

Zeroridge Biomass Ed 17A

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Fabbri industrial space heating solutions



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WOOD CHIP BOILERS

HDG wood chip boilers overview

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WOOD CHIP BOILERS



Zeroridge Biomass Ed 17A

Compact wood chip boilers overview

Wood chip boiler range

Model range HDG Compact automatic operation boilers	Output kW	Fuel specification	Page								
 <p>Compact 35 Touch control Lambda controlled automatic wood chip boiler</p> <p>Nominal heat output</p> <table border="1"> <tr> <td>Compact 35</td> <td>31 kW</td> </tr> </table>	Compact 35	31 kW		<p>Wood chips Size G30, Water content up to W25</p> <p>BS EN 14961-4:2011 Size according to P31.5 A1 Water content up to M20 Ash A1</p>							
Compact 35	31 kW										
 <p>Compact 45-50-65-80 Touch control Lambda controlled automatic wood chip and shaving boiler</p> <p>Nominal heat output</p> <table border="1"> <tr> <td>Compact 45</td> <td>45 kW</td> </tr> <tr> <td>Compact 50</td> <td>50 kW</td> </tr> <tr> <td>Compact 65</td> <td>65 kW</td> </tr> <tr> <td>Compact 80</td> <td>80 kW</td> </tr> </table>	Compact 45	45 kW	Compact 50	50 kW	Compact 65	65 kW	Compact 80	80 kW		<p>Wood chips Size G30, G50 Water content up to W25 BS EN 14961-4:2011 Size according to P45 A1, A2 Water content up to M25 Ash A1</p> <p>Briquettes Up to 60mm diameter, softly compressed. BS EN 14961-3:2011 A1, A2 Diameter D60 Length L50 Moisture M10 Ash A1.0 Nitrogen N3.0</p> <p>Shavings EN 14961-1:2010 Moisture M10 Ash A1.0 Nitrogen N3.0</p>	
Compact 45	45 kW										
Compact 50	50 kW										
Compact 65	65 kW										
Compact 80	80 kW										
 <p>Compact 100-115 Lambda controlled automatic wood chip and shaving boiler</p> <p>Nominal heat output</p> <table border="1"> <tr> <td>Compact 100</td> <td>100 kW</td> </tr> <tr> <td>Compact 115</td> <td>115 kW</td> </tr> </table>	Compact 100	100 kW	Compact 115	115 kW		<p>Wood chips Size G30, G50 Water content up to W30 BS EN 14961-4:2011 Size up to according P45 A1, A2 Water content up to M30 Ash A2</p> <p>Briquettes Up to 60mm diameter, softly compressed. BS EN 14961-3:2011 A1, A2 Diameter D60 Length L50 Moisture M10 Ash A2 Nitrogen N3.0</p> <p>Shavings EN 14961-1:2010 Moisture M10 Ash A1.0 Nitrogen N3.0</p>					
Compact 100	100 kW										
Compact 115	115 kW										
 <p>Compact 150-200 Lambda controlled automatic wood chip and shaving boiler</p> <p>Nominal heat output</p> <table border="1"> <tr> <td>Compact 150</td> <td>150 kW</td> </tr> <tr> <td>Compact 200</td> <td>199 kW</td> </tr> <tr> <td>Compact 200</td> <td>205 kW</td> </tr> </table>	Compact 150	150 kW	Compact 200	199 kW	Compact 200	205 kW		<p>Wood chips Size G30, G50 Water content up to W30 BS EN 14961-4:2011 Size up to according P45 A1, A2 Water content up to M30 Ash A2</p> <p>Briquettes Up to 60mm diameter, softly compressed. BS EN 14961-3:2011 A1, A2 Diameter D60 Length L50 Moisture M10 Ash A2 Nitrogen N3.0</p> <p>Shavings EN 14961-1:2010 Moisture M10 Ash A1.0 Nitrogen N3.0</p>			
Compact 150	150 kW										
Compact 200	199 kW										
Compact 200	205 kW										
 <p>M Series M 300-M 350-M 400-M 500 Lambda controlled automatic wood chip and shaving boiler</p> <p>Nominal heat output</p> <table border="1"> <tr> <td>M 300</td> <td>299 kW</td> </tr> <tr> <td>M 350</td> <td>350 kW</td> </tr> <tr> <td>M 400</td> <td>400 kW</td> </tr> <tr> <td>M 500</td> <td>500 kW</td> </tr> </table>	M 300	299 kW	M 350	350 kW	M 400	400 kW	M 500	500 kW		<p>Wood chips Size G30, G50 Water content up to W30 BS EN 14961-4:2011 Size up to according P45 A1, A2 Water content up to M30 Ash A2</p> <p>Briquettes Up to 60mm diameter, softly compressed. BS EN 14961-3:2011 A1, A2 Diameter D60 Length L50 Moisture M10 Ash A2 Nitrogen N3.0</p> <p>Shavings EN 14961-1:2010 Moisture M10 Ash A1.0 Nitrogen N3.0</p>	
M 300	299 kW										
M 350	350 kW										
M 400	400 kW										
M 500	500 kW										

Compact wood chip boilers explained



Compact 35

Domestic and/or light commercial



Compact 45-50-65-80

Domestic and/or commercial



Compact 100-115-150-200

Large domestic and/or commercial



M Series 300-350-400-500

Commercial and/or Industrial

Domestic properties and smaller commercial installations

Compact 35-45-50-65-80 range

Commercially engineered wood chip boiler sized for domestic and commercial applications.

As a guide the Compact 25-80 range of chip boilers might suit:

Compact 35-45

Well insulated 4-6 bedroom house with larger than average hot water demand and/or swimming pool. Small to medium commercial application.

Compact 45-50

Medium to large country property or large urban house. Small school or rest home, manufacturing process with heat requirement or space heating.

Compact 65

Medium to large country property or large urban house. Small school, rest space heating.

Compact 80

Large country property or large urban house. Medium rural primary school, rest home, manufacturing process with heat requirement or space heating.

Larger domestic properties and commercial installations

Compact 100-115-150-200 range

Commercially constructed wood chip boiler for heavy load applications with continuous long operation periods or regular stop and start applications. For nominal work loads of 2,000 hours per year.

As a guide the Compact 100-200 range of wood chip boilers might suit: Large country or urban houses. Medium to large hotels, rest homes and medical care. Large shop or showroom properties, such as supermarket, shopping centres and out of town stores. Process applications such as wood fuel drying, food, animal, chicken production.

M Series 300-350-400-500 range

Industrially designed and built wood chip boiler for heavy work loads with nominal working hours of 4,000 hours per year. As a guide the M Series range of wood chip boilers might suit: Schools, large country estates, medium to larger hotels, larger rest homes and medical care establishments. Larger shopping centres or showroom properties, car, supermarket, shopping centres and out of town stores. Process applications such as wood fuel drying, food, animal, chicken production. District heating of housing estates, industrial complexes.

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WOOD CHIP BOILERS

Cascade solutions

Euroheat offer a unique option to link multiple boilers together to match maximum heating demand and minimum requirements. Fitting a single large boiler to meet maximum heat requirements results in very poor operation during part of the year when far less heat is required. Up to 10 Compact boilers or M Series models can be cascaded together.

Almost any application with high energy input either regular or on erratic demand can be suitable for an HDG Compact boiler.



RHI (Renewable Heat Incentive)



The Domestic RHI is calculated on your properties size and heat requirement, successful applicants will receive "deemed" quarterly payments for seven years, but your boiler has to last for 20 years, replacement is not an option as this would be a new installation and the RHI payments may be withdrawn.



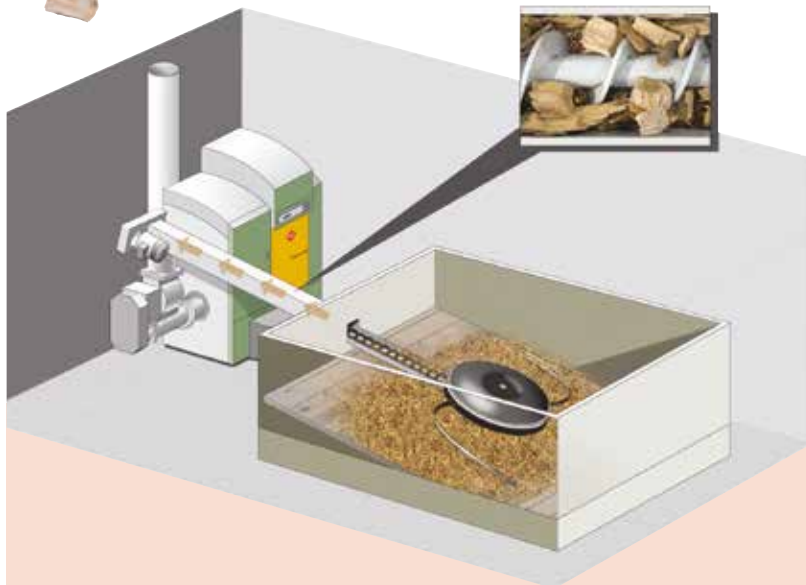
The Non domestic RHI is for a period of twenty years. To make full benefit of the payment structure for both domestic and commercial the boiler you choose must last the 20 year period or more without expensive repairs. Replacement is not an option as this would be a new installation and the RHI payments may be withdrawn.

Why wood chip?

Wood chip boilers are in many ways similar to pellet boilers, except of course for the fuel itself. Modern wood chip boilers are highly efficient, clean burning and are totally automatic. Wood chip boilers are generally more suitable for larger domestic and commercial applications. Some models designed for wood chips can also burn pellets, however boilers designed specifically for pellets cannot generally burn wood chips. A wide range of boiler systems are commercially available but all share the same basic features of a boiler, chip storage facility and a feed mechanism. Wood chips are made from whole trees, branch wood or coppice products which have been mechanically chipped. Ideally the wood needs to have been air-dried before chipping, or chipped then allowed to dry. Wood chips are delivered into a local bunker close to the boiler. On demand the wood chips are augered into the boiler which maintains a constant fuel supply. Wood chip boilers have advanced combustion control technology for constant heat performance, vertical self cleaning heat exchange surfaces and built in safety features such as rotary sluice prior to the final combustion feed auger to prevent any back burn.



HDG boilers have outstanding performance and reliability for efficient and safe operation. HDG chip boilers do not have to run constantly. The control technology monitors constantly the temperatures within the accumulator allowing the boiler, thanks to the advanced auto ignition, to run for shorter periods (as little one hour if required) and then switch off until next needed. This process reduces fuel and running costs while maintaining the desired operating temperature.



Wood chip feed systems

Wood chip boilers employ delivery systems designed to transport wood chips, wood shavings and wood pellets to the boiler.

Wood chips are typically stored in a timber floored bunker. A flexi-blade agitating head feeds the fuel into a central auger which then transports the material into the boiler feed system. For large bunkers the blades are hinged for extra reach, but otherwise work in the same way.

Wood chips are more bulky than pellets. Delivery in bulk is usual for wood chips and provision to deposit them into the bunker by tipping and/or conveying is designed into the installation.

Key considerations are access for vehicles, proximity to boiler and frequency and method of fuel delivery.

Wood chip delivery modules can be installed through 180 degrees left to right of the boiler, which means they can be integrated into almost any location.



The benefits

- Can fully replace fossil fuelled boilers
- Fully Automatic control/feed systems
- Wood chips are lower cost than wood pellets
- Installations can also be designed to burn wood pellets, sawdust and briquettes
- Running costs are stable and reliable
- Good for economy as source fuel can be grown and harvested locally
- Several boilers can be grouped together for redundancy and peak heat demands
- Remote boiler control over network or internet can be provided
- Higher installation cost compared to fossil fuels

The check list

- Require larger fuel bunkers than wood pellets
- Due to initial capital costs more suitable to larger domestic, commercial or industrial installs
- Requires corrected sized graded fuel
- Requires local maintenance and inspection
- Requires annual maintenance by engineer
- Requires occasional ash removal

Zeroridge Biomass Ed 17A

Compact 35 wood chip boiler

Boiler information



Comfortable heating. With wood!

HDG Touch Screen Controller

The HDG **Touch control** maximises combustion and fuel efficiency. This latest generation Lambda controlled boiler has 92% plus operational efficiency. At start up, fuel is incrementally fed on to the tipping grate and automatically ignited, primary and secondary air is precisely added, ensuring that the fire is quickly established. Once the fire has become established, the controller changes from ignition mode to Lambda control. The controller optimises combustion and emission levels by using information provided by the Lambda sensor which continuously samples the flue gas. Information gathered from this analysis allows precise primary and secondary air actuator adjustments, this guarantees low fuel consumption and ensures that maximised annual efficiencies are achieved.

Automatic cleaning of the heat exchanger is a process that maintains efficiency and cleanliness. Any products of combustion removed from the heat exchange surfaces are extracted with the ash.

Automatic ash removal promotes the fully automated ethos. Ash that would normally remain in two containers within the boiler is screw fed into two convenient, simply removed wheeled containers.

Loading the accumulator is also precisely managed; using one three way mixing valve and

3 x PT 100 temperature sensors. A sensor at the top of the accumulator and one at the bottom operate in conjunction with one another to achieve this control. When the boiler is first ignited water circulation is limited to the heat exchanger until the temperature has risen to 60°C, this is a precautionary measure to prevent corrosion within the boiler water jacket. At 60°C the mixing valve gradually starts to open, allowing hot water to leave the closed loop and to start heating the top of the accumulator. Once the water at the bottom of the accumulator reaches its preset temperature the boiler switches off. The boiler is turned back on again when the water at the top of the accumulator decreases to 60°C. This procedure ensures maximum access to the high grade energy and prevents unnecessary boiler cycling.

The Touch controller has a residual heat utilisation programme, when the temperature of the water within the accumulator falls 5°C below that of the water within the boiler, the pump is started and mixing valve opened. This process unloads the heat that was remaining within the boiler and makes it available for use within the building to be heated.

Integrated component protection, during dormant periods (possibly summer). The component protection program is always operational, all electrical components are energised periodically, the Lambda sensor is heated, and the boiler is ventilated, pumps and mixing valves are energised. This process extends component life time and efficiency.

