



Energy from Biomass
Member of  HERZ Group

Energy from Biomass up to 20,000 kW

BINDER combustion systems



Sophisticated Boiler Systems - for more than 30 years!



Quality - Made in Austria

With thousands of units installed from Canada to Japan BINDER is one of the leading manufacturers of renewable heating solutions in the world.

At the factory with a total area of approx. 6 ha and 6,200 m² production area, about 200 boilers are manufactured each year.

Our service team at the head office in Bärnbach provides top of the range service and maintenance support, **with service and sales offices and partners all over the world.**

Cooperation with universities and similar organizations as well as the expertise of our highly qualified engineers ensures top technological standard throughout the world.

Operating out of Austria – a country with one of the strictest environmental regulations of the world – BINDER develops products which meet the principle of sustainability and are ecologically and economically worthwhile.

Business activities...

- honest and fair long-term partnerships with our customers and suppliers
- continuous improvements of our systems
- appreciation of teamwork, initiative and self-motivated employees
- resource-efficient manufacturing of our products which are designed for durability
- long tradition of a business with solid growth and sound foundation.

We don't aim at short-term profits, but long-term growth and sustained development.







We look forward to working with you and your organisation.



Standard Fuels

BINDER offers a wide variety of different combustion systems for different fuels. Below is an overview of the various systems.

We are happy to test your fuel in our test center and will advise you of your optimum combustion system.

		Combustion systems→						Combustion systems→			
		RRF	SRF-S	SRF-H	TSRF			RRF	SRF-S	SRF-H	TSRF
	Swarf	●			●		Bark			●	
	Saw dust	●			●		Shredded demolition & pack-aging wood			●	
	Shavings- millings	●	●		●		Wood baes energy crops (chaffed)		●		●
	Chipboard, MDF	●	●		●		Pomace, juice production res- idues		●		●
	Virgin wood chips	●	●		●		Wood pellets	●			●
	Chip from landscape management		●	●			Industrial pellets	●			●
	Industrial wood chips		●	●			Turf pellets, agro-pellets				●

Boiler range

BINDER offers boilers with a nominal capacity from 100 kW to produce warm and hotwater, saturated steam, superheated steam, hot air and hot gas as well as CHP. The biggest advantage of BINDER is total flexibility. True to the motto "Nothing is impossible" our engineers will seek to provide an optimum solution for your requirements. For international markets like North America, and Canada BINDER offers ASME compliant boilers.

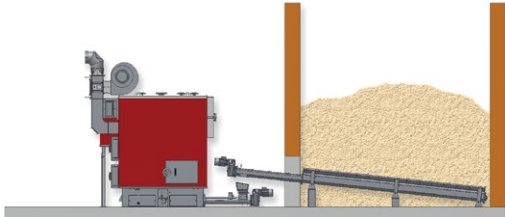
Type	Nominal capacity in kW (at W40)	Container	Heat ex- changer	RRF	SRF-S	SRF-H	TSRF	WW	HW	Steam
RRK 10M	10.000		III			●	●	▲	▲	▲
RRK 9M	9.000		III			●	●	▲	▲	▲
RRK 8M	8.000		III			●	●	▲	▲	▲
RRK 7M	7.000		III			●	●	▲	▲	▲
RRK 6M	6.000		III		●	●	●	▲	▲	▲
RRK 5M	5.000		III		●	●	●	▲	▲	▲
RRK 4M	4.000		III		●	●	●	▲	▲	▲
RRK 2500-3000	3.000		III	●	●	●	●	▲	▲	▲
RRK 1800-2300	2.100		III	●	●	●	●	▲	▲	▲
RRK 1200-1650	1.650		III	●	●	●	●	▲	▲	▲
RRK 1000	1.200		III	●	●	●	●	▲	▲	▲
RRK 640-850	850	C	III	●	●	●	●	▲	▲	▲
	650									
RRK 400-600	500	C*	III	●	●	●	●	▲	▲	▲
	350									
RRK 200-350	300	C*	III	●	●	●	●	▲	▲	▲
	250									
RRK 130-250	200	C*	III	●	●		●	▲	▲	
	185									
RRK 80-175	149	C*	III	●				▲		
	100									

C available as containerized version.
C* in standard container

WW = Warm water, HW = Hot water, Steam = Saturated steam
Special solutions on request!

