

AGRO

FORST & ENERGIETECHNIK GmbH



Heat and power from wood!

AGRO

FORST & ENERGIETECHNIK GROUP

... has been engaged in the mechanisation of forestry, the timber industry and the generation of power from renewable raw materials for the saw mill and timber industry as well as local and long-distance power stations for more than 30 years.

The focus is on generating power from renewable raw materials, such as bark, saw and plane chippings, wood chippings, residual and recycled wood and straw.

Our company's qualified plant engineers and experts in thermodynamics, with many years practical experience in the area of wood combustion facilities, plan and produce not only new plants, but have shown themselves to be qualified particularly in optimising, renovating and repairing existing combustion facilities for a diverse range of products.

We offer the whole spectrum of wood combustion technology, warm water, hot water, thermo oil, combined power and heat application (steam / ORC / stirling).

Our design engineers have had lead position involvement in the implementation of considerable pilot projects in Germany and Austria. Osterlitz, Altötting, Immenstadt in Germany, and STIA, Bad Hofgastein, Altenburg, Kästendorf, Strobl am Wolfgangsee etc. in Austria.

We have gained practical experience by investing in biomass heating plants.

It is AGRO Forst & Energietechnik's aim to optimise biomass power generation from existing heat and power plants.

Our wide-ranging activities in the area of optimisation and the experience we have gained from this have allowed us to provide the market with very highly developed plant technology.

High operational safety, low maintenance costs, permanent partnership over the lifetime of a plant are fundamental principles for our company.





AGRO moving grate ...

... for wood and bark fuel in inhomogeneous form.

The fuel is fed over a cooled moving grate. Dampness with a **humidity ratio of up to 60%**, impurities and solid fuels of various sizes are overcome without problem. The control system optimises all combustion processes with the necessary control circuits, achieving high efficiency and low emissions.

Efficient filter system for clean emissions.
Automatic removal of ashes.
Automatic cleaning of heating tubes.
Standing boiler from 1,000kW.

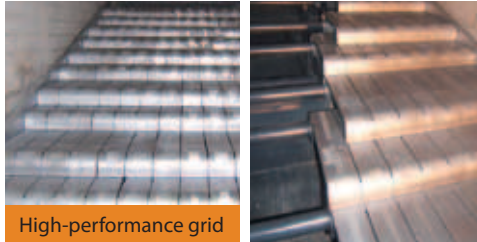
Capacity range: 200 – 10,000 kW

AGRO lower grate ...

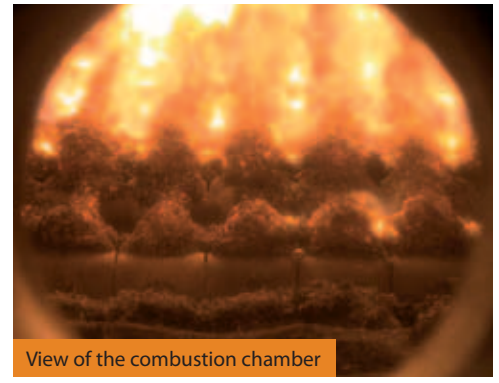
... together with a stoker screw conveyor and a lower trough is used for optimal incineration of homogenous fuel with a **humidity ratio of 10-40%** from the timber processing industry.

The combination of a lower trough with a moving grate makes fully-automated incineration possible.

Capacity range: 200 – 8,000 kW



High-performance grid



View of the combustion chamber

AGRO combustion control

Our moving grate furnaces are loaded with fuel in relation to output and in accordance with the natural course of incineration.

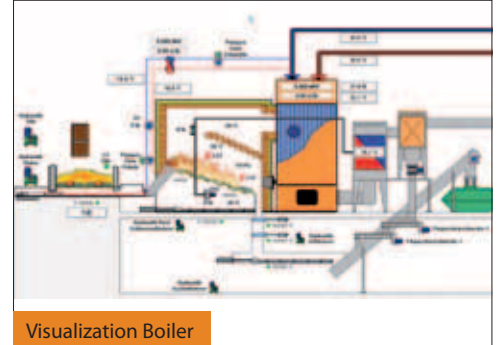
Our electronic control guarantees that the conveyance of the fuel is continuous along the whole grate, from feeding to burn out.

