

T4e

WOOD CHIP BOILER



- Integrated particle separator (electrostatic precipitator) available as an option
- Online boiler control via app
- 7" touch display with LED status display



BETTER HEATING

INNOVATIVE AND
CONVENIENT

froling 



ENVIRONMENTALLY
RESPONSIBLE HEATING,
ECONOMICALLY
REWARDING



Wood chips are a local and environmentally-friendly fuel which is not subject to the crises and fluctuations of the market. Furthermore, wood chip production provides jobs for local residents.

That is why wood chip is the perfect fuel, not just from an economic perspective but also from an environmental point of view. The quality class is determined by the type of wood used.



For more than fifty years Froling has specialised in the efficient use of wood as a source of energy. Today the name Froling stands for modern biomass heating technology. Our firewood, wood chip and pellet boilers are successfully in operation all over Europe. All of our products are manufactured in our factories in Austria and Germany. Froling's extensive service network ensures that we can handle all enquiries quickly.

GUARANTEED
QUALITY AND
RELIABILITY
FROM AUSTRIA

- International pioneer in technology and design.
- Sophisticated fully automatic operation
- Excellent environmental compatibility
- Environmentally responsible energy efficiency
- Renewable and CO₂-neutral fuel
- Ideal for all types of house
- More convenience and reliability

User-friendly, compact, economical and safe:
The new T4e from Froling meets all your needs.

With the silicon carbide combustion chamber, the T4e ensures a **high level of efficiency** (up to 96.3%) with **very low emissions**. Well-planned use of energy-saving EC drives ensures **extremely low energy consumption**.

Thanks to its modular construction and compact dimensions, the Froling T4e is particularly easy to position and install. The entire boiler comes fully assembled, electrically wired and tested.

Particular attention was paid to energy efficiency, durability and stability during the development of the T4e. The T4e consumes very little electricity during operation, keeping the operating costs down. This priority was clearly confirmed when the boiler was awarded the EnergieGenie prize.

The **“EnergieGenie Innovation Prize”** of the Federal Ministry of Agriculture, Forestry, Environment and Water Management and the State of Upper Austria recognises new products according to the criteria of innovation, energy savings and the degree of innovation.

The **“Plus X Award”** honours high-quality innovations that make life simpler and more enjoyable while respecting the environment. Froling's T4e wood chip boiler stood out in the categories for **innovation, high quality, ease of use, functionality and ecology**.



T4e WOOD CHIP BOILER

SYSTEMATIC CONVENIENCE

Flue pipe also available with rear connection (optional)

Speed-controlled, highly efficient EC induced draught fan for lowest power consumption

Built-in return temperature control with pump, mixing valve and ball valve for quick and easy installation

Optional integrated particle separator (electrostatic precipitator)

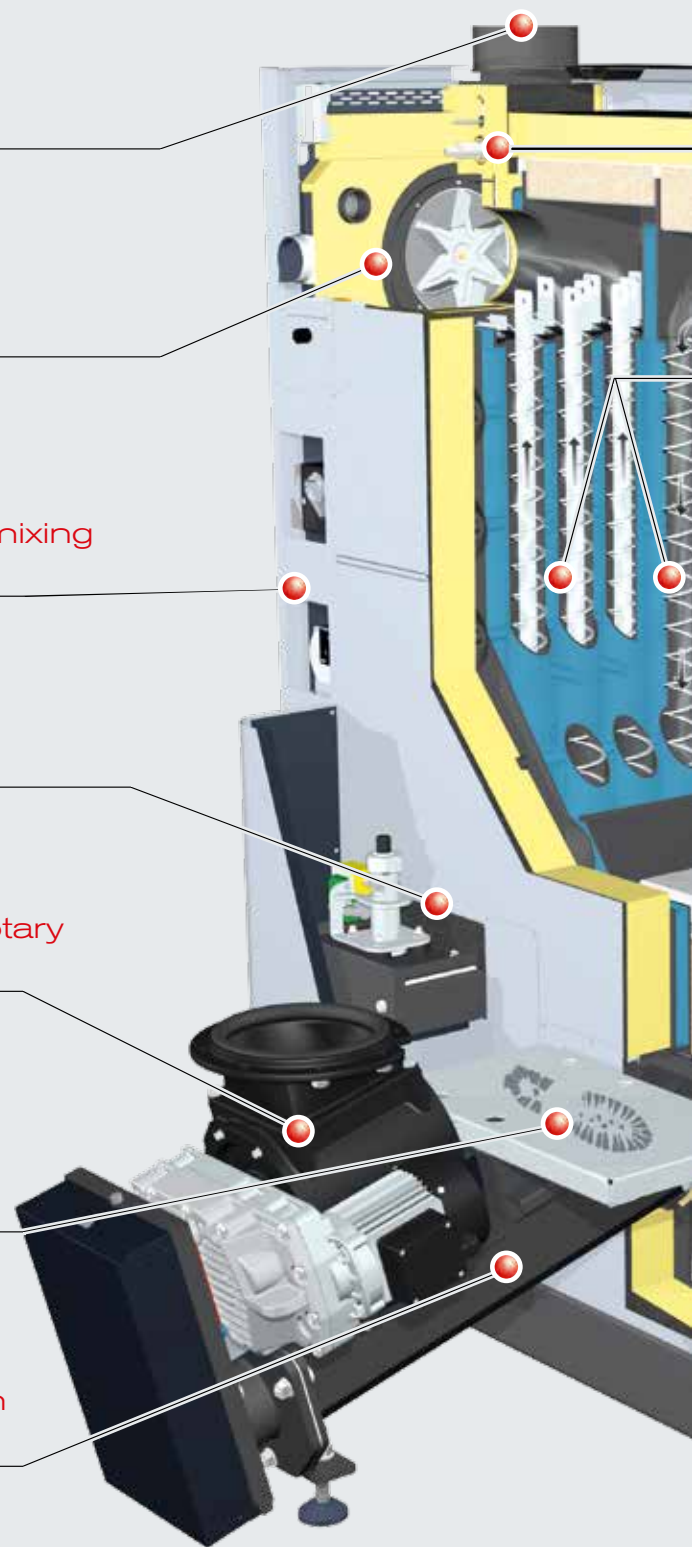
Volume-optimised Ø 200 mm twin-chamber rotary valve for burn back protection

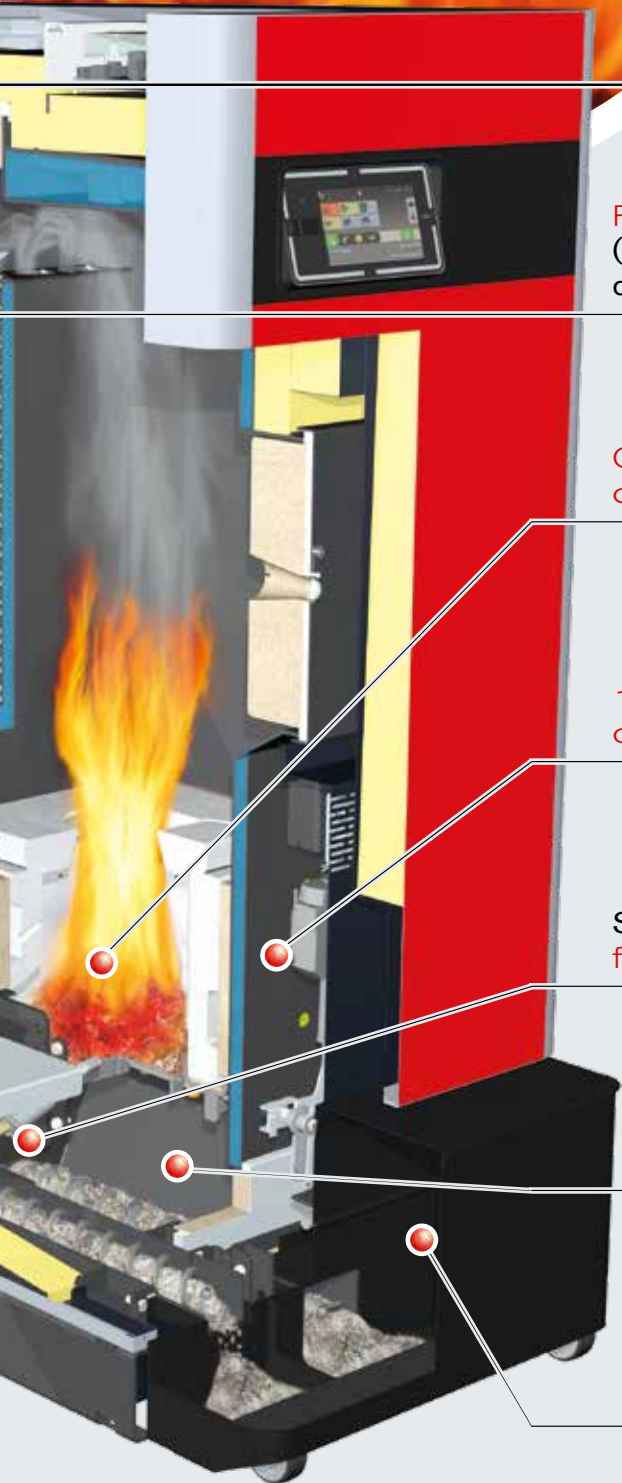
Sturdy foot step for easy maintenance and assembly

Stoker with large Ø100 mm screw and Ø150 mm screw from 200/250 kW

NEW!

7" touch display with LED status illumination





Lambda probe for optimum fuel adjustment

Fully automatic cleaning of all heat exchanger pipes (starting from the first pass) by means of turbulators (mechanical drive in the "cold" area)

Optimized silicon carbide combustion chamber for lowest emissions and a long service life

110° tipping grate with 900N drive for optimal grate cleaning

Silent, energy-efficient ceramic igniter with function monitor

Underpressure-controlled combustion with sensorless bed of embers monitor

Fully automatic ash removal with energy-saving combi drive (common drive for heat exchanger and combustion chamber ash screw) to large-sized ash containers

FGR (flue gas recirculation) prepared in the boiler, motor and connecting pipe for activation available as an option

PELLET BOILER PT4e



Sturdy, convenient, reliable and versatile:
The new PT4e pellet boiler is perfect in every way.

Well-planned use of energy-saving drives ensures extremely low energy consumption. With its durable high temperature silicon carbide combustion chamber, the PT4e ensures a high level of efficiency with minimal emissions. In addition, the PT4e can be equipped with an electrostatic particle separator as an option.

Thanks to its modular construction, Froling's PT4e is particularly easy to position and install. The entire boiler comes fully assembled, electrically wired and tested.