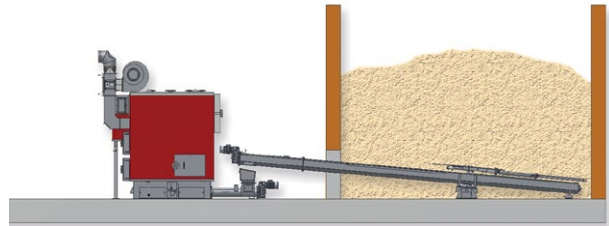
Extraction systems

PS - Pellet Extract Auger



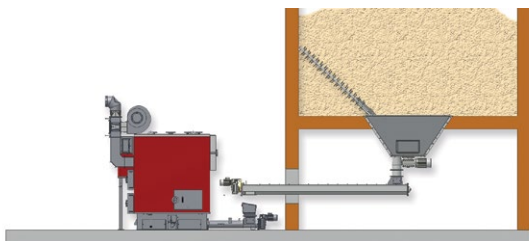
- with adjustable pressure relief device for rectangular silos
- suitable for the transport and silo discharge of wood pellets

KA - Sweep Arm Agitator



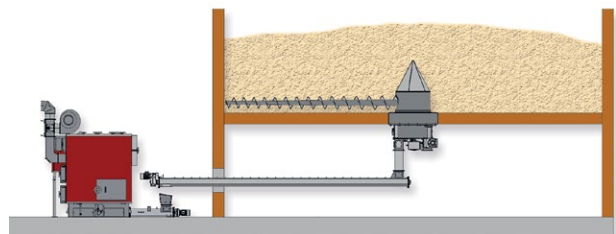
- for granulated fuels up to P63*
- Filling height up to 7m (depending on fuel bulk density)*

SS - Tapered Sweep Auger



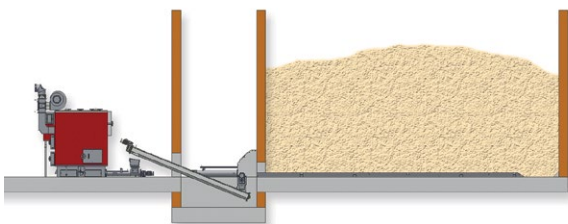
- for granulated fuels up to P63*
- For silos accessible from the bottom up to 7m ø
- Filling height up to 20m*

WS - Horizontal Sweep Auger



- for granulated fuels up to P63*
- For silos accessible from the bottom
- Filling height up to 30m*

SBA - Walking Floor



- for coarse and shredded fuels up to size class P120* (slivers up to 35cm long) with hydraulic ram infeed
- with transport auger up to P63*

Transport systems

BINDER offers different types of transport systems like Transport auger (TS), direct hydraulic ram (QFE), and chain conveyors (KKF).

These systems are suitable for the following max. size classes (acc. To OENORM EN 14961):

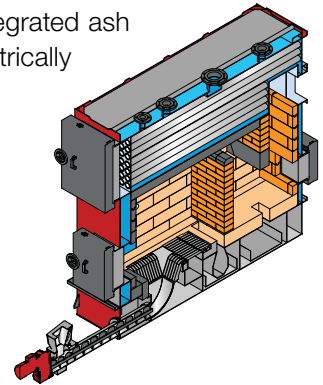
max. partice size (P)	16	45	63	120	125
KKF	[Red bar]				
QFE	[Red bar]				[]
TS 330	[Red bar]			[Grey bar]	
TS 220	[Red bar]		[]		

*)...Size class specifications and storage heights are for guidance only, as they depend on the actual kind of fuel and design variant. Beware of bridging which might occur on a storage height that exceeds twice the silo width.

