

VFE

Injection combustion 850 – 3,300 kW

EN



FUELS:

Dusty, very dry fuels from industrial wood processing

WOOD COMBUSTION SYSTEM

VFE

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»Blow-in firing with high-temperature air combustion for the energetic utilisation of pulverised wood residues from wood processing.«

Injection combustion

The very dry and pulverised fuel is blown into the fully fireclay-lined, high-quality insulated combustion chamber via one or more injection pipes. The injection with a specially developed combustion chamber geometry ensures optimum burnout of the fuel as well as the required turbulence and flow conditions.

The fuel is blown in according to the injector principle. This means that no fuel enters the injection fan and therefore no wear occurs on the fan due to the fuel.

The heat storage in the fireclay mass ensures the correspondingly high combustion chamber temperatures, which guarantee very low emission values. The horizontal 3-pass flame tube boiler or cooling screen boiler is installed on the combustion chamber as a warm or hot water boiler. Depending on requirements, steam boilers or thermal oil boilers can also be supplied.

Designed for the wood industry

The VFE has been specially developed for industrial wood processing. Even fuels such as MDF or chipboard residues pose no problem for the firing system.

The low- NO_x combustion chamber is designed with measures on the primary side, such as air staging to reduce NO_x emissions. The regulation of the primary air supply in combination with flue gas recirculation ensures sub-stoichiometric combustion in the reduction zone.

The secondary air is supplied downstream of the combustion chamber's reduction zone. The corresponding combustion chamber geometry in combination with the combustion air supply ensures high turbulence and mixing with the flue gas and thus optimum oxidation (CO burnout) of the combustion gases.

Selecting the right wood firing system

In addition to the energy requirement, the type, lumpiness, water and ash content of the fuel are the most important factors for selecting the right firing system. However, the annual utilisation hours and the annual duration curve are also important factors.

The Schmid Mawera sales team will advise you on the choice of a firing system tailored to your needs.

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Design and performance



Take advantage of these benefits:

TYPE	POWER RANGE*
850	510 to 850 kW
1100	660 to 1,100 kW
1400	420 to 1,400 kW
1700	510 to 1,700 kW
2100	630 to 2,100 kW
2600	780 to 2,600 kW
3300	990 to 3,300 kW

*depends on fuel and water content

- Fully automatic biomass combustion system with injection firing 850 to 3,300 kW
- Water content in the fuel: 5 to 15 %, ash content (foreign matter) up to 2 % (4 % with stationary combustion chamber)
- High efficiency of up to 92%
- Modulating load control from 55 to 100 % while maintaining the emission values
- Stop-and-go operation: If the power requirement of the system falls below the minimum output, the system switches off automatically and goes into stand-by mode. If the flow temperature falls below the setpoint temperature and the power requirement is thus renewed, the system is restarted.
- If the firing system is shut down for a longer period, the automatic pilot burner moves into the combustion chamber and heats the combustion chamber back up to the required temperature for the fuel supply.
- From 1,700 kW, two injection nozzles for modulating load control up to 35%.

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Design and performance

MODEL		850	1100	1400
Rated heating output	kW	850	1,100	1,400
Dimensions EBL				
Length	mm	4,900	5,250	5,850
Width	mm	2,175	2,392	2,392
Height	mm	4,522	4,708	4,965
Max, operating pressure	bar (ü)	6 or 10* or 16*	6 or 10* or 16*	6 or 10* or 16*