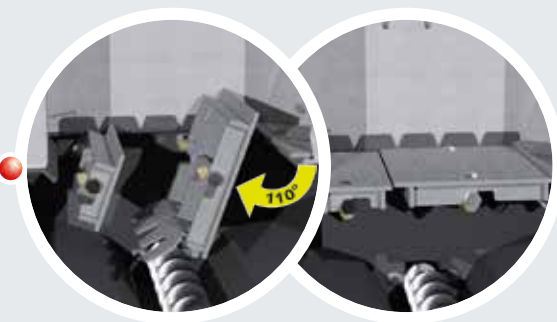
- Advantages:
- Long-life high temperature silicon carbide combustion chamber
 - Automatic WOS system
 - Automatic ash removal from the combustion chamber and the heat exchanger to mobile ash container
 - Speed-regulated, low-noise induced draught fan with function monitor
 - Underpressure-controlled combustion air supply for primary and secondary air

NEW!



Pellet boiler can be retrofitted with integrated particle separator (electrostatic precipitator) at any time

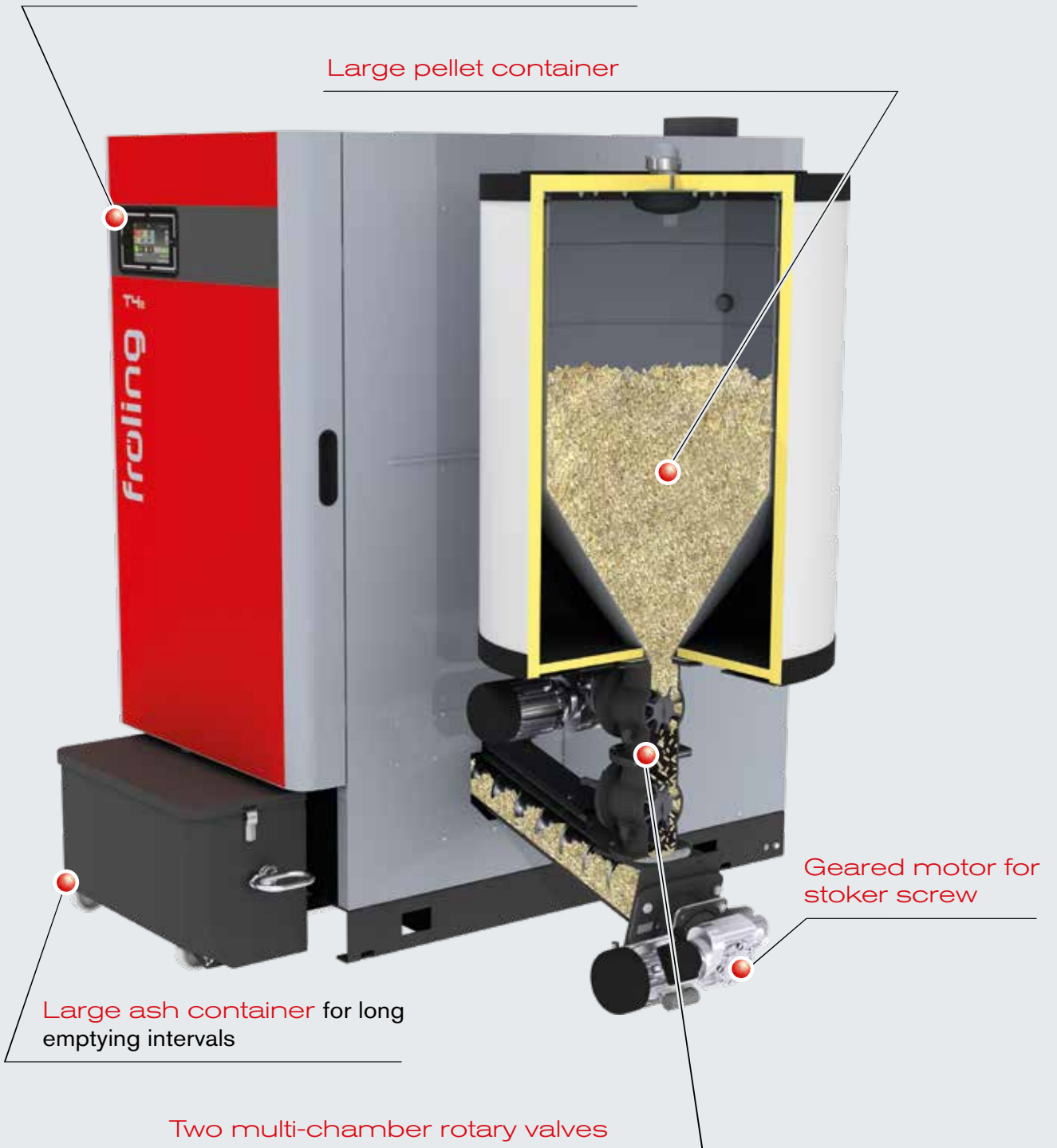
Multi-part combustion grate consisting of a fixed insertion zone and 2-part automatic tipping grate



FOR EVEN MORE CONVENIENCE

7" touch display with LED status indication
for simple and intuitive operation

Large pellet container

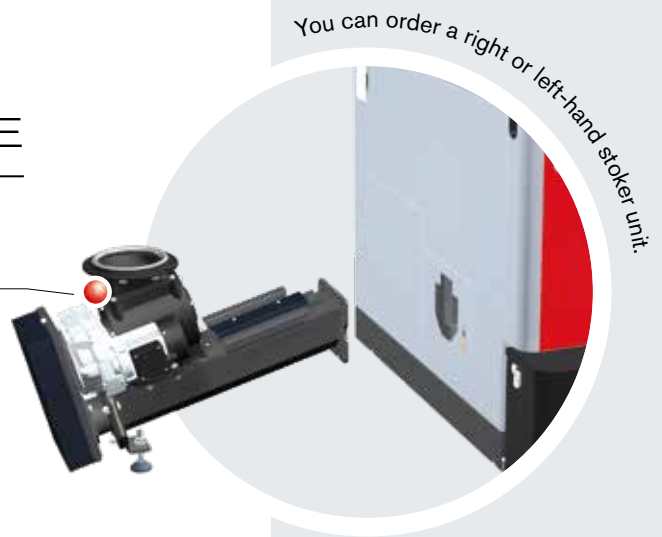


WELL PLANNED HOME FOR MORE CONVENIENCE

Easy to assemble on site

The T4e is supplied assembled and wired, you just need to fit the stoker unit and connect the chosen discharge system to the rotary valve. This saves time and money. Thanks to the well-planned layout of the units and its compact design, the T4e can also be used in very confined spaces.

- Advantages:**
- Quick installation
 - Pre-wired
 - Stoker unit can be ordered on the left or right as desired
 - Return temperature control already integrated (ex works)



Speed regulated EC induced draught fan

The speed-regulated EC induced draught fan ensures the exact air quantity for combustion. As the induced draught fan is speed-regulated, it stabilises combustion throughout and adjusts the air quantity to the output of the respective material. Working together with the lambda control, it ensures optimum combustion conditions. The EC induced draught fan has a significantly higher efficiency than conventional induced draught fans with AC motors. This results in significant power savings, especially in partial load conditions.

- Advantages:**
- Maximum ease of use
 - Continuous optimisation of combustion
 - Up to 40% less power consumption



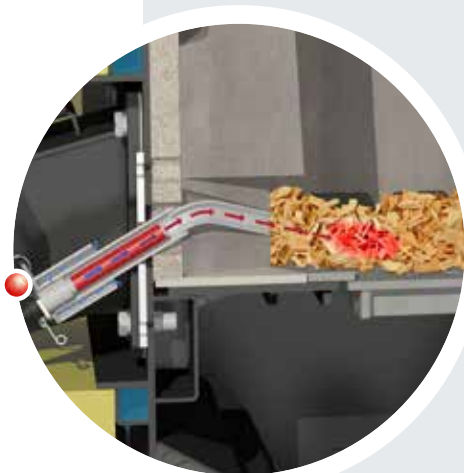
Precise primary and secondary air control

Combustion in the T4e is controlled by underpressure. Combined with the EC induced draught fan, this guarantees extremely high operating safety. The innovative control of air distribution in the combustion zone is a new feature. Primary and secondary air are optimally adjusted to the conditions in the combustion chamber with only one actuator. This, combined with the lambda controller which comes as standard, ensures that emissions are kept to a minimum.

Fast, energy-saving ignition

The silent ceramic igniter ensures safe and energy-saving ignition of the fuel. Thanks to the hot combustion zone, after short periods in idle mode the fuel is automatically reignited by the residual embers. It is only necessary to start the igniter after longer combustion pauses.

- Advantages:**
- Silent ceramic igniter for reliable ignition
 - Automatic combustion of residual embers
 - No separate blower fan required



Cleaning of all heat exchanger pipes



Heat exchanger with automatic cleaning (WOS) of all passes and lower drive

The WOS (Efficiency Optimisation System) consists of special turbulators, which are placed in the heat exchanger pipes (**NEW! Now from first pass**) and allow automatic cleaning of the heating surfaces. Clean heating surfaces ensure greater efficiency and thus fuel savings.

- Advantages:
- Greater efficiency
 - Fuel economy
 - Drive mechanism in cold zone (low thermal load)

Permanently integrated return temperature control

The room temperature control integrated as standard avoids unnecessary radiant heat loss; this special feature guarantees maximum efficiency. An external return temperature control is therefore no longer necessary and saves installation time. The components are intelligently built-in and the main parts (e.g. pump) are visible from the outside and easily accessible.

- Advantages:
- Minimum radiant heat loss
 - Maximum efficiency
 - No external return temperature control required
 - Saves space in the boiler room



T4e

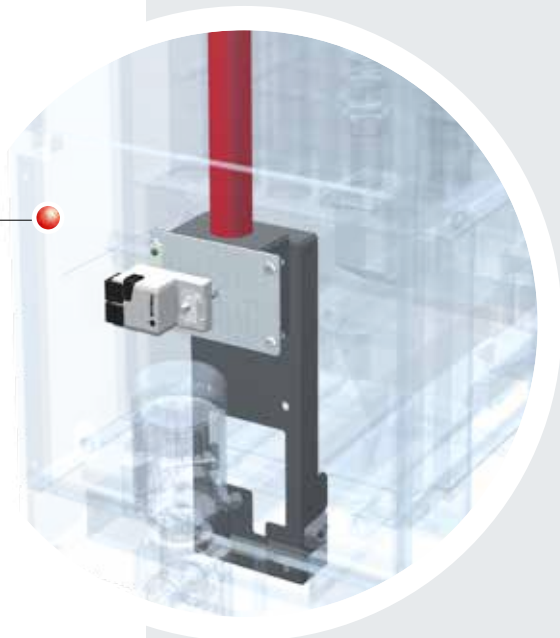
INTELLIGENT DESIGN DOWN TO THE LAST DETAIL

Flue gas recirculation (FGR) (optional)

The flue gas recirculation system (FGR) mixes part of the flue gas with the combustion air and returns it to the combustion zone.

The FGR optimises combustion and performance, and also reduces NOx emissions. The lower combustion temperatures offer added protection for flame-swept parts.

