



TECHNOLOGY BROCHURE

Wood combustion systems up to 8 MW

VITOFLEX

**Wood combustion
systems up to 8 MW**

Reliable, sustainable,
economical



Reliable, sustainable, economical

Efficient concepts for the use of biomass to obtain energy

In addition to companies directly involved in the timber industry, an increasing number of local authorities, contractors and other commercial power supply utilities are opting for biomass as a fuel. Biomass is less prone to extreme price fluctuations than fossil fuels and, being sustainable and CO₂ neutral, makes a significant contribution to preserving quality of life for future generations.

The type of fuel and other customer-specific requirements determine the best kind of combustion system. Options include underfeed, flat moving grate, step grate and direct firing systems.

Biomass as fuel

- Affordable fuel with low price fluctuations
- High availability
- Renewable, CO₂ neutral energy source



Residual forestry and sawmill wood



Residual wood, wood processing



Wood from countryside management



Shavings from planing and milling



Bark



Wood shavings



Pellets



Wood dust



Short rotation coppice wood



Waste wood



Holzwerk Schilling
Rot an der Rot, Germany
Vitoflex 300-SRT, 1700 kW
Woodworking industry

Committed to quality

The highest quality – down to the smallest detail

We work to exceptionally high standards – in research, planning, production and service. All combustion equipment is manufactured by skilled personnel and subject to the strictest quality assurance standards.

Our plants are exclusively equipped with first class machine tools. In selecting suitable equipment we pay attention to quality, efficiency and optimum interplay between individual components, as well as to durability and ease of maintenance. In addition to ensuring long plant runtimes and availability, we also seek to optimise lifecycle costs.

The latest technology for satisfied customers

By using advanced machine tools and highly qualified staff, we are able to ensure that all systems are of consistently high quality.

More than 5000 customers around the world place their trust in Viessmann's technology and expertise. This motivates us to continue to do our best.



Holzwerk Schilling



Combustion systems make the difference

Besides the energy demand, the type, size, moisture content and ash content of the fuel are essential elements to consider when selecting the right combustion system. Annual hours in use and heat demand are important aspects, too. The Viessmann Holzfeuerungsanlagen sales team will help you choose a perfectly tailored combustion system to suit your requirements.



VITOFLEX 300-FSB

Fully automatic wood combustion system with flat moving grate combustion
180 to 2600 kW
For dry to moist wood fuels
Moisture content: max. M55

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VITOFLEX 300-FSR

Fully automatic wood combustion system with flat moving grate combustion
850 to 8000 kW
Residual forestry and sawmill wood, residual wood from wood processing (chips and sawdust from planing, sawing and milling, dust, chipboard, MDF)
Moisture content: M6 to M55

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VITOFLEX 300-SRT

Fully automatic wood combustion system with step grate combustion
850 to 8000 kW
Woodchips, residual forestry and sawmill wood, bark, wood from countryside management, green cuttings, long-fibre bark
Moisture content: M20 to M60

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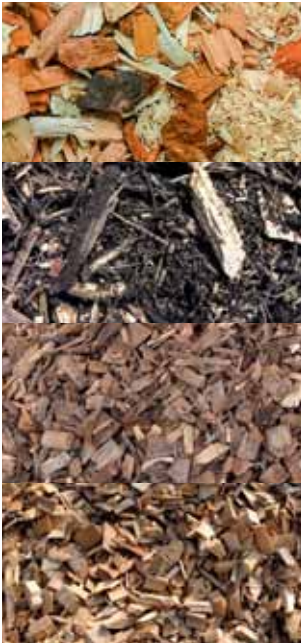


VITOFLEX 350-VFE

Fully automatic wood combustion system with direct firing
850 to 8000 kW
For the combustion of very dusty, dry fuel from industrial wood processing
Moisture content: M6 to M15

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The flat moving grate is suitable for a diverse range of wood fuels



Combustion of woodchips, residual forestry and sawmill wood, bark, wood from countryside management

Flat moving grate combustion

The flat moving grate is especially suitable for the combustion of wood fuels with a moisture content of up to 50 percent and an ash content of up to 4 percent. The Vitoflex 300-FSB is versatile in its use of fuel and produces flue gases with a low dust concentration due to its static fuel bed – both of which are major benefits. The geometry of the combustion chamber is the result of research at our own test facility, and flow simulation studies.

Low NO_x reduction technology is generally employed in flat moving grate combustion systems. The low NO_x combustion chamber is equipped with a primary-side air stage for reducing NO_x emissions. Efficiency levels of up to 92 percent also facilitate maximum seasonal efficiency in modulating operating mode.

Fuel charging

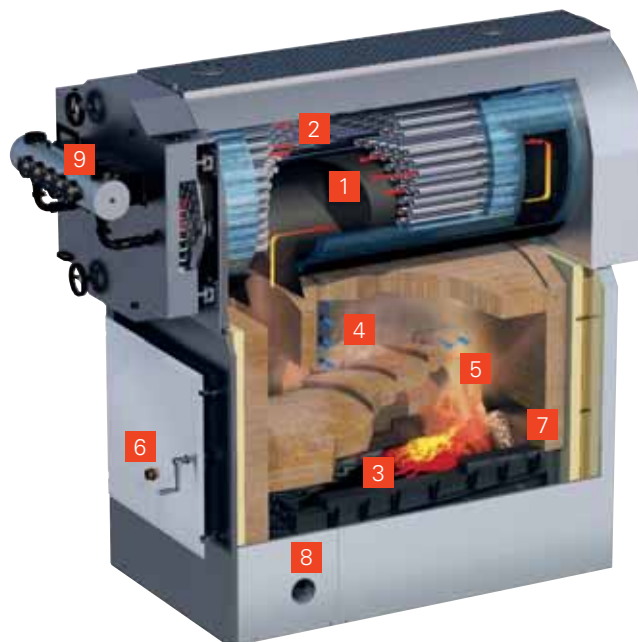
Fuel is charged via a screw conveyor (screw conveyor feed) or the water-cooled feed neck (hydraulic direct feed or hydraulic feed).