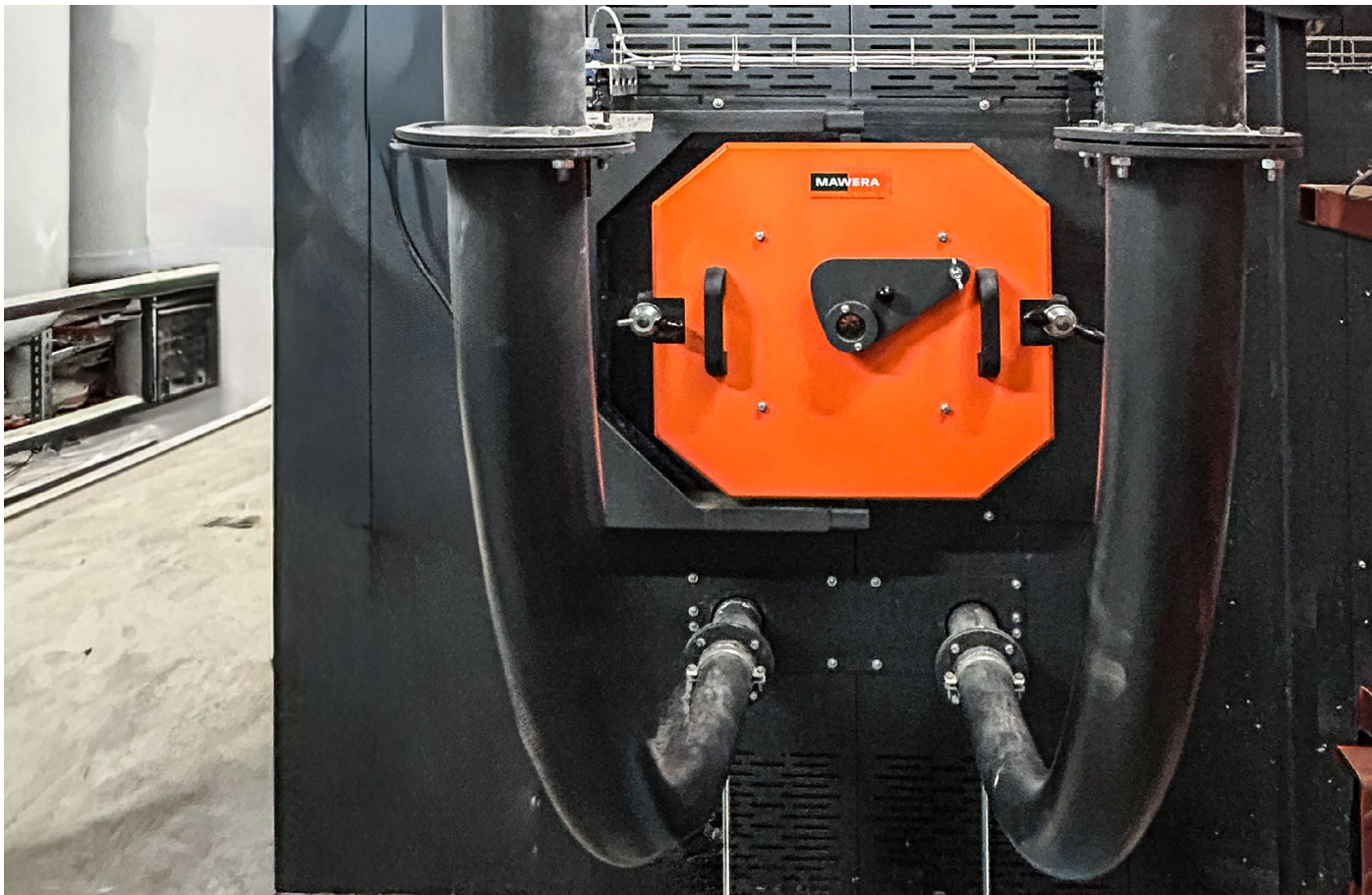
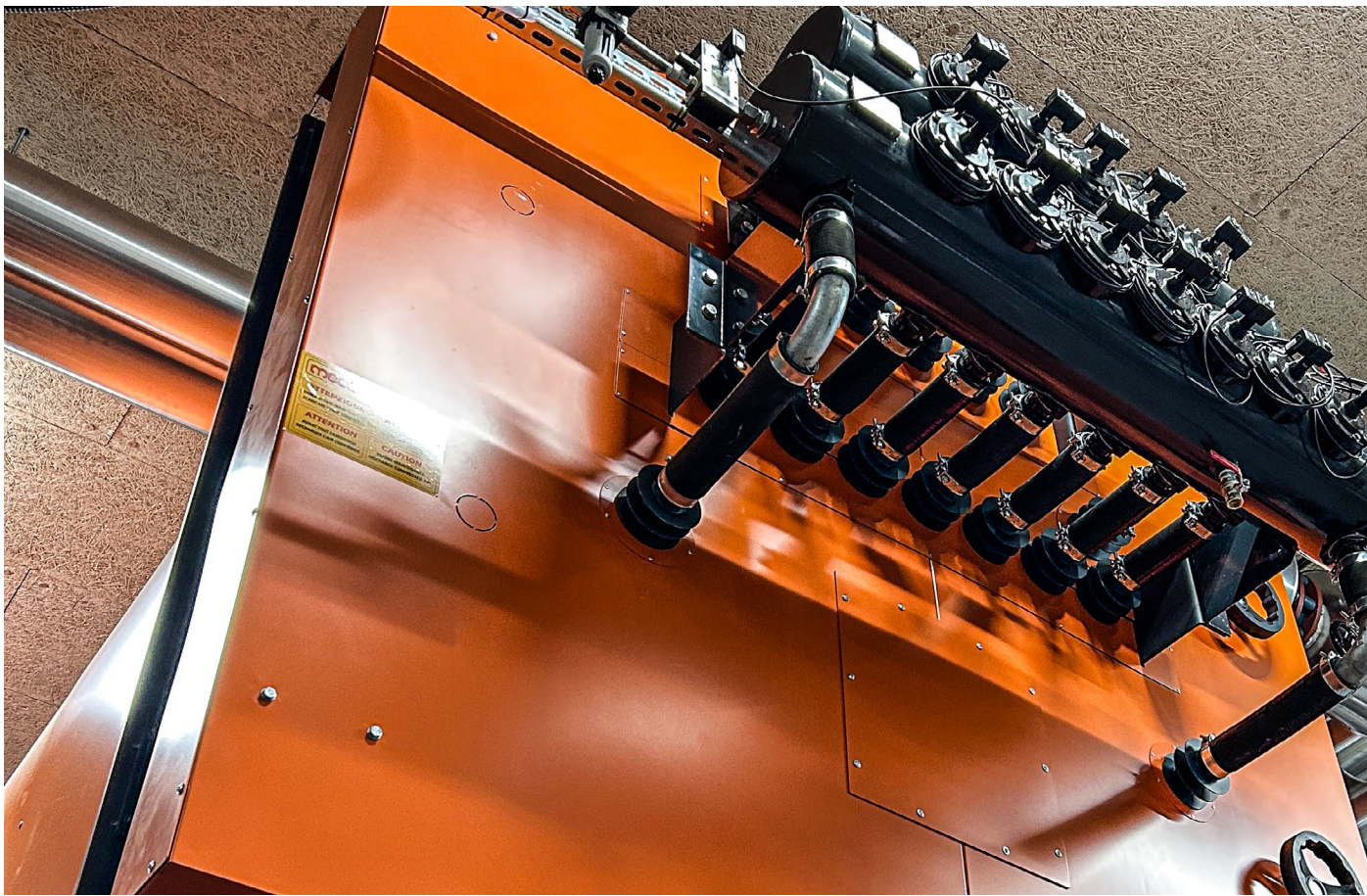
*on request