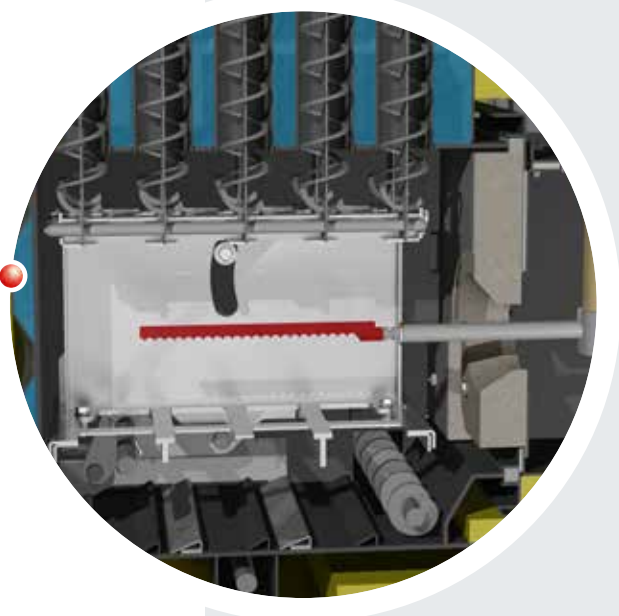
- Advantages:
- Precise adjustment via air actuators
 - Ideal combustion conditions
 - Intelligent control of air quantity



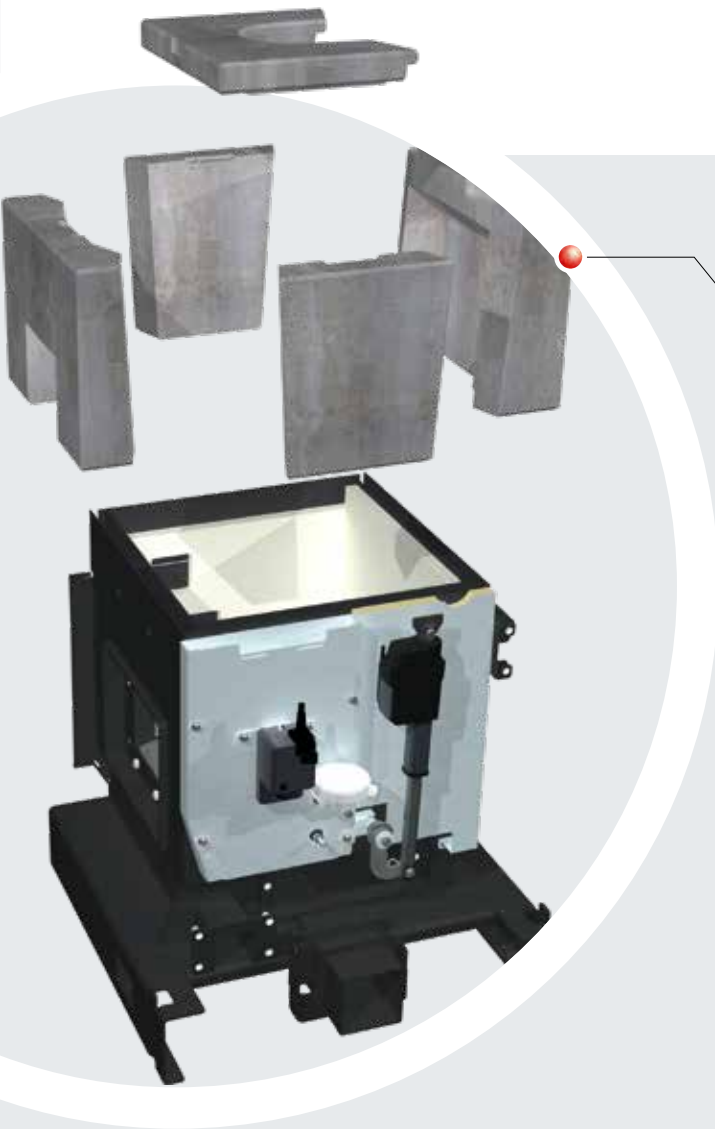
Optional integrated particle separator (electrostatic precipitator)

The optionally available particle separator (electrostatic precipitator) can be added at any time without additional space requirement and thereby considerably reduces the fine dust emissions of the boiler. Cleaning is carried out fully automatically in the joint ash box at the front of the boiler.

- Advantages:
- Can be retrofitted on site
 - No additional space required
 - Combined cleaning with heat exchanger optimisation system (WOS)



NEW! Integrated particle separator (electrostatic precipitator) can be added at any time



High-temperature silicon carbide combustion chamber and perfect combustion control

The firebricks are made entirely of high-quality fireproof material (silicon carbide). The hot combustion zone ensures optimal combustion and very low emissions.

Patented firebrick!

The patented shaping of the firebrick stones gives the air supply in the combustion chamber particularly good airtightness without the need to use expensive wearing seals. The new shape of the stones also considerably simplifies the maintenance of the combustion chamber as they can be removed easily.

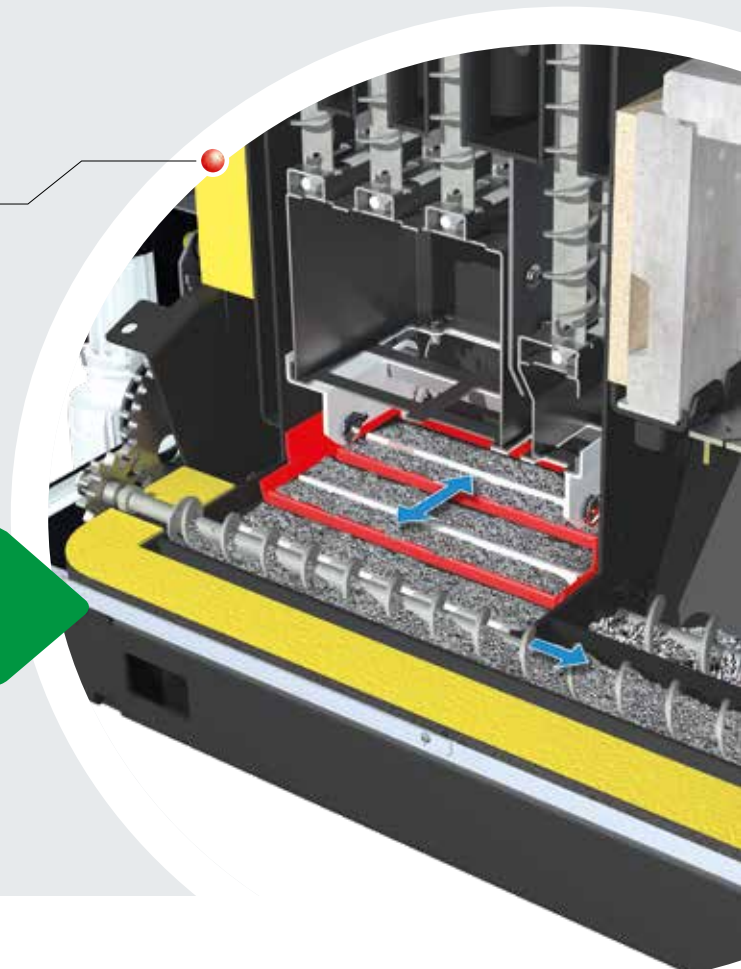
- Advantages:**
- Highest temperature resistance for a long service life
 - Optimum emission values
 - Adapts automatically to changing fuel qualities

Ash discharge system with separate ash screws and ash rakes

Ash is automatically emptied from the combustion chamber and the heat exchanger into the ash container using two separate ash screws, which are powered by a communal geared motor. This ensures a clear separation and absolute tightness between the combustion chamber and the heat exchanger and eliminates the risk of air leaks. The ash screws are speed controlled. The boiler automatically generates a warning message when the ash box is too full.

At the same time, the joint geared motor **drives the ash rake** (tested for many years in Froeling large-scale boiler systems) in the lower reversing chamber, which transports the heat exchanger ash reliably to the side ash screw.

- Advantages:**
- Optimal emptying
 - No risk of air leakage thanks to twin-chamber ash container
 - Just one common drive



SPECIAL TIPPING GRATE TECHNOLOGY

WITH 110° TIPPING GRATE INCLINATION



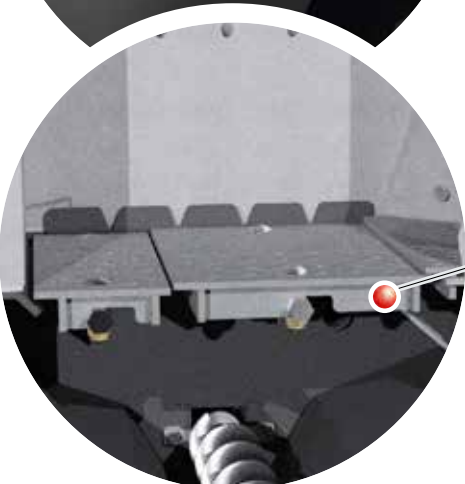
Two-part combustion grate consisting of a fixed insertion zone and automatic tipping grate guarantee energy-saving operation and lowest emissions.



Due to the 110° inclination, the ash is completely emptied from the tipping grate and discharged into the large-volume mobile ash container by means of the ash screw.



1 tipping grate (20 - 60 kW)



2 tipping grates (80 - 250 kW)



EXTRA CONVENIENCE WITH THE EXTERNAL ASH BOX

With automatic ash removal, the ash is fed into an external ash container. The clever locking mechanism makes it quick and easy to remove the ash container.



Side carrying handles for quick handling

Easy removal by means of transport rollers

The side carrying handles also allow the ash box to be transported comfortably by pallet forks (e.g. a front loader, forklift truck, etc.).



Practical hydraulic device for transporting with the tractor and easy emptying (tipping).

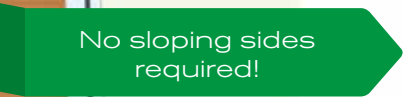


Optional: Ash discharge system with bin

For added convenience, ash can optionally be emptied into a standard 240 l dustbin. The ash is automatically conveyed into the dustbin where it can be easily emptied. This ensures long emptying intervals and maximum convenience

OPTIMISED FUEL TRANSPORT

No sloping sides required!



Robust agitator head

Maintenance-free agitator gearbox

Strong spring blades for even fuel transport (for wood chips up to P31S / G50).

Temperature monitoring device in the fuel store (only required in Austria).

Monitored gravity shaft cover

Inspection opening for easy access to the shear edge.

Sturdy stoker screw for reliable fuel feed with automatic turn control.

No sloping sides required

None of Froling's discharge systems requires sloping sides. Without sloping sides, the raising plate fitted to the trough ensures simple operation.

