

# CASE BIR

Avfallsenergi AS



## Managing the life cycle of high-value and high-risk turbomachinery with one service partner

The Norwegian BIR Avfallsenergi's Rådalen waste-to-energy plant in Bergen takes care of the municipal waste handling and district heating delivery. The facility encompasses two complete production lines with one turbine and generator unit in each.

In 2018 BIR signed a long-term, eight-year service agreement with Fortum eNext. The undertaking includes major and minor overhauls, remote monitoring and 24-hour support.

## Managing the life cycle of high-value and high-risk turbomachinery with one service partner

BIR Avfallsenergi AS (BIR) is part of Norway's second largest waste management company BIR. It is responsible for waste collection, recycling stations and waste handling in the Bergen area on Norway's southwestern coast. BIR processes 220,000 tonnes of waste each year at its modern facility in Rådalen, Bergen, and holds a concession for more. More than 20,000 households rely on BIR's energy production for heating, and almost 5,000 households are supplied with power.

Rådalen has two boilers, each of which can incinerate up to 14 tonnes per hour. The maximum output is 60 MWe of district heating and 8 MWe of electricity in the winter. The facility encompasses two complete production lines: the line 1 turbine and generator are from ABB and the line 2 turbine is from TGM Kanis and the generator is from Converteam.

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**BIR's waste-incineration plant in Bergen processes 220,000 tonnes of waste per year.**

Previously, BIR had engaged TGM Kanis as the service supplier for the turbine and generator on line 2 and different service suppliers on line 1, where BKK Varne AS owns the turbine and generator. When it was time to renew the agreement, the two companies joined forces in a public procurement process.

"We wanted to find one supplier who could manage the entire chain, by that I mean servicing, maintenance and monitoring of the production lines as well as providing us with 24-hour support. Our assessment was that in the long term, a system-wide solution would be the most economic – and it would enable us to reduce the number of suppliers and contracts we have to manage. It is much simpler with just one service partner," says **Kenneth Sörsdal**, Advisor at BIR AS.

## One supplier is better than many

In 2018 Fortum eNext signed a long-term, eight-year service agreement with BIR Avfallsenergi AS. The undertaking includes major and minor overhauls, remote monitoring and 24-hour support.

The customer's main driver for choosing Fortum as the single supplier was to save time and money. Without having to spend time on the supplier selection process, the overhaul and maintenance work can be done without delays. It is also easier to have one partner who is familiar with the equipment history. The need for repairs can be foreseen in advance, and managing the life cycle of the high-value and high-risk turbomachinery can become a focus.



**Fortum eNext is an independent service supplier with expertise in a variety of makes of turbines and generators.**

"Fortum met all of the requirements we had set in the tender documentation and it had the best price. Moreover, they have their own experience with energy production," Kenneth adds.

## Instant benefits

“It is much simpler with just one service partner.”

**Kenneth Sörsdal,**  
Advisor at BIR AS

Fortum has the resources and expertise to undertake lengthy service contracts for turbines and generators, irrespective of the manufacturer. Customers represent the CHP sector and forestry, as well as the petrochemical and metal industries. Fortum’s own production facilities mean that the company has a strong platform for offering service solutions for electricity production.

“We have been producing electricity for 30 years, which sets us apart from our competitors. We know the customers and their needs, and we have extensive experience with the various manufacturers gained through our own production environments, enabling us to provide service for more than ten different makes,” says **Mats Rombe**, General Manager at Fortum eNext Turbine and Generator Services.

The advantages of having Fortum as a supplier became abundantly apparent for BIR as early as the first planned shutdown in April 2018. It turned out that the turbine rotor was in need of repair. Together with a site manager, nine people from Fortum arrived quickly on site in Bergen to solve the problem and to minimise the duration of the shutdown for the afflicted line.

The major overhaul planned for the year before had been deferred, since the customer was going to invite tenders for the full system.