Zeroridge Biomass Ed 17A

HDG Fuel feeding systems

The Compact 35 boiler can be configured to burn wood chips or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG ash disposal

- Ash removal integral 2 x 15 litre containers (standard)
- Ash removal, automatic into 2 x 35 litre external ash containers (optional)

Automatic functions

- Automatic ignition
- Automatic heat exchanger cleaning to maintain high efficiency
- Automatic tipping grate making the boiler less fuel sensitive
- Integrated accumulator loading management

HDG construction

- The boiler is manufactured in left and right hand versions facilitating simple placement
- Boiler body – heat exchanger: welded construction, tension rod reinforced 4-5 mm thick boiler plate
- Certified in accordance to the pressure equipment directive 97/23/EG boiler class 3, the highest standard
- RAL colours - Green (RAL 6011) Traffic grey (RAL 7043)
- Integral thermal heat discharge within the heat exchanger
- Secondary combustion chamber: modular design, manufactured from cast refractory bricks

HDG safety features

- Extremely robust rotary sluice (maximum operational safety)
- Heat exchanger thermal discharge
- Chip feeder quenching
- Fuel over fill sensor
- Excess heat exchanger temperature protection. Electronic via the Touch Screen Control and mechanical via wax filled manual reset thermostat
- Automatic reverse on feed and dosing motors
- Minimum oxygen level automatic fuelling pause

HDG standards and approvals

- Type tested to EN 303-5
- The Compact passes the new standards to be set for Renewable Heat Incentive emission limits for total particulate matter and oxides of nitrogen 30g/GJ particulate matter and 150g/GJ NOx
- Approved for use in smokeless zones
- MCS approved

Touch Control





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WOOD CHIP BOILERS


Compact 35 wood chip boiler













Equipment prices and order codes

Compact 35 with TBZ150 auger transfer feed system			Order code	£ ex VAT	PG	Page
	Compact 35 left side version, with 4.3" touch screen	3 Phase (400V)	HDG3014T	14,065.00	40	
	Compact 35 right side version, with 4.3" touch screen	3 Phase (400V)	HDG3015T	14,065.00		
	Compact 35 left side version, with 4.3" touch screen	Single Phase (230V)	HDG3030T	14,615.00		
	Compact 35 right side version, with 4.3" touch screen	Single Phase (230V)	HDG3031T	14,615.00		
Model shown left side model with ash containers						
All models include automatic heat exchanger cleaning						

Touch screen options		Order code	£ ex VAT	PG	Page
	HDG Touch Control XL 7" touchscreen, integrated Web server with email and SMS. Surcharge with new boiler purchase instead of standard controller	HDG3505	435.00	40	

Note, control sensors depending on type of installation are required. To determine requirement contact the Euroheat design team

Ash removal option		Order code	£ ex VAT	PG	Page
	Automatic removal to two external 35 litre ash containers left side version	HDG3456	1,125.00	40	
	Automatic removal to two external 35 litre ash containers right side version	HDG3457	1,125.00		

System and hydraulic components		Order code	£ ex VAT	PG	Page
	Return temperature kit with energy efficient pump Includes cast iron pre-connected assembly for fast installation. Actuator SM 4.10, 2 x ball valves DN 32 for isolation. Includes insulation. 180 mm, DN 32	PL2028	545.00	41	 I18
	Boiler safety module Combined pressure gauge, autovent, pressure relief, with two part insulation. DN25, up to 50 kW	PL2001	48.00		 I31
	Thermal safety device DN 20 file pocket and water connections	PL2000	68.00		 I16
	Expansion vessel 150 litre. Minimum size to suit boiler/accumulator	EV4705	197.00		 I17
	Accumulator 1,000 litre. Minimum size	TS4810	1,243.00		 I31
	Accumulator temperature gauges Minimum of 2 recommended	PL2016	24.00		
	Water pressure valve 0.5 bar activation 230V	PL2062	68.00		

Compact 45-50 wood chip boiler

Boiler information



Comfortable heating. With wood!

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WOOD CHIP BOILERS

HDG Touch Screen Controller

The HDG touch control processes any requirement to maximise combustion and fuel efficiency. This latest generation Lambda controlled boiler has 90% plus operational efficiency.

At start up fuel is incrementally fed on to the tipping grate, and automatically ignited, primary and secondary air is precisely added, ensuring that the fire is quickly established. Once the fire has become established, the controller changes from ignition mode to Lambda control. The controller optimises combustion and emission levels by using information provided by the Lambda sensor which continuously samples the flue gas. Information gathered from this analysis allows precise primary and secondary air actuator adjustments, this guarantees low fuel consumption and ensures that maximised annual efficiencies are achieved.

Automatic cleaning of the heat exchanger is a process that maintains efficiency and cleanliness. Any products of combustion removed from the heat exchange surfaces are extracted with the ash.

Automatic ash removal promotes the fully automated ethos. Ash that would normally remain in two containers within the boiler is screw fed into two convenient, simply removed wheeled containers.

Loading the accumulator is also precisely managed; using one three way mixing valve and 3 x PT 1000 temperature sensors. A sensor at the top of the accumulator and one at the bottom operate in conjunction with one another to achieve this control. When the boiler is first ignited water circulation is limited to the heat exchanger until the temperature has risen to 60°C, this is a precautionary measure to prevent corrosion within the boiler water jacket. At 60°C the mixing valve gradually starts to open, allowing hot water to leave the closed loop and to start heating the top of the accumulator. Once the water at the bottom of the accumulator reaches its preset temperature the boiler switches off. The boiler is turned back on again when the water at the top of the accumulator decreases to 60°C. This procedure ensures maximum access to the high grade energy and prevents unnecessary boiler cycling.

The Touch Screen Controller has a residual heat utilisation programme, when the temperature of the water within the accumulator falls 5°C below that of the water within the boiler, the pump is started and mixing valve opened. This process unloads the heat that was remaining within the boiler and makes it available for use within the building to be heated.

Integrated component protection, during dormant periods (possibly summer). The component protection program is always operational, all electrical components are energised periodically, the Lambda sensor is heated, and the boiler is ventilated, pumps and mixing valves are energised. This process extends component life time and efficiency.

HDG Fuel feeding systems

The Compact 45-50 boiler can be configured to burn wood chips or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG ash disposal

- Ash removal integral 2 x 15 litre containers (standard)
- Ash removal, automatic into 2 x 35 litre external ash containers (optional)

Automatic functions

- Automatic ignition
- Automatic heat exchanger cleaning to maintain high efficiency
- Automatic tipping grate making the boiler less fuel sensitive
- Integrated accumulator loading management

HDG construction

- The boiler is manufactured in left and right hand versions facilitating simple placement
- Boiler body – heat exchanger: welded construction, tension rod reinforced 4-5 mm thick boiler plate
- Certified in accordance to the pressure equipment directive 97/23/EG boiler class 3, the highest standard
- RAL colours - Green (RAL 6011) Traffic grey (RAL 7043)
- Integral thermal heat discharge within the heat exchanger
- Secondary combustion chamber: modular design, manufactured from cast refractory bricks

HDG safety features

- Extremely robust rotary sluice (maximum operational safety)
- Heat exchanger thermal discharge
- Chip feeder quenching
- Fuel over fill sensor
- Excess heat exchanger temperature protection. Electronic via the Touch Screen Controller and mechanical via wax filled manual reset thermostat
- Automatic reverse on feed and dosing motors
- Minimum oxygen level automatic fuelling pause

HDG standards and approvals


- Type tested to EN 303-5
- The Compact passes the new standards to be set for Renewable Heat Incentive emission limits for total particulate matter and oxides of nitrogen 30g/Gj particulate matter and 150g/Gj NOx
- Approved for use in smokeless zones
- MCS approved


Touch Control




Compact 45-50 wood chip boiler













Equipment prices and order codes

Boiler pricing including automatic boiler flue way cleaning			Order code	£ ex VAT	PG	Page
	Compact 45 left side version, with 4.3" touch screen	3 Phase (400V)	HDG3322T	15,070.00	40	
	Compact 45 right side version, with 4.3" touch screen	3 Phase (400V)	HDG3323T	15,070.00		
	Compact 45 left side version, with 4.3" touch screen	Single Phase (230V)	HDG3324T	15,615.00		
	Compact 45 right side version, with 4.3" touch screen	Single Phase (230V)	HDG3325T	15,615.00		
	Compact 50 left side version, with 4.3" touch screen	3 Phase (400V)	HDG3000T	15,995.00		
	Compact 50 right side version, with 4.3" touch screen	3 Phase (400V)	HDG3001T	15,995.00		
	Compact 50 left side version, with 4.3" touch screen	Single Phase (230V)	HDG3016T	16,555.00		
	Compact 50 right side version, with 4.3" touch screen	Single Phase (230V)	HDG3017T	16,555.00		
Model shown left side version with ash removal option Includes automatic flue way cleaning						

Touch screen options			Order code	£ ex VAT	PG	Page
	HDG Touch Control XL 7" touchscreen, integrated Web server with email and SMS. Surcharge with new boiler purchase instead of standard controller		HDG3505	435.00	40	

Note, control sensors depending on type of installation are required. To determine requirement contact the Euroheat design team

Ash removal option			Order code	£ ex VAT	PG	Page
	Automatic removal to two external 35 litre ash containers left side version		HDG3459	1,370.00	40	
	Automatic removal to two external 35 litre ash containers right side version		HDG3460	1,370.00		

System and hydraulic components			Order code	£ ex VAT	PG	Page
	Return temperature kit 55-32 with energy efficient pump, Includes cast iron pre-connected assembly for fast installation. Actuator SM 4.10, 2 x ball valves DN 32 for isolation. Pump HE 55-32 with insulation, 180 mm, DN 32		PL2028	545.00	41	 I18
	Boiler safety module Combined pressure gauge, autovent, pressure relief, two part insulation, up to 50 kW		PL2001	48.00		 I31
	Thermal safety device DN 20 file pocket and water connections		PL2000	68.00		
	Expansion vessel 150 litre. Minimum size to suit boiler/accumulator		EV4705	197.00		 I16
	Accumulator 1,250 litre. Minimum size Compact 45-50		TS4811	1,311.00		 I17
	Accumulator temperature gauges Minimum of 4 recommended		PL2016	24.00		
	Water pressure valve 0.5 bar activation 230V		PL2062	68.00		 I31

Compact 65 wood chip boiler

Boiler information



Comfortable heating. With wood!

HDG Touch Screen Controller

The HDG touch control processes any required to maximise combustion and fuel efficiency. This latest generation Lambda controlled boiler has 92% plus operational efficiency.

At start up, fuel is incrementally fed on to the tipping grate, and automatically ignited, primary and secondary air is precisely added, ensuring that the fire is quickly established. Once the fire has become established, the controller changes from ignition mode to Lambda control. The controller optimises combustion and emission levels by using information provided by the Lambda sensor which continuously samples the flue gas. Information gathered from this analysis allows precise primary and secondary air actuator adjustments, this guarantees low fuel consumption and ensures that maximised annual efficiencies are achieved.

Automatic cleaning of the heat exchanger is a process that maintains efficiency and cleanliness. Any products of combustion removed from the heat exchange surfaces are extracted with the ash.

Automatic ash removal promotes the fully automated ethos. Ash that would normally remain in two containers within the boiler is screw fed into two convenient, simply removed wheeled containers.

Loading the accumulator is also precisely managed; using one three way mixing valve and two PT 100 temperature sensors. A sensor at the top of the accumulator and one at the bottom operate in conjunction with one another to achieve this control. When the boiler is first ignited water circulation is limited to the heat exchanger until the temperature has risen to 60°C, this is a precautionary measure to prevent corrosion within the boiler water jacket. At 60°C the mixing valve gradually starts to open, allowing hot water to leave the closed loop and to start heating the top of the accumulator. Once the water at the bottom of the accumulator reaches its preset temperature the boiler switches off. The boiler is turned back on again when the water at the top of the accumulator decreases to 60°C. This procedure ensures maximum access to the high grade energy and prevents unnecessary boiler cycling.

The Compatronic controller has a residual heat utilisation programme, when the temperature of the water within the accumulator falls 5°C below that of the water within the boiler, the pump is started and mixing valve opened. This process unloads the heat that was remaining within the boiler and makes it available for use within the building to be heated.

Integrated component protection, during dormant periods (possibly summer).

The component protection program is always operational, all electrical components are energised periodically, the Lambda sensor is heated, and the boiler is ventilated, pumps and mixing valves are energised. This process extends component life time and efficiency.

The HDG Compatronic is extendable with HDG Hydronic and HDG Hydronic plus.

HDG Fuel feeding systems

The compact 65 boiler can be configured to burn wood chips or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG ash disposal

- Ash removal integral 2 x 15 litre containers (standard)
- Ash removal, automatic into 2 x 35 litre external ash containers (optional)

Automatic functions

- Automatic ignition
- Automatic heat exchanger cleaning to maintain high efficiency
- Automatic tipping grate making the boiler less fuel sensitive
- Integrated accumulator loading management

HDG construction

- The boiler is manufactured in left and right hand versions facilitating simple placement
- Boiler body – heat exchanger: welded construction, tension rod reinforced 4-5 mm thick boiler plate
- Certified in accordance to the pressure equipment directive 97/23/EG boiler class 3, the highest standard
- Cladding, preassembled insulated powder coated steel: main body green (RAL 6011) yellow (RAL 1007) Inspection doors, chip feeder traffic grey (RAL 7043)
- Integral thermal heat discharge within the heat exchanger
- Secondary combustion chamber: modular design, manufactured from cast refractory bricks

HDG safety features

- Extremely robust rotary sluice (maximum operational safety)
- Heat exchanger thermal discharge
- Chip feeder quenching
- Fuel over fill sensor
- Excess heat exchanger temperature protection. Electronic via the Compatronic control & mechanical via wax filled manual reset thermostat
- Automatic reverse on feed and dosing motors
- Minimum oxygen level automatic fuelling pause

HDG standards and approvals


- Type tested to EN 303-5
- The Compact passes the new standards to be set for Renewable Heat Incentive emission limits for total particulate matter and oxides of nitrogen 30g/GJ particulate matter and 150g/GJ NOx
- Approved for use in smokeless zones
- MCS approved

Touch Control




Compact 65 wood chip boiler


Equipment prices and order codes













Boiler pricing including automatic boiler-way cleaning			Order code	£ ex VAT	PG	Page
	Compact 65 left side version, with 4.3" touch screen	3 Phase (400V)	HDG3002T	15,995.00	40	
	Compact 65 right side version, with 4.3" touch screen	3 Phase (400V)	HDG3003T	15,995.00		
	Compact 65 left side version, with 4.3" touch screen	Single Phase (230V)	HDG3018T	16,555.00		
	Compact 65 right side version, with 4.3" touch screen	Single Phase (230V)	HDG3019T	16,555.00		

Model shown left side version with ash removal option
Includes automatic flue way cleaning

Touch screen options						
	HDG Touch Control XL 7" touchscreen, integrated Web server with email and SMS. Surcharge with new boiler purchase instead of standard controller	HDG3505	435.00	40		

Note, control sensors depending on type of installation are required. To determine requirement contact the Euroheat design team

Ash removal option						
	Automatic removal to two external 35 litre ash containers left side version	HDG3459	1,370.00	40		
	Automatic removal to two external 35 litre ash containers right side version	HDG3460	1,370.00			

System and hydraulic components						
	Return temperature kit U 80A-32 energy efficient pump Includes cast iron pre-connected assembly for fast installation. Actuator SM 4.6, 2 x ball valves DN 32. Pump U 80A-32 with insulation, 180mm, DN32	PL2035	668.00	41		 I18
	Boiler safety module Combined pressure gauge, autovent, pressure relief, two part insulation, up to 100 kW	PL2002	78.00			 I31
	Thermal safety device DN 20 file pocket and water connections	PL2000	68.00			 I16
	Expansion vessel 200 litre. Minimum size to suit boiler/accumulator	EV4706	237.00			 I17
	Accumulator 1,500 litre. Minimum size Compact 65	TS4812	1,356.00			 I31
	Accumulator temperature gauges Minimum of 4 recommended	PL2016	24.00			
	Water pressure valve 0.5 bar activation 230V	PL2062	68.00			

Compact 80 wood chip boiler

Boiler information



Comfortable heating. With wood!