Our special grate units designed in-house using special alloys (see back page) guarantee a trouble-free burn-off and are distinguished by especially long life cycles.

The division into drying, gasification and burn-out areas means we can guarantee maximum burn-out of the emissions.



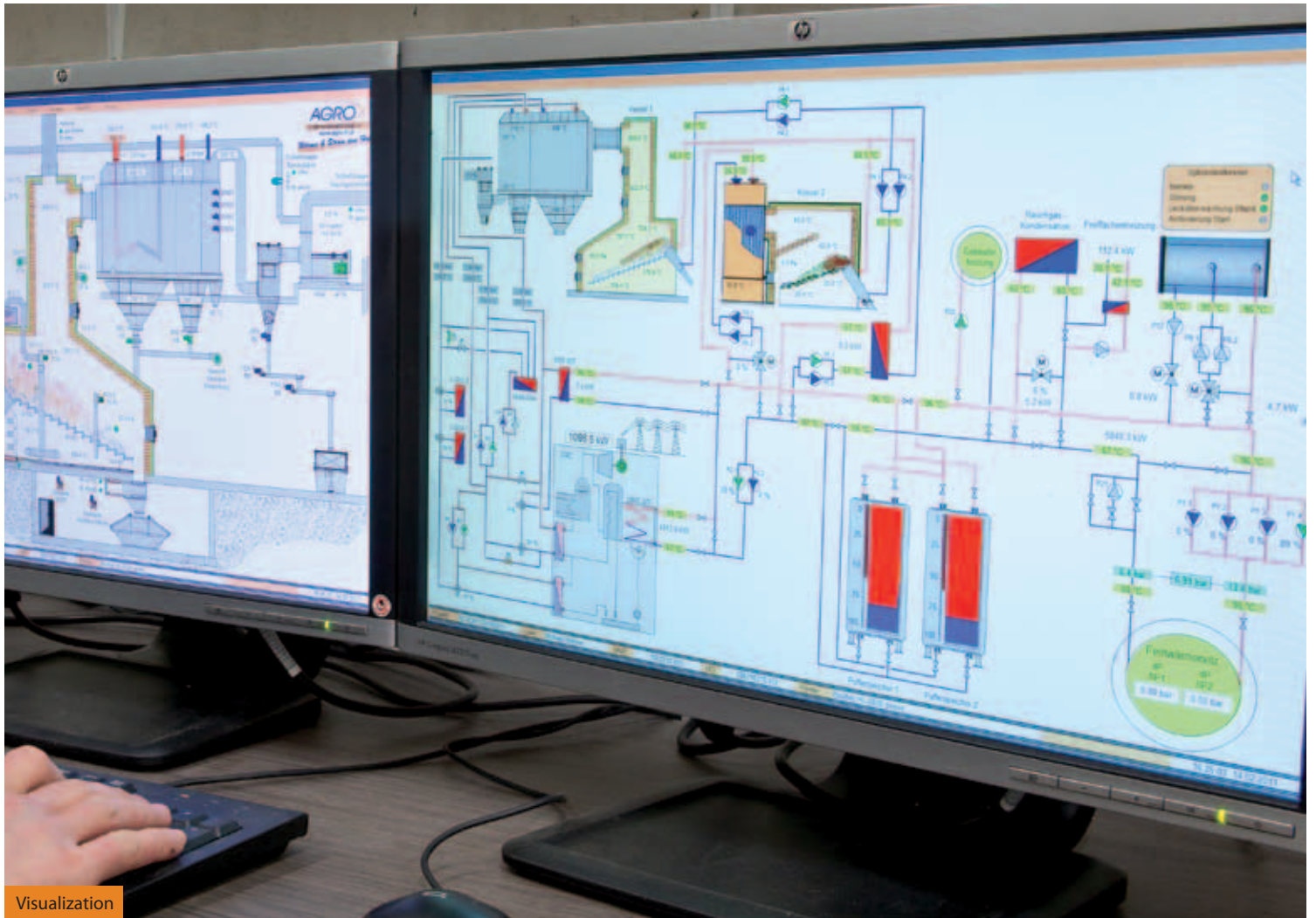
Vertical boiler 8 MW



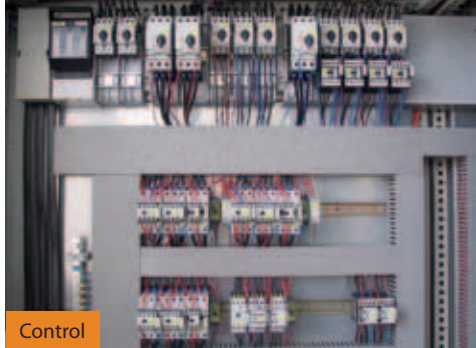
Visualization Boiler



Ash removal



Visualization



Control



Control center



Ash Logistics



Fuel drying



Heat exchanger



Economiser

AGRO burnt gas condensation ...

... makes it possible to use the remaining heat contained in the burnt gas after the boiler unit and the dust separation.

Exceptional efficiency results when the wet combustibles have to be burnt and the latent heat content of the burnt gas can also be exploited with an appropriate network return temperature.

With burnt gas condensation the residual heat can be used for the process of drying of combustibles, and, together with a downstream discharge of burnt gas, the chimney "plumes" can be made almost invisible.

Condensing boiler technology:

The optimal use of burnt gas condensation makes it possible, in combination with a boiler unit, to raise the efficiency of the total unit to more than 100%, based on the lower calorific value.