Underfed Hearth Combustion Unit RRF

Combustion with hearth and rear grate section with hinged cast steel elements. Integrated ash trays and optional de-ashing with auger. Completely refractory lined and stoichiometrically designed primary and secondary combustion air zones.

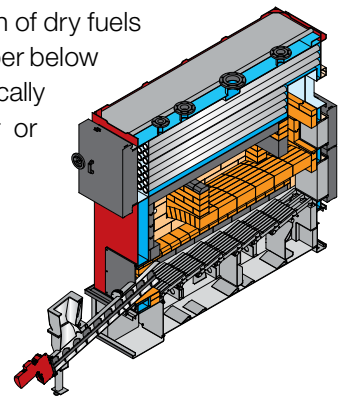
- max. fuel water content** up to M30
- max. fuel ash content** $\leq 1,5\%$
- Available** from 100 kW Nominal capacity



Moving Grate Combustion Unit for Dry Fuels TSRF

Combustion with hydraulically or electro-mechanically operated grate, for combustion of dry fuels with high ash content. Fully automatic de-ashing of the combustion unit with ash scraper below grate and ash auger. Completely refractory lined combustion chamber. Stoichiometrically designed primary and secondary combustion air zones. Alternatively with auger or hydraulic infeed.

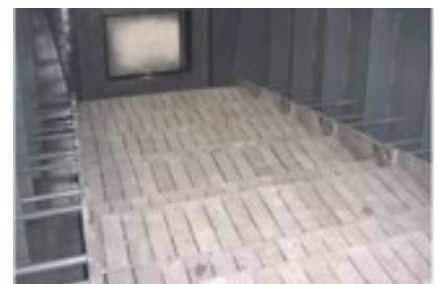
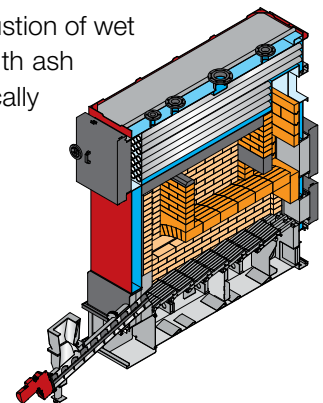
- max. fuel water content** M40 (more than M50 with preheater Luvo)
- max. fuel ash content** $\leq 7\%$
- Available** from 150 kW nominal capacity



Moving Grate Combustion Unit SRF

Combustion unit with hydraulically or electro-mechanically operated grate, for combustion of wet materials with high ash content. Fully automatic de-ashing of the combustion unit with ash scraper below grate and ash auger. Completely refractory lined and Stoichiometrically designed primary and secondary combustion air zones. Alternatively with auger or hydraulic infeed.

- max. fuel water content** M50 (more than M60 with preheater Luvo)
- max. fuel ash content** $\leq 7\%$
- Available** from 150 kW nominal capacity



Warm and Hotwater Systems

1 Boiler tubes
best-practise chamfered and rootwelded, individually replaceable if required

4 Water-cooled Boiler Jacket

- absorbs the heat from the combustion chamber (heat exchanger's first pass)
- preheats the return flow via a duct along the boiler jacket

8 Combustion chamber

- stoichiometrically designed three zone system
- completely lined with refractory brickwork

9 Anti-Burnback Provisions

- controlled negative pressure inside the combustion unit
- thermostatic sensor intervening PLC routine
- direct-acting thermostatic water dousing system
- certified power failure protected damper or rotary air valve
- monitored fuel barrier or 2-fold mechanical separation

10 Feeding System

- Stoker auger or hydraulic feed system

11 Moving Grate Boiler from >150 kW

- industrial-scale solution available for commercial applications
- fuel is evenly distributed and pre dried
- automatic de-ashing into a single ash receptacle powered by heavy-duty hydraulic or electro-mechanical unit

