Waste-to-energy plant

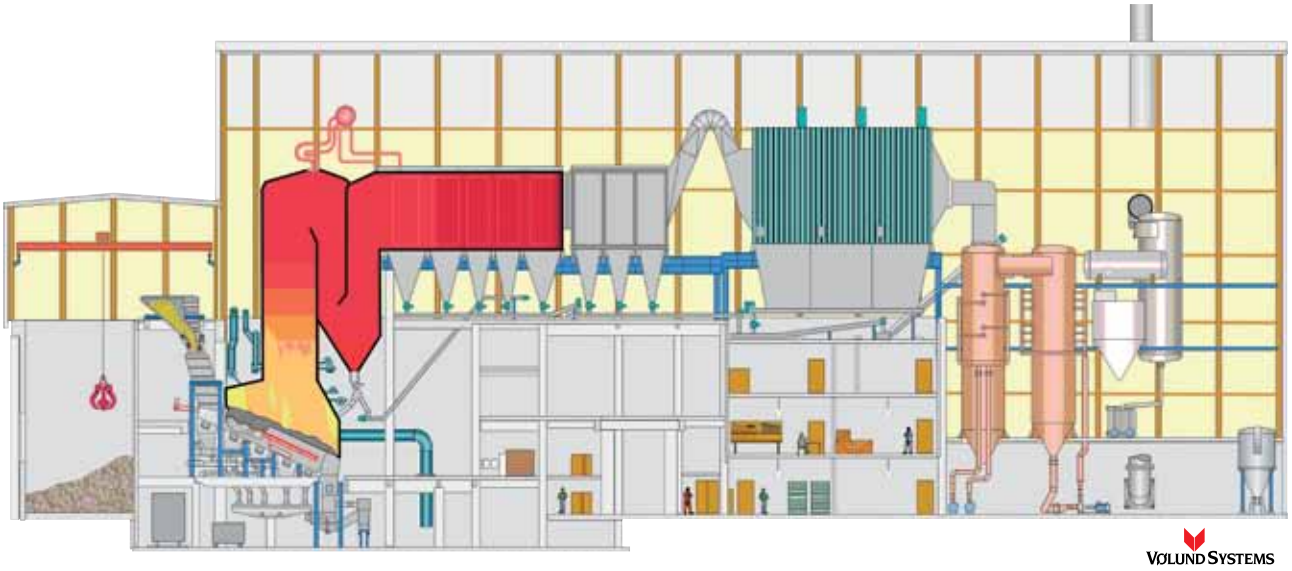
Reno Nord
Aalborg, Denmark

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 has been 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 Vølund (BWV) and the French company LAB S.A. (LAB). BWV has supplied the furnace/boiler line complete with auxiliary equipment, and LAB has supplied a complete flue gas cleaning plant with wet scrubber. BWV's sub-supplier has supplied a complete turbine/generator set. The concrete work has been carried out by the client.

Combined heat and power
Reno Nord, Denmark



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.

BWV's scope of supply

BWV's supply includes a furnace/boiler with economiser, an ash/clinker system, a DeNOx 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 DynaGrate®, prepared for later conversion to water-cooling and with feeding of waste by a so-called pusher, which ensures homogenous feeding without the risk of backfire.

The turbine generates approx. 18 MW of electricity, which will be fed into the main grid. Furthermore, the plant will supply approx. 43 MW of heat to the district heating network in Aalborg. The efficiency is approx. 100%, and the energy produced will supply approx. 16,000 houses with electricity, and approx. 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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