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WOOD CHIP BOILERS

HDG Touch Screen Controller

The HDG touch control processes any required to maximise combustion and fuel efficiency. This latest generation Lambda controlled boiler has 90% plus operational efficiency. At start up, fuel is incrementally fed on to the tipping grate, and automatically ignited, primary and secondary air is precisely added, ensuring that the fire is quickly established. Once the fire has become established, the controller changes from ignition mode to Lambda control. The controller optimises combustion and emission levels by using information provided by the Lambda sensor which continuously samples the flue gas. Information gathered from this analysis allows precise primary and secondary air actuator adjustments, this guarantees low fuel consumption and ensures that maximised annual efficiencies are achieved.

Automatic cleaning of the heat exchanger is a process that maintains efficiency and cleanliness. Any products of combustion removed from the heat exchange surfaces are extracted with the ash.

Automatic ash removal promotes the fully automated ethos. Ash that would normally remain in two containers within the boiler is screw fed into two convenient, simply removed wheeled containers.

Loading the accumulator is also precisely managed; using one three way mixing valve and 3 x PT 1000 temperature sensors. A sensor at the top of the accumulator and one at the bottom operate in conjunction with one another to achieve this control. When the boiler is first ignited water circulation is limited to the heat exchanger until the temperature has risen to 60°C, this is a precautionary measure to prevent corrosion within the boiler water jacket. At 60°C the mixing valve gradually starts to open, allowing hot water to leave the closed loop and to start heating the top of the accumulator.

Once the water at the bottom of the accumulator reaches its preset temperature the boiler switches off. The boiler is turned back on again when the water at the top of the accumulator decreases to 60°C. This procedure ensures maximum access to the high grade energy and prevents unnecessary boiler cycling.

The Touch Screen Controller has a residual heat utilisation programme, when the temperature of the water within the accumulator falls 5°C below that of the water within the boiler, the pump is started and mixing valve opened. This process unloads the heat that was remaining within the boiler and makes it available for use within the building to be heated.

Integrated component protection, during dormant periods (possibly summer). The component protection program is always operational, all electrical components are energised periodically, the Lambda sensor is heated, and the boiler is ventilated, pumps and mixing valves are energised. This process extends component life time and efficiency.

HDG Fuel feeding systems

The compact 80 boiler can be configured to burn wood chips or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG ash disposal

- Ash removal, automatic into 2 x 35 litre external ash containers (standard)

Automatic functions

- Automatic ignition
- Automatic heat exchanger cleaning to maintain high efficiency
- Automatic tipping grate making the boiler less fuel sensitive
- Integrated accumulator loading management

HDG construction

- The boiler is manufactured in left and right hand versions facilitating simple placement
- Boiler body – heat exchanger: welded construction, tension rod reinforced 4-5 mm thick boiler plate
- Certified in accordance to the pressure equipment directive 97/23/EG boiler class 3, the highest standard
- RAL colours - Green (RAL 6011) Traffic grey (RAL 7043)
- Integral thermal heat discharge within the heat exchanger
- Secondary combustion chamber: modular design, manufactured from cast refractory bricks

HDG safety features

- Extremely robust rotary sluice (maximum operational safety)
- Heat exchanger thermal discharge
- Chip feeder quenching
- Fuel over fill sensor
- Excess heat exchanger temperature protection. Electronic via the Compatronic control & mechanical via wax filled manual reset thermostat
- Automatic reverse on feed and dosing motors
- Minimum oxygen level automatic fuelling pause

HDG standards and approvals


- Type tested to EN 303-5
- The Compact passes the new standards to be set for Renewable Heat Incentive emission limits for total particulate matter and oxides of nitrogen 30g/GJ particulate matter and 150g/GJ NO_x
- Approved for use in smokeless zones
- MCS approved

Touch Control




Compact 80 wood chip boiler

Equipment prices and order codes













Compact 80 with TBZ150 auger transfer feed system		Order code	£ ex VAT	PG	Page
	Compact 80 left side version, with 4.3" touch screen	3 Phase (400V)	HDG3010	22,085.00	40
	Compact 80 right side version, with 4.3" touch screen	3 Phase (400V)	HDG3011	22,085.00	
	Compact 80 left side version, with 4.3" touch screen	Single Phase (230V)	HDG3026	22,630.00	
	Compact 80 right side version, with 4.3" touch screen	Single Phase (230V)	HDG3027	22,630.00	

All Compact 80 versions include automatic heat exchanger cleaning and external de-ashing as standard

Model shown left side version shown

Touch screen options		Order code	£ ex VAT	PG	Page
	HDG Touch Control XL 7" touchscreen, integrated Web server with email and SMS. Surcharge with new boiler purchase instead of standard controller	HDG3505	435.00	40	

Note, control sensors depending on type of installation are required. To determine requirement contact the Euroheat design team

System and hydraulic components		Order code	£ ex VAT	PG	Page
	HDG return temperature control for HDG Compact 80 Three-way mixing valve DN 40. ID DN 40. SM 4.10 servo motor Rotation time 150 seconds, 230 V Circulation pump Wilo Stratos 40/1-4	PL2056	1,140.00	41	 I18
	Boiler safety module Combined pressure gauge, autovent, pressure relief, with two part insulation. DN25, up to 100 kW	PL2002	78.00		 I31
	Thermal safety device DN 20 file pocket and water connections	PL2000	68.00		
	Expansion vessel 250 litre. Minimum size to suit boiler/accumulator	EV4707	293.00		 I16
	Accumulator 2,000 litre. Minimum size	TS4813	1,786.00		 I17
	Accumulator temperature gauges Minimum 4 recommended	PL2016	24.00		
	Water pressure valve 0.5 bar activation 230V	PL2062	68.00		 I31



Compact 35-45-50-65-80

Function and design with flexi blade wood chip delivery system

The temperature measured by the **combustion chamber temperature sensor** is the reference variable for required primary air and fuelling rate. If the combustion temperature exceeds the set-point, the controller will prevent more fuel being introduced until it reaches an acceptable level. In addition to combustion control, this measurement will indicate to the controller that the ignition system will need to be used on start up, or the embers remaining from the previous burn will light the new fuel.

The **automatic cleaning system** periodically raises and lowers the turbulators which are suspended within the channels of the heat exchanger. This motion removes the ash that adheres to the exchanger surface. While not being used to clean the heat exchanger the blades of the cleaning system cause turbulence in the flue gas which serves to force more heat into the water jacket.

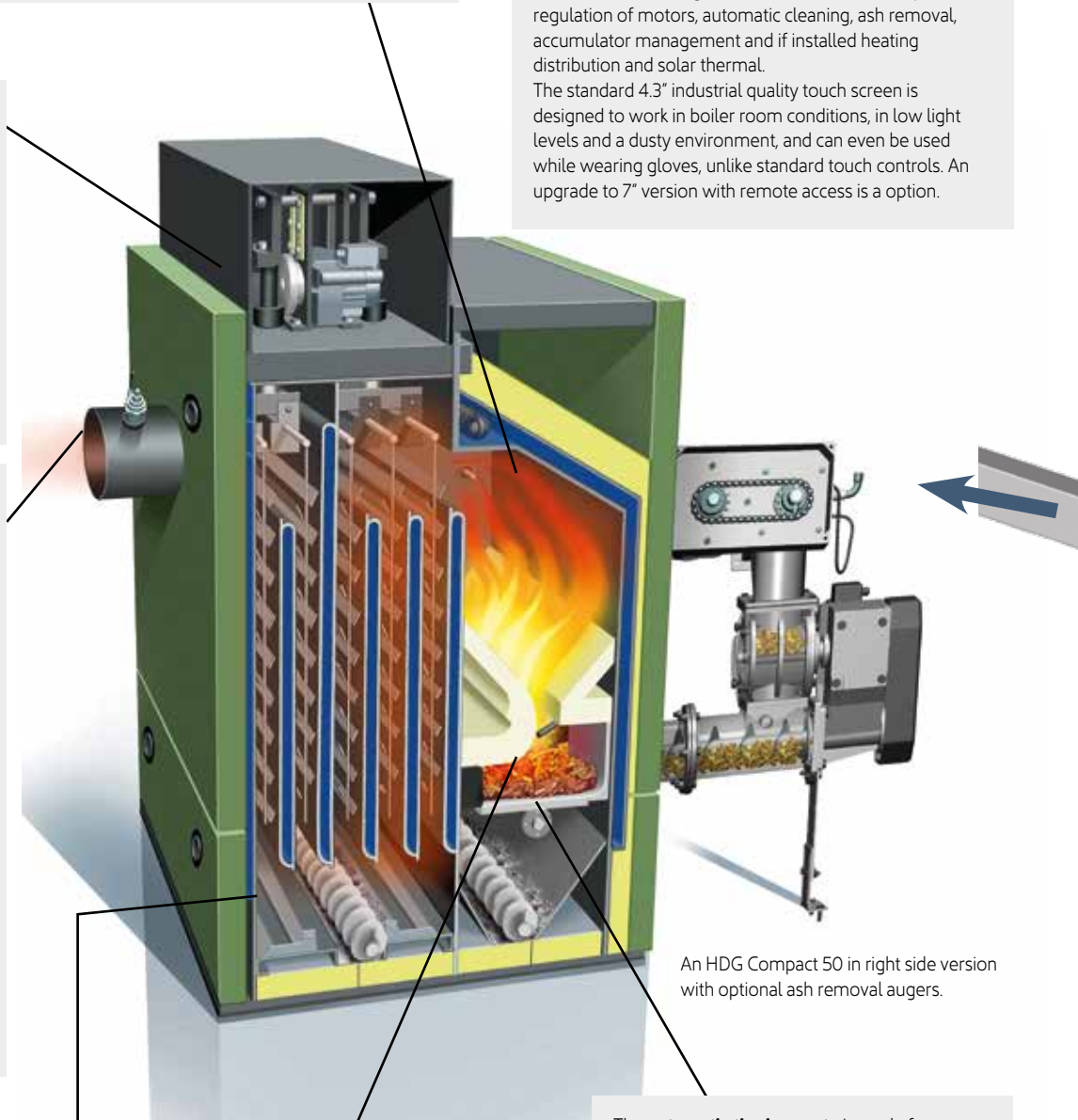
The **Lambda sensor** measures the residual oxygen in the flue and it is the reference variable for the secondary air quantity. The secondary air is transferred over a separate nozzle channel to the combustion gases in the combustion chamber. This way even with fluctuating combustion material quality the best combustion efficiency can be achieved with the available fuel. The Lambda sensor is automatically calibrated by the control system. By means of the adjustable additional function "Lambda-Stop", the control system automatically inhibits the fuel flow if the oxygen value falls below a minimal level. The exhaust temperature sensor also required for the combustion technology efficiency calculation.

The **automatic ash removal** - is standard on the HDG Compact 80 series and optionally available for HDG Compact 25/35/50/65. It transfers the combustion and fly ash into two external ash containers of 35 litre volume each. The two ash removal augers have 8mm auger lining. In order to achieve longer ash container operation times the combustion residuals are additionally compressed. The movable ash containers are locked on the boiler by a safety lock.

The **over fill lever** prevents too much fuel being loaded onto the grate. When the arm is moved the dosage auger is stopped ("material stop") and will re-start when the fuel has been burnt. This is one of the mechanisms which prevents the boiler from over firing. During ignition if the fuel has not ignited on the first run, the second run may activate the material stop. In this case the start up operation is moved straight to the ignition phase, and on to warm up in the usual way.

The **automatic tipping grate** is made from grey cast iron. It is air cooled during operation by the primary air, and fuel is fed onto the grate by the constant running TBZ auger. This is to minimise the residual fuel in the TBZ and prevent burn back. Periodically the grate tips the ash into an ash container beneath or onto the auger below if ash removal is fitted. The grate is in two sections, and when it tips a small portion of the grate remains in situ to hold burning embers for igniting the fresh fuel which is introduced after the tipping operation is completed.

The **HDG Touch Control** is at the forefront of the entire control strategy for the touch controller range. Connected via MODBUS to boiler specific control modules it receives information from all sensors and controls outputs to all electrical components in the boilers. The result is a clear and concise interface which displays and controls all functions including the fuel feed, combustion, power regulation of motors, automatic cleaning, ash removal, accumulator management and if installed heating distribution and solar thermal. The standard 4.3" industrial quality touch screen is designed to work in boiler room conditions, in low light levels and a dusty environment, and can even be used while wearing gloves, unlike standard touch controls. An upgrade to 7" version with remote access is a option.



An HDG Compact 50 in right side version with optional ash removal augers.