Detection of fuel type

The flame temperature controller, combined with regulation of the residual oxygen content (Lambda probe), provide optimum combustion control for a wide range of fuels, whether these are damp spruce woodchips straight from the forest, pellets or very dry beech dust from a joinery shop.

Ash removal





At the end of the grate, ash from the flat moving grate either lands in a container directly under the combustion chamber, on a trough chain conveyor, or is transported via a screw conveyor at the side into an ash container.



VITOFLEX 300-FSB

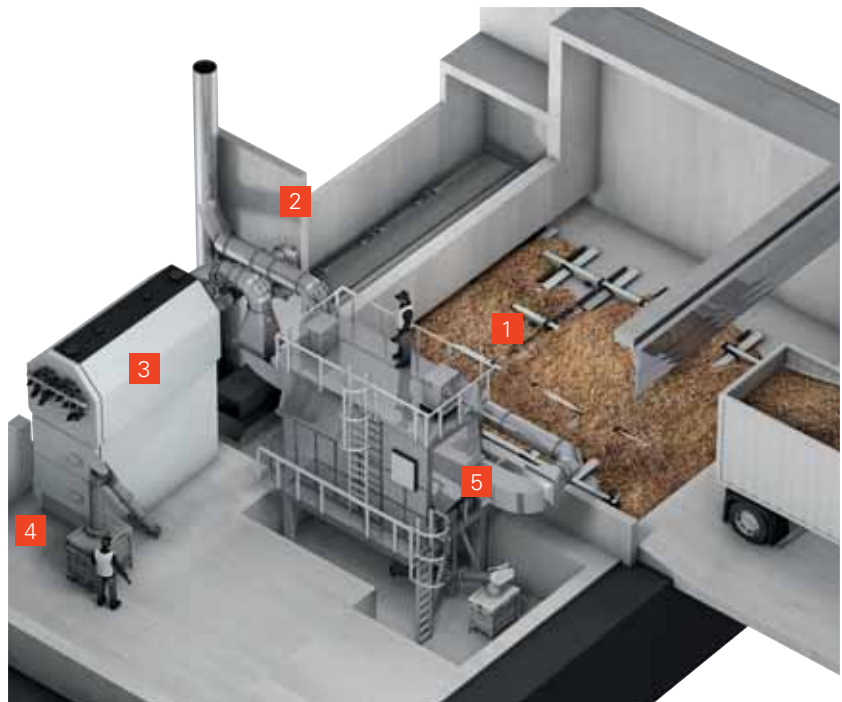
- 1 Three-pass smoke tube boiler (6 bar)
- 2 Safety heat exchanger in the boiler
- 3 Hydraulically driven flat moving grate with primary air supply (1 to 3 zones – depending on type)
- 4 Secondary air supply
- 5 Flue gas recirculation supply
- 6 Combustion chamber with sight glass
- 7 Feed screw conveyor or water-cooled feed neck
- 8 Ash removal from the combustion chamber (left or right)
- 9 Pneumatic boiler tube cleaning

Application areas

-  Local and district heating
-  Municipal and public property developers
-  Hotels and hospitality industry
-  Plant nurseries

Key to symbols

- 1** Fuel storage: push floor with pushrod discharge
- 2** Hydraulic fuel transport
- 3** Vitoflex 300-FSB combustion system
- 4** Ash removal from combustion chamber into container
- 5** Flue gas scrubbing: electrostatic filter with integral multi cyclone separator



Vitoflex 300-FSB sample application



Flat moving grate combustion

TAKE ADVANTAGE OF THESE BENEFITS

- + Fully automatic wood combustion system with flat moving grate, 180 to 2600 kW
- + Fuel moisture content: M6 to M55; ash content (foreign matter) up to 6 %
- + Staged combustion (low NO_x technology)
- + Boiler with integral backup heat exchanger
- + High efficiency up to 92 %
- + Highly wear-resistant due to generously dimensioned grate area
- + Minimum radiation losses due to complete insulation of the boiler system
- + Modulating load control from 25 to 100 % while maintaining emission levels
- + Three-pass flame tube/smoke tube boiler with flue gas temperatures below 190 °C when operating at full load
- + System operation requires minimum expenditure
- + Possibility of remote maintenance via PC and all mobile devices
- + Low power consumption is achieved in all of the system's load ranges through the use of frequency-controlled screw conveyors and fans such as flue gas, secondary air and recirculation fans

Specialist for the furniture industry

The Vitoflex 300 FSR wood combustion system is designed for the wood processing industry. The generously dimensioned combustion chamber volume and the heavy use of refractory lining material guarantee clean operation, even with fuels such as chipboard and MDF. The low NO_x combustion chamber is equipped with primary-side features such as air staging to reduce NO_x emissions.

Measurements of primary and recirculation air

The primary and recirculation air flow rates are measured and the air flow rates needed are calculated in advance. This enables optimum combustion results and emission levels to be achieved at all load stages, even with difficult fuels.

The Vitoflex 300-FSR grate is divided into four independent primary air zones. This enables the required air flow rates to be custom matched to the fuel.

Suitable wood fuels

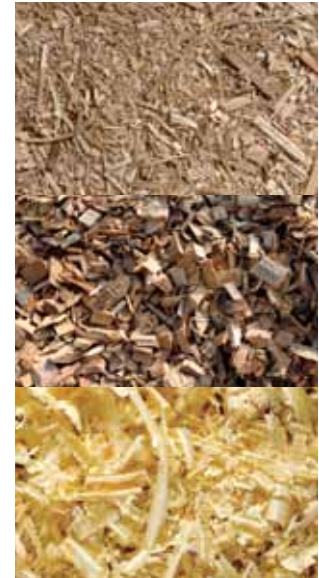
- Residual forestry and sawmill wood
- Residual wood from wood processing (chips and shavings from planing, sawing and milling; wood dust)
- Chipboard
- MDF

