English

Energy from Biomass
Member of Herz Group

Hot Air and Hot Gas Generators

for Drying, Heating and Industrial Processes





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 developes 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
- continuus 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 growthand 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.



BINDER Hot Air and Hot Gas (Drying) Systems

To make agricultural goods such as corn, pumpkin seeds, cereals or similar products storable they usually have to be dried. Common energy source for this is provided by oil- or gas furnaces. With biomass fired hot air or hot gas systems BINDER offers an ecological and economical alternative.



Advantages

Use of a wide range of fuel is possible

- One of the biggest advantages of a biomass fired boiler is that a wide range of different biogenic fuels can be used. For example: 1 ha of corn provides between 8.5% and 12% corn cobs (Source: BLT Wieselburg) which corresponds to approx. 14 m³ corn cobs. The energy amount provided by this amount of cobs is higher than the energy amount which is needed to dry the grains.
- In other words: The field enables not only growing the final product itself but is also providing fuel for the drying process. This means that the use of a BINDER Hot Air or a Hot Gas System in combination with a BINDER combustion chamber and a suitable BINDER firing system reduces the fuel costs to a minimum.

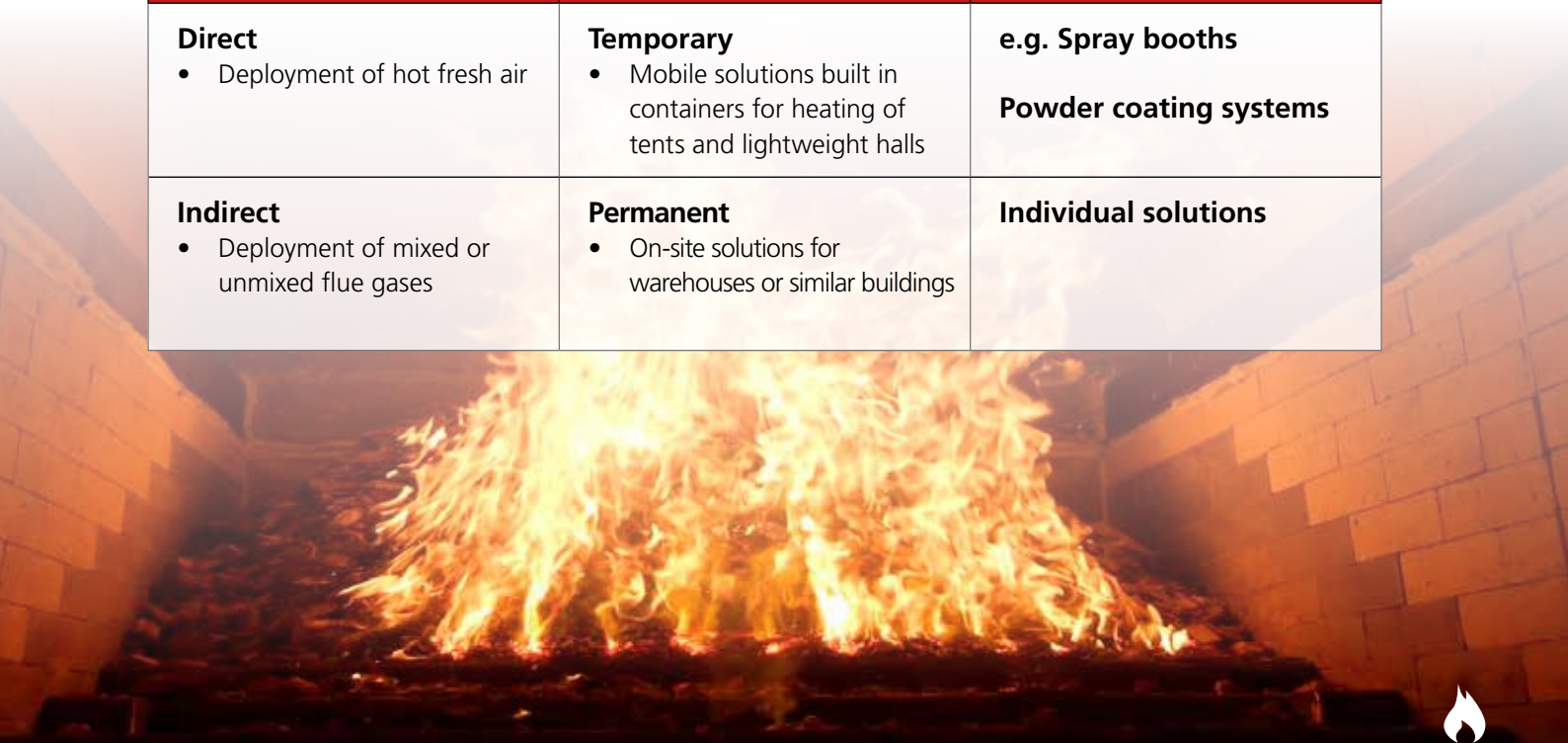
Reduction of radiation losses with water-cooled boiler jacket and heat-exchanger for air preheating

