



BIOMASSEHEIZKRAFTWERK GmbH

Pfaffenhofen, Germany

WOOD FIRED CHP PLANT

In the town of Pfaffenhofen, which has approx. 22,000 inhabitants, a new CHP plant has been built. The plant generates electricity for the grid and heat for a completely new town district heating network. The network supplies hospital, schools and other public buildings as well as private buildings. Furthermore, the plant delivers process steam for a large biological baby food factory.

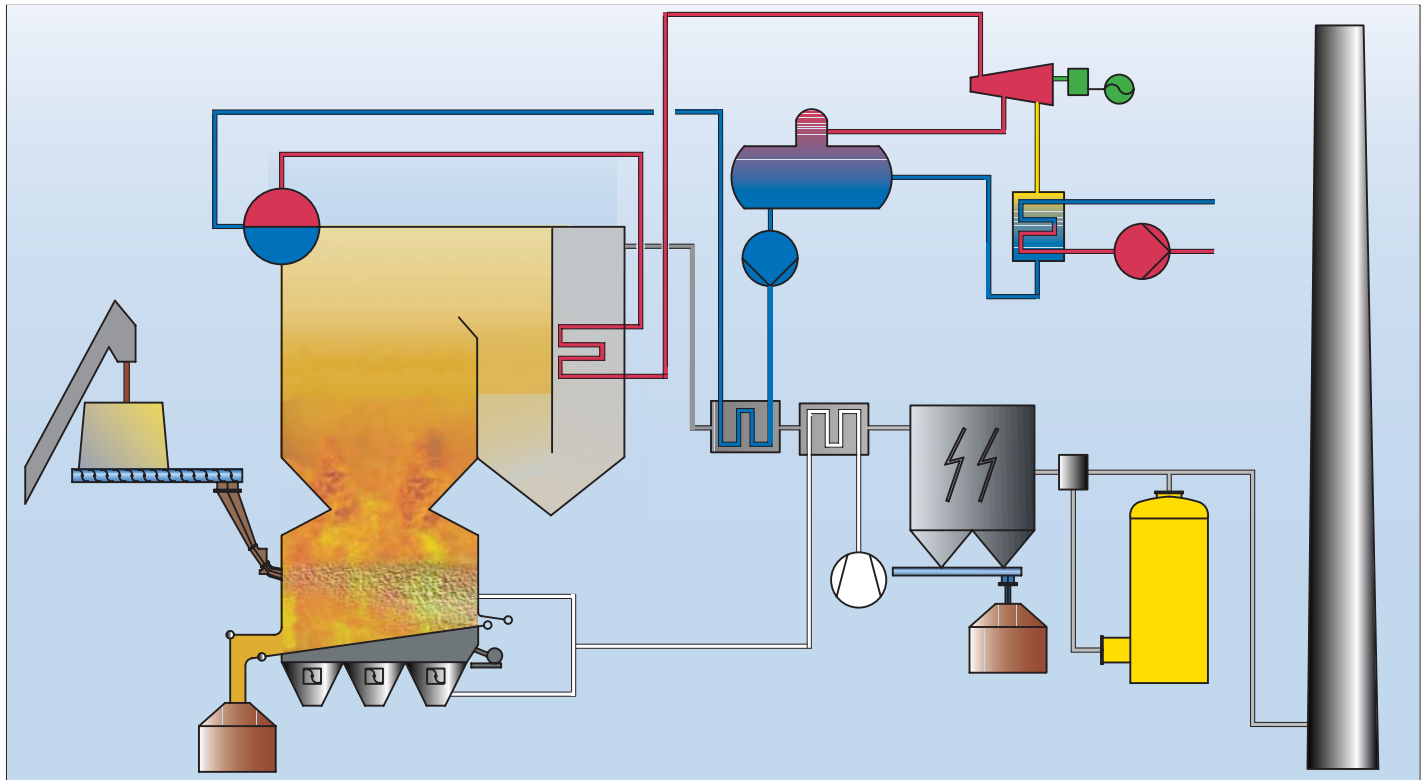
In January 2000 the company Kraftanlagen Anlagentechnik München GmbH, which was responsible for the building of the CHP station, signed a contract with Vølund A/S for the delivery and erection of a wood fired boiler plant with complete combustion equipment.

The boiler plant was completed in July 2001.



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The supply includes the well-known Vølund boiler with natural water circulation, designed as a self-supporting, fully welded structure in which downcomers and corner tubes form the load-bearing columns. This boiler design offers a high degree of freedom of construction because of the small number of downcomers leading from the boiler drum to the lower distributors. This means that the boiler can be adapted to suit almost any purpose. For this particular plant a very low boiler was required in order to comply with the building height laid down in the authority approval.

The fuel, which consists mainly of forestry wood chips and sawmill wood waste, is carried from an approx. 12 m³ buffer silo in front of the boiler via 3 double conveyor worms to 3 pneumatic throwers which blow the fuel into the furnace. In the furnace a partial drying and gasification takes place while the fuel is still suspended in the air. The combustion takes place on a water-cooled vibrating grate which is divided into 3 air zones in the longitudinal direction. The air zones are connected to the air duct by means of flexible connections and air dampers for control of the desired supply of combustion air.

Secondary combustion air and recycled flue gas are supplied to the furnace combustion zone through air nozzles arranged strategically in the boiler front and rear walls. Slag and ash are carried to a container by a submerged slag conveying system.

Control and monitoring

A PLC containing all software for the control and regulation of the complete boiler plant is built into a panel and connected with the DCS system.

Boiler data

Load point		100 %
Steam flow	30	t/h
Steam temperature after superheater		452 °C
Steam pressure after superheater	62	bar
Feed water temperature		120 °C
Boiler efficiency		87,2 %
Energy input		26,7 MW
Moisture content in fuel		45 %
Calorific value		9,07 MJ/kg

Local emission limits

Dust	20 mg/Nm ³
CO	125 mg/Nm ³
NO _x	250 mg/Nm ³
Organic substances with 11% O ₂ in dry flue gas	25 mg/Nm ³

According to TA-Luft the above limits are daily mean values