

Brand loyalty

STADTWERKE GEORGMARIENHÜTTE HAS BEEN USING THE G-BOX 50 SINCE 2012

When 2G service technician Christian Hüsing traveled to Georgsmarienhütte in Lower Saxony on May 14, 2020, he had two jobs to carry out: install a new CHP after he had removed the old one. Installed at the Averwetters Feld heating plant in 2012, the final hours of the g-box 50 had arrived and the compact CHP was taken out of operation after eight years in use to make way for the new plant. We would have been curious to find out whether the old g-box 50 would have kept going for 100,000 hours. Since it was commissioned eight years ago, it had completed two thirds of this total (67,000 operating hours) because it had been in continuous operation virtually without any interruption.



Power and heat around the clock

Eight years in continuous operation is not unusual for a CHP, some plants under similar conditions are in operation for ten or even 15 years and last considerably longer than a passenger car with a similar output. If a car were to drive 67,000 hours at 50 km/h, it could circle the equator approximately 80 times in this period – in theory that is. In reality, the continuous operation of a car is virtually impossible. In contrast, the g-boxes have demonstrated their durability in

many practical applications where – except for oil changes and maintenance work – they were in continuous use.

Tons of CO₂ saved year on year

“We had always been satisfied with the g-box 50,” was the judgment of Stefan Rohling, who is responsible for the heating plant at the municipal utility services in Georgsmarienhütte. “The CHP covered the thermal baseload for the 85 detached houses and apartment blocks connected to the grid and reliably provided energy for warm water supply or for heating purposes.” This cogeneration of power and heat had helped the municipal utility services save several thousand tons of CO₂ each year if compared to a separate generation of power and supply of heat with a gas boiler.

g-box 50plus replaces the long-serving g-box 50

To ensure the continued economical and environmentally-friendly supply of power to the estate supplied by the heating plant, those responsible for the plant decided to purchase the new CHP. “Because of the plant’s high operating performance since 2012, we wanted to make 100% sure which is why we made the replacement investment,” explains Rohling. This is already the fourth CHP to be installed in this heating plant. From 1997 to 2012, other brands of CHP had been installed. Since May 2012, the g-box 50 had been running smoothly in Averwetters Feld without any major malfunctions.

The “plus package”: more modern and efficient

In total, this was the fourth g-box 50 to be purchased by the municipal utility services. “We had the first one installed in our Panoramabad swimming pool in 2009,” reports the heating expert. “The plant was in operation for over nine years until we replaced it the winter before last with the successor model currently in operation.”

The g-box 50plus installed in the Averwetters Feld heating plant is more cutting-edge and economical to operate than the CHP in the Panorama swimming pool. The latest model delivers 50 kW_{el} and 104 kW_{th} and, thanks to its standard combustion exhaust heat exchanger, reaches a high overall volumetric efficiency of 106%. It therefore exceeds the overall efficiency of the 2012 model by a few percentage points. Besides this boost in performance, the g-box 50plus also offers other features such as the option to operate it in a microgrid or by remote control or variably control its output between partial and full load. The latter, however, only plays a minor role in the heating plant because, with a heat output of 104 kW, the g-box 50plus adapts well to the baseload demand of the 100 households connected to the grid.

We were always satisfied with the g-box 50.

Stefan Rohling
Stadtwerke Georgsmarienhütte

More output, more technical comfort

In terms of the equipment, the new g-box 50plus leaves nothing to be desired. Besides the standard combustion exhaust heat exchanger, it also offers a water-cooled synchronous generator, a speed-controlled heating circuit pump, a constant supply temperature control and it does not need a return temperature riser. Regrouping the temperature-sensitive components of the CHP plant in the "cold" part of the generator reduces their thermal load and, at the same time, has a positive effect on service friendliness and space requirements; space-saving wall installation is also possible.

The water-cooled g-box 50plus does not require additional air cooling. This means less technology and helps to comply with the stringent noise requirements. Combined with its smooth running

courtesy of dual vibration isolation and the compact outer dimensions, there are many good reasons to choose the compact CHP.

High on output, low on space required

Its size – or more accurately its small size – was also an advantage when it was installed in the heating plant. It was important that the old box could be replaced quickly with the new one because the machine operates as a baseload plant. "Although we could have used the peak load gas boiler for a while longer during the replacement, every day we use power cogeneration saves us money and CO₂," is the opinion of Rohling and mentions the advantage of its compact design: "A larger generator would have meant structural changes to the heating plant. The g-box 50plus is only slightly longer and, together with its new control cabinet, fits into the same space as its predecessor model." This is why it took only four working days to remove the old CHP and install the new one.

The time had come on the afternoon of May 19: The electricians had been connected, the engine had been topped up with oil and our 2G technician could start up the new generator in the presence of Stefan Rohling. The machine has already completed the first few operating hours in the many thousands of hours it is expected to operate in its long service life.

Stadtwerke
Georgsmarienhütte



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g-box 50plus
Natural gas
50 kW electrical
104 kW thermal
Machine house installation