EBL = Injection combustion

1700	2100	2600	3300
1,700	2,100	2,600	3,300
5,800	6,150	6,150	6,650
2,593	2,593	2,750	2,850
5,220	6,106	6,120	6,792
6 or 10" or 16"	6 or 10" or 16"	6 or 10" or 16"	6 or 10" or 16"

Optional accessories:

- Oil or gas burner with accessories for automatic ignition device
- Optional two injection nozzles for modulating load control up to 35% (from 1,700 kW)
- Remote maintenance and visualisation systems (full system access from PC, tablet or mobile phone)
- Exhaust gas temperature increase (to prevent condensation in the exhaust gas path and downstream components)
- Continuous emission measurement
- Firebox camera for monitoring the firebox as an ideal addition to a visualisation system
- Cleaning kit for the boiler





Flue gas re-circulation

The exhaust gas is extracted in the exhaust pipe and fed back into the combustion chamber via a fan. This causes a reduction in the flame temperature and a reduction in nitrogen oxides. The efficiency of the system is increased, as a low residual oxygen content in the flue gas can be achieved even with dry fuels.

Measurements of the primary and recirculation air

The volume flows of the primary and recirculation air are measured and the required air volumes are calculated in advance. This enables optimum combustion results and emission values to be achieved at all load levels, even with difficult fuels.



Use of high-quality O₂ probes

The secondary air volume flow is regulated to the actual oxygen value. The use of high-quality O₂ probes enables a constantly low residual oxygen content in the flue gas (approx. 5-6 % O₂ (wet) - depending on the fuel). This enables maximum efficiency to be achieved even in modulating partial load operation.