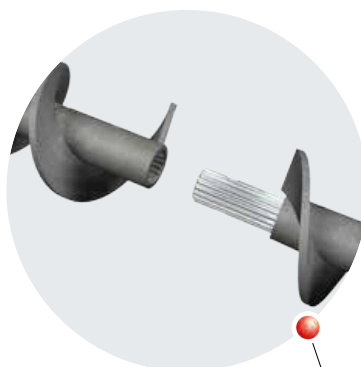
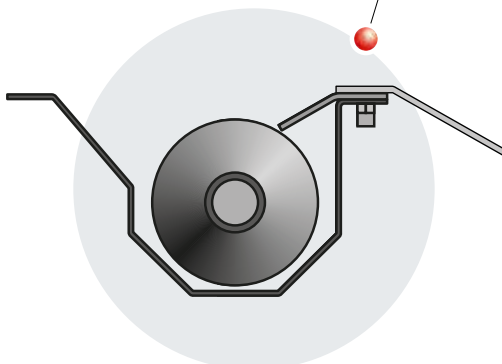
Progressive dosing screw and special trapezoidal duct for minimal force

The plug-in screw system with standard extension pieces between 100 and 2,000 mm (graduations every 100/200 mm) allows easy assembly and flexible positioning of the system in the boiler room.

Optional fibre shredder

If the material is particularly fibrous, the optional fibre shredder can shred long parts, thus ensuring reliable transportation of the material.

Special trapezoidal duct



Plug-in screw system





Flexible ball joint

The ball joint is a flexible connecting piece between the discharge screw and the stoker unit. Offering continuous adjustment of the inclinations (up to 15°) and angles, the ball joint allows flexible planning.

High volume rotary valve (Ø 200 mm)

The rotary valve with two large chambers offers maximum burn back protection and continuous material transport.

Highly efficient spur gears

The **powerful, energy-saving spur gears** with a drive power of 0.25 kW ensure that even larger wood chip pieces can be shredded and transported. This design strikes the perfect balance between power and service life.



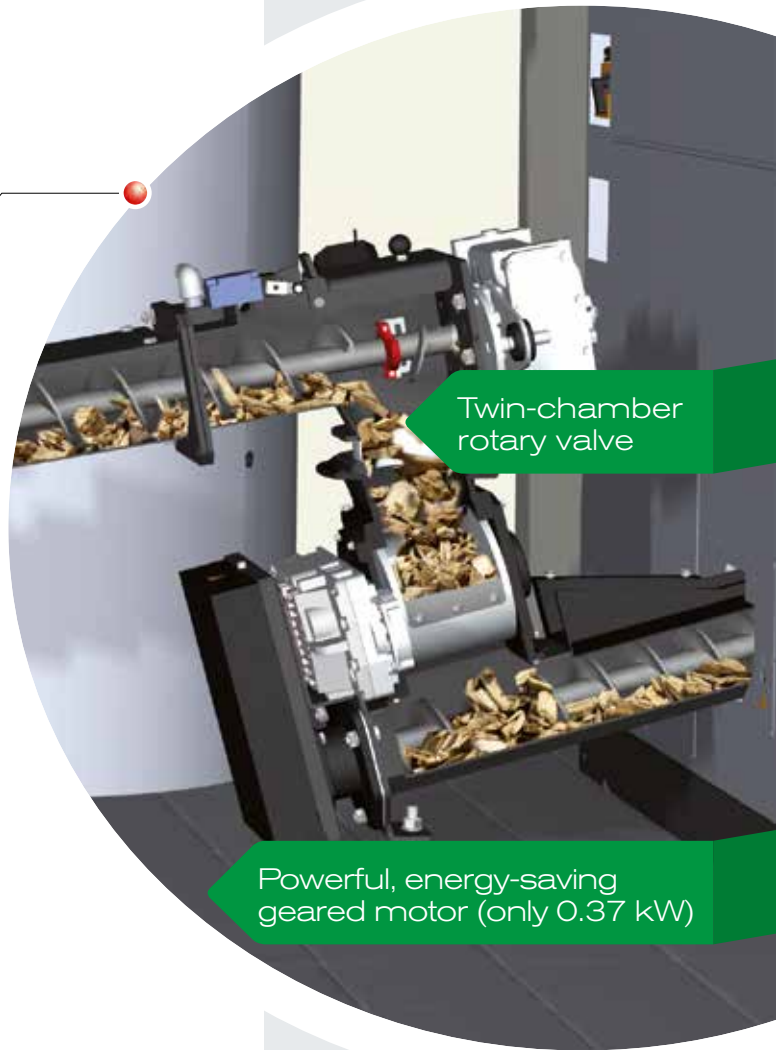
Energy-saving drive motor (only 0.25 kW)

Sturdy stoker unit

The extremely compact stoker unit of the Froling T4e in combination with the rotary valve guarantees maximum burn back protection and reliable fuel feed to the combustion zone. The stoker unit is driven together with the rotary valve by an energy-saving geared motor (highly efficient spur gears with just 0.37 kW power consumption, only 0.55 kW from 80 kW), thus guaranteeing maximum energy efficiency.

The Froling stoker screw with Ø 100 mm or Ø 150 mm (for T4e 200/250) is the optimum solution for safe fuel transport of wood chips up to P31S (previously G50).

- Advantages:
- Flexible set-up
 - Top burn-back protection
 - Low energy consumption
 - Great space saving due to the low design height of the stoker unit



Progressive dosing screw with modular plug-in system

The progressive feed screw guarantees reliable fuel transport. Thanks to the progressive screw raise, the material does not get compacted and can always be moved on easily. This ensures less force and energy consumption.

The modular design of the feed screw with standard extension pieces between 100 and 2,000 mm (graduations every 100/200 mm) allows easy assembly and flexible positioning of the system in the boiler room.

The Froling feed screw does not require sloping sides.

- Advantages:
- Flexible set-up
 - Reliable material transport
 - Low energy





High volume twin-chamber rotary valve

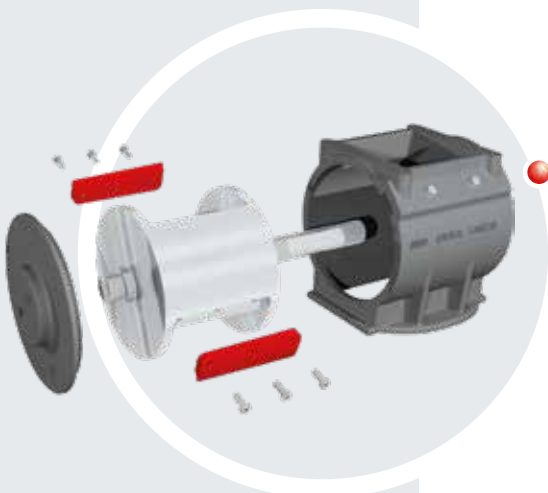
The twin-chamber rotary valve offers maximum operating safety. The rotary valve forms a reliable separation between the discharge system and the feed unit, providing optimal burn back protection. The advanced system design with two spacious chambers ensures that the fuel is transported continuously to the combustion zone. This optimal fuel metering ensures the best possible combustion values.

The rotary valve is extremely quiet and uses only minimal power.

- Advantages:**
- Continuous flow of material
 - Top burn-back protection
 - Suitable for P31S (previously G50) wood chips
 - 200 mm rotor diameter



The two large chambers (200 mm rotor diameter) are especially suitable for transporting wood chips up to P31S (previously G50). High resistance is recognised automatically. The rotary valve and screw move backwards (several times depending on the parameters set) until transport can be re-started.



Replaceable blades

The high-quality cutting edges of the blades can also easily cut through coarser pieces of wood chip. The blades both in the rotor and the housing can be simply removed and sharpened if necessary.

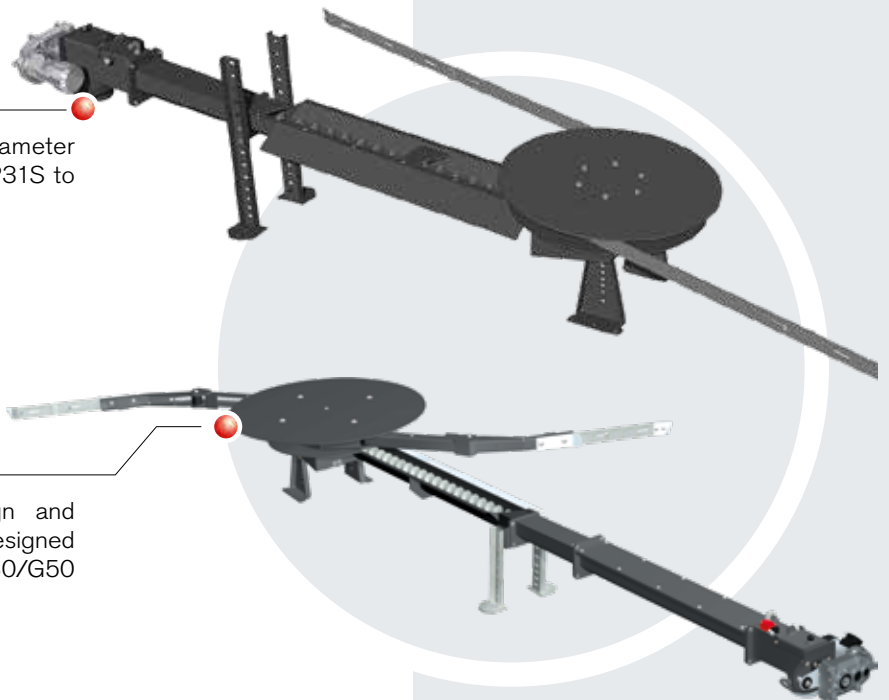
ROTARY AGITATOR DISCHARGE SYSTEMS

WITH COMBINED DRIVE

The simple and effective design of Froling's rotary agitator discharge systems ensures smooth operation. Any problematic materials (e.g. foreign bodies) are automatically detected and removed by a reverse turn of the screws (turn control). The feed screw with progressive screw raise ensures low energy consumption.

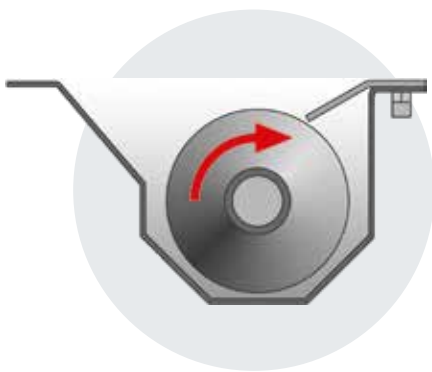
FBR spring blade agitator

Maintenance-free system with a max. working diameter of 5 metres. Designed for wood chips P16S/P31S to M35, previously G30/G50 to W35 for example.



