Reno Nord / Aalborg, Denmark

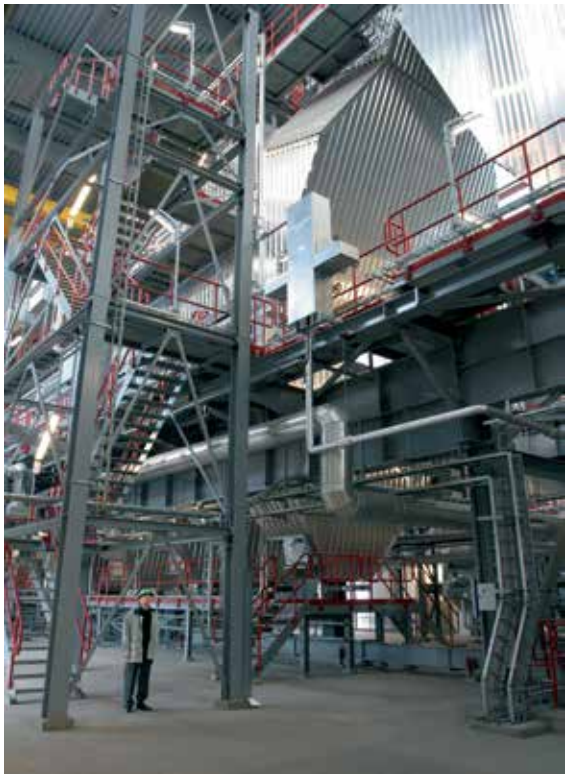
VØLUND™ WASTE-TO-ENERGY TECHNOLOGY

In October 2006 one of the most modern and efficient waste-to-energy plants in Denmark was handed over to I/S Reno Nord.

The new furnace line 4 was built to replace the two old furnace lines 1 and 2, which were supplied in 1981. The existing furnace line 3, supplied in 1991, will be kept as a replacement.

The complete machinery has been supplied by a consortium consisting of Babcock & Wilcox Renewable (B&W) and French company LAB S.A. (LAB). B&W supplied the furnace/boiler line complete with auxiliary equipment, and LAB supplied a complete flue gas cleaning plant with wet scrubber. B&W's sub-supplier provided a complete turbine/generator set. The concrete work was carried out by the client.

The nominal capacity of the plant is 20 t/h waste at a calorific value of 12 MJ/kg, corresponding to approx. 160,000 t/year. The boiler generates 80 t/h steam at 50 bar, 425°C.



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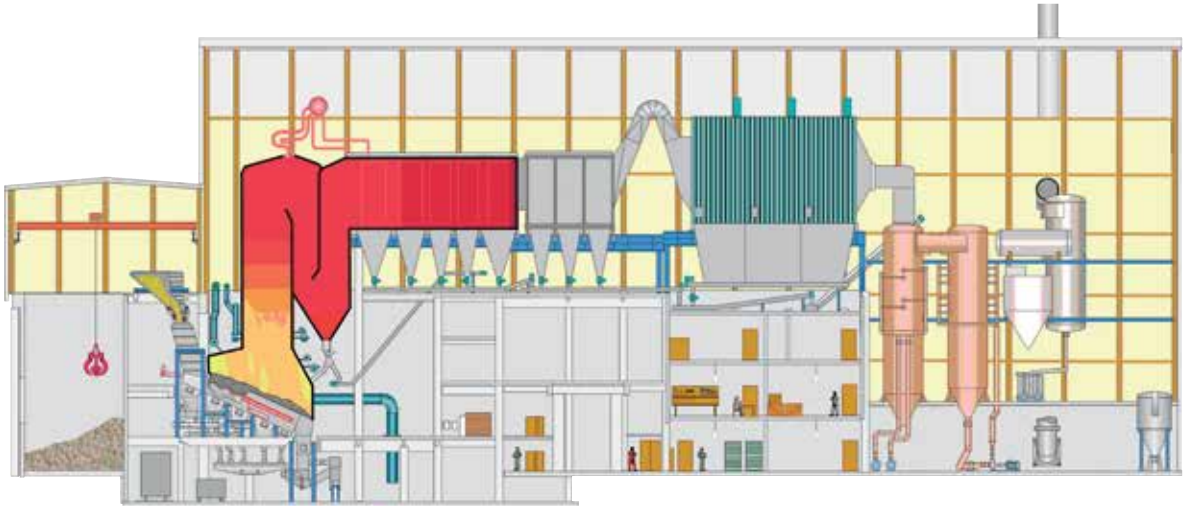

Scope of supply

B&W's supply includes a furnace/boiler with economiser, an ash/clinker system, a de-NO_x system (dosing of ammonium to the boiler first pass), an electrical and DCS system, and an electrostatic precipitator after the economiser. Furthermore, the steel structure of the building was supplied as an integrated part of the boiler's steel frame.

Technology

The plant is equipped with an air-cooled Vølund™ technology DynaGrate® combustion grate, prepared for later conversion to water-cooling and with feeding of waste by a pusher, which ensures homogenous feeding without the risk of backfire. The turbine generates approximately 18 MW of electricity, which will be fed into the main grid. The plant will supply approximately 43 MW of heat to the district heating network in Aalborg. The efficiency is approximately 100%, and the energy produced will supply some 16,000 houses with electricity, and 30,000 houses with district heating.

Guarantee test			
Process parameter	Guarantee values	300-hour test	Unit
Waste capacity	20	21,72	t/h
Calorific value, lower	12	11,28	MJ/kg
Steam production	22,42	22,55	kg/s
Steam temperature	425	423	°C
Steam pressure	50	48,6	bar
Input efficiency	66,66	67,69	MW
Electricity produced	17,918	18,232	MW
Thermal efficiency	85,56	87,1	%
Electrical efficiency	26,88	26,93	%
TOC, bottom ash	< 20	< 0,23	%
Flue gas temperature before superheater	620	530	°C
Outlet temperature, boiler	180	181	°C

The plant limit values comply with the EU directive on waste incineration.

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