

# BBS

Biomass Wood Pellet Boiler Range 130 – 1500kW

Biomass Wood Chip Boiler Range 130 – 2000kW



Working towards  
a cleaner future

**POTTERTON**  
COMMERCIAL

heating specialists

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The Potterton Commercial Biomass Boiler System (BBS) offers a complete solution for biomass heating with flexibility to accommodate both wood pellet and wood chip fuels depending upon application. The BBS features high grade steel construction ranging between 130kW and 2000kW heat outputs, catering for all project sizes.

Flexibility is inherent to the BBS offering with the options available including prefabricated solutions which can be configured to meet specific project and client needs and delivered to site as bespoke solutions.

The BBS offers advanced controls with options for local BMS integration or stand alone operation, together with remote monitoring access via web portal.

## Features and Benefits

- High degree of heating efficiency
- Flexible application
- Specific boiler program – tailored for the installation
- Vertical flue gas tubes – reduces the amount of cleaning required through normal maintenance
- Sliding grate furnace
- Optimised combustion chamber design
- An integral 5 pass smoke purification system
- 30-100% turn down ratio modulation
- Typically 50-60 litre ash collection
- 'Optimatic' control system for full system integration
- Optional remote monitoring

## Services

### Included

- Boiler design and installation
- Fuel storage sizing

### Optional

- Maintenance schedule advice
- Service contracts available
- Advice on:
  - Ash collection services
  - Fuel delivery suppliers

## Warranty

- 5 years warranty on Main body
- 3 years warranty on combustion chamber
- 2 years warranty on other components (controls, drives, augers and moving grates)
- 1 year warranty on the overall boiler with a complete service/maintenance history

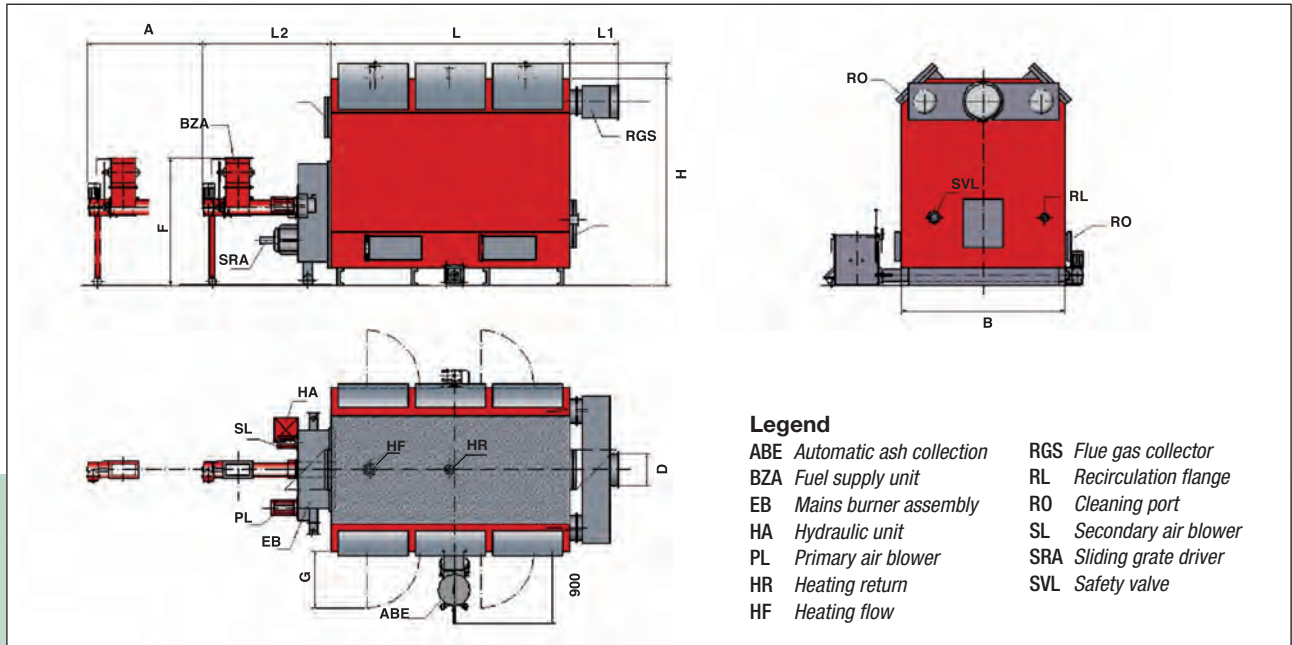
## Fuel types

To ensure that the boiler performs at its optimum efficiency, the correct fuel must be used. The BBS can be configured when ordering to use the following:

- **Woodchips** that comply with the requirements of CEN/TC 335 (Austrian ÖNORM M7133)
- **Wood pellets** that comply with the requirements of BS EN 14961-1:2010 and BS EN 14961-2:2011

## Optional Extras

- Remote monitoring of the system, via an ethernet connection to the boiler plant.
- 240L ash collection



Model No	Capacity (kW)	L (Length)	L1 (Length)	L2 (Length)	B (Width)	H (Height)	A (Feed)	F (Height)	G (Door opening)	D (Dia)	Weight (kg)	Integral Water Content (L)
BBS130	130	1222	75	1444	1128	1970	670	1200	455	250	3300	570
BBS199	199	1700	75	1444	1310	2092	700	1347	645	250	4000	980
BBS300	300	2040	75	1489	1403	2102	920	1352	645	300	5000	1076
BBS400	400	2170	75	1489	1538	2301	920	1382	645	300	5800	1985
BBS600	600	2644	75	1519	1671	2325	1450	1465	755	350	7600	2600
BBS750	750	2785	610	2529	2022	2484	1440	1500	667	400	10000	2950
BBS830	830	3005	610	2564	2052	2601	1440	1497	667	400	11660	3580
BBS1100	1100	3243	610	2589	2112	2796	1650	1556	667	450	12300	4210

\* Boilers of 1100kW and above can be specified on request. Please contact Potterton Commercial for a bespoke solution.

## Operation of the BBS

The diagram to the right shows the typical operation of the BBS, from the feed of the fuel from the left, to the exhaust of the gases to the right hand side.

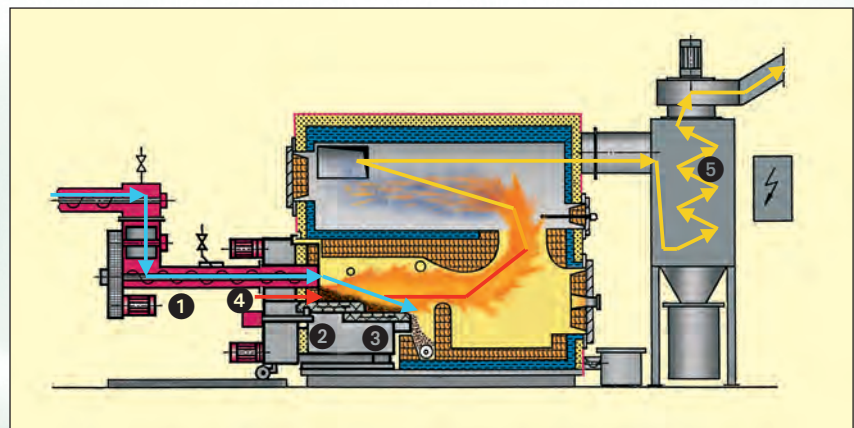
## Processes

### Blue Arrow

① This indicates the path of the fuel being fed into the combustion chamber of the boiler which is then ignited by a blown hot air ignition system. This begins the combustion process.

② The automated grate movement evenly spreads the fuel at the point of combustion for optimum burning efficiency.

③ When the fuel has been fully burnt, some ash residue will remain. The grate movement pushes any ash to a mechanical screw which removes the ash into the ash box (auto collection/removal of the ash).