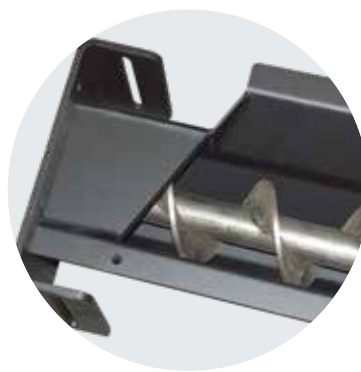
GAR articulated arm rotary agitator

Low maintenance system with sturdy design and maximum working diameter of 5 to 6 metres. Designed for wood chips P16S/P31S to M35, previously G30/G50 to W35 for example.



Special trapezoidal duct

The special trapezoidal shape of the trough ensures that fuel is transported smoothly. The system is easy to operate so it saves energy even when feeding in the maximum amount of pellets.



Shear edge

The robust shear plate with cutting edge breaks up larger pieces of fuel guaranteeing continuous fuel feed.



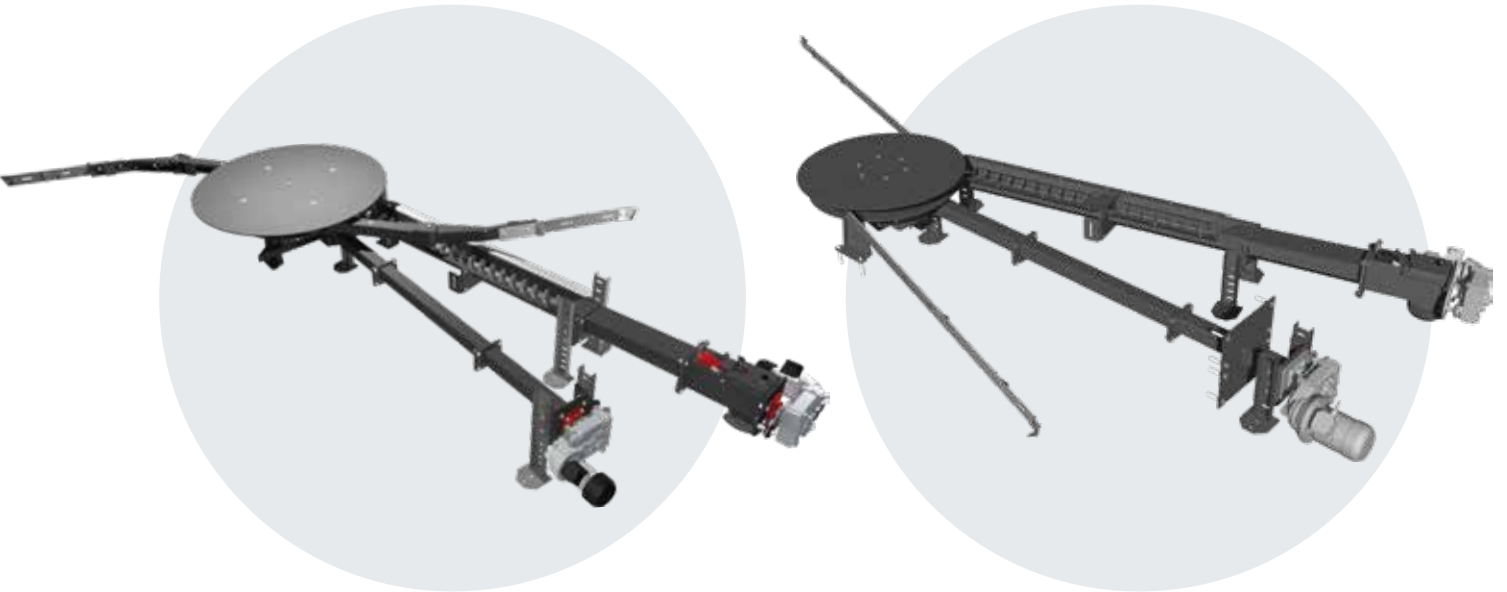
Rotary agitator arms with tearing hooks

The powerful rotary agitator arms move towards the agitator head during filling and then swing back out when fuel is removed. Together with the sturdy tearing hooks that loosen the fuel, they ensure that the fuel store is emptied.

ROTARY AGITATOR DISCHARGE SYSTEMS WITH SEPARATE DRIVE

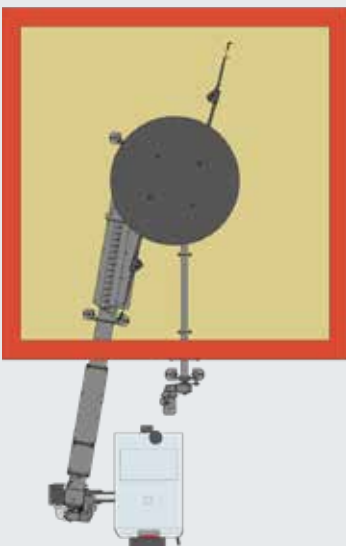
Froeling's rotary agitator discharge systems with separate drive offer even greater flexibility. In the FBR-G and GAR-G, the rotary agitator is powered independently of the discharge screw. This allows flexible installation and variable adjustment of the feed output. The discharge screws can be positioned on both the left and right of the rotary agitator.

There is also the option of using extra long discharge screws. This system means that the fuel can even be optimally fed from the back of the fuel store.

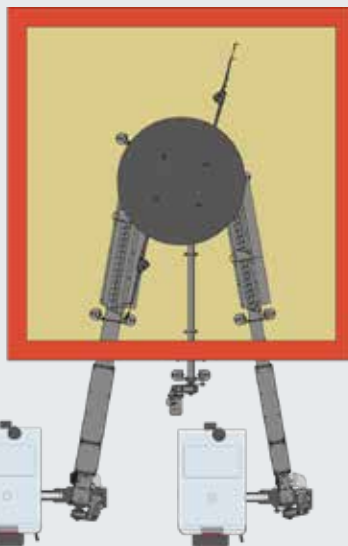


SAMPLE INSTALLATION OPTIONS

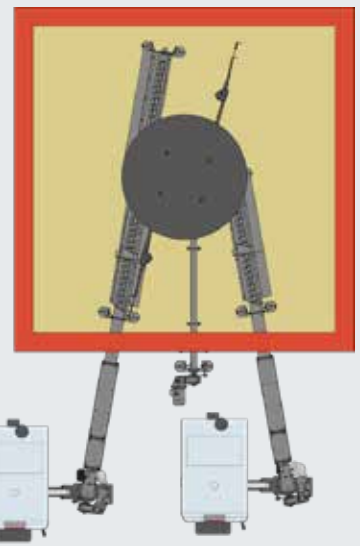
One discharge screw on the left



Dual boiler system with two discharge screws



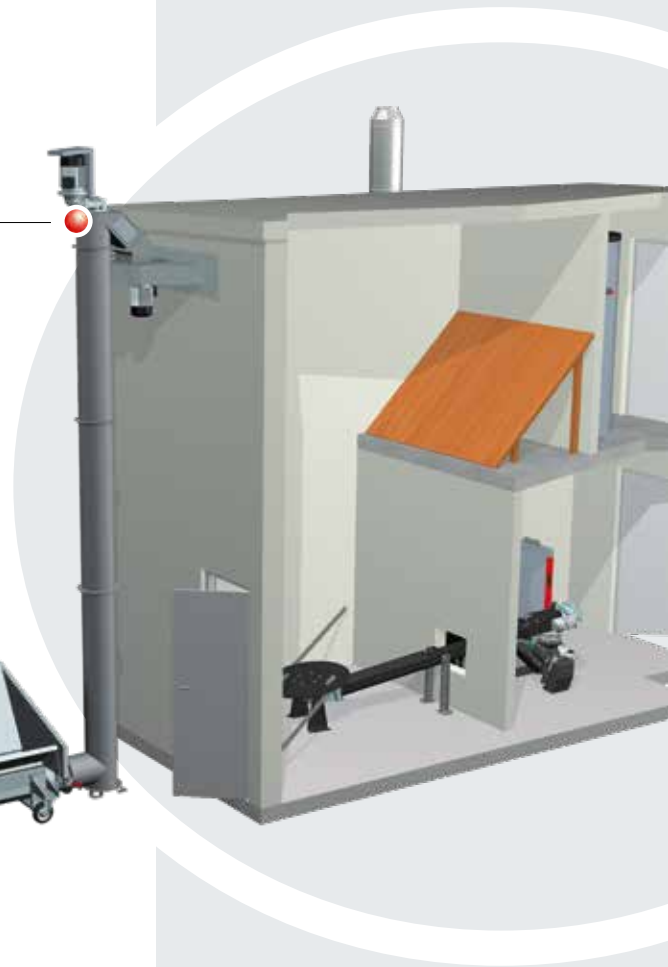
Two discharge screws, one standard, one extra-long



Vertical feed screw

Froling's vertical feed screw sets new standards for feed output (up to 40m³/h depending on the wood chips used), operating safety and effective distribution. The wood chips are pushed from the tipping gutter into the vertical feed system with a screw, which transports the fuel to the desired height for the distribution device. In this way, the vertical feed screw enables dust-free filling of the store, guaranteeing even distribution of the fuel.