2 Refractory
with standard firebricks instead of manufacturer specific moulded bricks: simple and cheap to replace

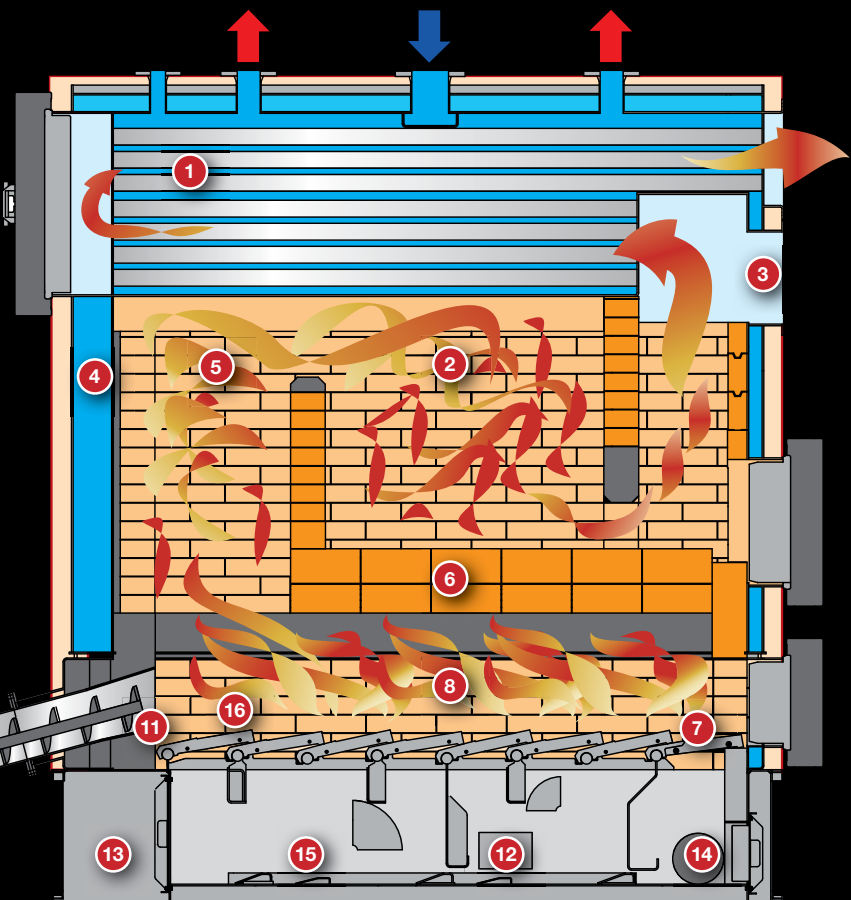
5 Secondary Air Supply
λ-controlled, with optimized arrangement of nozzles for superior turbulent flow

7 Grate screen
prevents ash-auger damage by falling debris

3 Heat exchanger cleaning

- unique high-velocity flue gas circulation system
- avoids emission peaks generated by compressed air blasts
- automatic de-ashing in preset intervals, with cleaning effect over the entire tube length
- no interference with combustion process

