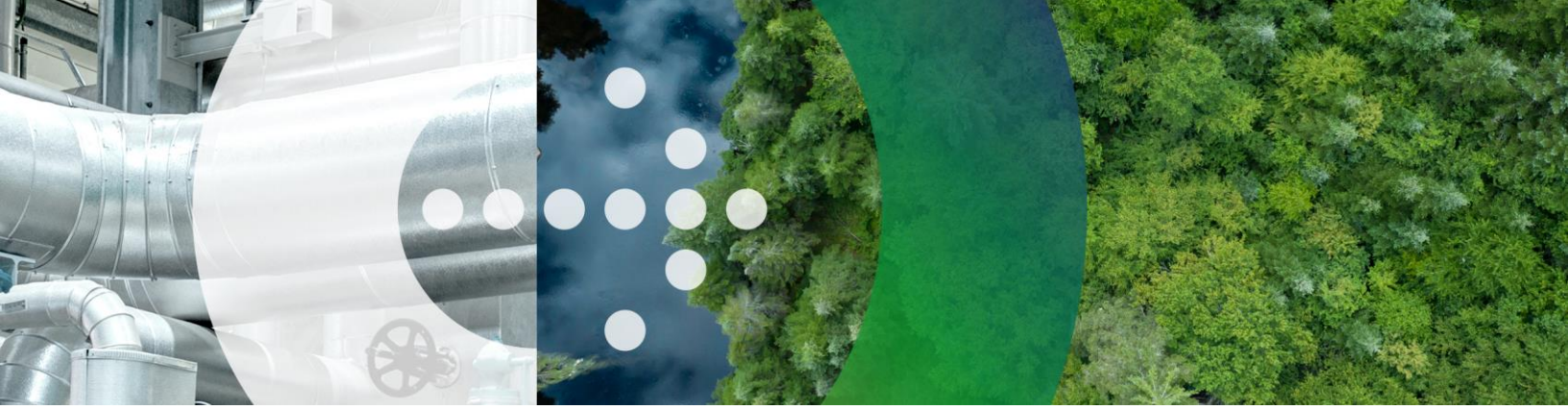


opting Solution

Biomass Boiler

EXTERNAL COMBUSTION BIOMASS BOILER

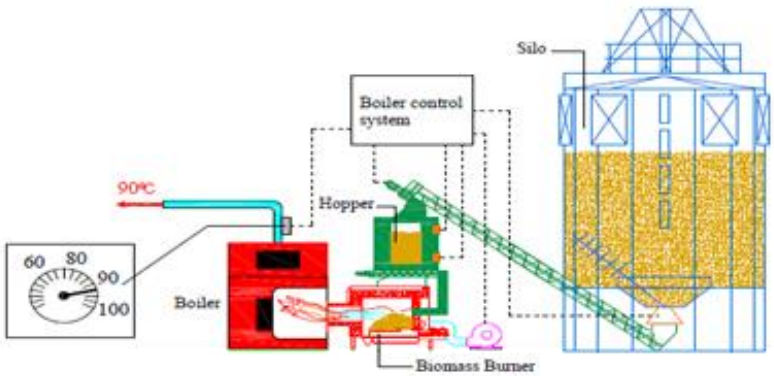
This patented External Combustion Biomass Boiler can fire wood waste (sawdust, chips and shavings) with moisture content between 20% and 40% and a particle size as big as 1.5 in.

- The gasifier generates higher temperatures and lower emissions.
- The external combustion biomass boiler is an all in-one, solid fuel and multi pass controller hot water boiler.
- The automated feed routes the stand by wood chips or other solid fuel from the hopper to the proprietary gasifier. The air is also adjustable account for heating requirement and through the air flaps.
- The boiler PLC a programmable logic PLC governs the feed timing for main and idle firing.
- The solid fuel particle size and moisture influence the performance combustion and response time.
- The combustion air modulates depending on the calorific value, size and moisture content of the biomass within some limitations.

Fire suppressor: A backfire prevention mechanism prevents fire from travelling back through the auger.

Temperature control: Main and stand-by (idle) firing gas evacuation b are governed by water temperature limit controls. Once the desired temperature is attained, stand-by firing is activated to retain the flame without overheating.

Automated feed: An agitator inhibits clogs in the hopper, which feeds the dosing auger. The auger delivers a set quantity of fuel to the gasifier, which is equipped with an overload sensor. Tripping the sensor will immobilize the feeding auger until the fuel level returns to acceptable levels. The air feed is also adjustable account for heating requirements, and through the opening of air restrictor flaps. The control is made in function also of solid fuel particle size, moisture content and calorific value.



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Montréal : 450 902-3142
Québec : 418 664-1177

ECBB SERIES: –

Technical parameters

	ECBB-200	ECBB-300	ECBB-650	ECBB-1000	ECBB-1900	ECBB-3400	ECBB-4100	ECBB-6800
Heating Capacity	0.2 MMBtu (60 kW)	0.3 MMBtu (90 kW)	0.65 MMBtu (190 kW)	1.0 MMBtu (300 kW)	1.9 MMBtu (550 kW)	3.4 MMBtu (1000 kW)	4.1 MMBtu (1200 kW)	6.8 MMBtu (2000 kW)
Fuel type	Wood waste 1-1/2" max; moisture content 20-40%							
Fuel Consumption (lb/hr)	53	89	121	260	343	826	1000	1724
Thermal efficiency %	≥82	≥83		≥86				
Admissible static pressure	3 Bar							
Max outlet temperature	203 °F							
Heated surface (m²)	5.5	11.5	21	25	49	78	98	174
Exhaust gas temperature	392			428	464			
Weight (kg)	1320	2530	3850	4730	6820	13750	15000	31400
Boiler Size (Length mm)	1665	1780	2200	2619	3205	3690	3910	4110
(Width mm)	710	835	1084	1310	1420	1990	1990	3100
(Height mm)	1300	1475	1570	1835	2050	2190	2190	2270