Also available with horizontal distributor screw

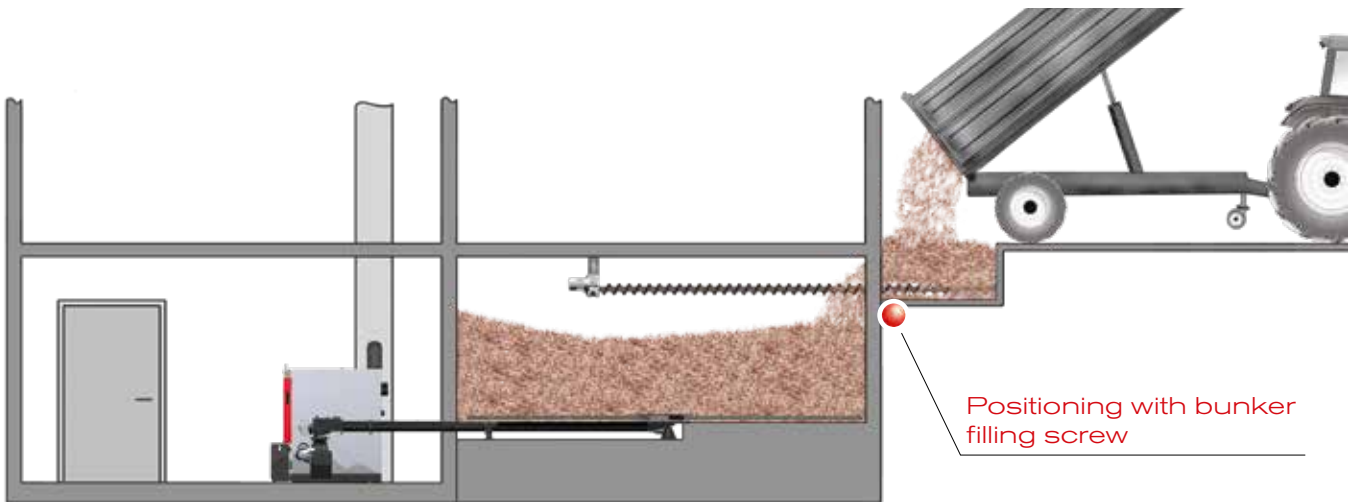
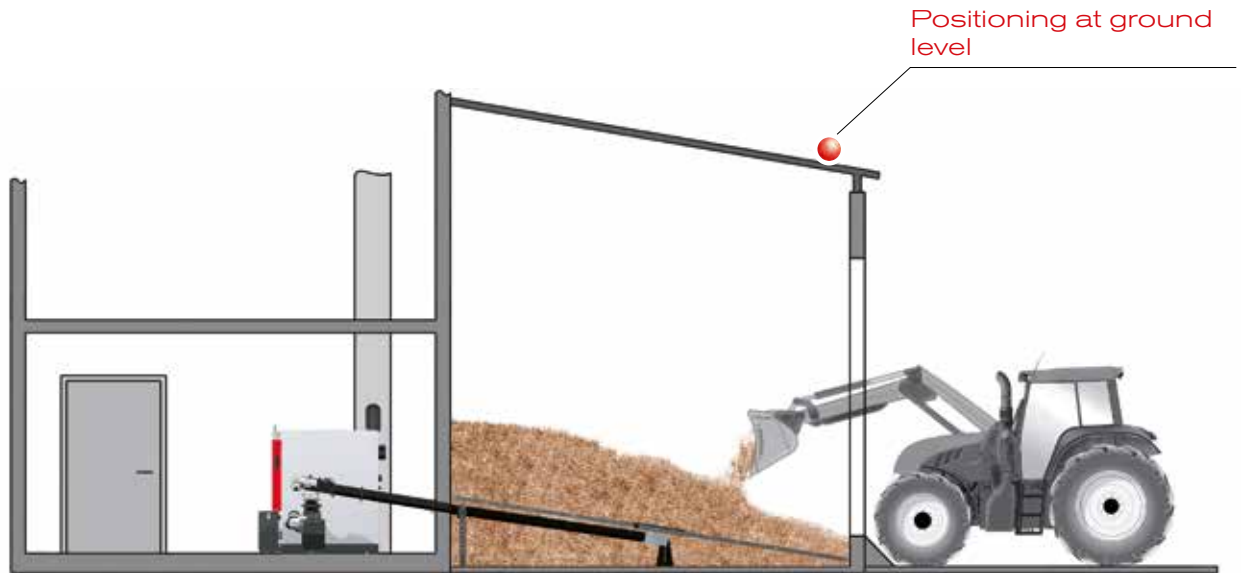


Bunker filling screw

The fuel is transported using the bunker filling screw into the store space via the tipping chute which is located outside the store. The bunker filling screw stops automatically when the bunker is full. The sloping sides shown in the fuel store are not required for the discharge to work properly.

For more information see our "Store filling systems" brochure.





INDIVIDUAL CONTROL OF THE HEATING SYSTEM

Lambdatronic H 3200 control

With the Lambdatronic H 3200 boiler controller and the new 7" touch display, Froling is taking a step into the future. Intelligent control management makes it possible to connect up to 18 heating circuits, up to 4 storage tanks and up to 8 hot water storage tanks. The control unit ensures that the operating statuses are clearly shown. The menu structure is ideally organised to allow easy operation. All essential functions can be selected by simply pressing icons on the large colour display.



- Advantage:**
- Precise combustion control by a Lambda controller using a Lambda probe
 - Connection for up to 18 heating circuits, 8 water heaters and up to 4 storage tank management systems
 - Integration capability for a solar panel system
 - LED frame for status display with illuminated presence detection
 - Simple, intuitive operation
 - Various smart home options (e.g. Loxone)
 - Room console Remote control from the living room (remote control RGB 3200 and RGB 3200 Touch) or via Internet (froeling-connect.com)



SIMPLE & INTUITIVE OPERATION



Fig. 1 General overview of heating circuit (start screen)



Fig. 2 View of the heating times (individually adjustable)



Fig. 3 Overview of the new holiday mode



EVERYTHING AT A GLANCE 24/7 WITH THE FROLING APP

The Froling App allows you to check and control your Froling boiler online from anywhere, at any time. You can read and modify the main status information and settings easily and conveniently online. You can also specify which status messages you want to be informed about via SMS or e-mail (e.g. when the ash box is to be emptied or in the event of a fault message).

Froling boiler (software core module from version V50.04 B05.16) with boiler touch display (from version V60.01 B01.34) a broadband internet connection and a tablet/smartphone with IOS or Android operating system are required. Once the boiler has been connected to the internet and activated, the system can be accessed 24/7 from anywhere using a web-enabled device (mobile, tablet, PC, etc.). The app is available in the Android Play Store and IOS App Store.

With optimized tablet view!



- Simple and intuitive operation of the boiler
- Status information can be called up and changed within seconds
- Individual naming of the heating circuits
- Changes of status are notified directly to the user (e.g. via e-mail or push notifications)
- No additional hardware required (such as an Internet gateway)

SMART HOME

Enjoy smart, convenient and peace-of-mind living with the Smart Home connection options from Froling.

Loxone

Combine your Froling heating system with the Loxone Miniserver and the new Froling Extension and implement individual boiler control on the basis of the single room control of the Loxone Smart Home.

Advantages: Easy operation and viewing of the heating circuit via the Loxone Miniserver, immediate notification of status changes and individual operating modes for each situation (presence, holiday, economy mode, etc.)

Mod bus

Via the Froling mod bus interface, the system can be integrated into a building management system.



ACCESSORIES FOR EVEN GREATER CONVENIENCE

FRA room temperature sensor

By using the FRA room temperature sensor, sized just 8x8 cm, the main modes of the corresponding heating circuit can be easily selected and adjusted. The FRA can be connected both with and without affecting the store. The adjusting wheel allows you to change the room temperature by up to $\pm 3^{\circ}\text{C}$.



RBG 3200 room console

For even more convenience you can use the RBG 3200 room console and the new RBG 3200 Touch. You can control the heating system easily from your living room. Important system data is clearly displayed and settings can be changed at the push of a button.



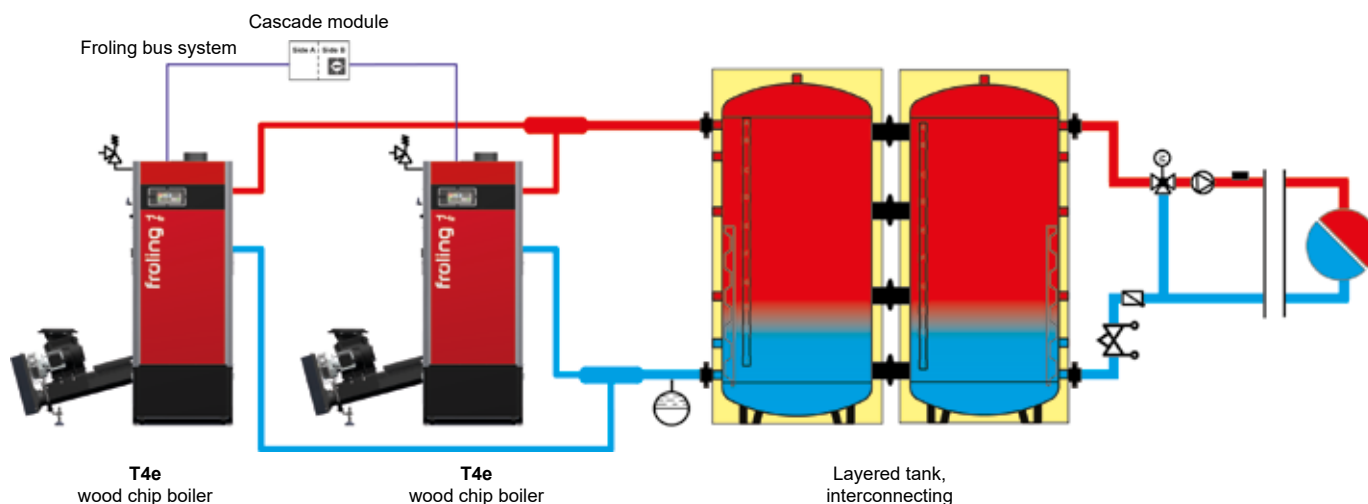
RBG 3200 Touch room console

The RBG 3200 Touch has an impressive touchpad interface. The menu structure means it is intuitive and easy to use. The 17x10 cm console with colour screen shows the most important functions at a glance and automatically adjusts the background lighting to the conditions. The room consoles are connected to the boiler controller using a bus cable.



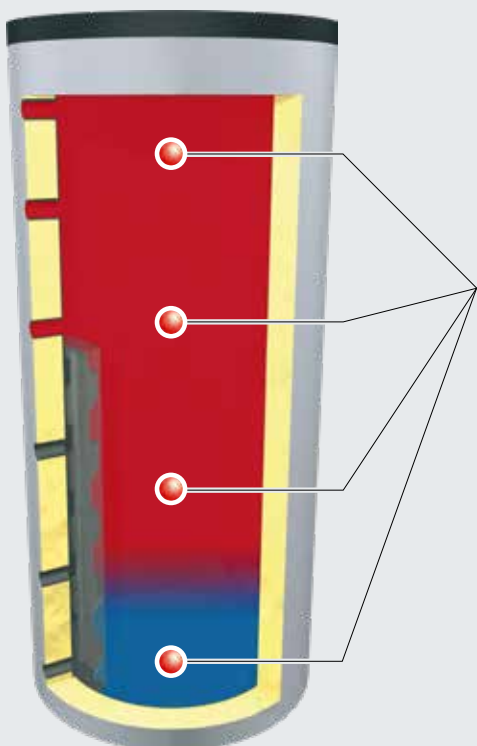
NEW!

FROLING CASCADE CONTROLLER



T4e with layered tank, interconnecting

Heating requirements vary considerably, especially in large buildings such as hotels or public buildings. Froling offers the necessary flexibility with a cascade. This smart solution allows you to combine up to four T4e wood chip boilers. You can also see the benefits of a cascade during summer months. If the heat requirement is low, one boiler is often sufficient for hot water preparation. This provides a particularly efficient and economical heating solution. A further advantage is the increased reliability of operation, as the heat is provided by several boilers.



MULTI-SENSOR STORAGE TANK MANAGEMENT

Precise storage tank level with four sensors

In addition to conventional storage tank management with two sensors, Froling also offers the option of multi-sensor storage tank management. For this function four sensors are distributed along the entire height of the storage tank. The controller then uses these to determine the storage tank fill level. The controller can thus quickly identify load changes and adjust the boiler output early on. Fewer start-stop cycles result in a long boiler life and maximise the system efficiency.