Fuel moisture content

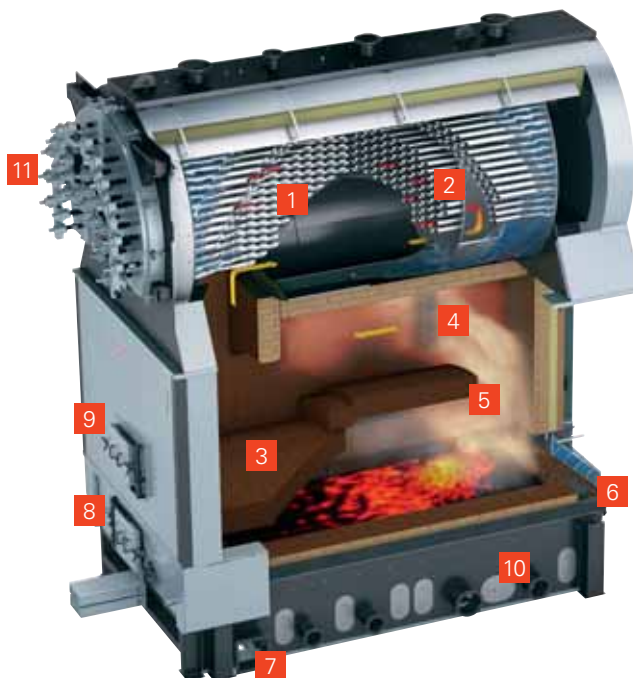
Moisture content M6 to M55

Water-cooled grate

To keep the combustion chamber temperature constantly low, the grate side panels and rigid tubular retainers are water-cooled. The non water-cooled parts of the grate are cooled by the primary air via generously dimensioned cooling ribs.

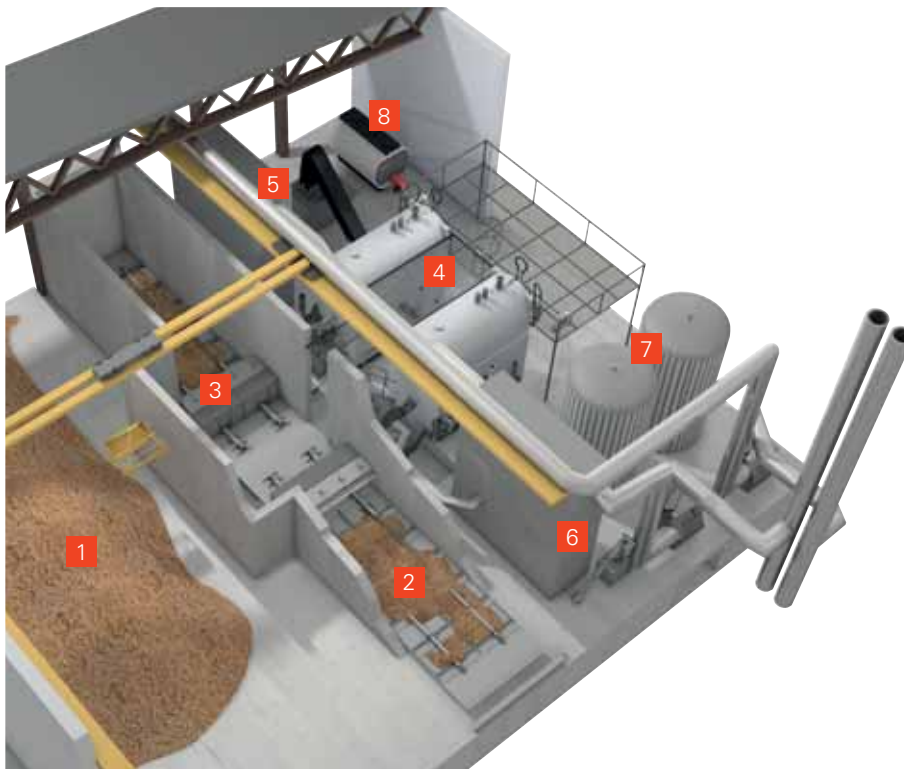


Combustion of woodchips, residual wood from wood processing, chipboard, MDF, shavings



VITOFLEX 300-FSR

- 1 Three-pass boiler (6 bar – higher pressure levels on request)
- 2 Safety heat exchanger (integrated in boiler)
- 3 Hydraulically driven flat moving grate (in two or three sections depending on type), with primary air supply (4 zones optional; zones 1 and 2 pre-heated via air/water heat exchanger)
- 4 Secondary air supply
- 5 Flue gas recirculation supply "over grate"
- 6 Hydraulic feed/direct feed with watercooled feed neck
- 7 Ash removal
- 8 Primary combustion chamber door
- 9 Secondary combustion chamber door
- 10 Cleaning apertures and access ports to the rollers below the flat moving grate
- 11 Pneumatic boiler cleaning (optional)



Vitoflex 300-FSR sample application

Application areas

-  Woodworking industry
-  Wood processing industry
-  Industry
-  Local and district heating
-  Municipal and public property developers

Key to symbols

- 1** Fuel storage: storage bunker with crane charging
- 2** Fuel storage: day bunker with push floor
- 3** Hydraulic fuel transport
- 4** Combustion systems: 2 x Vitoflex 300-FSR
- 5** Combustion chamber ash removal via trough chain conveyor to container
- 6** Flue gas scrubbing: 2 x electrostatic filters with integral multi cyclone separator
- 7** Heating water buffer cylinders
- 8** Vitomax 300 gas boiler to cover peak loads