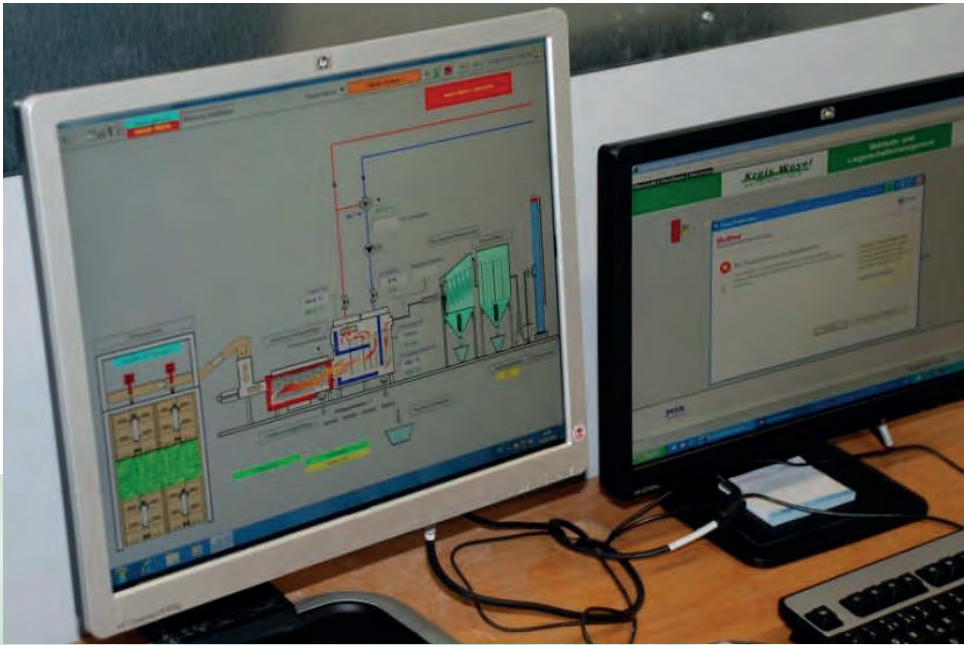


### Red Arrow

④ When the unit is first "fired", hot air is blown in at the fuel entry point. As the heat increase, the fuel is ignited and then the hot air ignition system turns off when the flame is established. The fuel is automatically fed in to the combustion point. The feed rate will modulate according to the heating system demand.

### Yellow Arrow

⑤ This is the path of the exhaust gases that are generated from combustion. The hot gases and particulates are drawn through the boiler through a multi cyclone collector to remove the majority of the particulates which are collected in the ash box at the base of the collector. The remaining hot gases are dispelled in to the atmosphere via the flue chimney.

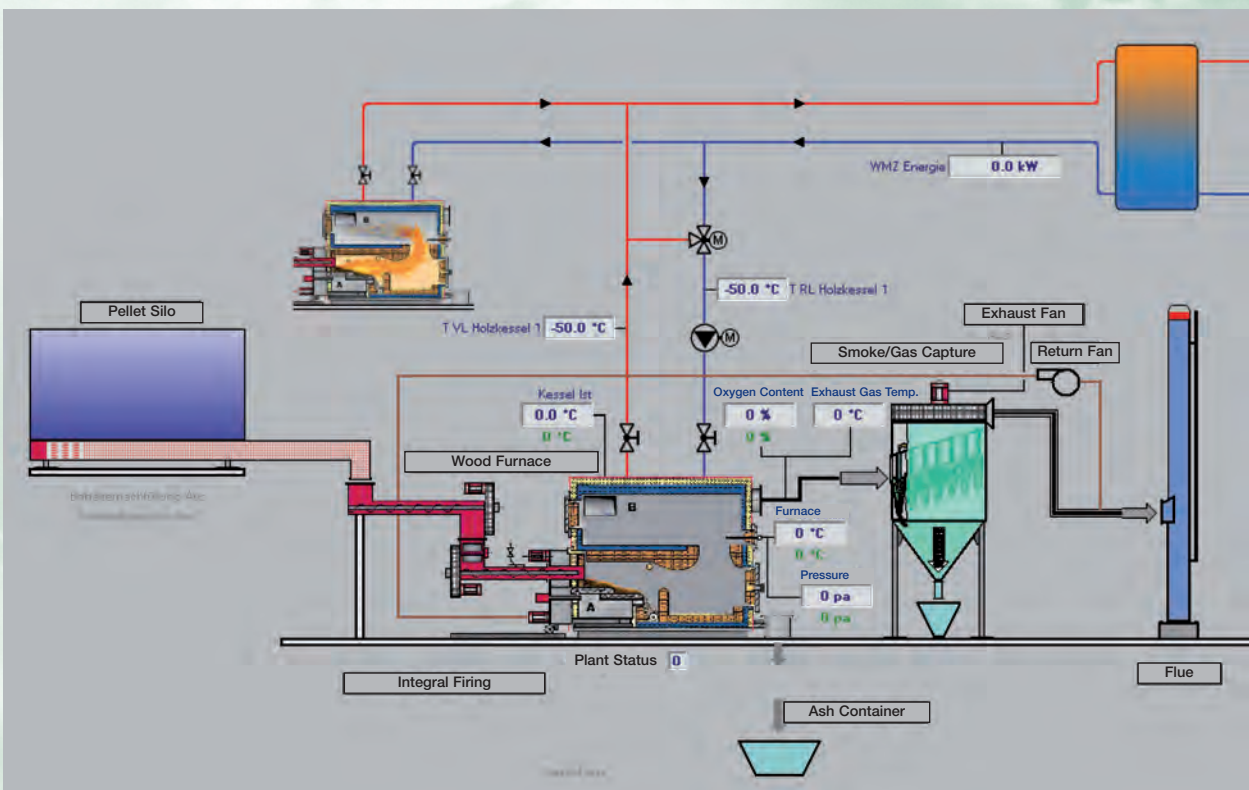
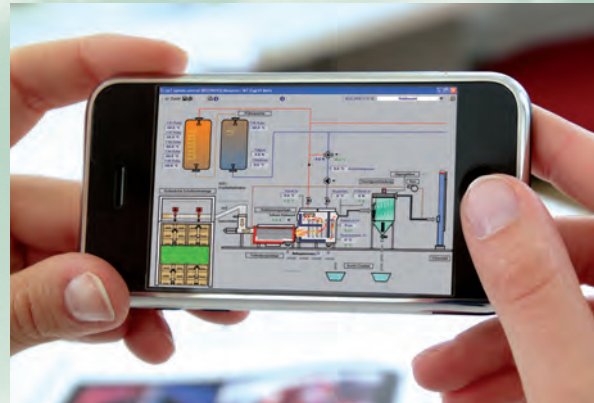