ECBE SERIES (SMALL CAPACITY)

- Thermal efficiency up to 91.15%
- Fly ash to be collected automatically inside by using cyclone
- High temperature firing up to 900-1005°C, and low temperature exhaust down to 107-113°C
- Operating at 60% fired and 40% gasified; no coking occurred
- Continuous run for 1-2 hours by one time feeding
- Firing time and speed controlled automatically by using variable frequency conversion
- Igniting only for one time, then maintain temperature automatically; unnecessary to ignite again when restart
- Long ash removal interval (3-7 days). Non- smoke, non-coking and easy for ash cleaning.
- Automatic feeding system. Low noise and cost saving.
- Nice appearance, easy to operate and maintain.
- Fuel can be wood / straw pellet, auxiliary wood chips and briquette.

Technical parameters

	ECBE -80	ECBE -120	ECBE -175	ECBE -240	ECBE -350	ECBE -540	ECBE -720
Rated Heating Capacity	0.3 MMBtu (80 kW)	0.4 MMBtu (120 kW)	0.6 MMBtu (175 kW)	0.8 MMBtu (240 kW)	1.2 MMBtu (350 kW)	1.8 MMBtu (540 kW)	2.5 MMBtu (720 kW)
Thermal Efficiency	91.15%						
Air Fan Motor (kW)	0.75	0.75	1.5	1.5	2.2	3	4
Ignitor	1.8 KW × 2						
Fuel Consumption (kg/hr)	11.34	16.2	25.7	34.2	51.3	77.5	112.4
Water Storage Capacity (m^3)	0.5976	0.697	0.956	1.29	1.72	2.25	3.8
Heating Area (m^2)	500-700	700-920	920-1400	1400-1800	1800-2700	2700-4500	4500-5500
Water Yield (ton/hr)	1.65	2.2	3.5	4.5	6.8	10.08	13.2
Silo Size (Length mm)	1000	1000	1000	1000	1000	1100	1100
(Width mm)	570	570	570	570	570	600	600
(Height mm)	750	750	750	750	750	750	750
Weight (kg)	575	630	735	960	1422	2018	2896
Boiler Size (Length mm)	985	985	1160	1160	1290	1610	1710
(Width mm)	540	590	640	690	790	890	990
(Height mm)	1200	1200	1290	1390	1620	1710	2000

More capacities not listed above are available.

INTERNAL COMBUSTION BIOMASS BOILER

GZ SERIES

GZ combustion system is designed to burn fuels of lower moisture content (max. 40%) including pellets, as well as contaminated with MDF resins. Heavy refractory lining assures high combustion temperature resulting in complete combustion of unwanted chemicals.

An advantage of this boiler is a compact structure (the heat exchanger is placed directly above furnace) and a simplified service. The result of the design allows for smaller area of installation. A reliable and proved construction is based on 50 years- experiences of company in the field of manufacturing boilers and furnaces.

Opting offers a wide range of related devices as; silos of up to 250 m3 capacity with automatic selecting discharge auger conveyors, free standing steel chimneys, hydraulic operated live floors, and ash cyclones improving exhaust quality.

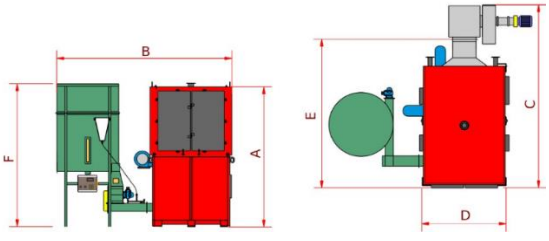
Every boiler is protected against burning back through the auger with sensor controlled fire suppression installation (gravity water tank, thermostatic valve and sensor). Bigger boilers (GZ-600 and GZ-1000) contain chute channel mechanically separating upper and lower feeders.

GZ systems consist of following elements:

- Water boiler and dual pass heat exchanger above combustion furnace;
- Refractory furnace with thermal insulation;
- Fuel feeding system;
- Fire suppression system;
- Primary and secondary air blowers;
- Control box;
- Fuel hopper;

Technical parameters

	Unit	GZ-110	GZ-300	GZ-600	GZ-1000
Rated Heating Capacity	kW BTU/h	110 380 K	300 1 MM	600 2 MM	1000 3.5 MM
Fuel	Fuel with nominal power, n.c.v. 17600 [kJ/kg], humidity 25 [%]				
Fuel Consumption	kg/hr	38.5	105	210	350
Tank capacity	m³	1.5	1.5	2.3	4.4
Power consumption	kW	0.95	2.5	2.45/3	5.15/5.7
Power supply voltage	V	230/400 or per request			
Heated surface (m²)	m²	700	1920	3900	6400
Weight	kg	1850	5000	10000	15200
Dimension A	in	62	90	120	124
Dimension B	in	112	132	142	188
Dimension C	in	111	148	157	185
Dimension D	in	38	52	69	75
Dimension E	in	83	118	130	156
Dimension F	in	60	85	116	143



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