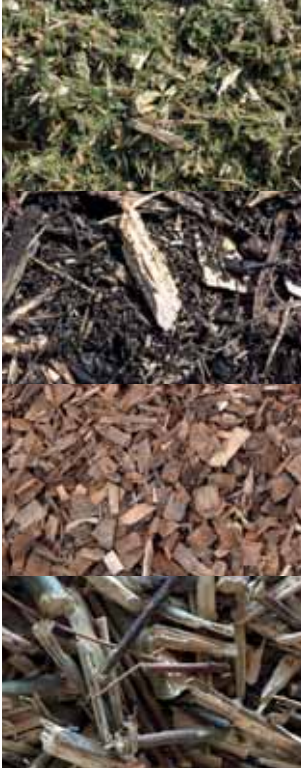
TAKE ADVANTAGE OF THESE BENEFITS

- + Fully automatic wood combustion system with flat moving grate, 850 to 8000 kW
- + Fuel moisture content: M6 to M55; ash content (foreign matter) up to 6 %
- + High efficiency up to 92 %
- + A static firebed and generously proportioned combustion chamber result in significantly lower emissions, even with problematic fuels
- + Modulating load control from 25 to 100 % while maintaining emission levels
- + Four independent air supply zones under the grate – therefore optimum combustion conditions in every part of the grate
- + From a drive aspect, the grate is divided into two or three zones (depending on the system size) – as a result, the individual zones can be operated at different speeds. This enables optimum burnout of the fuel
- + High wear resistance through generously sized grate surface, plus water cooling of the grate retainers and side panels
- + Low power consumption is achieved in all of the system's load ranges through the use of frequency-controlled screw conveyors, grate drives and fans such as flue gas, secondary air and recirculation fans



Vitoflex 300-FSR – wood combustion system with flat moving grate combustion

Wood combustion system with step grate combustion, 850 to 8000 kW



Combustion of wood from countryside management, green cuttings, waste wood, bark, special fuels, short rotation coppice

Suitable for continuous operation

The Vitoflex 300-SRT wood combustion system, with step grate combustion, is designed for continuous operation of more than 8000 hours a year. This makes it suitable for power generation with biomass CHP units.

The fuel may contain up to 55 percent moisture without loss of output. These conditions enable flexible use of affordable fuels, such as woodchips from forestry work, green cuttings, bark and wood from countryside management, without the need to dry or season them.

Measurements of primary and recirculation air

The primary and recirculation air flow rates are measured and the air flow rates needed are calculated in advance. Through this, optimum combustion results and emission values are achieved at all load stages, even with problematic fuels. The Vitoflex 300-SRT grate is divided into four independent

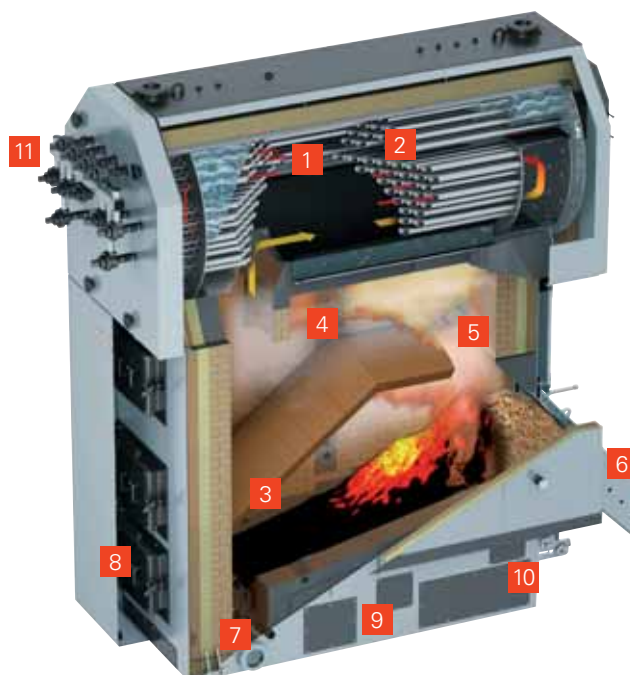
primary air zones. This allows the air flow rates required to be precisely matched to the fuel.

Ideal for local authorities and power supply utilities

The Vitoflex 300-SRT is noted for its modulating operation – that is, it matches the system output to the actual heat demand. Consequently, this biomass boiler is an economical solution for local authorities and commercial power supply utilities.

Low lifecycle costs





Great importance is attached to durability and a long system service life. A solid steel structure and the use of high grade refractory lining material guarantee reliable system availability for many years. The generous size of the grate and above average combustion chamber volumes considerably reduce wear and tear. With frequency-controlled screw conveyors, grate drives and flue gas recirculation, we ensure the lowest possible power consumption in all system load states.



VITOFLEX 300-SRT

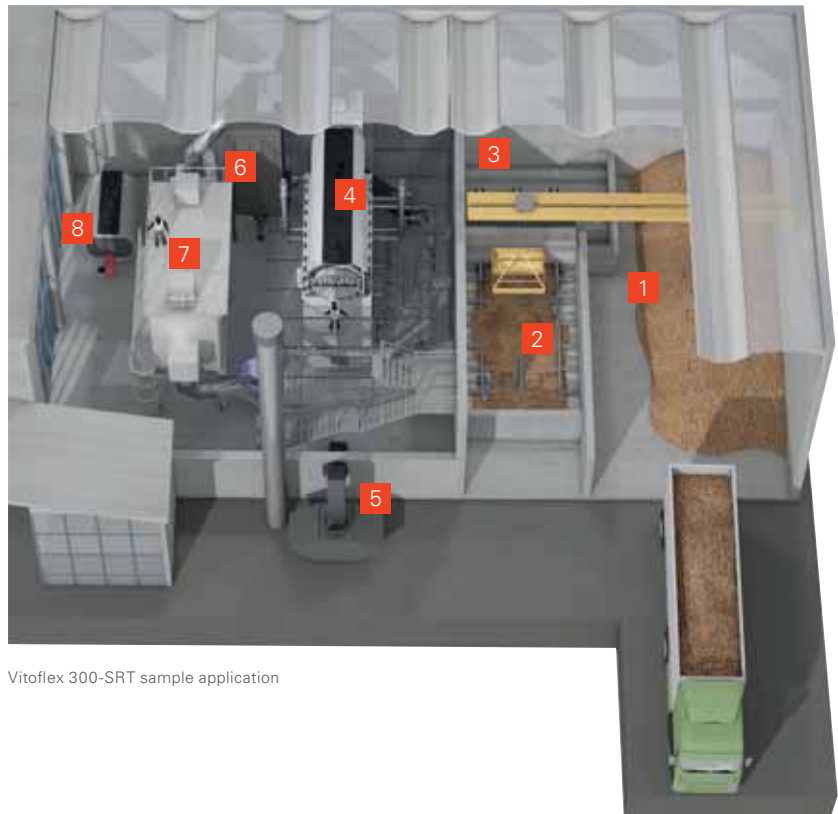
- 1 Three-pass boiler
(6 bar – higher pressure levels on request)
- 2 Safety heat exchanger (integrated in the boiler)
- 3 Hydraulically driven, controllable step grate
- 4 Secondary air supply
- 5 Flue gas recirculation supply "over grate"
- 6 Hydraulic feed/direct feed with watercooled feed neck or feed screw conveyor
- 7 Ash removal via screw conveyors or directly into an ash container
- 8 Combustion chamber door
- 9 Underfeed pushrod
- 10 Cleaning apertures and access ports to the rollers below the flat moving grate
- 11 Pneumatic boiler cleaning (optional)