The BBS web portal shown on a PC screen (left) and a smartphone (below)

## Web Based Portal

### Features

- Monitoring of the individual parts of the plant
  - to monitor the temperatures, modulation and fuel levels within the system
- Alarms / fault reporting
- Optimisation of the system (parameter changes)
  - Potterton Commercial Secure Access
- Maintenance monitoring
- Requires Ethernet connection
- Only available with optional optimatic control
- Optional app interface



Typical system application schematic: BBS + Buffer + Feeder demand boilers

## Prefabricated Systems Enclosure Option

Included in the complete BBS solution is the option of a packaged plant room biomass enclosure. Specifically built to meet all building requirements, it also contributes towards Part L compliance for on-site generation.

Each BBS package plant room solution is designed to ensure client needs for exact project-fit are met. This includes any requirements for fuel storage and delivery.

Potterton Commercial is able to design packages and deliver bespoke biomass solutions up to 2MW.



## Package Plant Room Solution

### Features

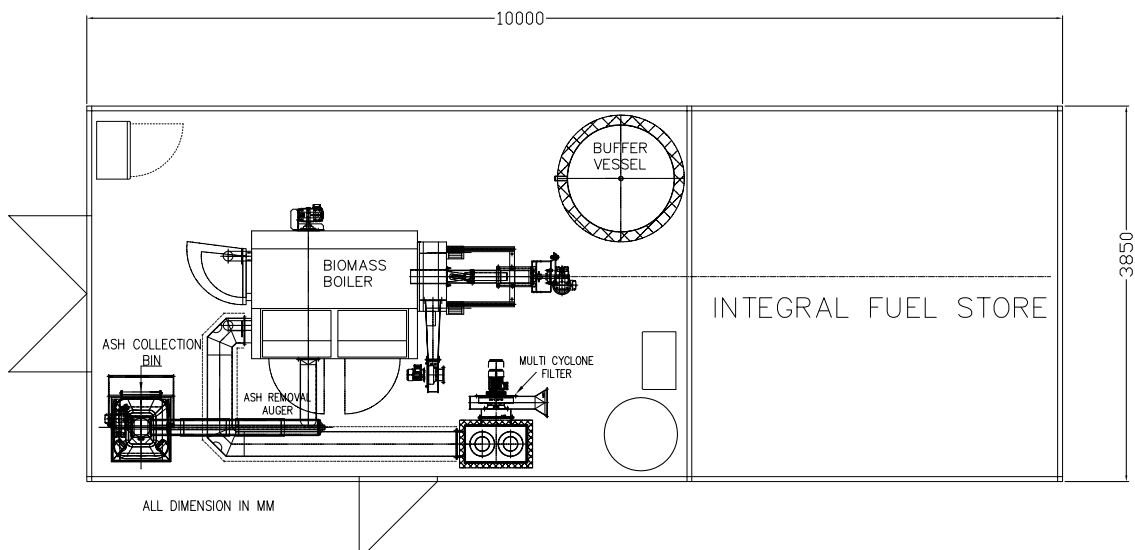
- Complete system design
- Commissioning
- Logistics
- Process flow schematics
- Site survey for delivery
- Integral Fuel storage and fuel delivery systems
- Supplementary heating appliances
- System circulating pumps
- Integrated system controls
- Safety blast doors on fuel storage