Facilities are not subject to the pressure equipment directive for hot water generators

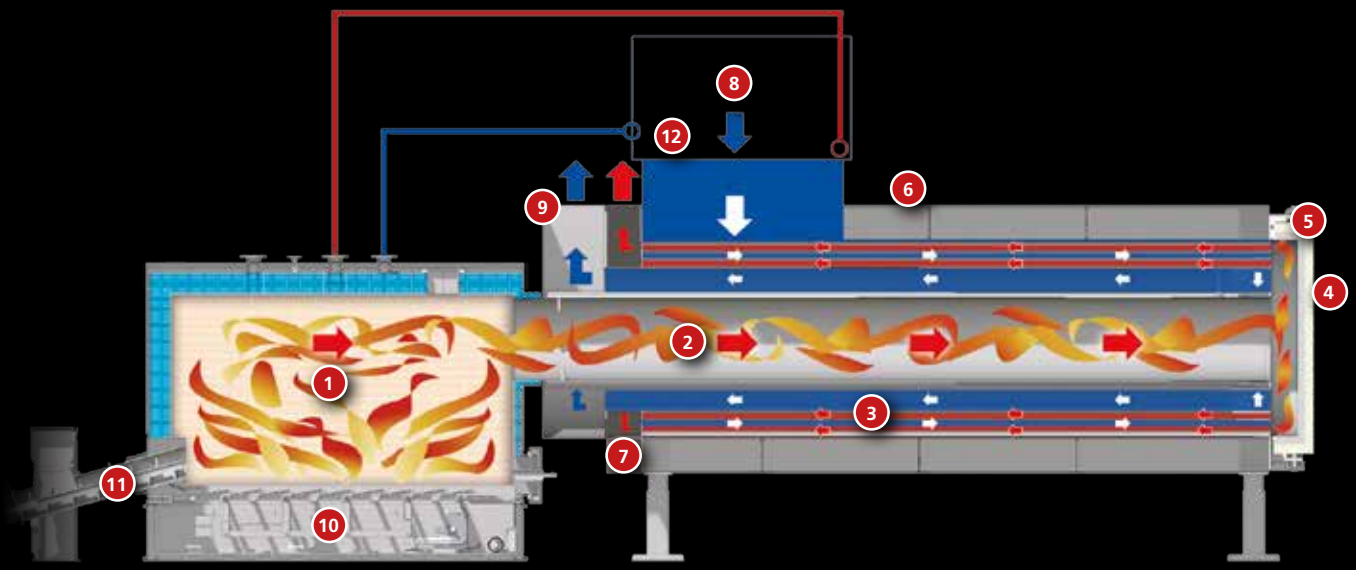
- No complex and expensive recurring annual checks and security devices (like required for hot water systems) are necessary.
- No expensive high-temperature and high-pressure piping, fittings and pumps required.

Application Areas

Drying	Object heating	Industrial Processes
Direct • Deployment of hot fresh air	**Temporary** • Mobile solutions built in containers for heating of tents and lightweight halls	**e.g. Spray booths** **Powder coating systems**
Indirect • Deployment of mixed or unmixed flue gases	**Permanent** • On-site solutions for warehouses or similar buildings	**Individual solutions**



Hot Air System



1 Combustion chamber with 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 4.5 mm

4 Cleaning Door
Easy 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 fresh air

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

8 Fresh air inlet
Individual positioning as required
Preheated fresh air blown into the heat exchanger

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 preheating
Preheating of the fresh air via water-to-air heat exchanger
Heat of the burning chamber is used to preheat the fresh air and optimizing the efficiency

BINDER assumes no liability for the information, subject to change without notice

Application Areas

BINDER Hot Air Systems provide hot clean air for your process.