Application areas

-  Wood processing industry
-  Industry
-  Local and district heating
-  Municipal and public property developers

Key to symbols

- 1** Fuel storage: storage bunker with crane charging
- 2** Fuel storage: day bunker with push floor
- 3** Hydraulic fuel transport
- 4** Combustion system: Vitoflex 300-SRT
- 5** Ash removal from the combustion chamber to a container using a trough chain conveyor
- 6** Flue gas scrubbing: multi cyclone separator
- 7** Flue gas scrubbing: electrostatic filter
- 8** Vitomax 300 gas boiler to cover peak loads



Vitoflex 300-SRT sample application



Vitoflex 300-SRT – wood combustion system with step grate

TAKE ADVANTAGE OF THESE BENEFITS

- + Fully automatic wood combustion system with step grate, 850 to 8000 kW
- + Fuel moisture content M6 to M60; ash content (foreign matter) up to 10 %
- + Designed for continuous operation of up to 8000 hours
- + Step grate technology with up to four independent, hydraulically driven primary air zones (depending on the system size)
- + Flue gas recirculation "over" and "under" grate, restricting the burnout rate and cooling the flame temperature and grate – preventing slag deposits
- + Modulating load control from 25 to 100 % while maintaining emission levels
- + Low flow velocities over the firebed prevent turbulence and ensure clean combustion in all load states
- + Optimised and generously sized combustion chamber ensures the best possible emission values and low stress on components and fireproof lining
- + Low power consumption is achieved in all of the system's load ranges through the use of frequency-controlled screw conveyors, grate drives and fans such as flue gas, secondary air and recirculation fans

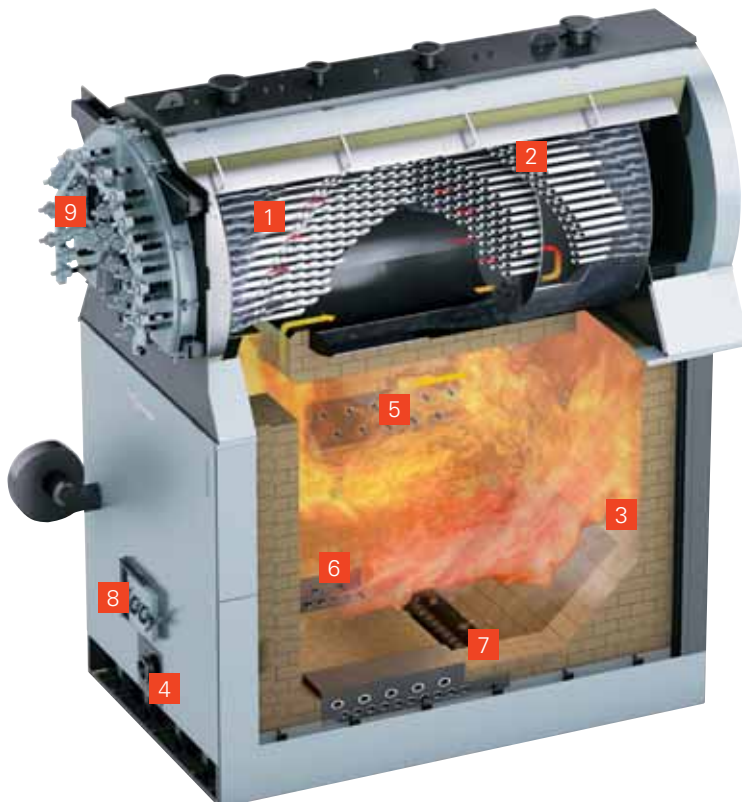
Direct firing system with high temperature combustion to maximise the energy yield of dusty wood residues from wood processing



Combustion of dusty, very dry fuel from industrial wood processing

The very dry and dusty fuel is injected through one or more feed pipes into the fully fireclay-lined, highly insulated combustion chamber. This fuel injection, combined with the specially developed combustion chamber geometry, ensures optimum burnout of the fuel and the required turbulence and flow characteristics.



The thermal storage in the fireclay mass ensures correspondingly high combustion chamber temperatures, which guarantee low emissions. The horizontal three-pass flame tube/ smoke tube boiler is mounted on top of the combustion chamber to serve as a hot water boiler, for either up to 110 °C or above 110 °C. If required, steam boilers or thermal oil boilers can also be supplied.