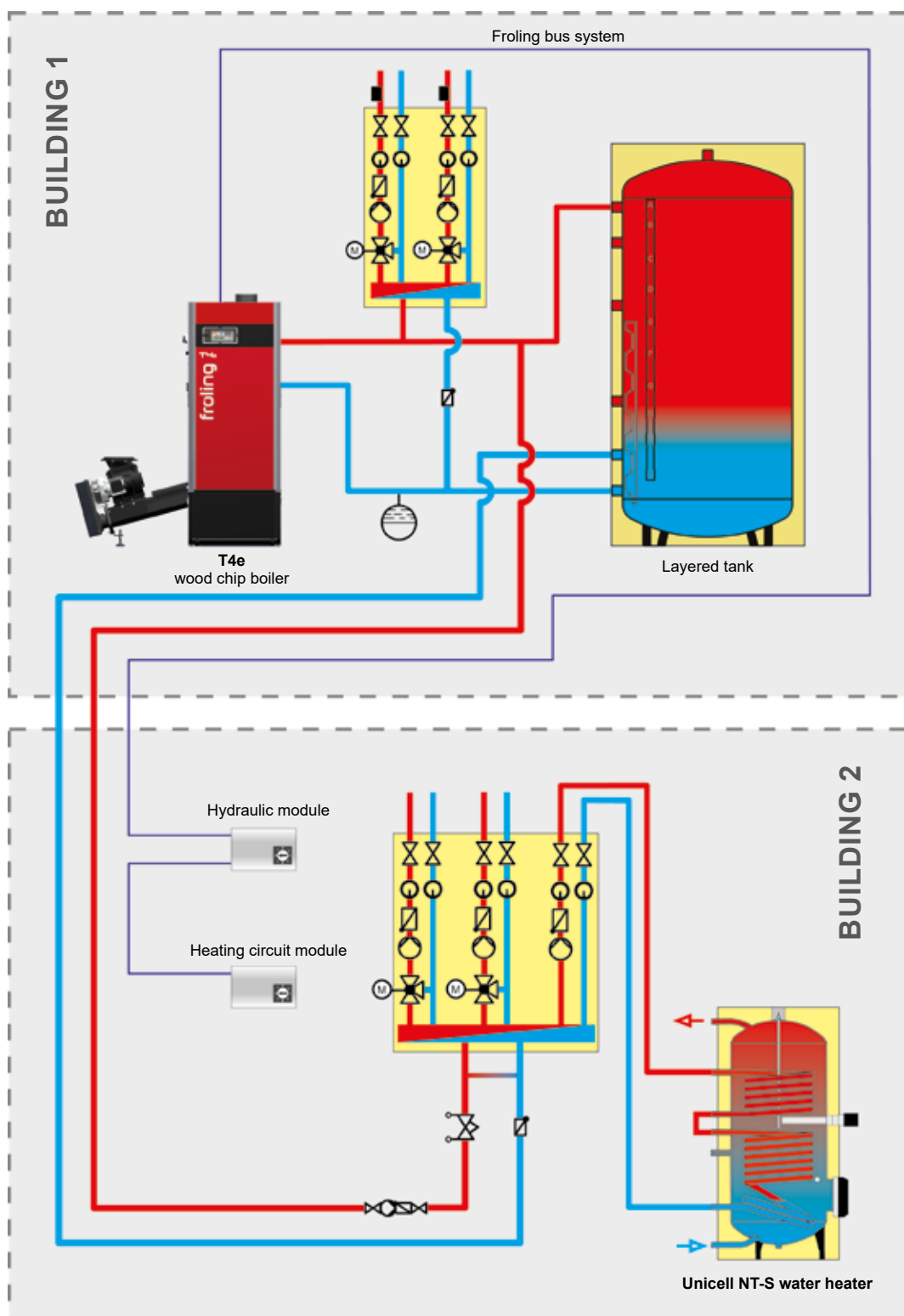
- Minimal start-stop cycles
- High system efficiency
- Optimised for cascade systems

TECHNICAL INFORMATION

SAVES MORE ENERGY

The Froling bus system makes it possible to install extension modules at any location. The local controls can be installed wherever they are needed: at the boiler, at the heat distributor, at the tank, in the living room or in the house next door. Additionally, electric cables are kept to a minimum.

T4e with multiple house system



CALCULATING THE FUEL REQUIREMENT



Wood chip fuel specification

P16S woodchips (previously G30)	
Size	3.15 – 16 mm (min. 60%)
Max. length	45 mm
Max. cross-section	2 cm ²
P31S woodchips (previously G50)	
Size	3.15 – 31.5 mm (min. 60%)
Max. length	150 mm
Max. cross-section	4 cm ²
water content	max. 25%
Bulk weight	approx. 210 - 250 kg/bcm
Energy content	3.5 kWh/kg



Pellets fuel data

Length	3.15 - 40 mm
Diameter	6 mm
Water content	max. 10%
Bulk weight	approx. 650 kg/m ³
Ash content	max. 0.5%
Dust content	max. 2.3%
Energy content	4.9 kWh/kg

The fuel requirement depends on the fuel quality. The following rule of thumb can be used to make a rough estimate:

Wood chips:

Hardwood P16S/M30 (previously G30/W30):
2.0 bcm per kW heating load
Softwood P16S/M30 (previously G30/W30):
2.5 bcm per kW heating load

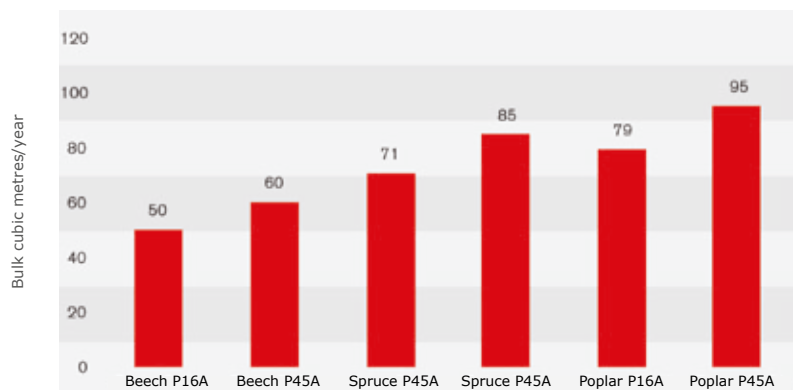
Pellets:

1 m³ per kW heating load

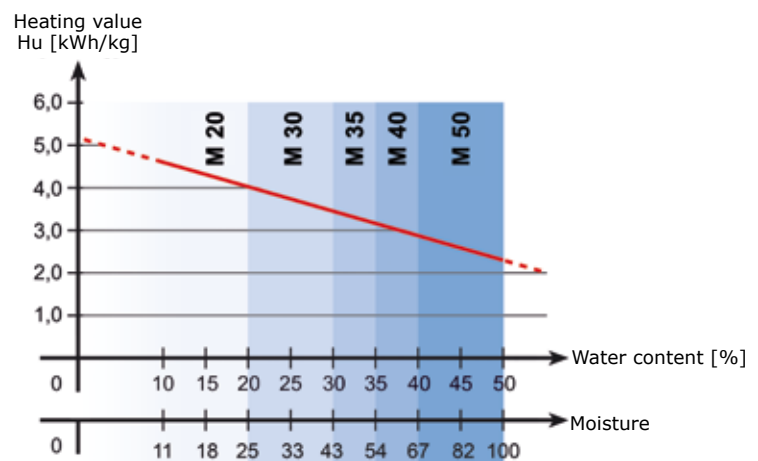
Annual wood chip requirement in bulk cubic metres

Source: Bayerische Forstverwaltung

E.g. annual consumption approx. 57,500 kWh (T4e 30 kW, 1,600 full load hours, 93.5% efficiency, wood chips M30 previously W30)



Heating values depending on water content and moisture



T4e WOOD CHIP BOILER

CLEARANCES & TECHNICAL SPECIFICATIONS

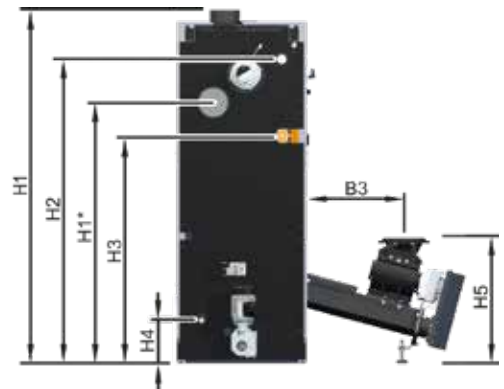
Technical specifications - T4e		20	25	30	35
Nominal output	[kW]	19.9	25.1	30	35
Thermal output range	[kW]	5,95 - 19,9	7.51 - 25.1	9 - 30	10,5 - 35
Electrical connection	[V/Hz/A]	400V / 50Hz / fused C16A			
Power consumption	[W]	48 / 39	55 / 39	59 / 39	63 / 38
Weight of boiler (including stoker, without water)	[kg]	740			
Boiler capacity (water)	[l]	117			
Maximum boiler temperature setting	[°C]	90			
Permitted operating pressure	[bar]	3			
Permitted fuel as per EN ISO 17225 ¹⁾		Part 4: Wood chips class A1 / P16S-P31S			

		45	50	60
Nominal output	[kW]	45	49.9	60
Output range	[kW]	13,5 - 45	14,9 - 49,9	18 - 60
Electrical connection	[V/Hz/A]	400V / 50Hz / fused C16A		
Power consumption	[W]	37 - 70	37 - 77	37 - 90
Weight of boiler (including stoker, without water)	[kg]	850		
Boiler capacity (water)	[l]	155		
Maximum boiler temperature setting	[°C]	90		
Permitted operating pressure	[bar]	3		
Permitted fuel as per EN ISO 17225 ¹⁾		Part 4: Wood chips class A1 / P16S-P31S		

		80	90	100	110
Nominal output	[kW]	80	90	100	110
Thermal output range	[kW]	24 - 80	27 - 90	30 - 100	33 - 110
Electrical connection	[V/Hz/A]	400V / 50Hz / fused C16A			
Power consumption NL/PL	[W]	114/47	126/51	138/56	138/57
Weight of boiler (including stoker, without water)	[kg]	1160			
Boiler capacity (water)	[l]	228			
Maximum boiler temperature setting	[°C]	90			
Permitted operating pressure	[bar]	3			
Permitted fuel as per EN ISO 17225 ¹⁾		Part 2: Wood pellets class A1 / D06 Part 4: Wood chips class A1 / P16S-P31S Additional for Germany: Fuel class 4 (§3 of the First Federal Emissions Protection Ordinance (BImSchV) in the last amended version)			