6 Radiation Arch
optimized air flow, completely lined with refractory brickwork



12 Primary Air supply,
λ-controlled, with load-dependent distribution to combustion and burnout zone

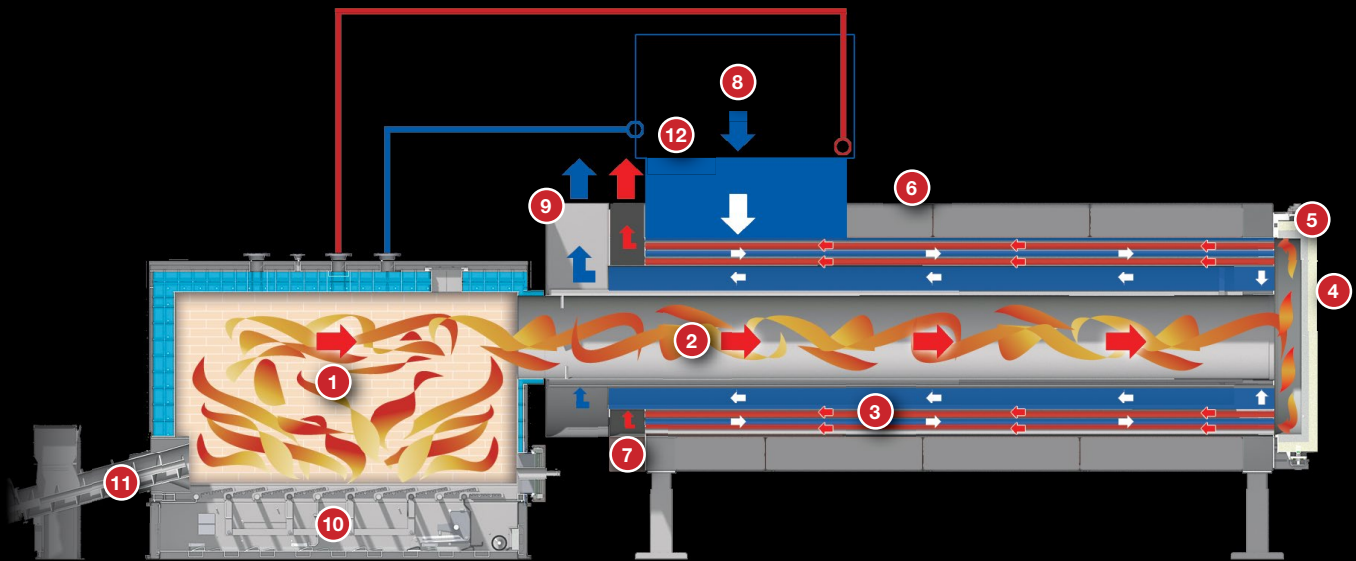
14 Ash Auger
for removal of ash into the central receptacle optional with ash lock or hydraulic de-ash-ram

16 Grate Element
made of high temperature cast chromium alloy, separately replaceable

13 Industrial Quality

- Wall thickness (standard): Heat Exchanger 6 mm Boiler base 10 bzw. 5 mm
- heavy-duty cleaning doors and inspection apertures, functionally arranged

15 Ash Scraper
for de-ashing of the entire boiler-base



1 Water-cooled Boiler Jacket
completely lined with refractory brickwork λ -controlled combustion with primary and secondary air intake

2 Flame tube
large scaled flame tube, free on one side optimized flow velocity to reduce dust deposition

3 Boiler tubes
Concentrically arranged around the Flame Tube Industrial quality with material thickness of 4.5mm

4 Cleaning Door
Optimum access to the boiler tubes Space saving rotation and paning hinges

5 Turning Chamber
Turning of the flue gases out of the Flame Tube Integrated in Cleaning Door

6 Air-to-air Heat Exchanger
Large scaled single pass heat exchanger Proven counter flow principle to avoid contamination of the fresh air