VITOFLEX 350-VFE

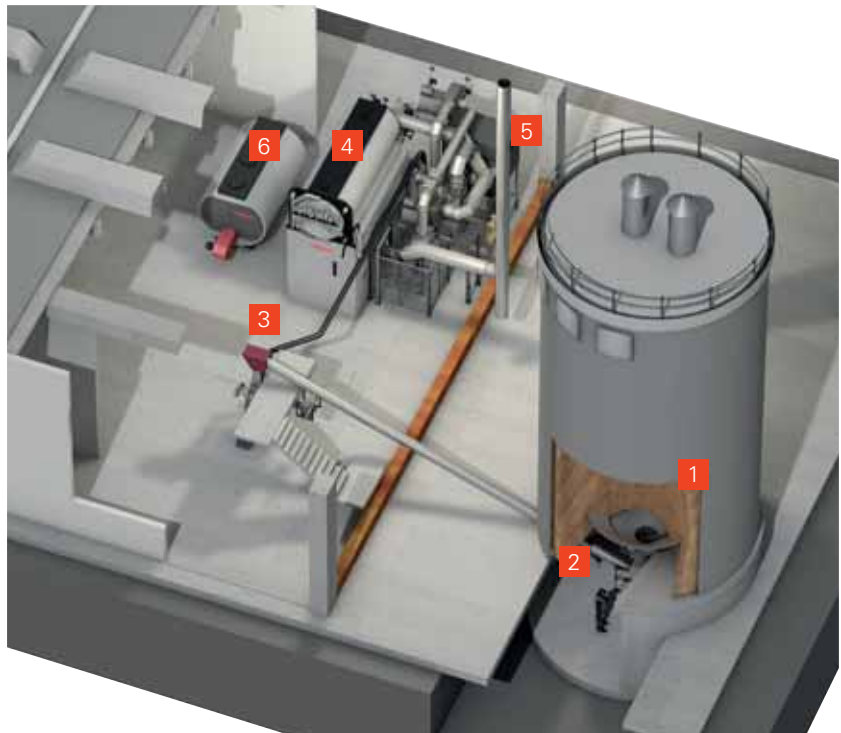
- 1 Three-pass boiler
(6 bar – higher pressure levels on request)
- 2 Safety heat exchanger (integrated in the boiler)
- 3 Combustion chamber
- 4 Injection connector
- 5 Secondary air supply
- 6 Flue gas recirculation supply
- 7 Automatic ash removal via water-filled screw conveyor (optional)
- 8 Combustion chamber door
- 9 Pneumatic boiler cleaning (optional)

Application areas

-  Woodworking industry
-  Wood processing industry

Key to symbols

-  Fuel storage in silo
-  Fuel discharge by means of pendulum screw conveyor
-  Pneumatic fuel transport
-  Combustion system: Vitoflex 350-VFE
-  Flue gas scrubbing: multi cyclone filter
-  Vitomax 200 gas boiler to cover peak loads



Vitoflex 350-VFE application example



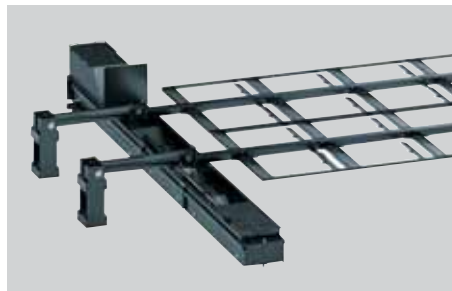
Vitoflex 350-VFE – wood combustion system with direct firing

TAKE ADVANTAGE OF THESE BENEFITS

- + Direct firing system with high temperature combustion, 850 to 8000 kW
- + Suitable for dry, dusty fuel
- + Fuel moisture content to M15; wood from a chipper up to 20 mm in length can be used
- + Direct injection principle for fuel charging, hence no injection fan wear and optimum fuel metering
- + Easy ash removal due to minimum ash accrual in the combustion chamber thanks to the direct firing combustion technology
- + Modulating load control from 55 to 100 % while maintaining emission levels
- + Two optional injection nozzles for modulating load control down to 35 % (from 1700 kW)
- + Maintenance is minimal as there are few mechanical components
- + Integral backup heat exchanger to maintain quick controllability to DIN 4751
- + Automatic ash removal via water-cooled screw conveyor (optional)
- + Automatic ignition system (gas/oil burner) for fully automated operation of the system

Tailor-made system solutions

Design, production, installation and servicing of our complete, tailor-made systems from a single source. More than 5000 customers around the world place their trust in the experience and expertise that Viessmann Holzfeuerungsanlagen has built up over more than 40 years.



Fuel discharge systems

- Push floors
- Pendulum and horizontal screw conveyors
- Mixing and metering containers



Conveyor systems

- Pipe and trough screw conveyors
- Hydraulic and pneumatic conveyor systems
- Trough chain conveyor



Pneumatic cleaning system

The entire tubular heat exchanger is cleaned with periodic blasts of compressed air during operation.



MZA flue gas dust extractor

- For woodchips
- For pellets
- Pre-separator for systems with electrostatic filters



Control and management systems

- Visualisation systems
- Viessmann Logic
- System operation via PC and all mobile devices

Digital products

The digital solutions range from HFA Alarm, the simple PLC email alert that sends fault and alarm messages in plain text, through to complex evaluations and forecasting tools such as HFA VISU.

The digital, cloud-based products for Viessmann wood combustion systems are tailored to the different needs of various system users.

HFA VISU small for smaller plants offers a simple display of the most important plant parameters. Four preselected trends can be monitored with this tool and trends can be created via a dedicated interactive analysis.

For larger plants, the HFA VISU large comes into play – a visualisation tool that's in a league of its own. Based on the data collected, the HFA VISU large can produce 2D or 3D views, evaluations and forecasts to optimise the whole heating operation and therefore minimise downtimes.



Data security is a very important subject at Viessmann. The system data is recorded in a Viessmann database via an encrypted VPN connection. The data can be conveniently called up as a graphic evaluation via a platform-independent portal.

Overview of the whole system operation by means of 2D, or optional 3D, views

Dedicated, interactive analyses provide the user with an overview of precisely defined parameters

Assessments of previous output demand or fuel requirements optimise the heating operation

Overview

The cloud-based visualisation systems are completely platform independent and can be used anywhere and with any mobile device.

	HFA VISU small	HFA VISU medium	HFA VISU large
email alarm portal (configurable)	+	+	+
4 preset trends and 1 freely configurable trend	+	+	+
2D or optional 3D visualisation, graphic display of current values		+	+
Predictive system support through provision of prognoses			+



Professional service and support

By opting for a wood combustion system you are choosing a high quality product

From engineering and concept development through to the commissioning of your wood combustion system, you benefit from the knowledge and experience our experts have gained over the years.

Viessmann is available to its customers throughout the service life of the plant. Our in-house project management and service staff receive regular ongoing professional training, with particular emphasis given to problem solving.

