

FLUE GAS CONDENSING IN FALUN SWEDEN



A combined power and heat boiler for fossil fuel is being installed at the Falu Energy Plant. As a means of improving the profitability of this plant *Falu Energiverk* also decided to fit the boiler with a **flue gas condensing facility** complete with a combustion air humidifier. In this way the boiler's total performance capacity increases up to 115%, as per definition. Götaverken Miljö's condensing system comprises well-proven components which are easily accessible for servicing and the condenser unit as well as the humidifier are stationary. Besides the fact that **flue gas condensing** provides improved boiler capacity it also provides purification of the flue gas from dust and other water soluble components and pollutants such as hydrochloric acid, traces of ammonia, sulphur etc. The plant will be ready for operation in December 1993.



PLANT DATA

Boiler contractor: Ahlström Termoflow
Osakeyhtiö

Boiler design: Fossil fueled
fluidised bed
30 MW
9 MW electricity

Flue gas condensing:

Plant contractor: Götaverken Miljö AB
Process: Flue gas condenser with
humidifier for
combustion air

Condenser output: approx. 8.4 MW

Effluents: Traces of ammonia
20 mg dust

Description of the process

After the flue gas has passed through the electrostatic precipitator and fan it enters a quench where cooling takes place from 150°C to dew point by the injection of water.

The condenser following comprises thermal plating whereby water for the district heating system is heated as the flue gas is condensed.

The flue gas then passes through the humidifier where the combustion air is heated and moistened, lowering the flue gas temperature even further.

Combustion air is taken from the top of the boiler house and fed to the humidifier which is of plate heat exchanger design, before returning to the boiler combustion air system.

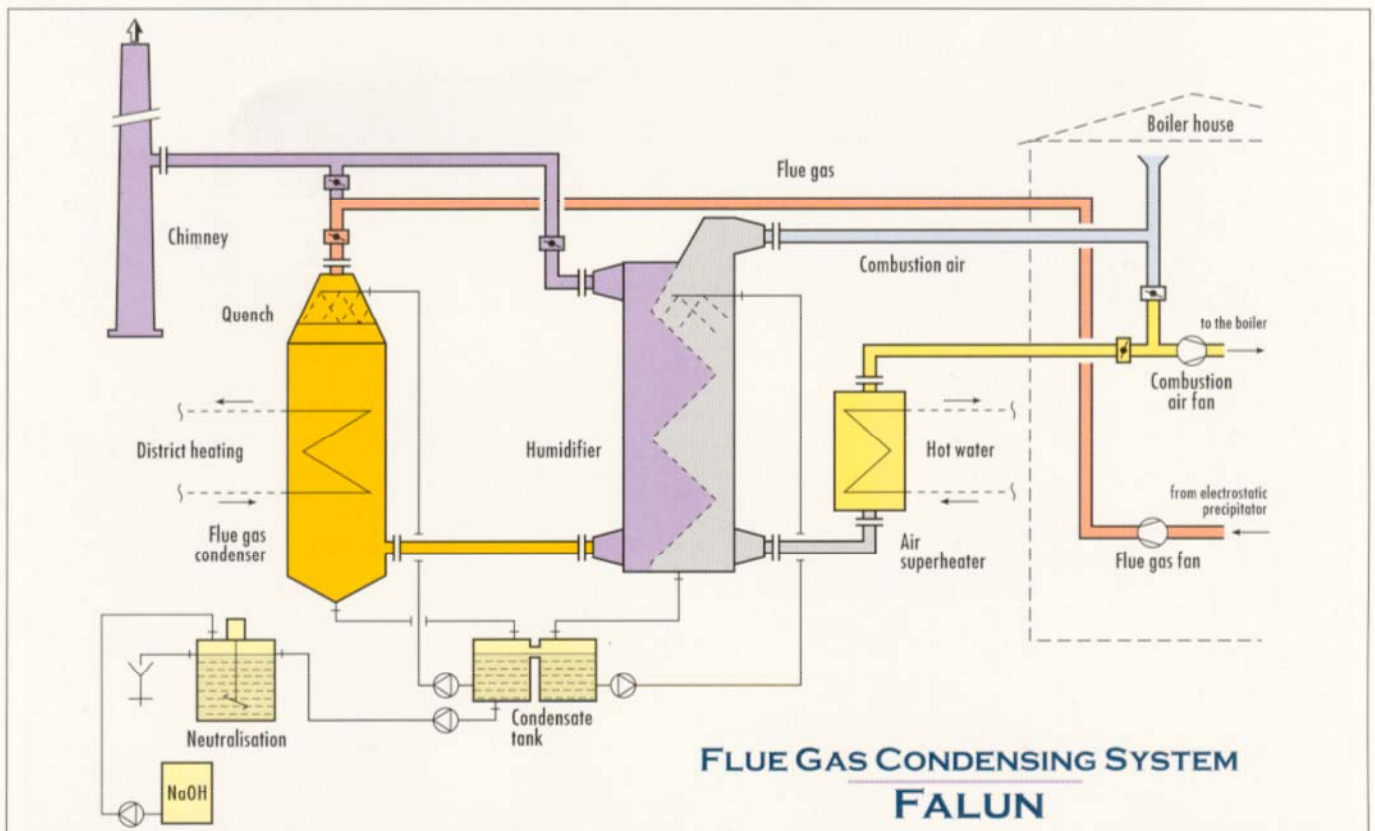
After the air has been moistened it is heated in a superheater in order to prevent corrosion in the ducts and preheater which follow after this process.

The higher moisture content in the combustion air is transferred to the flue gases with an increase in the maximum possible output in the flue gas condenser as a result.

The condensate which forms is continuously discharged to a separate water treatment plant for neutralisation before passing to the sewage system.

Besides good energy recovery there is a considerable reduction in the emission levels of dust, ammonia and other pollutants.

The improved level of performance also means that all emissions are reduced by 25% for each unit of power produced!



Götaverken Miljö, a member of the Celsius Group of companies and a leader in the field of environmental management for many years, markets systems for efficient flue gas cleaning, economical energy and heat recovery as well as for safe CFC handling.

Götaverken Miljö also markets a catalytic reduction system (SCR) for nitric oxides, which achieves excellent results in lowering emission of NO_x .



GÖTAVERKEN MILJÖ AB

Postadress/Postal address • Box 8876, SE-402 72 Göteborg, Sweden Besöksadress/Visiting address • Anders Carlssons gata 14
Telefon/Telephone No • 031-50 19 60, Int. +46-31-50 19 60 Telefax • 031-22 98 67, Int. +46-31-22 98 67
www.gmab.se