübeck GmbH

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The district heat network of Stadtwerke Lübeck comprises 14 cogeneration power plants in the city area, two more are planned. The locations of the cogeneration power plants are consolidated in nine district heat subnetworks. The Töpferweg bunker cogeneration power plant is part of the "St. Lorenz" district heat network, which also comprises two more cogeneration power plants.

Photo: Stadtwerke Lübeck GmbH

Technical Specifications BHKW

Go live	2017
Engine type	TCG 2020 V20
Electrical output	2,000 kW
Thermal output	2,130 kW
Electrical efficiency	43.7 %
Thermal efficiency	46.5 %
Total efficiency	90.2 %

Photo: Stadtwerke Lübeck GmbH

Moving the "Core" into the Bunker

Following the heavy goods transport from Mannheim, the 18 t genset was unloaded with a crane and rolled into the bunker on special load rollers. Walls with a thickness of 2.5 m had to be penetrated, removing about 25 m³ of bricks and concrete. Moreover, due to the building conservation regulations, elements such as the visible wall edges, the old safety paint, and the bunker doors had to be preserved.

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