Our service

- Tailored maintenance contracts
- Experienced employees with relevant expertise
- Remote maintenance in the event of a fault
- Professional spare parts management

Professional support

Viessmann's project management ensures smooth coordination between all companies involved in the construction process. Our installers and service engineers guarantee rapid installation and professional commissioning, and will hand over

the system to you in fully documented, approved and fault-free condition. Carefully scheduled and executed maintenance is the key to long term plant operation under optimum conditions and minimises downtime and repair costs.

Bespoke maintenance

The benefits of a Viessmann maintenance contract:

- Operational reliability is maintained
- System availability is increased
- Quick response time via remote maintenance/troubleshooting

Basic service package

TAKE ADVANTAGE OF THESE BENEFITS

- + Regular review of all important system data
- + Early detection of faults/wear and tear
- + Extended system service life with improved efficiency
- + Maintenance outside of the heating season – therefore fewer unscheduled interruptions in operation
- + Lower repair costs and cost benefit due to short journey times
- + Extended bearing and drive service life thanks to professional lubrication
- + Better planning of future investments thanks to Viessmann status analysis
- + Preferential telephone and field service support
- + Remote diagnosis and optimisation included (subject to availability of visualisation with remote access)
- + Price benefit thanks to fixed 5 percent discount on spare and wearing parts

SERVICES AT A GLANCE

- Free telephone support all year round during our business hours
- Regular inspection and maintenance outside of the heating season (March to August)
- Courtesy call from our MRP controllers prior to inspection and maintenance
- System inspection and maintenance based on an individual inspection and maintenance checklist
- Cleaning and inspection of sensors
- Cleaning and lubrication of moving parts
- Checks on process technology
- Inspection of safety equipment
- Checks on wearing parts
- Checks on and discussions regarding the parameter settings in the system controller
- Small parts/consumables included
- Cleaning agents and lubricants included
- Equipment and tools included
- Travel expenses and labour time included
- Feedback on the condition of the system and suggestions for optimisation
- Test report based on the maintenance checklist
- Contract can commence at any time (regardless of hours run and year of manufacture)

Premium service package

TAKE ADVANTAGE OF THESE BENEFITS

- + Regular review of all important system data
- + Early detection of faults/wear and tear
- + Extended system service life with improved efficiency
- + Maintenance outside of the heating season – therefore fewer unscheduled interruptions in operation
- + Lower repair costs and cost benefit due to short journey times
- + Extended bearing and drive service life thanks to professional lubrication
- + Better planning of future investments thanks to Viessmann status analysis
- + VIP telephone and field service support
- + Remote diagnosis and optimisation included (subject to availability of visualisation with remote access)
- + Price benefit thanks to fixed 10 percent discount on spare and wearing parts

SERVICES AT A GLANCE

- Free telephone support from our specialists from 07:30 to 22:00, 365 days a year
- Regular inspection and maintenance outside of the heating season (March to August)
- Courtesy call from our MRP controllers prior to inspection and maintenance
- System inspection and maintenance based on an individual inspection and maintenance checklist
- Cleaning and inspection of sensors
- Cleaning and lubrication of moving parts
- Checks on process technology
- Inspection of safety equipment
- Checks on wearing parts
- Checks on and discussions regarding the parameter settings in the system controller
- Small parts and consumables included
- Cleaning agents and lubricants included
- Equipment and tools included
- Travel expenses and labour time included
- Feedback on the condition of the system and suggestions for optimisation
- Test report based on the maintenance checklist
- Contract can commence at any time (regardless of hours run and year of manufacture)

NOTE

Telephone support

Tel.: +43 5574 74301-130

Tel.: +49 6452 70-3607

Business hours

Mon – Thurs: 07:30 to 12:00 Uhr
13:00 to 17:00 Uhr

Fri: 07:30 to 12:00 Uhr

servicehfa@viessmann.com

Emergency technical support

Tel.: +43 (0)5574 74301-130

Mon – Thurs: 17:00 to 22:00

Fri: 13:00 to 22:00

Weekends & public holidays:
07:30 to 22:00



1100 kW and 550 kW wood combustion systems
Biowärme Frastanz, Austria

Top references for top sales results

Energy from biomass can be used in many ways: we offer wood combustion systems for residential complexes, commercial enterprises and supply utilities.

We have more than 5000 satisfied customers who already enjoy the benefits of obtaining energy from biomass.

- Woodworking industry
(carpentry and joinery workshops, interior outfitters, sawmills, etc.)
- Timber industry
(manufacturers and processors of chipboard, MDF, kitchen and furniture makers)
- Commerce and industry
(food processing, pharmaceutical and chemical industries, etc.)
- Municipal and public property developers
(hospitals, schools, army barracks, housing estates)
- Tourism
(hospitality industry, hotels, etc.)
- Local and district heating associations
(municipal authorities, cities, contractors)
- Commercial nurseries
(heating greenhouses of all sizes)



Bauwerk Parkett AG, St. Margrethen, Switzerland



Toddington Nurseries
Toddington, England
Vitoflex 300-FSB (980 kW)

Bioheat for regional energy supply



Bioheating centre at E-Werke Frastanz, Austria

E-Werke, Frastanz, Austria

E-Werke Frastanz chose to invest in a bioheating plant to supply the Vorarlberg region in Austria with energy from renewable resources. Consumers are now benefiting from the more stable price of biomass compared to crude oil. The plant supplies private, public and commercial buildings with natural heat from woodchips all year round.

The woodchips are automatically transported from the silo to the combustion chamber using a pushrod discharge system. A flat moving grate (FSB) with variable speed ensures optimum combustion of fuels that have a high moisture and ash content.

Specification

- Biomass boilers:
2 x Vitoflex 300-FSB
(1100 kW, 550 kW)
- Fuel type: Biomass
- Water temperature: 95 °C
- Local heating network:
2.7 km in length
- Buffer cylinder: 40,000 litres
- Annual fuel oil savings:
450,000 litres

Standard delivery

- + Wood combustion system
- + Push floor
- + Trough chain conveyor
- + Hydraulic feed
- + Multi cyclone separator
- + Electrostatic filter
- + Bunker cover
- + Controller

Efficient, CO₂ neutral district heating provision



Wood combustion system Vitoflex 300-SRT

Bioenergie Bucklige Welt, Austria

Bioenergie Bucklige Welt's district heating meets high demands for quality, efficiency and the optimum interaction of all modules. Durability and ease of maintenance are also particular focal points and make a significant contribution to the economic success of the project. The stepped grate combustion system is distinguished by its low fuel requirements. Natural, landscape-preserving local materials with a moisture content of up to 60 % can be burned reliably and with low emissions. The modulating operating mode matches the system output to the actual heat demand.