“It was perhaps slightly bad news for the customer that we identified the need for repair. But this is exactly our area of expertise: identifying deviations, reacting quickly and keeping lead times, together with our broad and extensive contact network,” says Mats.

## 24/7 for the first time

“It was great to win this contract. It showcases our competence to take on a long-term service agreement that includes both turbines and generators.”

**Mats Rombe, General Manager**  
at Fortum eNext Turbine and  
Generator Services.

BIR was the first customer to be offered year-round 24/7 support by Fortum. While such agreements are common in the oil industry, they are less common in energy production and this was one of BIR’s requirements.

“Support doesn’t necessarily mean someone has to come to the site; a confirmation by phone to keep running despite the temperature not being ideal could be sufficient, for example. Round-the-clock support provides considerable peace of mind, because we have incredibly expensive equipment in our processes,” says **Bjarte Iversen**, Technical Manager at BIR, responsible for the turbine on line 2 and for all of line 1.

In 2020, remote monitoring will enable Fortum to see what is happening in Bergen and to analyse data off site. This means Fortum can conduct the initial analysis from its home base, thereby allowing the customer to avoid the cost of a call-out. If a site visit is required, decision data is already in place.

“Our circumstances mean that everything has to work all of the time, particularly district heating. I believe that online monitoring will lead to a faster and more efficient process when support is needed,” says Bjarte.

Bjarte Iversen and Kenneth Sörsdal are in agreement that the partnership with Fortum is working extremely well.

“Overall, it has been easy to get hold of someone when we have needed assistance; we have received quick responses and good contact has been made between all parties.”

## Service supplier with complete solutions

Fortum eNext has a strong and broad organisation within Turbine and Generator Services, with 120 skilled employees as well as workshops in Västerås, Sweden, and Naantali, Finland. This enables customers to have a single point of contact for all turbine generator-related services.

The workshop in Naantali has the skills and tools needed for reverse engineering, in other words, 3D modelling of generators and turbines to enable the manufacture of spare parts. In Sweden, Fortum can offer a complete solution with responsibility for turbines, gearboxes and generators. Västerås also has the only site in the Nordic region that can offer high-speed generator rotor balancing up to a limit of 110 tonnes as well as the equipment and expertise to conduct rotor and stator rewinding, among other services.

Last but not least, engaging Fortum means that safety will always be prioritised. “We never compromise on safety,” says Mats.

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**Customer**  
BIR Avfallsenergi AS

**Site**  
Waste incineration facility in  
Bergen, Norway, producing  
electricity and heat

- Current thermal plant: 5 units with altogether 5 boilers, 2 gas turbines and 2 steam turbine generators (condensing + backpressure).
- 3 new boilers and a steam turbine generator under construction. Once commissioned, 2 old boilers and the old steam turbine generators will be decommissioned.
- Eventually 6 operational units with electricity generation capacity of 170MW
- Gas turbine plants: General Electric gas turbines, Alstom generators
- Steam turbine plant: Siemens steam turbine and generator

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## CASE BIR

### Customer challenges

- » Finding an economical solution to manage the entire chain: servicing, maintenance and monitoring of the incineration lines
- » Reducing complexity by reducing the number of suppliers and contracts
  - » finding a supplier who can cover a wide maintenance scope
- » Possibility to receive expert support when needed

### Solution by Fortum eNext

- » Full maintenance of turbine generators of both incineration lines for the next 8 years, including major and minor overhauls, remote monitoring service and 24/7 support
- » Systematic long-term approach to maintenance planning and implementation

### Customer benefits

- » Peace of mind knowing that support is always available if a fault occurs
- » Identifying deviations immediately and the ability to react quickly when needed
- » Savings through spot-on maintenance work at an optimal time, and shorter production down time altogether
- » Careful upfront planning and preparation of both maintenance work and needed spare parts, thanks to insights on the maintenance history



If you want to know more about the case or about our long-term service agreement, please contact:

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