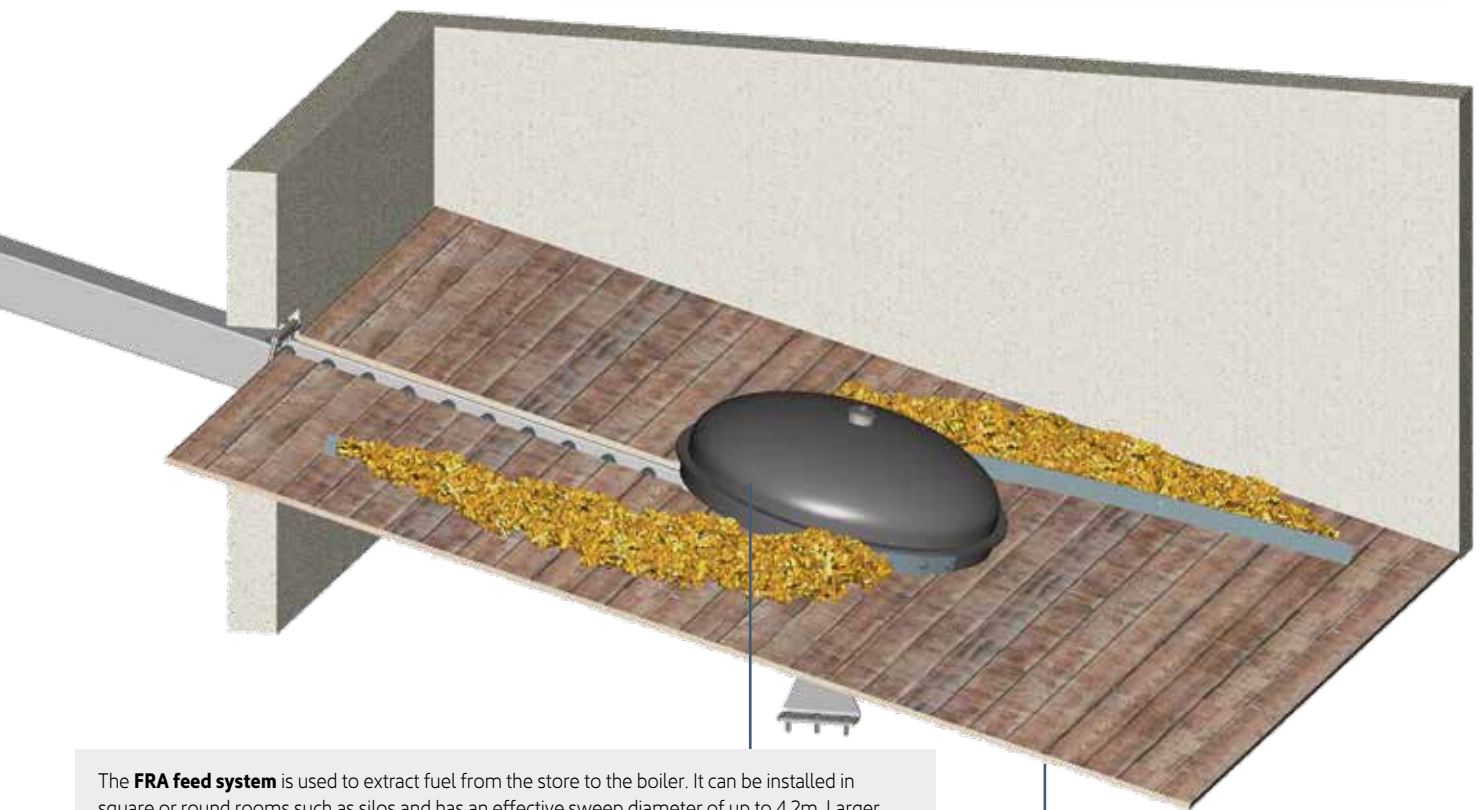
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WOOD CHIP BOILERS



FRA spring blade feed system



FRA spring blade feed system with TFQ lift auger



The **FRA feed system** is used to extract fuel from the store to the boiler. It can be installed in square or round rooms such as silos and has an effective sweep diameter of up to 4.2m. Larger stores can be made by building sloping sides down to the sweep radius. The floor of the store is otherwise flat, on the plane of the auger. This is usually around 18 degrees the maximum being 20 degrees for wood chip, or 5 degrees for pellet or briquettes.

Spring arms that are connected to a large central dome expand as the store empties and they sweep chip into the open section of the transfer auger. The dome is driven by a shaft inside the auger which is connected to a low maintenance gear box under the store. The auger and drive shaft are driven simultaneously by a single motor outside the fuel store, but a link can be removed if the auger needs to be reversed.

The base of the **fuel store floor** is built by the installer after the FRA has been positioned to give an accurate datum to build from. Ventilation is required to the area below the floor either through the wall, or up to high level inside the store. The aperture of the open part of the auger can be adjusted for different fuel types.

Technical dimension sheets and installation suggestions can be found at www.euroheat.co.uk/hdg.



Compact 35 wood chip kits

Equipment prices and order codes

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WOOD CHIP BOILERS

Compact 35 with TBZ 150 auger transfer system



Compact 35 with TBZ 150 kit - left hand three phase	TP1116	16,997.00
Compact 35 with TBZ 150 kit - right hand three phase	TP1117	
Compact 35 with TBZ 150 kit - left hand single phase	TP1118	17,547.00
Compact 35 with TBZ 150 kit - right hand single phase	TP1119	



Includes:

Return temperature control kit, boiler safety module, thermal safety devices, flue starter kit and support stand, bi-metallic temperature gauges, 150 litre expansion vessel, nickel cap valve, 1000 litre H2O accumulator

The above boilers come with:

A full 10 year HDG warranty • • See page M12 for full details

Also included free of charge

Purpose designed wall mounted record keeping and service equipment centre

Options

FRA flexiblade delivery system Is the recommended way to feed wood chip from your storage to the boiler • See page <?> for full details.

The Compact 35 Touch control can be expanded to provide weather compensated heating and domestic hot water production at a fraction of the normal price with the **Heating Weather Compensation and Hot Water Pack**. This increases and decreases the radiator temperatures based on current outdoor temperatures, ensuring comfort levels while saving energy. This provides safe hygienic domestic hot water from a new or existing hot water cylinder.

The **Solar Thermal Pack** comes complete and ready to install. The installation is straight forward and offers the benefit of free energy during the summer. Ideal as a top up on summer days.

FRA flexiblade delivery system



FRA 2.5 flexi blade delivery system

HDG3118

4,995.00

Weather Compensated Heating and Hot Water Pack



Compact 25-80 Heating and Hot Water Pack

Temperature controlled mixed pump station with HE35 pump, unmixed pump station with U35 pump, starter and extension distributors, flow sensor, immersion sensor

TP2004

889.00

Compact 45 wood chip kits

Equipment prices and order codes

Compact 45 with TBZ 150 auger transfer system		Order code	£ ex VAT
	Compact 45 with TBZ 150 kit - left hand three phase	TP1120	18,058.00
	Compact 45 with TBZ 150 kit - right hand three phase	TP1121	
	Compact 45 with TBZ 150 kit - left hand single phase	TP1122	18,603.00
	Compact 45 with TBZ 150 kit - right hand single phase	TP1123	
	Compact 50 with TBZ 150 kit - left hand three phase	TP1148	18,983.00
	Compact 50 with TBZ 150 kit - right hand three phase	TP1149	
	Compact 50 with TBZ 150 kit - left hand single phase	TP1150	19,543.00
	Compact 50 with TBZ 150 kit - right hand single phase	TP1151	



Includes:

Return temperature control kit, boiler safety module, thermal safety devices, flue starter kit and support stand, bi-metallic temperature gauges, 150 litre expansion vessel, nickel cap valve, 1,250 litre H2O accumulator

The above boilers come with:

A full 10 year HDG warranty • See page M12 for full details

Also included free of charge

Purpose designed wall mounted record keeping and service equipment centre

Options

FRA flexiblade delivery system Is the recommended way to feed wood chip from your storage to the boiler. • See page <?> for full details

The Compact 45 Touch control can be expanded to provide weather compensated heating and domestic hot water production at a fraction of the normal price with the **Heating Weather Compensation and Hot Water Pack**. This increases and decreases the radiator temperatures based on current outdoor temperatures, ensuring comfort levels while saving energy. This provides safe hygienic domestic hot water from a new or existing hot water cylinder.

The **Solar Thermal Pack** comes complete and ready to install. The installation is straight forward and offers the benefit of free energy during the summer.

FRA Flexiblade delivery system



FRA 2.5 flexi blade delivery system

HDG3118

4,995.00

Weather Compensated Heating and Hot Water Pack



Compact 25-80 Heating and Hot Water Pack

Temperature controlled mixed pump station with HE35 pump, unmixed pump station with U35 pump, starter and extension distributors, flow sensor, immersion sensor

TP2004

889.00

WOOD CHIP BOILERS

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Compact 65 wood chip kits

Equipment prices and order codes

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WOOD CHIP BOILERS

Compact 65 with TBZ 150 auger transfer system



	Order code	£ ex VAT
Compact 65 with TBZ 150 kit - left hand three phase	TP1124	19,221.00
Compact 65 with TBZ 150 kit - right hand three phase	TP1125	
Compact 65 with TBZ 150 kit - left hand single phase	TP1126	19,781.00
Compact 65 with TBZ 150 kit - right hand single phase	TP1127	



Includes:
Return temperature control kit, variable speed flue fan, boiler safety module, thermal safety devices, flue starter kit and support stand, bi-metallic temperature gauges, 200 litre expansion vessel, nickel cap valve, 1,500 litre H₂O accumulator



The HDG Compact 65 boiler comes with:
A full 10 year HDG warranty • • See page M12 for full details
Also included free of charge
Purpose designed wall mounted record keeping and service equipment centre



Options

FRA Flexiblade delivery system Is the recommended way to feed wood chip from your storage to the boiler • • See page <?> for full details.

The Compact 65 Touch control can be expanded to provide weather compensated heating and domestic hot water production at a fraction of the normal price with the **Heating Weather Compensation and Hot Water Pack**. This increases and decreases the radiator temperatures based on current outdoor temperatures, ensuring comfort levels while saving energy. This provides safe hygienic domestic hot water from a new or existing hot water cylinder.

The **Solar Thermal Pack** comes complete and ready to install. The installation is straight forward and offers the benefit of free energy during the summer. Ideal as a top up on summer days. Ideal as a top up on summer days.

FRA Flexiblade delivery system



FRA 2.5 flexi blade delivery system	HDG3119	5,385.00
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Weather Compensated Heating and Hot Water Pack



Compact 25-80 Heating and Hot Water Pack Temperature controlled mixed pump station with HE35 pump, unmixed pump station with U35 pump, starter and extension distributors, flow sensor, immersion sensor	TP2004	889.00
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Compact 80 wood chip kits

Equipment prices and order codes

Compact 80 with TBZ 150 auger transfer system		Order code	£ ex VAT
	Compact 80 with TBZ 150 kit - left hand three phase	TP1128	25,727.00
	Compact 80 with TBZ 150 kit - right hand three phase	TP1129	
	Compact 80 with TBZ 150 kit - left hand single phase	TP1130	26,272.00
	Compact 80 with TBZ 150 kit - right hand single phase	TP1131	



Includes:

Return temperature control kit, variable speed flue fan, boiler safety module, thermal safety devices, flue starter kit and support stand, bi-metallic temperature gauges, 200 litre expansion vessel, nickel cap valve, 2,000 litre H₂O accumulator



The HDG Compact 65 boiler comes with:

A full 10 year HDG warranty •• See page M12 for full details



Also included free of charge

Purpose designed wall mounted record keeping and service equipment centre


Options

FRA flexiblade delivery system Is the recommended way to feed wood chip from your storage to the boiler • See page D18 for full details.

The Compact 80 Touch control can be expanded to provide weather compensated heating and domestic hot water production at a fraction of the normal price with the **Heating Weather Compensation and Hot Water Pack**. This increases and decreases the radiator temperatures based on current outdoor temperatures, ensuring comfort levels while saving energy. This provides safe hygienic domestic hot water from a new or existing hot water cylinder.

The **Solar Thermal Pack** comes complete and ready to install. The installation is straight forward and offers the benefit of free energy during the summer. Ideal as a top up on shorter days. Ideal as a top up on summer days.

FRA Flexiblade delivery system			
	FRA 2.5 flexi blade delivery system	HDG3119	5,385.00

Weather Compensated Heating and Hot Water Pack			
	<p>Compact 25-80 Heating and Hot Water Pack</p> <p>Temperature controlled mixed pump station with HE35 pump, unmixed pump station with U35 pump, starter and extension distributors, flow sensor, immersion sensor</p>	TP2004	889.00

Compact 100 wood chip boiler

Boiler information



Comfortable heating. With wood!

HDG Step grate system

At the heart of the Compact 100 boiler lies the HDG step grate system. Step grates are usually associated with much larger boilers, because the cost of manufacturing this innovative moving grate solution would normally prevent its inclusion within a boiler of this size. However the design team at HDG considered its advantages so important that a step grate has become a standard feature on all boilers 100 kW and above. Step grates allow for greater fuel variability, by keeping the incandescent bed moving. This promotes complete fuel combustion & higher efficiency, reduced fuel sensitivity and linear output throughout the entire burn cycle.

HDG EMD boiler controller

The latest generation Lambda controlled boiler 90% plus operational efficiency. The HDG EMD-C215 controls all the processes required to maximise combustion and fuel efficiency.

At start up, fuel is incrementally fed on to the step grate system, and automatically ignited, primary and secondary air is accurately added, ensuring that the fire is quickly established. Once the fire has become established, the controller changes from ignition mode to Lambda control, the controller optimises combustion and emission levels by using information provided by the Lambda sensor. The Lambda sensor continuously samples the flue gas. Information gathered from this analysis allows precise primary and secondary air actuator adjustments, guaranteeing low fuel consumption and ensuring maximum annual efficiencies are achieved. Automatic ash removal & heat exchanger cleaning are processes that maintain efficiency and cleanliness. Any products of combustion removed from the heat exchange surfaces are removed with the ash.

Loading the accumulator is also managed using one three way mixing valve and two PT 1000 temperature sensors. A sensor at the top of the accumulator and one at the bottom operate in conjunction with one another to achieve this control. When the boiler is first ignited water circulation is limited to the heat exchanger until the temperature has risen to 60°C, this is a precautionary measure to prevent corrosion within the boiler water jacket.

EMD-C215 controller has a residual heat utilisation programme, when the temperature of the water within the accumulator falls 5°C below that of the water within the boiler, the pump is started, this process unloads the heat that was remaining within the boiler and makes it available for use within the building to be heated.

Integrated component protection.

During dormant periods (possibly summer) the component protection program is always operational. All electrical components are energised periodically, the Lambda sensor is heated, the boiler ventilated and the pumps and mixing valves are energised. This process extends component life and efficiency.

