

CASE NOTE

Energnist – More power from waste



At a waste incineration facility in Denmark, a new generator from ABB boosted power output by 25 percent and promises a long lifetime.

Energnist

Danish waste management company Energnist operates two waste incineration plants in the towns of Esbjerg and Kolding that produce an annual 805,000 MWh of district heating and another 195,000 MWh of electricity. The Esbjerg site is the larger of the two, generating 57 percent of the company's district heating and 77 percent of its electricity. Energnist is responsible for ensuring that the waste incineration capacity is sufficient for the 16 municipalities that own the company.

The problem

A generator in a waste management plant has a normal life expectancy of 25 years. But after the Esbjerg site was built in 2003, plant officials began to see problems with the original generator. "We smelled ozone and saw white powder coming out of cracks in the generator, so we knew something was wrong," says René Pedersen, who is in charge of production and maintenance at the plant. "When we opened the generator for inspection we saw that the corona protection was burned in many places. It was just a matter of time before the generator would fail to work."

In 2013 the company asked ABB to make a Life Expectancy Analysis Program (LEAP) measurement of the old generator. This is a systematic approach that allows an operator to know with a high level of confidence how long its motor or generator can remain in service before a failure. The results from the analysis showed that the generator had one or two more years to go before it broke down. "The LEAP concept has proved its worth," says Per Pedersen, Sales Director at ABB. "If the customer had chosen to do nothing, it would have become extremely expensive for them if the generator suddenly broke down. The production stop would have been long, as it takes time to order, deliver and install a new generator." After a procurement round, Energnist decided to purchase a new generator from ABB to replace the old, worn-out generator.

The solution

Denmark has about 50 energy plants that use large generators to produce electricity and heating. ABB has a proven track record of providing generators for the energy industry and has about 10 reference plants in Denmark.



The new 25 MW generator was produced and delivered to Energnist in the summer of 2014. But the installation and commissioning of the generator had to wait another nine months. As it is costly to stop production at a waste incineration plant, Energnist has planned maintenance stoppages only once every 18 months. “We knew we needed a normal maintenance stop to put in the new generator, but in 2014 we didn’t have any,” René Pedersen says.

Apart from switching the generator, Energnist also planned to install a new gearbox and control system during the 30-day stoppage, which saw up to seven different suppliers working in a tiny space in the turbine hall. “It was important that everybody was ready on time,” René Pedersen says.

“The project needed careful planning, and we put a lot of effort into creating a detailed time plan for the installation and commissioning of the generator,” says Jørgen Olsen, project manager at ABB.

René Pedersen says, “Our deal with ABB was that it needed to be installed in three weeks. All in all, ABB managed to deliver on time on all the milestones.”

“The short execution time was a challenge,” says Olsen. “One generator weighs 45 tons, and it was difficult to get the generators in and out of the building. We had to do a very long lift with a big crane.” The installation was executed without incident, with daily safety briefings and observation tours.

Customer benefits

The main benefits of the new generator from ABB are better performance and quality.

It produces more energy, 25 MW, compared with 20 MW for its predecessor. It has a higher-quality corona protection system and is a well-known and proven generator with a long lifetime. “The generator has performed without problems,” René Pedersen says. “It runs smoothly, with no vibrations or temperature issues.”

In addition, ABB has a strong service organization and local presence in Denmark. The local ABB office in Esbjerg is situated just a few kilometers from the Energnist site.

Customer statement

René Pedersen is very satisfied with ABB’s delivery. “The ABB guys are really good to work with,” he says. “We had a good cooperation, from signing the contract to commissioning. It was a good experience for our company.”

For more information please visit:

new.abb.com/motors-generators/service

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