Energy-from-Waste Plants, Nuuk & Sisimiut, Greenland

VØLUND® WASTE-TO-ENERGY TECHNOLOGY

PROJECT CASE HISTORY

Babcock & Wilcox Renewable (B&W) was awarded a contract with ESANI, Greenland's national waste management company, to deliver two waste-to-energy plants, one at Nuuk and one further north at Sisimiut. The two plants are central and key facilities in Greenland's new waste management plan. The new unit in Nuuk will be replacing a smaller thirty-year-old Vølund® systems boiler.

The plants will have a total capacity to process 140 tons of the municipal waste per day generated in the arctic country. The two plants will generate heat for the inhabitants of Greenland's capital Nuuk, and its second largest city Sisimiut, all from Greenland's own resources. The plants will also process old landfill waste, reducing harmful methane emissions and water contamination from leachate.

B&W's advanced DynaGrate® combustion grate will be installed at both locations. B&W's scope comprises the plants' electromechanical equipment including the one-lane air-cooled DynaGrate, three-pass Vølund® vertical boiler, waste feeding system, ash conveyor, GMAB™ flue gas cleaning system, and an advanced control and monitoring system. B&W will install and commission the two plants.

Plant Design Data		
Process parameters	Value	Units
Waste capacity	2.95	t/h
Heat value (LHV)	7.5 to 13.1	MJ/kg
Maximum continuous rating (LHV)	8.9	MJ/kg
District heat output	6.18	MW_t
District heat temperature	140	°C

This map of Greenland shows the arctic location of the two plants.

Design Objectives

- Fuel flexibility
- No pre-treatment of waste
- Wide operating scheme
- Adaptable to a wide range of heating values
- High availability
- Reliable operation
- Low maintenance costs
- Fully automated operation

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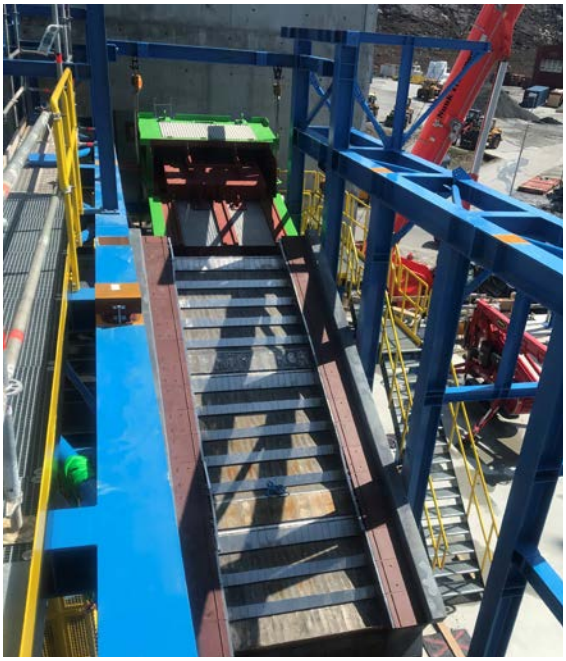
Scope of Supply

B&W will provide the combustion equipment and boiler design, including:

- Air-cooled DynaGrate combustion grates
- Advanced parallel flow furnace with water-cooled wear zone
- Vølund vertical multi-pass boiler with two radiant passes, two convection passes with evaporator walls and an integrated economizer
- DynaFeeder® waste fuel feeding systems
- Ash conveyors
- GMAB flue gas cleaning technologies
- Advanced control and monitoring systems
- Installation and commissioning

Project Highlights

- As key facilities in Greenland's new waste management plan, the plants are designed with a capacity of 71 t/d to process the municipal waste generated in the arctic country.
- The plants will generate heat for the inhabitants of Greenland's capital Nuuk, and its second largest city, Sisimiut, all from Greenland's own resources.
- Replacing a small, thirty-year-old Vølund systems boiler, the new Nuuk plant is scheduled for commissioning in 2023, while the Sisimiut line is scheduled for commissioning in 2024.
- Both plants are also designed to process old landfill waste, reducing harmful methane emissions and water contamination from leachate.



DynaGrate combustion grate and DynaFeeder fuel feeder system after lift-in.

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