7 Exhaust gas outlet
Individual orientation as required Transfer of the flue gases to a cleaning system

8 Exhaust gas outlet
Individual orientation as required Transfer of the flue gases to a cleaning system

9 Fresh air outlet

10 Combustion unit
Combinable with every BINDER combustion system depending on the fuel

11 Feeding System
Stoker auger or hydraulic feed system

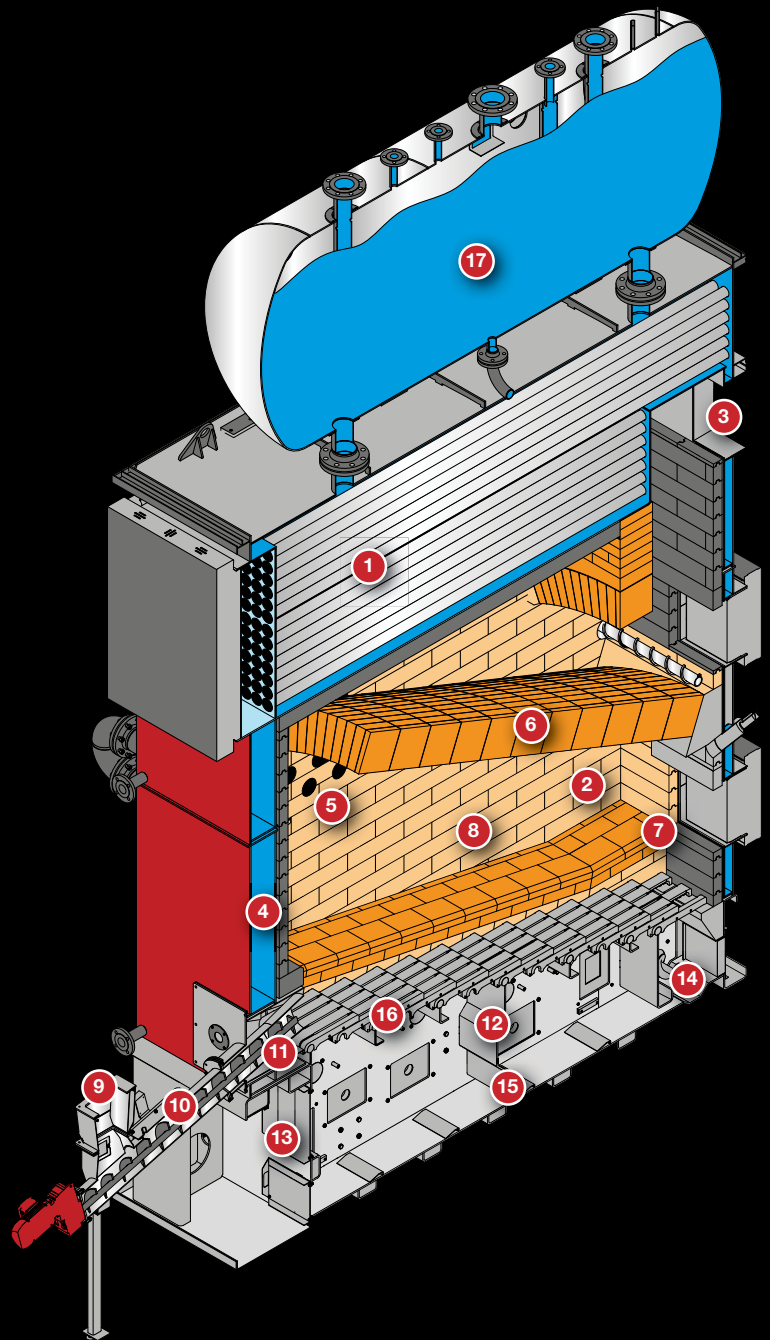
12 Fresh air pre-heating
Pre-heating of the fresh air via water-to-air heat exchanger. Heat of the burning chamber is used to pre-heat the fresh air, optimising the efficiency

Steam Boiler

Saturated steam boiler

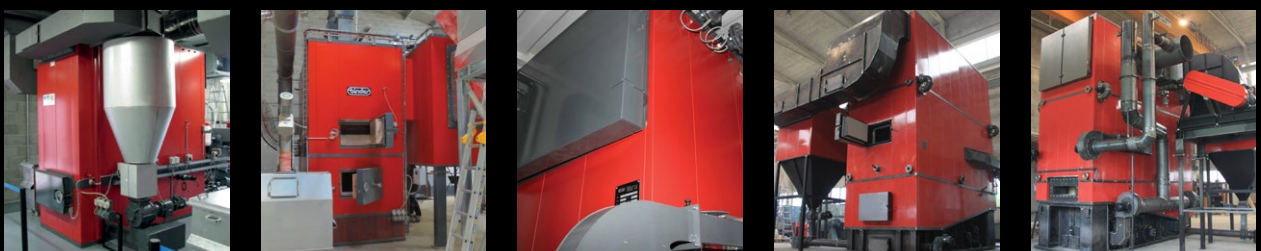
Available from nominal capacity of 200 kW upwards, combinable with all BINDER combustion systems, for the production of saturated steam. Working pressure up to 22 barG available, higher pressure on demand.