The HDG EMD-C215 controller has the option of remote visualisation. This allows

the customer or engineer to monitor the boiler performance without a plant room visit. The visualisation software allows a historic and real time view of events. The Hydronic plus is also available to use in conjunction with the EMD-C215 controller, this product provides a weather compensated complete heating system control.

HDG fuel feeding systems

The compact boiler can be configured to burn wood chips, shavings or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG ash disposal

- Ash removal automatic 80 litres sealed containers (standard)
- 140 litre containers (optional) centralised ash container 240 litre (optional)

Automatic functions

- Automatic ignition
- Automatic heat exchanger cleaning (maintains high efficiency)
- Automatic step grate (making the boiler less fuel sensitive)
- Integrated accumulator loading management, recommended minimum accumulator size 2000 litres

HDG construction

- The boiler is manufactured in left and right hand versions (facilitating simple placement)
- Boiler body – heat exchanger: welded construction, tension rod reinforced 4-5 mm thick boiler plate
- Certified in accordance to the pressure equipment directive 97/23/EG boiler class 3 (the highest standard)
- Cladding preassembled insulated powder coated steel: main body green (RAL 6011) yellow (RAL 1007) Inspection doors, chip feeder traffic grey (RAL 7043)
- Integral thermal heat discharge within the heat exchanger
- Secondary combustion chamber: modular design, manufactured from cast refractory bricks

HDG safety features


- Extremely robust rotary sluice (maximum operational safety)
- Heat exchanger thermal discharge
- Chip feeder quenching
- Fuel over fill sensor
- Excess heat exchanger temperature protection. Electronic via the Compatronic control & mechanical via wax filled manual reset thermostat
- Automatic reverse on feed and dosing motors
- Minimum oxygen level automatic fuelling pause

HDG standards and approvals


- Type tested to EN 303-5
- The Compact passes the standards to be set for Renewable Heat Incentive emission limits for total particulate matter and oxides of nitrogen 30g/GJ particulate matter and 150g/GJ NOx
- Approved for use in smokeless zones


Compact 100 wood chip boiler







Equipment prices and order codes

Compact 100 with TBZ150 auger transfer feed system			Order code	£ ex VAT	PG	Page
	Compact 100 left side version	3 Phase (400V)	HDG3004	27,435.00	40	
	Compact 100 right side version	3 Phase (400V)	HDG3005			
	Compact 100 left side version	Single Phase (230V)	HDG3020	27,980.00		
	Compact 100 right side version	Single Phase (230V)	HDG3021			

Model shown right side version

Grate option		Order code	£ ex VAT	PG	Page
	High-performance stepped grate with high-grade stainless elements. For base load boiler application (> 2500 hr/year) or when using pellets, pressed wood briquettes and other wood fuels approved by HDG	HDG3105	905.00	40	
	Additional step grate drive De-coupling of grate movement and ash removal, for high ash content fuel such as apple purnings, or very low ash content fuels such as shavings and bark-less wood	HDG3274	1,135.00		

Chimney fan and particulate matter cyclone options		Order code	£ ex VAT	PG	Page
	Chimney assist fan Ideal for short flue applications or where flue conditions are not ideal, or fuels maybe an issue due to moisture. Includes HDG pressure controller. Suits 300 mm flue starter kit MS9280	HDG3272	1,945.00	40	
	Cyclone dust extractor For short flue applications or where flue conditions are not ideal. The cyclone reduces particulate matter where the fuel content is rich in ash or strict emission requirements are required. Includes HDG pressure controller. Suits 300 mm flue starter kit MS9280	HDG3198	3,895.00		

System and hydraulic components		Order code	£ ex VAT	PG	Page
	Return temperature control for HDG Compact 100 & 115 Three-way mixing valve DN 40. ID DN 40. SM 4 servo motor.10. Rotation time 150 seconds, 230 V, Circulation pump Wilo Stratos 40/1-4	PL2071	1,140.00	41	 I18
	Boiler safety module Combined pressure gauge, autovent, pressure relief, with two part insulation up to 200kW	PL2003	110.00		 I31
	Thermal safety device DN 20 file pocket and water connections	PL2000	68.00		
	Expansion vessel 300 litre. Minimum size to suit boiler/accumulator	EV4708	331.00		 I16
	Accumulator 2,000 litre. Minimum size	TS4813	1,786.00		 I7
	Accumulator temperature gauges Minimum 4 recommended	PL2016	24.00		
	Low water pressure valve 0.5 bar activation 230V	PL2062	68.00	 I31	

Compact 115 wood chip boiler

Boiler information



Comfortable heating. With wood!

HDG Step grate system

At the heart of the Compact boiler lies the HDG step grate system. Step grates are usually associated with much larger boilers, because the cost of manufacturing this innovative moving grate solution would normally prevent its inclusion within a boiler of this size. However the design team at HDG considered its advantages so important that a step grate has become a standard feature on all boilers 100kW and above. Step grates allow for greater fuel variability, by keeping the incandescent bed moving. This promotes complete fuel combustion & higher efficiency, reduced fuel sensitivity and linear output throughout the entire burn cycle.

HDG EMD boiler controller

The latest generation Lambda controlled boiler 90% plus operational efficiency. The HDG EMD-C215 controls all the processes required to maximise combustion and fuel efficiency.

At start up, fuel is incrementally fed on to the step grate system, and automatically ignited, primary and secondary air is accurately added, ensuring that the fire is quickly established. Once the fire has become established, the controller changes from ignition mode to Lambda control, the controller optimises combustion and emission levels by using information provided by the Lambda sensor. The Lambda sensor continuously samples the flue gas. Information gathered from this analysis allows precise primary and secondary air actuator adjustments, guaranteeing low fuel consumption and ensuring maximum annual efficiencies are achieved.

Automatic ash removal & heat exchanger cleaning are processes that maintain efficiency and cleanliness. Any products of combustion removed from the heat exchange surfaces are removed with the ash.

Loading the accumulator is also managed using one three way mixing valve and two PT 1000 temperature sensors. A sensor at the top of the accumulator and one at the bottom operate in conjunction with one another to achieve this control. When the boiler is first ignited water circulation is limited to the heat exchanger until the temperature has risen to 60°C, this is a precautionary measure to prevent corrosion within the boiler water jacket.

EMD-C215 controller has a residual heat utilisation programme, when the temperature of the water within the accumulator falls 5°C below that of the water within the boiler, the pump is started, this process unloads the heat that was remaining within the boiler and makes it available for use within the building to be heated.

Integrated component protection.

During dormant periods (possibly summer) the component protection program is always operational. All electrical components are energised periodically, the Lambda sensor is heated, the boiler ventilated and the pumps and mixing valves are energised. This process extends component life and efficiency.

The HDG EMD-C25 controller has the option of remote visualisation. This allows the customer or engineer to monitor the boiler performance without a plant room visit. The visualisation software allows a historic and real time view of events. The Hydronic plus is also available to use in conjunction with the EMD-C215 controller, this product provides a weather compensated complete heating system control.

HDG fuel feeding systems

The compact boiler can be configured to burn wood chips, shavings or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG Fuel feeding systems

The Compact 115 boiler can be configured to burn wood chips, shavings or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG Ash disposal

- Ash removal automatic 80 litres sealed containers (standard)
- 140 litre containers (optional) centralised ash container 240 litre (optional)

HDG ash disposal

- Ash removal automatic 80 litres sealed containers (standard)
- 140 litre containers (optional) centralised ash container 240 litre (optional)

Automatic functions

- Automatic ignition
- Automatic heat exchanger cleaning (maintains high efficiency)
- Automatic step grate (making the boiler less fuel sensitive)
- Integrated accumulator loading management, recommended minimum accumulator size 2000 litres

HDG construction

- The boiler is manufactured in left and right hand versions (facilitating simple placement)
- Boiler body – heat exchanger: welded construction, tension rod reinforced 4-5mm thick boiler plate
- Certified in accordance to the pressure equipment directive 97/23/EG boiler class 3 (the highest standard)
- Cladding preassembled insulated powder coated steel: main body green (RAL 6011) yellow (RAL 1007) Inspection doors, chip feeder traffic grey (RAL 7043)
- Integral thermal heat discharge within the heat exchanger
- Secondary combustion chamber: modular design, manufactured from cast refractory bricks

HDG safety features


- Extremely robust rotary sluice (maximum operational safety)
- Heat exchanger thermal discharge
- Chip feeder quenching
- Fuel over fill sensor
- Excess heat exchanger temperature protection. Electronic via the Compatronic control & mechanical via wax filled manual reset thermostat
- Automatic reverse on feed and dosing motors
- Minimum oxygen level automatic fuelling pause

HDG standards and approvals



- Type tested to EN 303-5
- The Compact passes the standards to be set for Renewable Heat Incentive emission limits for total particulate matter and oxides of nitrogen 30g/GJ particulate matter and 150g/GJ NOx
- Approved for use in smokeless zones



Compact 115 wood chip boiler







Equipment prices and order codes

Compact 100 with TBZ150 auger transfer feed system			Order code	£ ex VAT	PG	Page
	Compact 115 left side version	3 Phase (400V)	HDG3344	28,955.00	40	
	Compact 115 right side version	3 Phase (400V)	HDG3345	28,955.00		
	Compact 115 left side version	Single Phase (230V)	HDG3346	29,555.00		
	Compact 115 right side version	Single Phase (230V)	HDG3347	29,555.00		

Model shown right side version

Grate options						
	High-performance stepped grate with high-grade stainless elements.	For base load boiler application (> 2500 hr/year) or when using pellets, pressed wood briquettes and other wood fuels approved by HDG	Included in price of Compact 115			
		Additional step grate drive	De-coupling of grate movement and ash removal, for high ash content fuel such as apple purnings, or very low ash content fuels such as shavings and bark-less wood	HDG3274	1,135.00	40

Chimney fan and particulate matter cyclone options						
	Chimney assist fan	Ideal for short flue applications or where flue conditions are not ideal, or fuels maybe an issue due to moisture. Includes HDG pressure controller. Suits 300 mm flue starter kit MS9280	HDG3272	1,945.00	40	
		Cyclone dust extractor	For short flue applications or where flue conditions are not ideal. The cyclone reduces particulate matter where the fuel content is rich in ash or strict emission requirements are required. Includes HDG pressure controller. Suits 300 mm flue starter kit MS9280	HDG3198		

System and hydraulic components						
	Return temperature control for HDG Compact 100 & 115	Three-way mixing valve DN 40. ID DN 40. SM 4 servo motor.10. Rotation time 150 seconds, 230V Circulation pump Wilo Stratos 40/1-4	PL2071	1,140.00	41	
	Boiler safety module	Combined pressure gauge, autovent, pressure relief, with two part insulation up to 200 kW	PL2003	110.00		
	Thermal safety device	DN 20 file pocket and water connections	PL2000	68.00		
	Expansion vessel	300 litre. Minimum size to suit boiler/accumulator	EV4708	331.00		
	Accumulator	2,500 litre. Minimum size	TS4822	2,291.00		
	Accumulator temperature gauges	Minimum 4 recommended	PL2016	24.00		
	Low water pressure valve	0.5 bar activation 230V	PL2062	68.00		

Compact 150 wood chip boiler

Boiler information



Comfortable heating. With wood!

HDG Step grate system

At the heart of the Compact boiler lies the HDG step grate system. Step grates are usually associated with much larger boilers, because the cost of manufacturing this innovative moving grate solution would normally prevent its inclusion within a boiler of this size. However the design team at HDG considered its advantages so important that a step grate has become a standard feature on all boilers 100kW and above. Step grates allow for greater fuel variability, by keeping the incandescent bed moving. This promotes complete fuel combustion & higher efficiency, reduced fuel sensitivity and linear output throughout the entire burn cycle.

HDG EMD boiler controller

The latest generation Lambda controlled boiler 90% plus operational efficiency. The HDG EMD-C215 controls all the processes required to maximise combustion and fuel efficiency.

At start up, fuel is incrementally fed on to the step grate system, and automatically ignited, primary and secondary air is accurately added, ensuring that the fire is quickly established. Once the fire has become established, the controller changes from ignition mode to Lambda control, the controller optimises combustion and emission levels by using information provided by the Lambda sensor. The Lambda sensor continuously samples the flue gas. Information gathered from this analysis allows precise primary and secondary air actuator adjustments, guaranteeing low fuel consumption and ensuring maximum annual efficiencies are achieved.

Automatic ash removal & heat exchanger cleaning are processes that maintain efficiency and cleanliness. Any products of combustion removed from the heat exchange surfaces are removed with the ash. Loading the accumulator is also managed using one three way mixing valve and two PT 1000 temperature sensors. A sensor at the top of the accumulator and one at the bottom operate in conjunction with one another to achieve this control. When the boiler is first ignited water circulation is limited to the heat exchanger until the temperature has risen to 60°C, this is a precautionary measure to prevent corrosion within the boiler water jacket.

EMD-C215 controller has a residual heat utilisation programme, when the temperature of the water within the accumulator falls 5°C below that of the water within the boiler, the pump is started, this process unloads the heat that was remaining within the boiler and makes it available for use within the building to be heated.

Integrated component protection.

During dormant periods (possibly summer) the component protection program is always operational. All electrical components are energised periodically, the Lambda sensor is heated, the boiler ventilated and the pumps and mixing valves are energised. This process extends component life and efficiency.

The HDG EMD-C215 controller has the option of remote visualisation. This allows the customer or engineer to monitor the boiler performance without a plant room visit. The visualisation software allows a historic and real time view of events. The Hydronic plus is also available to use in conjunction with the EMD-C215 controller, this product provides a weather compensated complete heating system control.