Hot Air Systems of BINDER are best suited for a wide range of industrial processes. The sophisticated design of the system ensures that flue gases will not get in direct contact with fresh air which makes **BINDER Hot Air Sytems** perfect for agricultural drying processes like corn drying or similar.

How does it work?

The flue gases which are produced by the ❶ **combustion sytem** are led by a ❷ **flame tube** into the ❸ **heat exchanger** where the heat transfer takes place. Afterwards the flue gases are led to a ❺ **turning chamber** which is integrated in the heat-exchanger cleaning door.

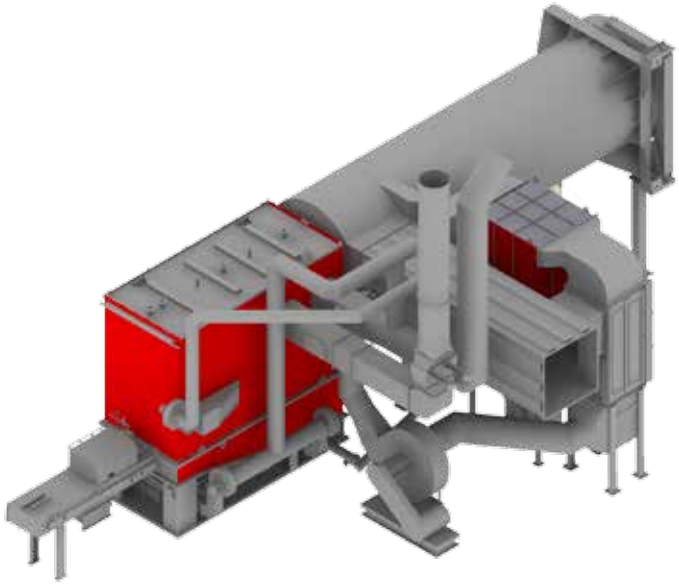
In the turning chamber the gas is diverted and redirected to a tube heat exchanger which is concentrically arranged around the flame tube. In this tube section the final heat transfer takes place.

In a ⓬ **Water-Air Heat Exchanger** the waste heat from the water-cooled boiler jacket is transferred to the fresh air that is sucked in.

The pressure of the fresh air is kept higher than the pressure of the flue gas. Due to this fact contamination of fresh air with flue gas can be prevented.

