

### Plant Facts

Treats approx. 200,000 tonnes of waste annually produced by inhabitants and businesses in the southern Sweden region

Produces approx. 40% of the district heating water for 2,000 apartments and 8,500 villas in the Helsingborg district

Produces electricity for 7,500 villas

Steam conditions of 425 °C and 49 bar doubles the electrical efficiency of the former plant



Photography: Fagermolt

The Filbornaverket waste-to-energy plant in Helsingborg produces steam, district heating and electricity. The plant was handed over to the customer Öresundskraft in early 2013.

The main fuel for Filbornaverket is combustible fractions of waste from households, industry and businesses. The plant uses the region's large quantities of combustible waste to produce electricity and district heating for the local grid.

- Burns approx. 200,000 tonnes of waste per year
- Thermal efficiency: 98%
- Investment in the plant: 1.85 billion SEK

### Scope of supply

Babcock & Wilcox Renewable's (B&W's) project scope included a Vølund™ technology combustion system with waste crane, steam boiler with superheaters and economizers,

electrical system, wet flue gas cleaning and flue gas cleaning condensation system with a heat pump. In 2020, our adaptive selective non-catalytic reduction (SNCR) system replaced the original third-party system for nitrogen oxides (NO<sub>x</sub>) reduction.

The boiler is equipped with a water-cooled DynaGrate® combustion grate and an advanced combustion control system. The DynaGrate combustion grate is distinguished by its reliability and fuel flexibility to accommodate both high and low calorific fuels.

To reduce maintenance costs, the boiler design also includes water-cooled wear zones and panel walls protected with Inconel® weld overlay.

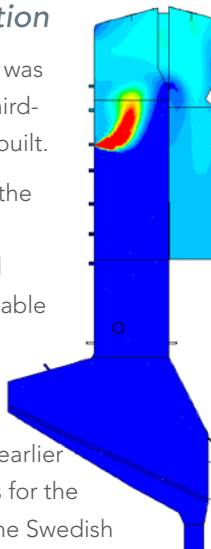
Inconel weld overlay is a strong, corrosion- and oxidation-resistant material that forms a thick, stable, oxide layer for surface protection. It is an investment that provides considerable long-term financial benefits.

*continued* ►

## Adaptive SNCR for NO<sub>x</sub> reduction

In 2020, B&W Renewable's adaptive SNCR was installed at Filborna, replacing an earlier third-party system installed when the plant was built.

By knowing the detailed design criteria of the SNCR system and integrating this into the computational fluid dynamics (CFD)-based boiler design process, our engineers were able to optimize boiler operation and NO<sub>x</sub> emissions. In fact, our adaptive SNCR achieved a 24% NO<sub>x</sub> reduction in the first year of operation compared to the plant's earlier solution. This was a significant cost savings for the plant owner as payments are required to the Swedish government for its NO<sub>x</sub> emissions. B&W's maintenance plan and operational strategies allow continual optimised operation of the SNCR system.



## Sophisticated emissions control components

B&W Environmental supplied the GMAB™ ADIOX® scrubber, a component of the flue gas cleaning system, as well as the condensation heat pump. The unit includes stacked scrubber sections for removal of ammonia and remaining acidic components.

The scrubber includes packing material and droplet separators of ADIOX-material for maximum dioxin removal and dioxin memory-effect prevention.

### What makes the Dynagrate® combustion grate special?

Advanced technology, known for maximum burnout and energy recovery

Ideal for combustion of all types of waste

Long lifetime

Plant Data		
Process parameters	Values	Units
R1 value	1.41	–
Waste capacity (MCR)	27	t/h
Heat value, lower	10	MJ/kg
Steam output	88.7	t/h
Steam temperature	425	°C
Steam pressure	49	bar
Gross electric output	17	MW
District heating output	58	MW
Boiler outlet flue gas temp.	160	°C
Feed water temperature	130	°C

Flue gas values:*	Values**	Units
After cleaning		
NO <sub>x</sub> **	80	mg/Nm <sup>3</sup>
CO***	50	mg/Nm <sup>3</sup>
NH <sub>3</sub> **	5	mg/Nm <sup>3</sup>
HCl**	5	mg/Nm <sup>3</sup>
SO <sub>2</sub> **	25	mg/Nm <sup>3</sup>
Dioxin	0.05	ng/Nm <sup>3</sup>

\* Guaranteed values  
 \*\* 24-hour average  
 \*\*\* Half-hour average

## Babcock & Wilcox

Dybendalsvaenget 3  
 2630 Taastrup  
 Denmark  
 Phone: +45 76.14.34.00

[www.babcock.com/renewable](http://www.babcock.com/renewable)

The information contained herein is provided for general information purposes only and is not intended nor to be construed as a warranty, an offer, or any representation of contractual or other legal responsibility.

Vølund, DynaGrate, GMAB and ADIOX are trademarks of The Babcock & Wilcox Company or its affiliates.

Inconel is a trademark of Special Metals Corporation and its subsidiaries.

© 2023 The Babcock & Wilcox Company. All rights reserved.



RENEWABLE | ENVIRONMENTAL | THERMAL

Established in 1867, Babcock & Wilcox is a global leader in renewable, environmental and thermal technologies and services for power and industrial applications.

For more information or to contact us, visit our website at [www.babcock.com](http://www.babcock.com).