HDG fuel feeding systems

The compact boiler can be configured to burn wood chips, shavings or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG Fuel feeding systems

The Compact 115 boiler can be configured to burn wood chips, shavings or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG ash disposal

- Ash removal automatic 80 litres sealed containers (standard)
- 140 litre containers (optional) centralised ash container 240 litre (optional)

Automatic functions

- Automatic ignition
- Automatic heat exchanger cleaning (maintains high efficiency)
- Automatic step grate (making the boiler less fuel sensitive)
- Integrated accumulator loading management, recommended minimum accumulator size 2000 litres

HDG construction

- The boiler is manufactured in left and right hand versions (facilitating simple placement)
- Boiler body – heat exchanger: welded construction, tension rod reinforced 4-5 mm thick boiler plate
- Certified in accordance to the pressure equipment directive 97/23/EG boiler class 3 (the highest standard)
- Cladding preassembled insulated powder coated steel: main body green (RAL 6011) yellow (RAL 1007) Inspection doors, chip feeder traffic grey (RAL 7043)
- Integral thermal heat discharge within the heat exchanger
- Secondary combustion chamber: modular design, manufactured from cast refractory bricks

HDG safety features

- Extremely robust rotary sluice (maximum operational safety)
- Heat exchanger thermal discharge
- Chip feeder quenching
- Fuel over fill sensor
- Excess heat exchanger temperature protection. Electronic via the Compatronic control & mechanical via wax filled manual reset thermostat
- Automatic reverse on feed and dosing motors
- Minimum oxygen level automatic fuelling pause

HDG standards and approvals


- Type tested to EN 303-5
- The Compact passes the standards to be set for Renewable Heat Incentive emission limits for total particulate matter and oxides of nitrogen 30g/GJ particulate matter and 150g/GJ NOx
- Approved for use in smokeless zones


Compact 150 wood chip boiler







Equipment prices and order codes

Compact 150 with TBZ150, includes high performance grate, cyclone fan pressure control			Order code	£ ex VAT	PG	Page
	HDG Compact 150 left side version	3 Phase (400V)	HDG3006CF	36,580.00	40	
	HDG Compact 150 right side version	3 Phase (400V)	HDG3007CF			
	HDG Compact 150 left side version	Single Phase (230V)	HDG3022CF	39,835.00		
	HDG Compact 150 right side version	Single Phase (230V)	HDG3023CF			

Model shown right side version with 80 litre ash pans cyclone

Grate option Compact 150			Order code	£ ex VAT	PG	Page
	High-performance stepped grate with high-grade stainless elements. For base load boiler application (> 2500 hr/year) or when using pellets, pressed wood briquettes and other wood fuels approved by HDG		HDG3114	1,125.00	40	
	Additional step grate drive De-coupling of grate movement and ash removal, for high ash content fuel such as apple prunings, or very low ash content fuels such as shavings and bark-less wood		HDG3274	1,135.00		

Chimney fan and particulate matter cyclone options			Order code	£ ex VAT	PG	Page
	Chimney assist fan Ideal for short flue applications or where flue conditions are not ideal, or fuels maybe an issue due to moisture. Includes HDG pressure controller. Suits 300mm flue starter kit MS9280		Included in price of Compact 150		40	
	Cyclone dust extractor For short flue applications or where flue conditions are not ideal. The cyclone reduces particulate matter where the fuel content is rich in ash or strict emission requirements are required. Includes HDG pressure controller. Suits 300 mm flue starter kit MS9280		HDG3198	3,895.00		

System and hydraulic components.			Order code	£ ex VAT	PG	Page
	Return temperature control for HDG Compact 150 & 200 Three-way mixing valve DN 65. 3 flange PN 6. DN 65 with seals, servo motor 3-30. 230V, Circulation pump UPS 50-60. Installation length 310 mm, 2 piece flange PN 6. DN 50 with seals		PL2072	1,897.00	41	 I18
	Boiler safety module Combined pressure gauge, autovent, pressure relief, with two part insulation up to 200 kW		PL2003	110.00		 I31
	Thermal safety device, DN 20 file pocket and water connections		PL2000	68.00		
	Expansion vessel 400 litre. Minimum size to suit boiler/accumulator Compact 150		EV4709	475.00		 I16
	Accumulator 3,000 litre. Minimum size. Compact 150		TS4814	2,797.00		 I17
	Accumulator temperature gauges Minimum 4 recommended		PL2016	24.00		 I31
	Low water pressure valve 0.5 bar activation 230V		PL2062	68.00		

Compact 200 wood chip boiler

Boiler information



Comfortable heating. With wood!

HDG Step grate system

At the heart of the Compact boiler lies the HDG step grate system. Step grates are usually associated with much larger boilers, because the cost of manufacturing this innovative moving grate solution would normally prevent its inclusion within a boiler of this size. However the design team at HDG considered its advantages so important that a step grate has become a standard feature on all boilers 100kW and above. Step grates allow for greater fuel variability, by keeping the incandescent bed moving. This promotes complete fuel combustion & higher efficiency, reduced fuel sensitivity and linear output throughout the entire burn cycle.

HDG EMD boiler controller

The latest generation Lambda controlled boiler 90% plus operational efficiency. The HDG EMD-C215 controls all the processes required to maximise combustion and fuel efficiency.

At start up, fuel is incrementally fed on to the step grate system, and automatically ignited, primary and secondary air is accurately added, ensuring that the fire is quickly established. Once the fire has become established, the controller changes from ignition mode to Lambda control, the controller optimises combustion and emission levels by using information provided by the Lambda sensor. The Lambda sensor continuously samples the flue gas. Information gathered from this analysis allows precise primary and secondary air actuator adjustments, guaranteeing low fuel consumption and ensuring maximum annual efficiencies are achieved.

Automatic ash removal & heat exchanger cleaning are processes that maintain efficiency and cleanliness. Any products of combustion removed from the heat exchange surfaces are removed with the ash.

Loading the accumulator is also managed using one three way mixing valve and two PT 1000 temperature sensors. A sensor at the top of the accumulator and one at the bottom operate in conjunction with one another to achieve this control. When the boiler is first ignited water circulation is limited to the heat exchanger until the temperature has risen to 60°C, this is a precautionary measure to prevent corrosion within the boiler water jacket.

EMD-C215 controller has a residual heat utilisation programme, when the temperature of the water within the accumulator falls 5°C below that of the water within the boiler, the pump is started, this process unloads the heat that was remaining within the boiler and makes it available for use within the building to be heated.

Integrated component protection.

During dormant periods (possibly summer) the component protection program is always operational. All electrical components are energised periodically, the Lambda sensor is heated, the boiler ventilated and the pumps and mixing valves are energised. This process extends component life and efficiency.

The HDG EMD-C215 controller has the option of remote visualisation. This allows

Zeroridge Biomass Ed 17A

the customer or engineer to monitor the boiler performance without a plant room visit. The visualisation software allows a historic and real time view of events. The Hydronic plus is also available to use in conjunction with the EMD-C215 controller, this product provides a weather compensated complete heating system control.

HDG fuel feeding systems

The compact boiler can be configured to burn wood chips, shavings or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG Fuel feeding systems

The Compact 115 boiler can be configured to burn wood chips, shavings or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another.

HDG ash disposal

- Ash removal automatic 80 litres sealed containers (standard)
- 140 litre containers (optional) centralised ash container 240 litre (optional)

Automatic functions

- Automatic ignition
- Automatic heat exchanger cleaning (maintains high efficiency)
- Automatic step grate (making the boiler less fuel sensitive)
- Integrated accumulator loading management, recommended minimum accumulator size 2000 litres

HDG construction

- The boiler is manufactured in left and right hand versions (facilitating simple placement)
- Boiler body – heat exchanger: welded construction, tension rod reinforced 4-5 mm thick boiler plate
- Certified in accordance to the pressure equipment directive 97/23/EG boiler class 3 (the highest standard)
- Cladding preassembled insulated powder coated steel: main body green (RAL 6011) yellow (RAL 1007) Inspection doors, chip feeder traffic grey (RAL 7043)
- Integral thermal heat discharge within the heat exchanger
- Secondary combustion chamber: modular design, manufactured from cast refractory bricks

HDG safety features


- Extremely robust rotary sluice (maximum operational safety)
- Heat exchanger thermal discharge
- Chip feeder quenching
- Fuel over fill sensor
- Excess heat exchanger temperature protection. Electronic via the Compatronic control & mechanical via wax filled manual reset thermostat
- Automatic reverse on feed and dosing motors
- Minimum oxygen level automatic fuelling pause

HDG standards and approvals



- Type tested to EN 303-5
- The Compact passes the standards to be set for Renewable Heat Incentive emission limits for total particulate matter and oxides of nitrogen 30g/GJ particulate matter and 150g/GJ NOx
- Approved for use in smokeless zones



Compact 200 wood chip boiler














Equipment prices and order codes

Compact 200 with TBZ150, includes high performance grate, cyclone fan pressure control			Order code	£ ex VAT	PG	Page
	HDG Compact 200 left side version	3 Phase (400V)	HDG3008CF	41,255.00	40	
	HDG Compact 200 right side version	3 Phase (400V)	HDG3009CF	41,255.00		
	HDG Compact 200 left side version	Single Phase (230V)	HDG3024CF	44,510.00		
	HDG Compact 200 right side version	Single Phase (230V)	HDG3025CF	44,510.00		

Model shown right side version with 80 litre ash pans cyclone

Grate option Compact 200		Order code	£ ex VAT	PG	Page
	High-performance stepped grate with high-grade stainless elements. (Standard with Compact 200). For base load boiler application (> 2500 hr/year) or when using pellets, pressed wood briquettes and other wood fuels approved by HDG	Included in price of Compact 200		40	
	Additional step grate drive De-coupling of grate movement and ash removal, for high ash content fuel such as apple purnings, or very low ash content fuels such as shavings and bark-less wood	HDG3274	1,135.00		

Chimney fan and particulate matter cyclone options		Order code	£ ex VAT	PG	Page
	Chimney assist fan Ideal for short flue applications or where flue conditions are not ideal, or fuels maybe an issue due to moisture. Includes HDG pressure controller. Suits 300 mm flue starter kit MS9280	Included in price of Compact 200		40	
	Cyclone dust extractor For short flue applications or where flue conditions are not ideal. The cyclone reduces particulate matter where the fuel content is rich in ash or strict emission requirements are required. Includes HDG pressure controller. Suits 300 mm flue starter kit MS9280	HDG3198	3,895.00		

		Order code	£ ex VAT	PG	Page
	Return temperature control for HDG Compact 150 & 200 Three-way mixing valve DN 65. 3 flange PN 6. DN 65 with seals, servo motor 3-30. 230 V, Circulation pump UPS 50-60. Installation length 310mm, 2 piece flange PN 6. DN 50 with seals	PL2072	1,897.00	41	 I18
	Electronic flow temperature control system Includes 0-10V module for Wilo pump. PLC control software and additional accumulator sensor	HDG4139	390.00		
	Boiler safety module Combined pressure gauge, autovent, pressure relief, with two part insulation up to 200 kW	PL2003	110.00		 I31
	Thermal safety device, DN 20 file pocket and water connections	PL2000	68.00		
	Expansion vessel 500 litre. Minimum size to suit boiler/accumulator Compact 200	EV4710	591.00		 I16
	Accumulator 4,000 litre. Minimum size. Compact 200	TS4816	3,319.00		 I7
	Accumulator temperature gauges Minimum 2 recommended	PL2016	24.00		 I31
	Low water pressure valve 0.5 bar activation 230V	PL2062	68.00		

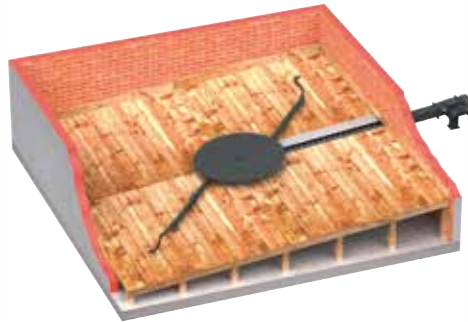
Compact 100-150-200 wood chip boilers

Design and function with flexi blade chip delivery system

Fuel delivery system types



FRA effective sweep radius up to 4.2 meters.



GRA effective sweep radius up to 5.7 meters.



Twin FRA. For use with two boilers with single fuel store.



The **FRA feed system** shown here is used to extract fuel from the store to the boiler. It can be installed in square or round rooms such as silos and has an effective sweep diameter of up to 4.2m. Larger stores can be made by building sloping sides down to the sweep radius. The floor of the store is otherwise flat, on the plane of the auger. This is usually around 18 degrees the maximum being 20 degrees for wood chip, or 5 degrees for pellet or briquettes. Spring arms connected to a large central dome expand as the store empties and they sweep chip into the open section of the transfer auger. The dome is driven by a shaft inside the auger which is connected to a low maintenance gear box under the store. The auger and drive shaft are driven simultaneously by a single motor outside the fuel store, but a link can be removed if the auger needs to be reversed.

The **control cabinet EMD-C 215** houses the controller and contractors associated with the Compact 100 to 200 boilers. The programmable logic controller controls all the electronic processes required for heat production and optimum combustion efficiency by adjusting the fuel, primary and secondary air rates. It also controls the automatic cleaning, the stepped grate with its ash removal system, the accumulator loading, and optional second boiler as peak load for twin Compact boiler installations.



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WOOD CHIP BOILERS

The temperature measured by the **combustion chamber temperature sensor** is the reference variable for required primary air and fuelling rate. If the combustion temperature exceeds the set-point, the controller will prevent more fuel being introduced until it reaches an acceptable level. In addition to combustion control, this measurement will indicate to the controller whether the ignition system will need to be used on start up, or the embers remaining from the previous burn will light the new fuel.

The **automatic cleaning system** periodically raises and lowers the turbulators which are suspended within the channels of the heat exchanger. This motion removes the ash that adheres to the exchanger surface. While not being used to clean the heat exchanger the blades of the cleaning system cause turbulence in the flue gas which serves to force more of the heat into the water jacket.