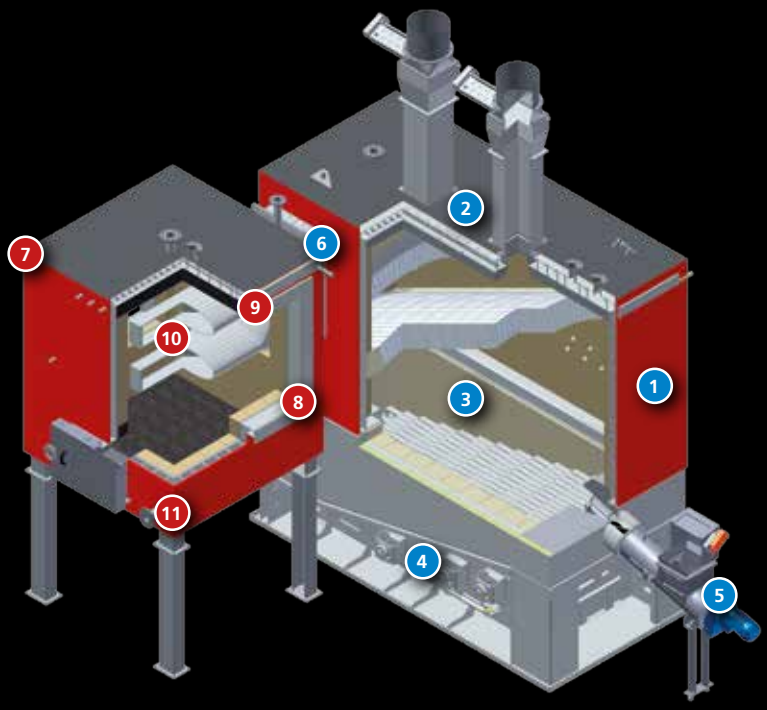
Advantages

- **Provides clean and low-cost Hot Air for drying of agricultural goods or for heating of buildings**
- **Corresponds to an indirect fired drying system**
- **Combinable with different BINDER firing systems optimised for your particular fuel**
- **Robust and industrial design for 24/7 flat-out use**
- **Proven counter flow principle to avoid contamination of fresh air**
- **Low-cost security systems if downstream-process is switched off in case of emergency**



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Hot Gas System



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

2 Emergency chimney(s)
If downstream-process is shutdown in case of emergency the hot combustion chamber can be cooled very quick to prevent the system from damages

3 Refractory
with standard firebricks of different qualities depending on the fuel used

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

5 Feeding System
Stoker auger or hydraulic feed system

6 Water-cooled Transition
Connection of an optional Mixing Chamber with a firebrick lined and water-cooled transition

7 Mixing Chamber (optional)
Aerodynamically optimized for optimal mixing of flue gases and fresh air

8 Mixing Chamber - Fresh Air inlet
Suction of fresh air for mixing with flue gases

9 Mixing Chamber - Flue Gas inlet
Transition of flue gases in the mixing chamber

10 Mixing Chamber - Mixing Profiles
CFD optimized mixing blades for optimal mixing of hot flue gases with the cool fresh air

11 Mixing Chamber - Design
Lined with refractory and water jacket to minimize radiation losses and for cooling the entire chamber

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Application Areas

The water-cooled combustion chamber combined with a BINDER combustion system provides hot flue gases directly from the firing process.

The provided flue gases are usually mixed with fresh air in a mixing chamber to reach the desired outlet temperature. The produced air-gas mixture can be cleaned through a hot-temperature cyclon cleaning system (or similar) depending on the application or it can be used directly without application of a cleaning system depending on the downstream process.

How does it work?

The flue gases which are produced by the (1) **combustion sytem** are either led directly to the downstream process or sucked through a (6) **water-cooled transition** in a (7) **mixing chamber** which is also water-cooled and lined with refractory. CFD optimized (10) **mixing blades** ensure optimal mixing of hot flue gases with the cool fresh air to produce a homogeneous Gas-Air mix.

This mixture can be used for the downstream process directly or can be, depending on the needs of the downstream process, cleaned with a cleaning system.

The waste heat from the water-cooled jacket of the combustion chamber is transferred in a Water Air Heat Exchanger to preheat the fresh air.

Advantages

- **Corresponds to a direct-fired drying system**
- **Combinable with different BINDER combustion sytems optimized for your specific fuel**
- **Robust and industrial design for 24/7 flat-out use**
- **Aerodynamically optimized, water-cooled and brick lined Mixing Chamber to achieve the desired outlet temperature**
- **Low-cost security systems if downstream-process is switched off in case of emergency**



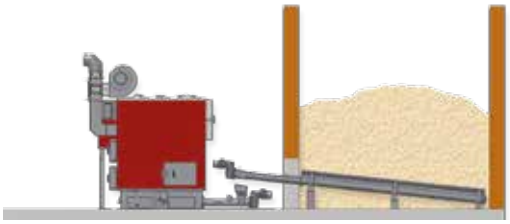




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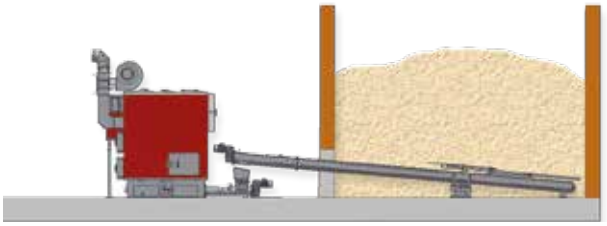
Extraction Systems