### Benefits

- Reduced site installation time
- 'Drop and connect' installation reduces downtime in retrofit applications
- Design of fuel store, delivery system and internal pipe work in accordance with best practice ensuring ease of operation and maintenance
- Quality controlled, factory assembled, pre-tested and commissioned product offering minimised risk and increased reliability

- Time and cost saving over conventional installation methods
- Reduced material waste on site
- Improved site health and safety owing to reduced activity and 'hot work'

### Packaged Plant – Plan View



## Specification

Model Reference		BBS130	BBS199	BBS300	BBS400	BBS600	BBS750	BBS830	BBS1100
Nominal Output	kW	130	199	300	400	600	750	830	1100
Heat Input at Nominal Output	kW	150	230	350	450	650	800	880	1150
Heat Minimum Output (25%)	kW	33	50	75	100	150	188	208	275
Maximum Boiler Flow Temperature	°C	80	80	80	80	80	80	80	80
Minimum Boiler Operating Temperature	°C	60	60	60	60	60	60	60	60
Minimum Boiler Return Temperature	°C	60	60	60	60	60	60	60	60
Flue Gas Temperature at Nominal Output	°C	170	170	170	170	170	170	170	170
Flue Gas Temperature at Minimum Output	°C	120	120	120	120	120	120	120	120
Carbon Dioxide CO <sub>2</sub>	%	11	11	11	11	11	11	11	11
Operating (Test) Pressure	bar	4(8)	4(8)	4(8)	4(8)	4(8)	4(8)	4(8)	4(8)
Minimum Operating Pressure	bar	1	1	1	1	1	1	1	1
Boiler Efficiency at nominal Output	% net	87	87	87	87	87	87	87	87
Flue Gas Mass Flow Rate at Nominal Output (based on moisture content of pellets 10%)	kg/h	345	529	794	1,059	1,588	1,984	2,256	2,980
Flue Gas Mass Flow Rate at Minimum Output	kg/h	86	132	198	264	396	495	562	743
Boiler Waterside Resistance at 10 K delta T	mbar	86	86	86	86	98	50	60	60
Boiler Waterside Resistance at 20 K delta T	mbar	90	90	90	90	103	52	64	64
Water Flow at 10k Delta T	l/s	10.34	4.788	7.1833	9.577	14.366	17.96	21.55	26.34
Water Flow at 20k Delta T	l/s	5.17	2.39	3.591	4.788	7.183	8.98	10.775	13.169
Boiler Water Content	l	570	980	1076	1985	2600	2950	3580	4210
Ash Bin Capacity (Standard)	l	60	60	60	60	60	60	60	60
Ash Bin Capacity (Optional)	l	240	240	240	240	240	240	240	240
Thickness of Boiler Body Insulation	mm	100	100	100	100	100	100	100	100
Boiler Dry Weight (with Insulation, Burner)	kg	2,304	4,000	5,000	5,800	7,600	10,000	11,660	12,300
Boiler Weight (with Water Content, Insulation, Burner)	kg	2,875	4,980	6,076	7,785	10,200	12,950	15,240	16,510
High Limit Thermostat Cut-off Temperature	°C	105	105	105	105	105	105	105	105
Minimum Cold Water Operating Pressure	bar	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Negative Pressure Condition at Boiler Flue Outlet	Pa	550	550	550	550	550	650	650	650
Electrical Consumption During Operation	Watt	4,500	4,500	5,200	5,200	6,000	7,000	7,000	8,500
Electrical Consumption During Ignition	Watt	7,600	7,600	8,300	8,300	9,100	10,100	10,100	11,600
Electrical Consumption During Introduction of Pellets	Watt	6,000	6,000	6,700	6,700	7,500	8,500	8,500	10,000
Maximum Current (dependant on the number of drives)	A	32	32	63	63	63	63	63	63
Fuel – Pellet		✓	✓	✓	✓	✓	✓	✓	✓
Fuel – Chip		✓	✓	✓	✓	✓	✓	✓	✓

This document is for guidance only. For installation purposes, this information must be read in conjunction with local Regulations, applicable standards and the manufacturer's installation instructions.

For outputs above 1100kW, please contact Potterton Commercial for a bespoke quotation (wood chip option only on models 1500kW and above).

All descriptions and illustrations contained within this leaflet have been carefully prepared, but we reserve the right to make changes and improvements in our products which may affect the accuracy of the information in this leaflet.



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