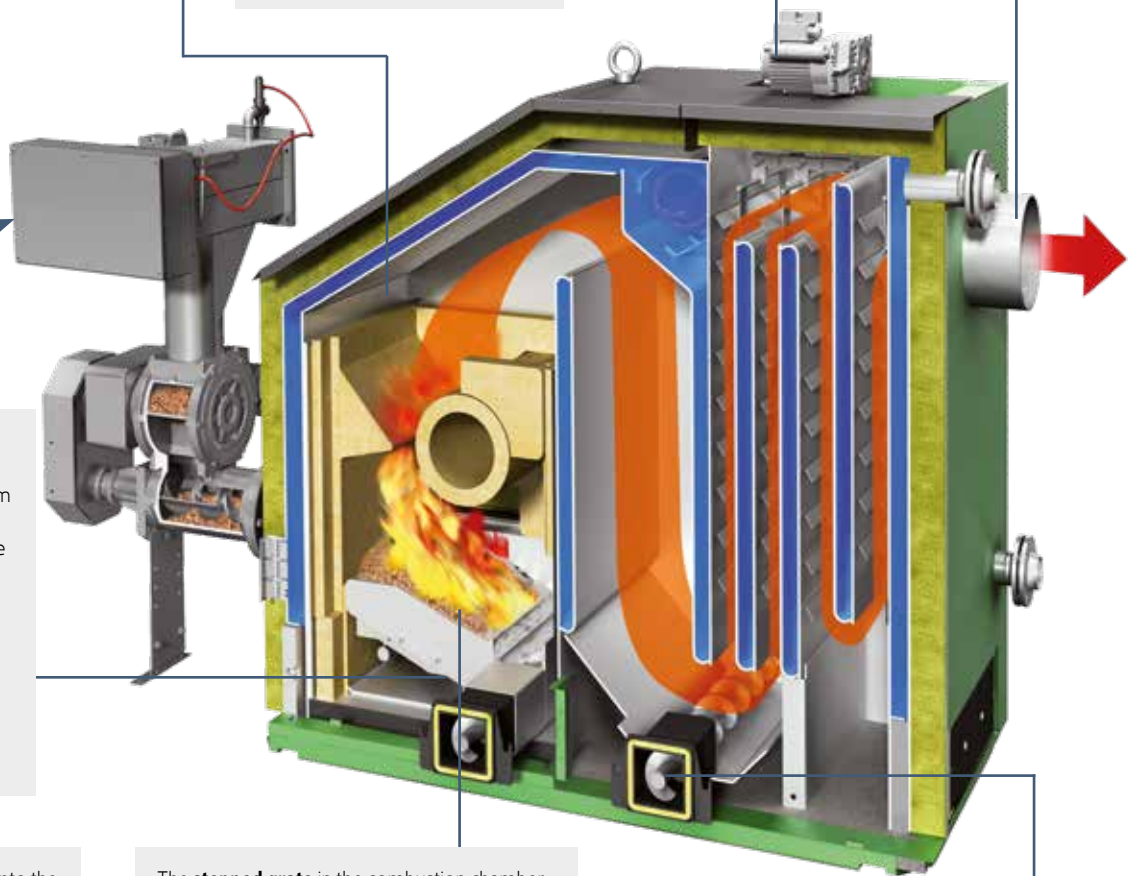
The **Lambda sensor** measures the residual oxygen in the flue and it is the reference variable for the secondary air quantity. The secondary air is transferred over a separate air channel to the combustion gases in the combustion chamber. This way even with fluctuating combustion material quality the best combustion efficiency can be achieved. The Lambda sensor is automatically calibrated by the control system. By means of the adjustable additional function "Lambda-Stop", the control system automatically inhibits the fuel flow, if the oxygen value falls below a minimal oxygen value.

The **automatic ash removal** works in conjunction with the stepped grate, removing ash from the combustion chamber and fly ash from the heat exchanger. The standard containers are 80 litres, but 140 litre ash containers and a central ash removal system are also available. The ash augers have 8mm linings and the ash boxes are sealed onto the boiler with a single action lever.

The **over fill mechanism** is built into the ignition fan, and prevents too much fuel being loaded onto the grate. When the igniter is moved the fuel dosage auger is stopped ("material stop") and will re-start when the fuel has been burnt. This is one of the mechanisms which prevents the boiler from over firing. During ignition if the fuel has not ignited on the first run, the second run may activate the material stop. In this case the start up operation is moved straight to the ignition phase, and on to warm up in the usual way.

The **stepped grate** in the combustion chamber is what gives the Compact 100 – 200 range the exceptionally efficient combustion characteristics. The patented linear drive enables constant power for the duration of the burn, and effective introduction of the primary air to the fuel. Fuel is fed onto the grate by the constant running TBZ auger. This is to minimise the residual fuel in the TBZ and prevent burn back. Periodically the grate walks the fire towards the ash auger while being refreshed with new fuel behind by the TBZ. By the time the chip has reached the bottom of the grate it is burnt to ash.


The **automatic ash removal** - standard at the Compact 100-200 series - transfers the combustion and fly ash into two external ash containers of approximately 80 litre volume each. Optional ash containers with 140 litre volume or a central ash removal (HDG Compact 150/200) are also available. The two ash removal augers have 8mm auger lining. In order to achieve longer ash container operation times, the combustion residuals are additionally compressed. The ash containers are locked on the boiler by a safety lock.



Compact 100 wood chip kits

Equipment prices and order codes


WOOD CHIP BOILERS

HDG Compact 100 with TBZ 150 auger transfer system		Order code	£ ex VAT
	Compact 100 with TBZ 150 auger transfer kit - left hand three phase	TP1132	33,682.00
	Compact 100 with TBZ 150 auger transfer kit - right hand three phase	TP1133	
	Compact 100 with TBZ 150 auger transfer kit - left hand single phase	TP1134	34,227.00
	Compact 100 with TBZ 150 auger transfer kit - right hand single phase	TP1135	
<p>Includes: Return temperature control kit, variable speed flue fan, boiler safety module, thermal safety devices, flue starter kit and support stand, bi-metallic temperature gauges, 300 litre expansion vessel, nickel cap valve, 2000 litre H₂O accumulator</p> <p>The HDG Compact 100 boiler comes with: A full 10 year HDG warranty •• See page M11 for full details</p> <p>Also included free of charge Purpose designed wall mounted record keeping and service equipment centre</p>			


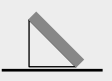

Options
FRA Flexiblade delivery system is the recommended way to feed wood chip from your storage to the boiler.

FRA Flexiblade delivery system		Order code	£ ex VAT
	FRA 3.5 flexi blade delivery system	HDG3120	5,695.00

Options
The **Solar Thermal Pack** comes complete and ready to install excluding pipework. The installation is straight forward and offers the benefit of free energy during the summer. Suitable hot water cylinder with thermal solar coil required.





Uniko Solar Thermal Pack		Order code	£ ex VAT	PG
	<p>Solar controller Solar controller for Biomass boiler without integrated solar control</p>	ST2039	244.00	24
	<p>Uniko Biomass Package - 4.04m² gross area, 2 Uniko flat plate collectors, pump station, 24 litre expansion vessel, connection kit, sensor, mixing thermostat, glycol (20 litres)</p>	ST3001	1,938.00	


Mounting options

		
On-roof, parallel	Flat roof, 45	In-roof mounting

Compact 115 wood chip kits

Equipment prices and order codes

HDG Compact 115 with TBZ 150 auger transfer system		Order code	£ ex VAT
	Compact 115 with TBZ 150 auger transfer kit - left hand three phase	TP1136	35,707.00
	Compact 115 with TBZ 150 auger transfer kit - right hand three phase	TP1137	
	Compact 115 with TBZ 150 auger transfer kit - left hand single phase	TP1138	36,307.00
	Compact 115 with TBZ 150 auger transfer kit - right hand single phase	TP1139	
	<p>Includes: Return temperature control kit, variable speed flue fan, boiler safety module, thermal safety devices, flue starter kit and support stand, bi-metallic temperature gauges, 300 litre expansion vessel, nickel cap valve, 2500 litre H2O accumulator</p>		
	<p>The HDG Compact 80 boiler comes with: A full 10 year HDG warranty • See page M11 for full details</p>		
	<p>Also included free of charge Purpose designed wall mounted record keeping and service equipment centre</p>		
<p>Options FRA Flexiblade delivery system Is the recommended way to feed wood chip from your storage to the boiler.</p>			





FRA Flexiblade delivery system		Order code	£ ex VAT
	FRA 3.5 flexi blade delivery system	HDG3120	5,695.00

Compact 150 wood chip kits


Equipment prices and order codes

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WOOD CHIP BOILERS

HDG Compact 150 with TBZ 150 auger transfer system		Order code	£ ex VAT
	Compact 150 with TBZ 150 auger transfer kit - left hand three phase	TP1140	42,663.00
	Compact 150 with TBZ 150 auger transfer kit - right hand three phase	TP1141	
	Compact 150 with TBZ 150 auger transfer kit - left hand single phase	TP1142	45,918.00
	Compact 150 with TBZ 150 auger transfer kit - right hand single phase	TP1143	
	<p>Includes: Return temperature control kit, variable speed flue fan, boiler safety module, thermal safety devices, flue starter kit and support stand, bi-metallic temperature gauges, 400 litre expansion vessel, nickel cap valve, 3,000 litre H₂O accumulator</p> <p>The HDG Compact 150 boiler comes with: A full 10 year HDG warranty • See page M12 for full details</p> <p>Also included free of charge Purpose designed wall mounted record keeping and service equipment centre</p>		
			
			




Options
FRA Flexiblade delivery system is the recommended way to feed wood chip from your storage to the boiler.

FRA Flexiblade delivery system		Order code	£ ex VAT
	FRA 4.5 flexi blade delivery system, for pellets including FRA flexi blade delivery system	HDG3120	6,115.00

Options
The **Solar Thermal Pack** comes complete and ready to install excluding pipework. The installation is straight forward and offers the benefit of free energy during the summer. Suitable hot water cylinder with thermal solar coil required.






Uniko Solar Thermal Pack		Order code	£ ex VAT	PG
	<p>Solar controller Solar controller for Biomass boiler without integrated solar control</p>	ST2039	244.00	24
	<p>Uniko Biomass Package - 4.04m² gross area, 2 Uniko flat plate collectors, pump station, 24 litre expansion vessel, connection kit, sensor, mixing thermostat, glycol (20 litres)</p>	ST3001	1,938.00	

Mounting options

		
On-roof, parallel	Flat roof, 45	In-roof mounting

Compact 200 wood chip kits

Equipment prices and order codes

HDG Compact 200 with TBZ 150 vacuum transfer system		Order code	£ ex VAT
   	Compact 200 with TBZ 150 vacuum transfer kit - left hand three phase	TP1144	47,976.00
	Compact 200 with TBZ 150 vacuum transfer kit - right hand three phase	TP1145	
	Compact 200 with TBZ 150 vacuum transfer kit - left hand single phase	TP1146	51,231.00
	Compact 200 with TBZ 150 vacuum transfer kit - right hand single phase	TP1147	
<p>Includes: Return temperature control kit, variable speed flue fan, boiler safety module, thermal safety devices, flue starter kit and support stand, bi-metallic temperature gauges, 400 litre expansion vessel, nickel cap valve, 4,000 litre H₂O accumulator</p> <p>The HDG Compact 200 boiler comes with: A full 10 year HDG warranty • See page M12 for full details Also included free of charge Purpose designed wall mounted record keeping and service equipment centre</p>			
<p>Options FRA Flexiblade delivery system Is the recommended way to feed wood chip from your storage to the boiler.</p>			
FRA Flexiblade delivery system			
	FRA 4.5 flexi blade delivery system, for pellets, including FRA flexi blade delivery system	HDG3120	6,115.00

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WOOD CHIP BOILERS

M Series 300-350-400-500 wood chip boiler

Boiler information



Comfortable heating. With wood!

HDG stepped grate system

The moving stepped grate of the M Series boiler allows for greater fuel variability by keeping the incandescent bed moving. This promotes complete fuel combustion and higher efficiency, reduced fuel sensitivity and linear output throughout the entire burn cycle.

High temperature combustion chamber

The M Series features a water-cooled combustion unit with an air-cooled, moving, 2-zone stepping grate. High temperature combustion chamber with innovative air supplies ensures complete burning of the combustion gases and the lowest emissions at the highest level of efficiency. An automatic delivery system for the grate and first fly ash using an ascending auger into the available 240 litre large ash bin ensures infrequent emptying of the ash.

HDG EMD boiler controller

Latest generation Lambda controlled boiler 94% operational efficiency. The HDG EMD-C215 controls all the processes required to maximise combustion and fuel efficiency.

At start up, fuel is incrementally fed on to the stepped grate system, where it is automatically ignited. Primary and secondary air is accurately added by means of speed regulated fans, ensuring that the fire is quickly established. Once the fire is viable, the controller changes from ignition mode to Lambda control. The controller optimises combustion and emission levels by using information provided by the Lambda sensor. The Lambda sensor continuously samples the flue gas, information gathered from this analysis allows precise primary and secondary air fan adjustments, this guarantees low fuel consumption and ensures maximum annual efficiencies are achieved.

Automatic ash removal and heat exchanger cleaning are processes that maintain efficiency and cleanliness, any products of combustion removed from the heat exchange surfaces are disposed of with the ash.

Loading the accumulator is also prudently managed; one three way mixing valve and two PT 1000 temperature sensors, one at the top of the accumulator and one at the bottom operate in conjunction with one another to achieve this control. When the boiler is first ignited water circulation is limited to the heat exchanger until the temperature has risen to 60°C, this is a precautionary measure to prevent corrosion within the boiler water jacket.

EMD-C215 controller has a residual heat utilisation programme, when the temperature of the water within the accumulator falls 5°C below that of the water within the boiler, the pump is started, this process unloads the heat that was remaining within the boiler and makes it available for use within the building to be heated.

Integrated component protection during dormant periods (possibly summer) the component protection program is always operational, all electrical components

are powered periodically, the Lambda sensor is heated, the boiler is ventilated, pumps and mixing valves are operated. This process extends component life time and efficiency.

The HDG EMD-C25 controller has the option of remote visualisation. This allows the customer or engineer to monitor the boiler performance without a plant room visit. The visualisation software allows a historic and real time view of events. The Hydronic plus is also available to use in conjunction with the EMD-C215 controller. This provides a weather compensated complete heating system control.

Variable speed fan

To guarantee a consistent combustion quality, a pressure gauge constantly monitors the pressure within the boiler and automatically adjusts the speed of the flue gas fan to ensure a consistent pressure with the combustion chamber. This pressure control system ensures consistently high performance, specifically in respect to fluctuating fuel qualities or unfavourable flue conditions.

HDG fuel feeding systems

The M Series boiler can be configured to burn wood chips, shavings or wood pellets. It is the fuel feed system that generally dedicates the boiler to one fuel type or another. See section G for information regarding fuel feed and storage options.