PS - Pellet Extract Auger



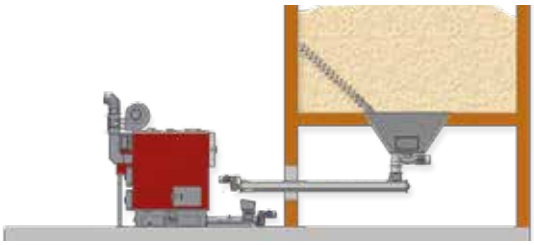
- *with adjustable pressure relief device for rectangular silos*
- *suitable for the transport and silo discharge of wood pellets*

KA - Sweep Arm Agitator



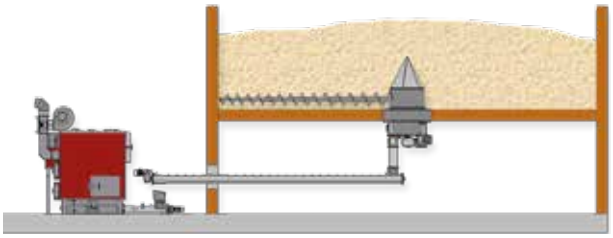
- *for granulated fuels up to size class P63**
- *Filling height up to 7m (depending on fuel bulk density)*

SS - Tapered Sweep Auger



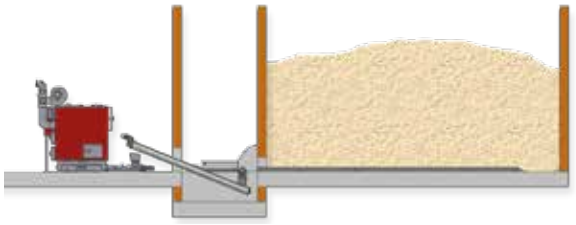
- *for granulated fuels up to size class P63**
- *For silos accessible from the bottom up to 7m ø*
- *Filling height up to 20m**

WS - Horizontal Sweep Auger



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

SBA - Walking Floor

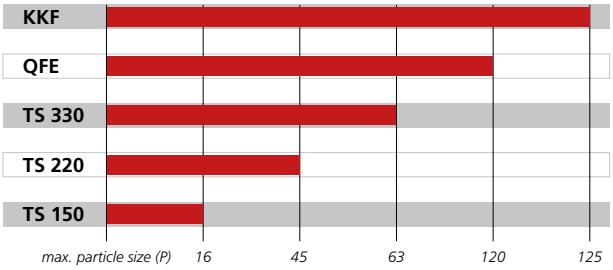


- *for coarse and shredded fuels up to size class P125* (slivers up to 35cm long) with hydraulic ram infeed*
- *with transport auger up to size class P63**

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 size classes (acc. to ÖNORM EN 14961):

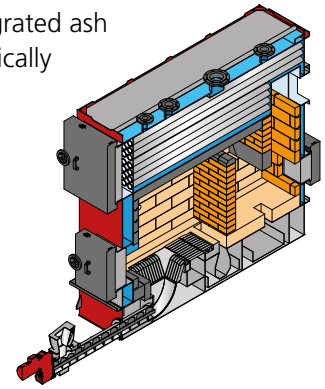


*)…Size class specifications and storage heights are for guidance only, as they depend on the actual kind of fuel and design. Beware of bridging which might occur on a storage height that exceeds twice the silo width.

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Underfed Hearth Combustion Unit RRF

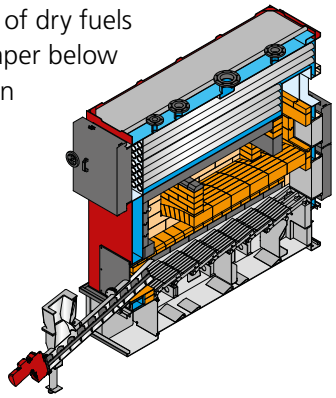
Combustion with hearth and rear grate section with hinged cast steel elements. Integrated ash trays and optional de-ashing with auger. Completely refractory lined and stochiometrically designed primary and secondary combustion air zones.



max. fuel water content up to M30
max. fuel ash content ≤ 1,5%
Available from 100 kW nominal capacity