- 1 Boiler tubes
- 2 Refractory
- 3 Heat exchanger cleaning
- 4 Water-cooled boiler jacket
- 5 Secondary Air Supply
- 6 Radiation Arch
- 7 Grate screen
- 8 Combustion chamber
- 9 Anti-Burnback Provisions
- 10 Infeed
- 11 Moving grate boiler >150 kW
- 12 Primary Air supply
- 13 Industrial quality
- 14 Ash auger
- 15 Ash scraper
- 16 Grate element
- 17 Steam dome (external or integrated)



Hot Gas Generator

Available from nominal capacity of 200 kW upwards, combinable with all BINDER combustion systems. For the production of hot flue gases, optional with flow optimized mixing chamber.





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Everything from one source!



Consulting



Planning



Manufacturing



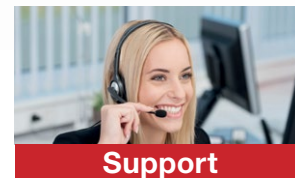
Delivery



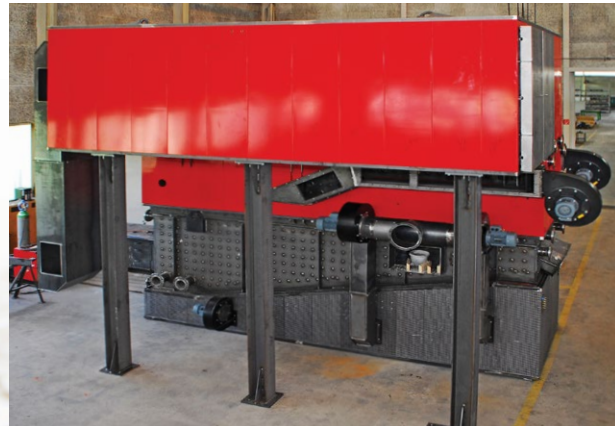
Assembling



Commissioning



Support



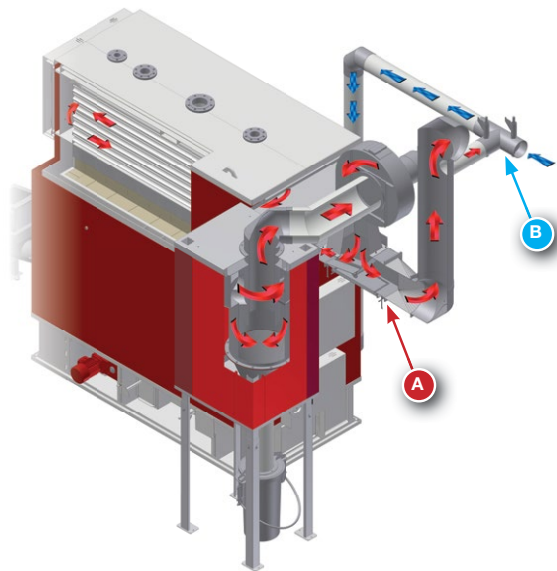
A

Automatic High Velocity Cleaning System HV

With the HV system the cleaned flue gases (after passing the cyclone separator) are blown back into the heat exchanger through a non-return flap at high speeds to clean the heat exchanger tubes.

High velocity cleaning at preset intervals without interfering with normal operation.

- Prevents dust deposition over the whole length of the heat exchanger pipes, maintaining a constant high efficiency
- Reduces maintenance to 1-2 basic procedures per year
- Protects against boiler corrosion



Capacity and Combustion Control CVP

Features a fully modulating computer control that permanently assesses the actual load, adjusts the fuel feed accordingly and matches it with the continuously variable air supply.

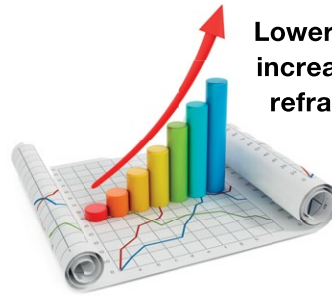
- Reacts dynamically to changes in the combustion process through the Lambda O₂ control
- Variable air volumes are automatically compensated by the integrated negative pressure control
- Speed-controlled fans minimise electric power consumption
- Provides an optimal efficiency over the entire output range of the boiler.