HDG ash disposal

- Ash removal automatic to choice of ash bins
- Automatic functions
- Automatic ignition
- Automatic heat exchanger cleaning (maintains high efficiency)
- Automatic stepped grate (making the boiler less fuel sensitive)
- Integrated accumulator loading management, recommended minimum accumulator size M Series 8000 litres

HDG construction

- Boiler Body – heat exchanger: welded construction, tension rod reinforced 4-5 mm thick boiler plate
- Certified in accordance to the pressure equipment directive 97/23/EG boiler class 3 (the highest standard)
- Cladding, preassembled powder coated steel: main body green (RAL 6011) yellow (RAL 1007) inspection doors, chip feeder traffic grey (RAL 7043)
- Integral thermal heat discharge within the heat exchange
- Secondary combustion chamber: Modular design, manufactured from cast refractory bricks

HDG safety features

- Extremely robust rotary sluice (maximum operational safety)
- Heat exchanger thermal discharge
- Chip – pellet feeder quenching
- Fuel over fill sensor
- Excess heat exchanger temperature protection. Electronic via the EMD control & mechanical via wax filled manual reset thermostat
- Automatic reverse on feed and dosing motors
- Minimum oxygen level automatic fuelling pause

HDG standards and approvals






- Type tested to EN 303-5
- The Compact M Series qualifies for the new standards to be set for Renewable Heat Incentive emission limits for total particulate matter and oxides of nitrogen 30g/GJ particulate matter and 150g/GJ NOx














M Series 300-350-400-500 wood chip boiler

Equipment prices and order codes

M300 with TBZ200 feed system		Order code	£ ex VAT	PG	Page
	M 300 with TBZ200 auger feed system	3 Phase (400V)	HDG3086	68,835.00	40
	M 350 with TBZ200 auger feed system	3 Phase (400V)	HDG3087	74,390.00	
	M 400 with TBZ200 auger feed system	3 Phase (400V)	HDG3088	79,940.00	
	M 500 with TBZ200 auger feed system	3 Phase (400V)	HDG3091	82,440.00	

Model shown with optional 240 litre ash bin
Main combustion chamber and fly ash container not included as standard, due to the choices available
Heat exchanger 80 litre ash containers are included

Ash collection options		Order code	£ ex VAT	PG	Page
	240 litre ash bin For wheeled transport of combustion and main fly ash chamber	HDG4140	625.00	40	
	400 litre tipping ash container For transport by fork lift, with tipping mechanism of combustion and main fly ash chamber. (Special designs available on request)	MS91175	1,480.00		
	Transfer cart For ash container heat exchanger 80 Litre ash containers	HDG3232	245.00		

System and hydraulic components		Order code	£ ex VAT	PG	Page
	HDG return temperature control for M Series Three-way mixing valve DN 80. 3 flange PN 6. DN 80 with seals, servo motor 230 V, Wilo Stratos circulation pump 50/1-12, heat exchanger combustion unit connection pump Wilo Stratos 30/1-8 without display, including connections	PL2074	2,974.00	41	
	Boiler safety module Pressure gauge, autovent, pressure relief, with two part insulation. Up to 350 kW	PL2004	115.00		
	Pressure relief valve 1 1/4" x 1 1/2" 3 Bar. Must be used with item PL2057. Up to 400 kW	PL2033	62.00		
	Radial pressure gauge 0-6 bar with 50 mm face. Must be used with item PL2033. Up to 400 kW	PL2057	17.00		
	Thermal safety device DN 20 file pocket and water connections. Requires 2 per boiler. We require 1 x PL2000 for the GRA feed system	HDG3481	85.00		
	Expansion vessel 1,000 litre	EV4715	2,263.00		
	Accumulator 8,000 litre	TS4820	7,398.00		
	Accumulator temperature gauges Minimum 4 recommended	PL2016	24.00		

M Series 300-350-400-500 wood chip boiler

Design and features

The **Lambda sensor** measures the residual oxygen in the flue and it is the reference variable for the secondary air quantity. The secondary air is transferred over a separate air channel to the combustion gases in the combustion chamber. This way even with fluctuating combustion material quality the best combustion efficiency can be achieved. The Lambda sensor is automatically calibrated by the control system. By means of the adjustable additional function "Lambda-Stop", the control system automatically inhibits the fuel flow, if the oxygen value falls below a minimal oxygen value.

The four section **heat exchanger** is connected directly to the combustion chamber and ensures optimum heat transfer. It consists of four sections, each equipped with vertical heat exchanger pipes. The fire resistant concrete is very robust and its geometric design contributes to the retention time and the turbulence of the combustion gases in the combustion chamber being very high. The combustion gases are they completely burned off so that emissions are reduced to a minimum. Even when operating under partial load, the hot combustion chamber provides the necessary combustion temperatures for the lowest emissions.

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WOOD CHIP BOILERS

The patented **rotary feed system** activates an automatic reversing mechanism should larger pieces of wood or foreign bodies have got into the fuel. If the rotary feeder experiences a certain amount of resistance, the wheel reverses up to three times and thereby prevents damage from occurring. The stoker auger supplies the boiler with the precise quantity of fuel that is required for optimum combustion. The direct input of fuel on the grate and the efficient design of the gearbox ensure that the feeding system operates quietly and the energy costs are kept low.

The **stepped grate** in the combustion chamber is what gives the M Series range the exceptionally efficient combustion characteristics. The patented linear drive enables constant power for the duration of the burn and effective introduction of the primary air to the fuel. Fuel is fed onto the grate by the constant running TBZ auger. This is to minimise the residual fuel in the TBZ and prevent burn back. Periodically the grate walks the fire towards the ash auger while being refreshed with new fuel behind by the TBZ. By the time the chip has reached the bottom of the grate it is burnt to ash.

The ash produced in the M Series is constantly being pushed by the stepped grate towards the **ash removal auger**. The ash is automatically conveyed into the 240 litre ash bin connected via the ash removal auger and ascending auger. A second ash removal auger conveys the major part of the fly ash - also automatically - to the central ash removal system. This large central ash removal system, extends the service and maintenance intervals, even over extended operating hours.



The temperature measured by the **combustion chamber temperature sensor** is the reference variable for required primary air, and fuelling rate. If the combustion temperature exceeds the set-point, the controller will prevent more fuel being introduced until it reaches an acceptable level. In addition to combustion control, this measurement will indicate to the controller that the ignition system will need to be used on start up, or the embers remaining from the previous burn will light the new fuel.

Cleaning turbulators, fitted as standard, ensure that the heat exchangers pipes are kept clean and that an ideal heat transfer takes place constantly. The turbulators clear the vertical heat exchanger tubes at regular intervals, removing fly ash by automatically moving up and down. Moreover, their shape creates further turbulence of the flue gases, improving heat transfer and efficiency. The ash scraped off by the turbulators is automatically extracted by ash removal augers into the external fly ash containers.

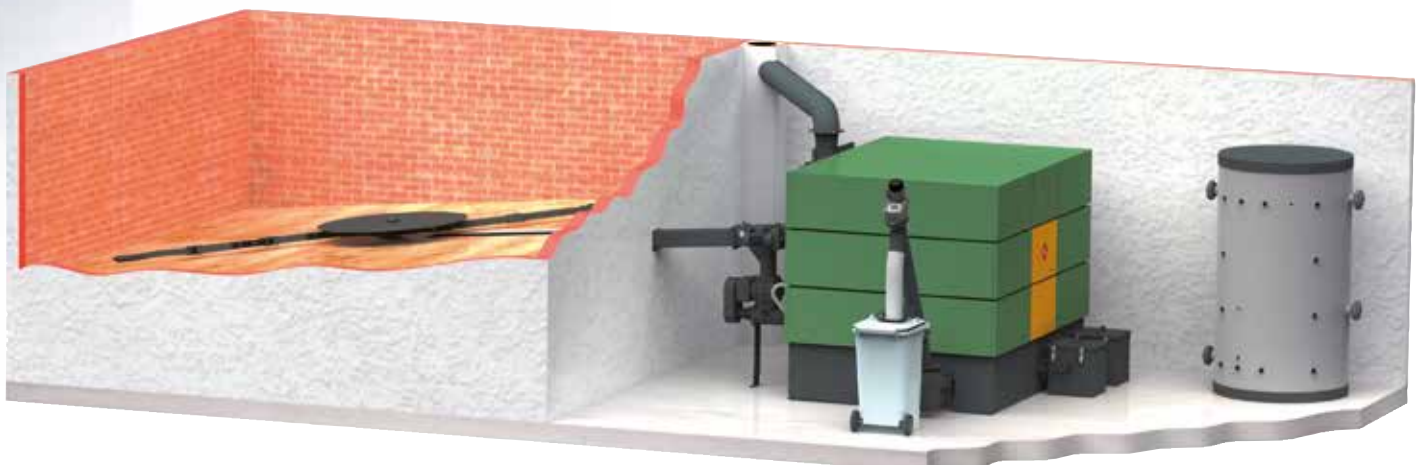
During combustion of the heating material in the HDG M300-500 targeted air is added by the speed-controlled combustion air fan as well as the controlled airflow cross-sections.

There are three different air zones:

Zone 1 (primary air): This serves to cool the grate, dries the fuel in the upper area of the grate in advance, provides for the degassing of the material and constitutes the main air for the combustion.

Zone 2 (secondary air): Here air is specifically added to ensure that the combustion is clean and complete. The combustion gases and combustion air are carefully mixed by being redirected in the combustion chamber.




Zone 3 (tertiary air): In the last zone, the combustion gases and the pre-heated air are remixed. A very clean combustion with extremely high levels of efficiency is achieved due to the different air zones and the lengthy time that the gases are retained in the combustion chamber.



M Series 300 - 500 kit comparisons



Equipment prices and order codes

WOOD CHIP BOILERS



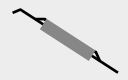
HDG M 300 Series with TBZ 200 auger transfer system		Order code	£ ex VAT
	M300 with TBZ 200 auger transfer system kit	TP1148	80,755.00
	M350 with TBZ 200 auger transfer system kit	TP1149	86,310.00
	M400 with TBZ 200 auger transfer system kit	TP1150	91,860.00
	M500 with TBZ 200 auger transfer system kit	TP1151	94,360.00
 Includes: Return temperature control kit, variable speed flue fan, boiler safety module, thermal safety devices, flue starter kit and support stand, bi-metallic temperature gauges, 1000 litre expansion vessel, nickel cap valve, 6000 litre H ₂ O accumulator Also included free of charge Purpose designed wall mounted record keeping and service equipment centre 			

GRA Flexiblade delivery system option		Order code	£ ex VAT
	GRA 200 - 3 hinged arm delivery system	HDG3261	9,335.00

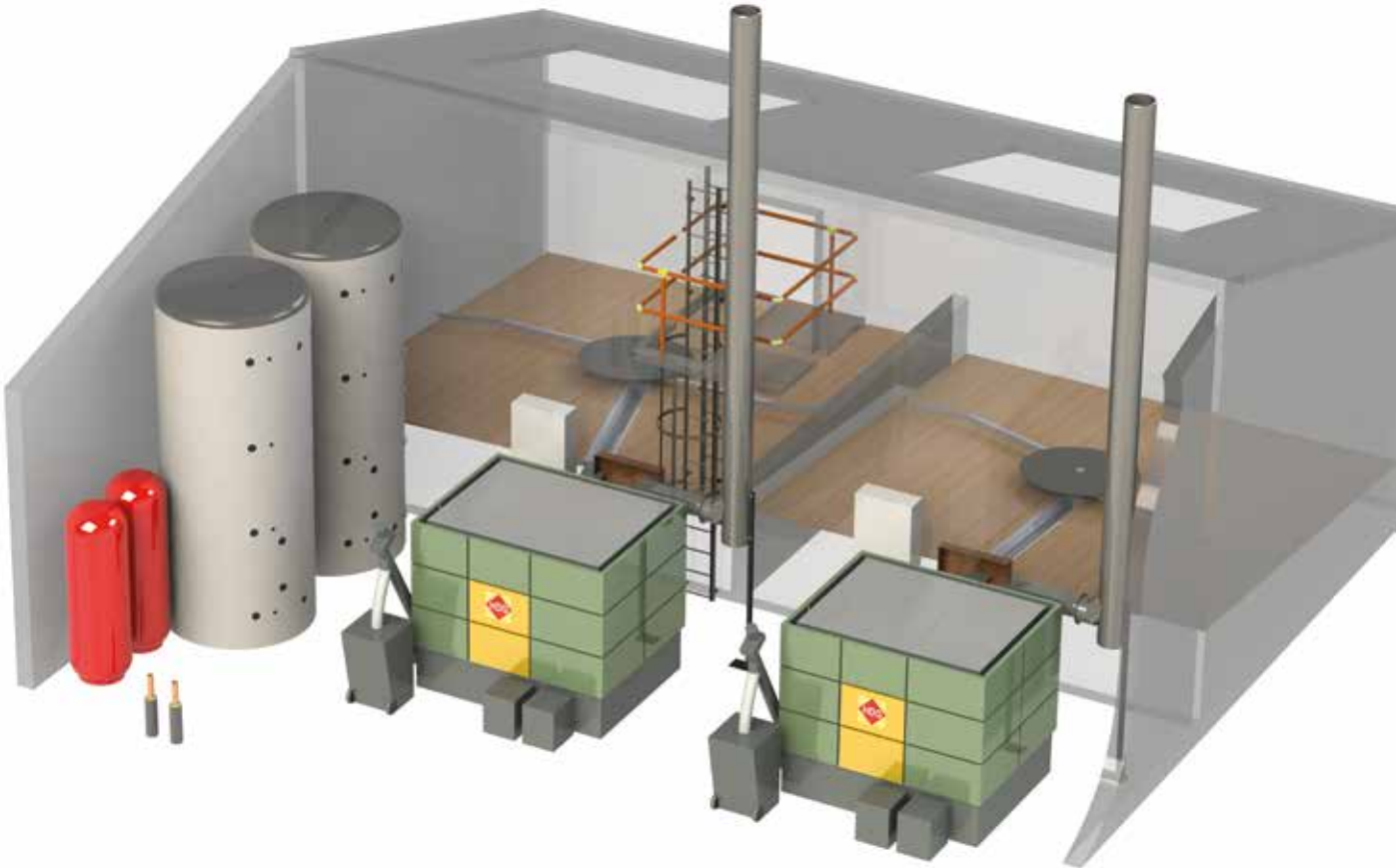
Options
 The **Solar Thermal Pack** comes complete and ready to install excluding pipework. The installation is straight forward and offers the benefit of free energy during the summer. Suitable hot water cylinder with thermal solar coil required.

Uniko Solar Thermal Pack		Order code	£ ex VAT	PG
	Solar controller Solar controller for Biomass boiler without integrated solar control	ST2039	244.00	24
	Uniko Biomass Package - 4.04m ² gross area, 2 Uniko flat plate collectors, pump station, 24 litre expansion vessel, connection kit, sensor, mixing thermostat, glycol (20 litres)	ST3001	1,938.00	

Mounting options

		
On-roof, parallel	Flat roof, 45	In-roof mounting

Shown here is a M400 sited in a purpose built building.
The minimum size for this type of building to house a M400 2 x 7,000 litre buffer tanks, all components and a 19 ton fuel store with a PSZ 450 pellet extraction system is 12m x 4.5m.

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WOOD CHIP BOILERS