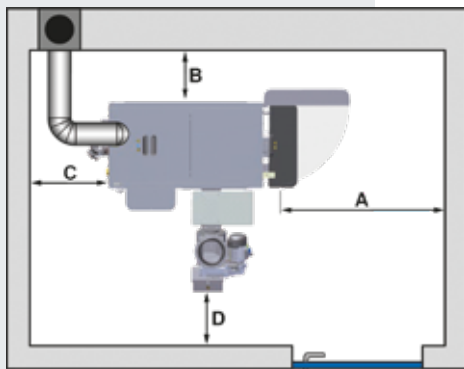
		200	250
Nominal output	[kW]	199	250
Thermal output range	[kW]	59 - 199	75 - 250
Electrical connection	[V/Hz/A]	400V / 50Hz / fused C16A	
Power consumption wood chip mode NL/PL	[W]	135 / 62	214 / 62
Power consumption pellet mode NL/PL	[W]	120 / 55	162 / 55
Weight of boiler (including stoker, without water)	[kg]	2500	
Boiler capacity (water)	[l]	438	
Maximum boiler temperature setting	[°C]	90	
Permitted operating pressure	[bar]	3	
Permitted fuel as per EN ISO 17225 ¹⁾		Part 2: Wood pellets class A1 / D06 Part 4: Wood chips class A1 / P16S-P31S Additional for Germany: Fuel class 4 (§3 of the First Federal Emissions Protection Ordinance (BImSchV) in the last amended version)	

¹⁾Detailed information on the fuel is included in the operating instructions, in the section on "Permitted fuels"



Dimensions [mm]		20 - 35	45 - 60	8 - 110	200 - 250
H	Boiler height	1490	1690	1740	1950
H1	Total height including flue gas pipe connection	1545	1745	1790	2025
H1*	Optional flue gas pipe connection	960	1160	1210	1350
H2	Height of flow connection	1305	1505	1545	1770
H3	Height of return connection with integrated return feed boost	955	1155	1135	1240
H4	Height of the drainage connection	210		200	180
H5	Height of rotary valve connection		615		690
B	Boiler width Width without insulation (width required)	640 -		800 -	1060 980
B1	Total width with stoker unit	1410		1570	1955
B2	Width of stoker unit		770		890
B3	Distance from boiler side to stoker connection		470		610
B4	Width of particle separator/electrostatic precipitator (optional)		165		
L	Length of boiler	1170	1270	1420	2005
L1	Overall length	1475	1550	1795	2550
L2	Length, back of boiler to stoker connection	690	770	890	1310
L3	Length of particle separator/electrostatic precipitator (optional)		370	550	735
	Flue pipe diameter		149	179	249
	Diameter boiler flow / boiler return		1 1/4"	2"	2 1/2"
	Drainage		1/2"		1"

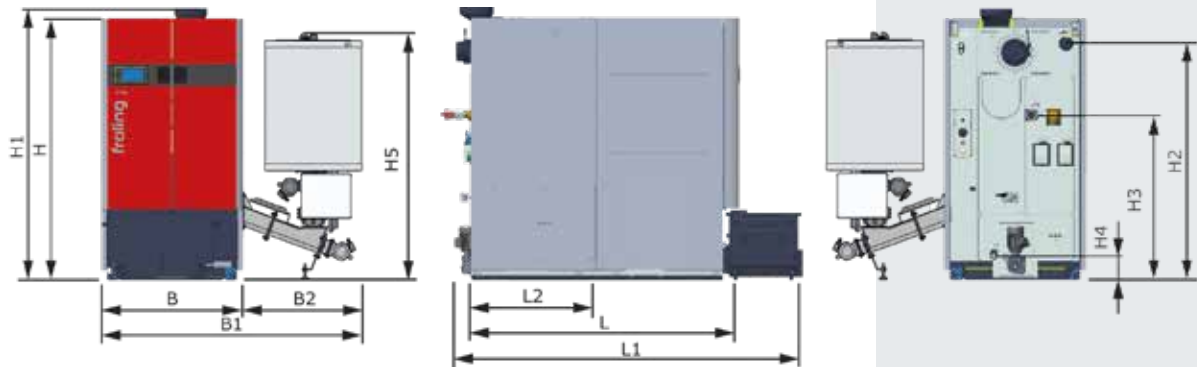
CAUTION: In the case of the T4e 20-110, the flow and return connection are on the side of the stoker and for the T4e 200-250 they are always on the left side of the boiler. The rear flue pipe connection (optional) is installed on the averted side of the stoker on the T4e 20-110 and always on the right-hand side of the boiler for the T4e 200-250.



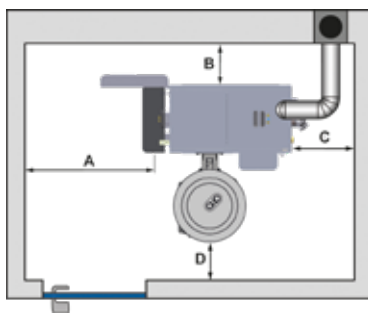
Minimum clearances [mm]		20 - 35	45 - 60	8 - 110	200 - 250
A	Insulated door to wall		700	800	900
B	Side of boiler to wall			150	
C	Back of boiler to wall			500	
D	Stoker to wall			300	
	Minimum room height	1800	2000	2100	2500

PELLET BOILER PT4e 120 - 250

CLEARANCES & TECHNICAL SPECIFICATIONS



Dimensions [mm]	120	200	250
H Boiler height	1740		1950
H1 Total height including flue gas pipe connection	1790		2025
H1* Optional flue gas pipe connection	1210		1350
H2 Height of flow connection	1545		1770
H3 Height of return connection with integrated return temperature control	1135		1240
H4 Height of drain	200		180
H5 Height of suction unit	1717		1805
B Boiler width without insulation (width required)	800		1060
B1 Overall width with suction system	1759		1865
B2 Width of suction system	959		805
L Length of boiler	1420		2005
L1 Total length incl. flue gas pipe connection	1790		2550
L2 Length, back of boiler to stoker connection	890		1310
Flue pipe diameter	179		249
Diameter boiler flow / boiler return	2"		2 1/2"
Drainage		1"	

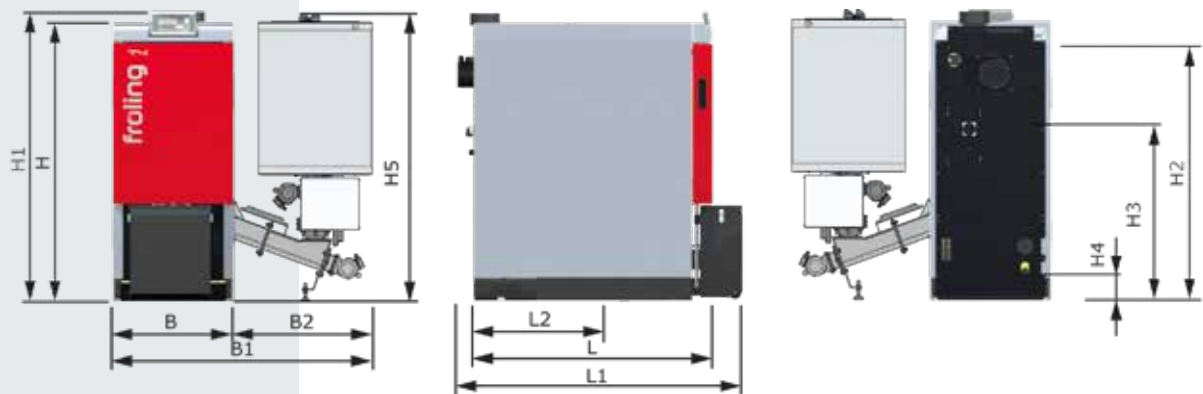


Minimum clearances [mm]	120	200 - 250
A Insulated door to wall	800	900
B Side of boiler to wall		200
C Back of boiler to wall		500
D Stoker to wall		300
Minimum room height	2050	2150

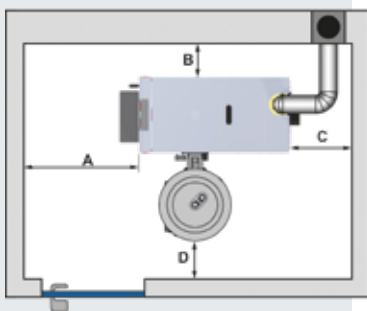
Technical specifications - PT4e		120	200	250
Nominal output	[kW]	120	199	250
Thermal output range	[kW]	36 - 120	59 - 199	75 - 250
Electrical connection	[V/Hz/A]	400V / 50Hz / fused C16A		
Power consumption pellet mode NL/PL	[W]	127/49	120 / 55	162 / 55
Weight of boiler (including stoker, without water)	[kg]	1730	2500	
Boiler capacity (water)	[l]	340	438	
Maximum boiler temperature setting	[°C]	90		
Permitted operating pressure	[bar]	3		
Permitted fuel as per EN ISO 17225 ¹⁾		Part 2: Wood pellets class A1 / D06		

PELLET BOILER PT4 130 - 150

CLEARANCES & TECHNICAL SPECIFICATIONS



Dimensions [mm]		130	150
H	Boiler height		1720
H1	Total height including flue gas pipe connection		1770
H2	Height of flow connection		1540
H3	Height of return connection		200
H4	Height of drain		140
H5	Height of suction unit		1770
B	Boiler width		880
B1	Overall width with suction system		1775
B2	Width of suction system		895
L	Length of boiler		1905
L1	Total length incl. flue gas pipe connection		2300
L2	Length, back of boiler to stoker connection		1305
	Flue pipe diameter		199
	Diameter boiler flow / boiler return		DN65
	Drainage		1"



Minimum clearances [mm]		130 - 150
A	Insulated door to wall	900
B	Side of boiler to wall	200
C	Back of boiler to wall	500
D	Stoker to wall	300
	Minimum room height	2150

Technical specifications - PT4e		130	150
Nominal output	[kW]	130	150
Thermal output range	[kW]	39 - 130	45 - 150
Electrical connection	[V/Hz/A]	400V / 50Hz / fused C16A	
Power consumption pellet mode NL/PL	[W]	240/110	262/110
Weight of boiler (including stoker, without water)	[kg]	1730	1750
Boiler capacity (water)	[l]	340	
Maximum boiler temperature setting	[°C]	90	
Permitted operating pressure	[bar]	3	
Permitted fuel as per EN ISO 17225 ¹⁾		Part 2: Wood pellets class A1 / D06	



Pellet boiler

PE1 Pellet	7 - 35 kW
PE1c Pellet	16 - 22 kW
P4 Pellet	15 - 105 kW



Firewood boiler

S1 Turbo	15 - 20 kW
S3 Turbo	20 - 45 kW
S4 Turbo	15 - 60 kW

Dual fuel boiler

SP Dual compact	15 - 20 kW
SP Dual	15 - 40 kW



Wood chip boiler / Industrial systems

T4e	20 - 250 kW	TI	350 kW
Turbomat	150 - 500 kW	Lambdamat	700 - 1500 kW



Heat and electricity from wood

Fixed bed gasifier CHP	45 - 500 kWel
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