B

Flue Gas Recirculation

Depending on the temperature in the combustion chamber the recirculation system adds a regulated amount of flue gas to the combustion air.

Because of the greater volume of flue gas in the combustion chamber, more heat is dissipated from here towards the heat exchanger.



Lower temperatures also increase the lifespan of the refractory and the grate.

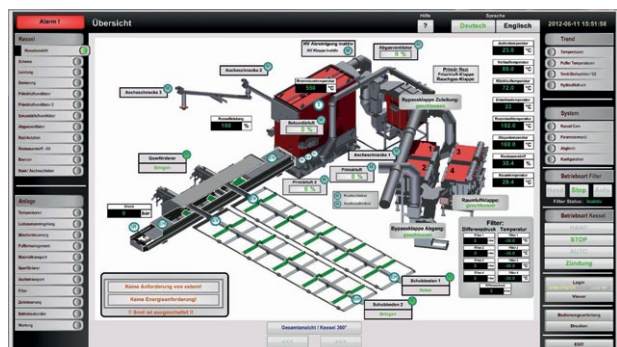
The flue gas recirculation system is particularly recommended for fuels with either a high calorific value, low ash fusion point, or a high nitrogen content.

3D Visualization

The innovative **BINDER 3D Visualization** is created from your individual layout plan.

Individually designed setting windows and the included data logging, and also the possibility to integrate the BINDER combustion chamber camera completed the package.

If an Internet connection is available it is possible to log in to the boiler control unit and make adjustments at any time you want.



Know-How & Reliability

High Overall Efficiency Across the Output Range

BINDER boilers achieve efficiency ratings of over 92 percent¹.

- The CVP control package gives fully modulating capacity control from 20-100%
 - Speed-control on all fans minimises the electric power consumption
 - The Lambda O₂ regulation improves efficiency and brings out the most of your fuel
 - High quality engineering with a minimum of maintenance required provides for high availability
- 1)...audit report A-1211-1/18d-06, NUA Umweltanalytik GmbH



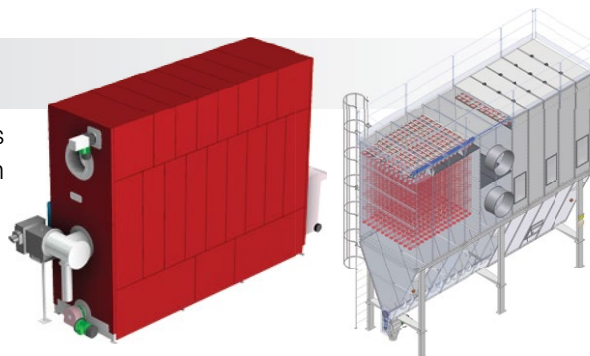
Lambda O₂ Regulation

Uses the exhaust O₂ level as an efficient indicator for complete combustion:

- Reacts to fuel variations by automatically adjusting the air intake and/or fuel supply
- Provides a stable combustion without emissions peaks even where fuel quality varies.

Flue Gas Cleaning

To comply with the legal emission limits, special filters have to be used. BINDER offers optimized filtration systems for your needs.



Electrostatic precipitators

Metal Sleeve filters

References



Boiler type: DK 1800-2300 | **Capacity: 1950kW / Dampf ca. 3,3to/h**



Boiler type: DK 640-850 SRF | **Capacity: 840kW / Dampf ca. 1,3to/h**



Boiler type: RRK 400-600 RRF | **Capacity: 500kW**



Boiler type: RRK 200-350 u. RRK 1000 | **Capacity: 300kW u. 1200 kW**



Boiler type: RRK 400-600 SRF | **Capacity: 500kW**



Boiler type: RRK 200-350 TSRF | **Capacity: 300kW**



Boiler type: 4x RRK 200-350 and 2x RRK 200-600 SRF



Boiler type: 1200-1650 SRF | **Capacity: 1600kW**



Boiler type: 2500-3000 SRF | **Capacity: 3000kW**



Boiler type: 6-7M TSRF | **Capacity: 7000kW**

Our local partner:



Energy from Biomass
Member of  HERZ Group



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