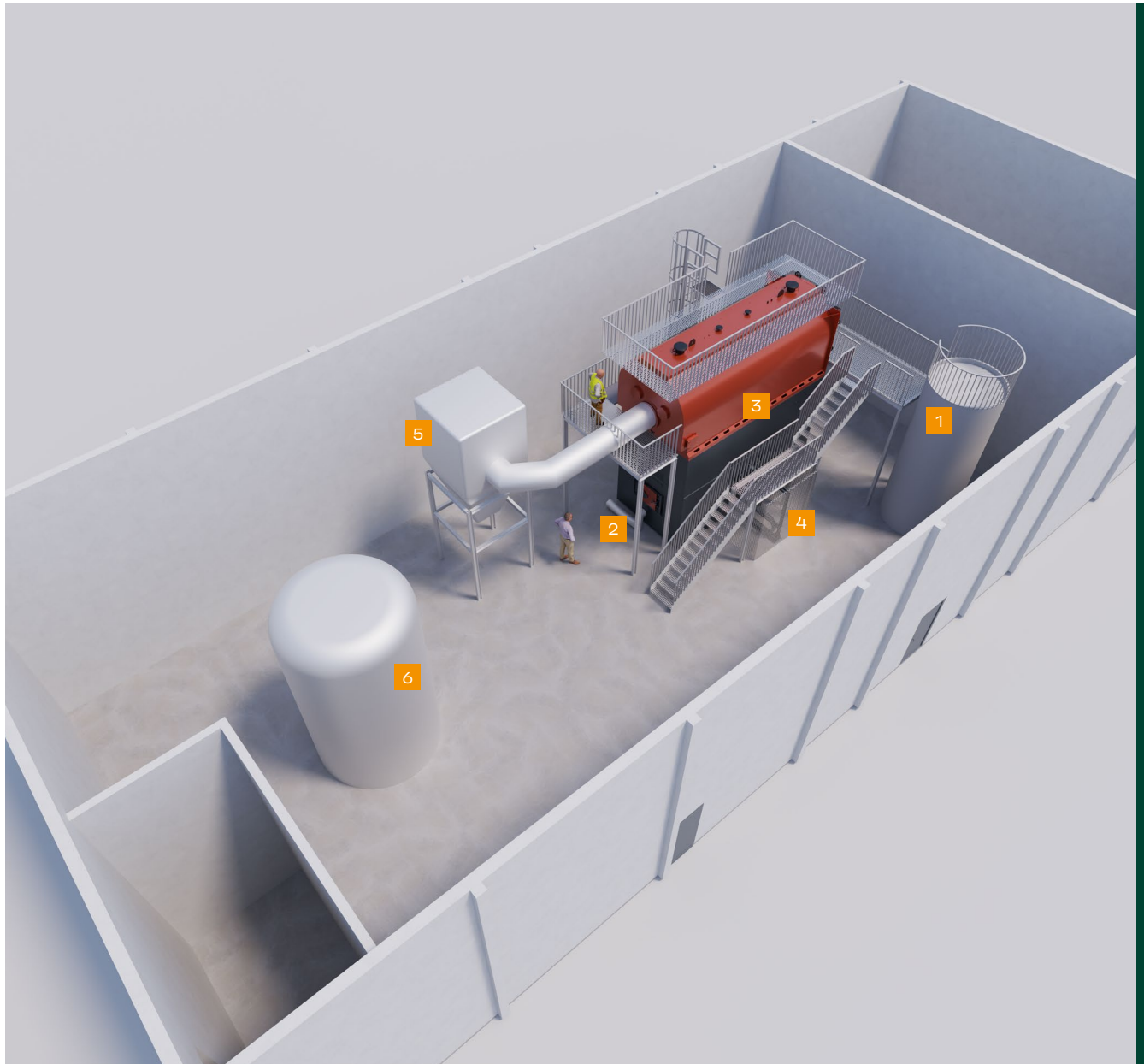
Ash removal

Very little ash is produced in the combustion chamber as a result of the air combustion. Ash is removed from the combustion chamber manually or automatically via a water-cooled screw.

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System example



- 1 Fuel storage in silo
- 2 Pneumatic fuel transport
- 3 Combustion: VFE
- 4 Automatic ignition device
- 5 Flue gas cleaning Multi-cyclone filter
incl. ash removal
- 6 Puffer tank

Example: Furniture industry (profiles and panelling)

- Combustion: VFE
- Output: 1,700 kW
- Fuel: Dust and chips from production

Application areas VFE:



Woodworking industry



Wood processing industry



Local and district heating



Municipal and public property

Fired up for energy from biomass.

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