Moving Grate Combustion Unit for Dry Fuels TSRF

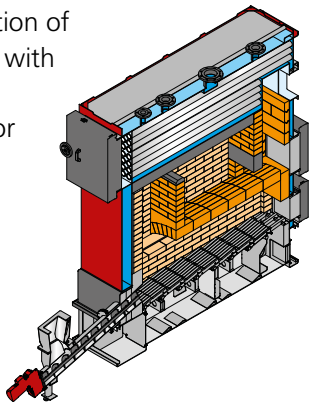
Combustion with hydraulically or electro-mechanically operated grate for combustion of dry fuels with high ash content. Fully automatic de-ashing of the combustion unit with ash scraper below grate and ash auger. Combination with auger or hydraulic infeed system depending on customer needs.



max. fuel water content up to M40 (higher than M50 with preheater Luvo)
max. fuel ash content ≤ 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 stochiometrically designed primary and secondary combustion air zones. Combination with auger or hydraulic infeed system depending on customer needs.



max. fuel water content up to M50 (higher than M50 with preheater Luvo)
max. fuel ash content ≤ 7%
Available from 150 kW nominal capacity







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Sophisticated Boiler Systems

Ecological and Economical Alternative

BINDER Hot Air and Hot Gas generators can be a reasonable alternative to conventional oil or gas-fired plants.

For Example:
During corn harvest also corn cobs as a so-called coupling product arise in addition to the grains.
The corn cobs can be used as an additional fuel to reduce fuel costs significantly.
Mixing 50% of corn cobs to wood chips can reduce fuel costs up to 39% compared with oil even up to 85%.



Know-How & Reliability



High Overall Efficiency Across the Output Range
BINDER boilers achieve efficiency ratings of over 92 percent[1].

- The CVP control package enables 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 maximum of your fuel
- High quality engineering and low maintenance requirements provide 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 adjusting the air intake and/or fuel supply automatically
- Provides a stable combustion without emission peaks even when fuel quality varies

Capacity and Combustion Control CVP

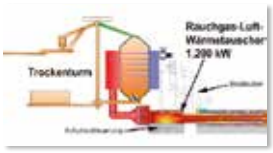
Features a fully modulating computer control that permanently assess the actual load, adjust the fuel feed accordingly and mateches it with the continuously variable air supply

- Reacts dynamically to changes in the combustion process through the Lambda O2 control
- Variable air quantities 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

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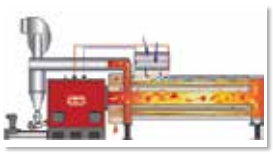
Franz-Josef Gründl, Lind bei St. Veit am Vogau, Austria

Boiler Type: LWT 1200
Capacity: 1200 kW
Fuel: Wood Chips
Starting Up: September 2007

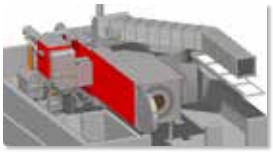
Schreiner Maistrocknung, St. Bartholomä, Austria

Boiler Type: LWT 1500
Capacity: 1500 kW
Fuel: Wood Chips and Corn Cobs
Starting Up: October 2008

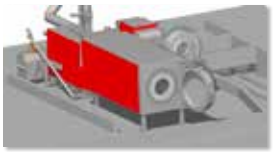
Niedermeier Agrar GbR, Harburg, Germany

Boiler Type: LWT 1500
Capacity: 1500 kW
Fuel: Wood Chips and Corn Cobs
Starting Up: July 2012

Lorber KG, Styria, Austria

Boiler Type: LWT 1500
Capacity: 1500 kW
Fuel: Wood Chips and Corn Cobs
Starting Up: August 2013

Franz Edlinger, Mittermerking, Austria

Boiler Type: LWT 3000
Capacity: 3000 kW
Fuel: Wood Chips and Corn Cobs
Starting Up: October 2015




Agristock S.a.r.l., Lafitte, France

Boiler Type: BK 2500-3000 with Mixing Chamber
Capacity: 3000 kW
Fuel: Wood Chips
Starting Up: September 2014





Prestagri S.a.r.l., Strassbourg, France

Boiler Type:BK 1800-2300 with Mixing Chamger
Capacity: 2100 kW
Fuel: Wood Chips and Corn Cobs
Starting Up: November 2013





Our local partner

Energy from Biomass
Member of Herz Group

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