Specification

- Biomass boiler: Stepped grate combustion system Vitoflex 300-SRT
- Output: 8500 kW
- Operating weight of the system: 194 t
- Weight of the refractory lining: 90 t
- Annual CO₂ savings: 14,200 t
- Annual woodchip demand: 60,500 tcm
- Investment costs: 5.5 million euros

Standard delivery

- + Pushrod discharge
- + Troughed chain conveyor for fuel and ash
- + Hydraulic fuel delivery
- + Stepped grate combustion system Vitoflex 300-SRT
- + Control includes digital visualisation (VISU large)
- + Multi-cyclone and electrostatic precipitator
- + Fans and smoke tubes



Fuel and primary air supply

Biomass boiler converts sawmill by-products into heat



Vitoflex 300-SRT at Sarner Holz OHG, Italy

Sarner Holz OHG has been involved in wood processing and associated work for generations. Its products range from simple sawn timber and sawmill by-products, through to high quality carpentry goods. Absolute priority is given to responsible use of raw materials from the company's South Tyrolean hinterland, with due respect to maintaining the ecological balance of the area. Continuous improvements to environmental protection and energy efficiency practices are defined company objectives.

Sawdust, bark and woodchips are by-products of sawmill operations. It therefore made perfect sense to use the entire energy value of the wood and install a CHP unit for inhouse heat generation. Only spruce bark is used for fuel, while woodchips, sawdust and shavings are sold as fuel.

Sustainable energy generation using wood remnants from production processes

A Viessmann wood heating system was selected: the Vitoflex 300-SRT step grate combustion system, with

a floorstanding combustion chamber and 2600 kW rated heating output, is ideal for spruce bark combustion with almost no residues. The fuel may contain up to 60 percent moisture without compromising system function. This enables the use of wet bark without pre-drying. In addition, the combustion system meets the most stringent emission standards and is characterised by extremely low NO_x and CO values.

The push floor is charged via a wheel loader. The bark is automatically transported to the combustion system via the hydraulic direct feed. The Vitoflex 300-SRT combustion system grate is divided into three grate zones and three air zones. This means different grate speeds and air flow rates can be set in each grate zone. The air flow rates required for the combustion process are calculated in advance by the Viessmann Logic controller. Through this, optimum combustion results are achieved at all load stages. The heating output of the combustion system is modulated by the controller to match actual heat consumption.

The Vitoflex 300-SRT also features flue gas recirculation "over" and "under" the grate. This improves the drying of the fuel and enables optimum usage of the grate area. Slag deposits on the grate are also prevented, even with problematic fuels. A trough chain conveyor removes ash from both the combustion chamber and multi cyclone, and deposits it in a container.

Besides the heating plant, a 150 m³ buffer cylinder was also installed. This enables the combustion system to operate continuously even with a fluctuating heat demand, which has a very positive effect on emissions. The sustainably produced heat is used to heat the drying chambers and production facility.

Biomass combustion systems combined with ORC module

The thermal energy generated during biomass combustion is transmitted to a thermal oil boiler. The thermal oil circuit then feeds heat into the ORC module, which uses this to generate power. The ORC module has an electrical output of 300 kW. The electrical energy is used for the company's own power needs.



Sarner Holz OHG, Italy



View of the thermal oil boiler and step grate



Pump station

Specification

- Biomass boiler: Vitoflex 300-SRT
- Fuel: Spruce bark, M50
- Rated output: 2600 kW
- Electrical output: 300 kW
- Grate area: 4.7 m²
- Length: 6200 mm
- Width: 2450 mm
- Height: 8950 mm
- Total operating weight: 72,000 kg
- Fireclay weight: 35,500 kg
- Combustion chamber vol.: 18.8 m³



Matrix-Plus burner

Viessmann comprehensive range

- Boilers for oil or gas
- Combined heat and power generation
- Hybrid appliances
- Heat pumps
- Wood combustion technology
- Biogas production plants
- Biogas upgrading plants
- Solar thermal
- Photovoltaic
- Electric heating/DHW systems
- Refrigeration systems
- Accessories

Milestones of heating technology

As an environmental pioneer and technological trailblazer for the heating sector, Viessmann has been supplying exceptionally clean and efficient systems for heating, refrigeration and decentralised power generation for decades. Many of the company's developments are recognised as heating equipment milestones.

Sustainability in action

As a family business Viessmann takes the long view and places great value on acting responsibly; sustainability is firmly enshrined in the company's principles. For Viessmann, sustainability in action means striking a balance between economy, ecology and social responsibility throughout the company; meeting current needs without compromising the quality of life of future generations.

With its strategic sustainability project, Viessmann demonstrates at its own head office in Allendorf (Eder) that the energy and climate policy goals set by the German government for 2050 can in fact be achieved today with the help of commercially available technology.



We create living spaces
for generations to come.



Number 1 Trade Partner for the 15th consecutive time

Practical partnership

As part of its comprehensive range, Viessmann also offers a wide selection of complementary services. These services include a comprehensive training and further development programme for trade partners at the well equipped training facilities of the Viessmann Academy.

With its new digital services, Viessmann offers innovative solutions such as the operation and monitoring of heating systems by smartphone. Users benefit from greater reassurance and convenience, whilst contractors can keep a constant eye on the systems for which they are responsible.



Viessmann is a leading international manufacturer of efficient energy systems.

VISSMANN GROUP IN FIGURES

1917

— Viessmann was founded

12,000

— employees

2.5

— Group turnover in billions of euros

54

— export share in percent

23

— production companies in

12

— countries

120

— sales offices worldwide

74

— countries with agents and sales companies

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