Energy recovery:

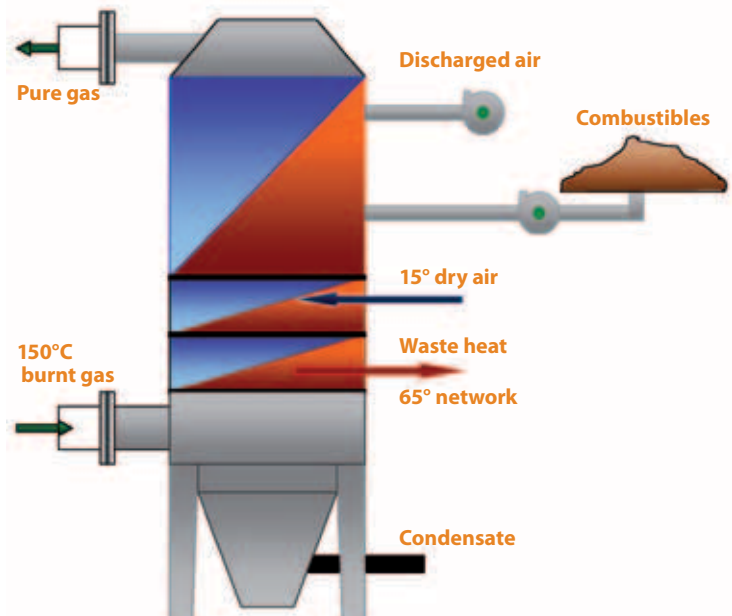
Economiser 10 – 12 %
of the boiler output reusable

Condenser 15 - 20 %
of the boiler output reusable

Air pre-heater 10 – 20 %
of the boiler output partly renewable.



Condenser





AGRO K1-48



AGRO P1



AGRO U1

AGRO grate systems

Our many years experience in the thermo-dynamic business have lead to the construction of intelligent grate units. Special alloys guarantee a long life cycle and trouble-free burn-off.

Can be used in all makes of boiler.



Heating Plant Asitz/A



Push rod

AGRO optimisation service

Optimisation, repair and renewal of

- ... push rods
- ... screw conveyors and screw transport mechanisms
- ... hydraulic insertion zones for all makes of boiler
- ... fireclay optimisation and repair of vaults
- ... ash logistics
- ... electronic boiler control



Berchtesgaden/D

7 MW/th with Thermal oil boiler - 1,5 MW/el ORC
6 MW/th Hot water



Hospital Kaufbeuren/D

5 MW/th with 1 MW/el ORC



KWK Aurnhammer/Mr. Harriolf Aurnhammer



Heat and power from wood!



Stadtwerke Ludwigsburg/D

15 MW/th with 2,5 MW/el ORC

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