

Rudkøbing CHP plant

The first generation of straw-fired plants



Boiler specification

The plant has the following main data:

| | |
|--------------------------------|---------------------|
| Main fuel | Wheat straw |
| Maximum water content in straw | 25 % |
| Fuel consumption | approximately 3 t/h |
| Steam production | 13 t/h |
| Steam pressure | 60 bar |
| Steam temperature | 450° C |
| Boiler efficiency | 92.5 % |
| Power output (net) | 2.3 MW |
| Thermal output | 7.0 MJ/s |
| Plant efficiency | 84 % |

Creating a network

From 1988-1990, FLS miljø designed, erected and commissioned Rudkøbing Heat and Power Station on a turn-key basis. The establishment of the plant forms part of the project of creating a network of decentralised heat and power stations in Denmark which are fired with biomass fuels. Electricity and heat are produced using straw as fuel. The plant yields a heat production of 7 MJ/s and a power production of 2.3 MW.

Low emissions

The emission of dust, nitrogen oxide (NO_x) and sulphur dioxide (SO₂) from FLS miljø's straw-fired boiler plant is relatively low. Straw is defined as a carbon dioxide (CO₂) neutral fuel, i.e. during the combustion it does not release more

CO₂ than is absorbed during the growing season. Straw-firing does not, therefore, contribute to the 'greenhouse' effect.

Locally available fuel

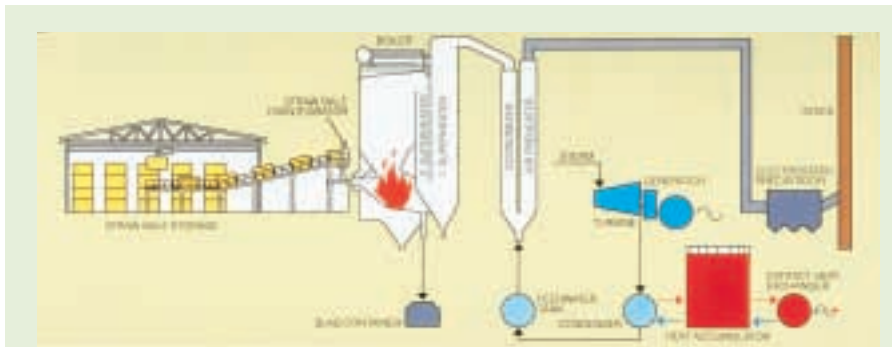
Straw is a locally available fuel. The establishment of a straw-fired boiler plant in the district encourages local employment and local openings for the use of the straw surplus of the area.

It also reduces the consumption of often imported fossil-fuels: for instance, coal and oil.

Meets future requirements

FLS miljø's straw-firing plants have been designed to meet future requirements as to high efficiency, good operating economy and sound environmental considerations. At the





same time, the combustion-technical problems entailing the large variations in humidity percentages and consistency of the straw, as well as the various pressing methods, have been solved.

Fuel handling

The storage of the straw is operated by a fully automatic crane system which moves the stacked bales of straw to the straw bale disintegrator at the boiler inlet.

A hydraulic piston presses the straw onto the boiler grate. The combustion takes place on a water-cooled vibration grate. From the lower end of the grate system, the slag and ashes are conveyed to closed containers by a wet, submerged, conveying system.

The process

The straw is fed through a water-cooled duct. It is thus possible to eliminate backfire in this manner.

Via the superheater sections, the economiser and the air preheater, the flue gas is led to a fabric filter for cleaning of particles before it leaves the chimney at a temperature of approximately 110 °C.

The 450 °C live steam expands through the turbine and continues to the condenser in which the heat is transferred into the district heating system.

In the district heating circuit, a 2,500 m³ heat accumulator is installed which enables the plant to generate electricity at the most favourable time during a 24-hour cyclus.

where experience and innovation meet

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