

Biomass Boiler Information

Issue 28th February 2023

In common with other types of combustion appliances, biomass boilers are potentially a source of air pollution. Pollutants associated with biomass combustion include particulate matter (PM₁₀/PM_{2.5}) and nitrogen oxides (NO_x) emissions. These pollution emissions can have an impact on local air quality and affect human health. It is essential that any new biomass boilers meet certain emission control requirements in order to protect local air quality.

1. Development Details

a) Planning Application Reference	tbc
b) Name of Site	Sauchen Tree Farm
c) Address where boiler(s) will be located	Sauchen Tree, New Aberdour, AB43 7LN
d) Person completing form	Kevin O'Brien Architects Ltd
e) Contact telephone number	01779 238020

2. Particulars of the Boiler

f) Describe the proposed biomass boiler including make, model, manufacturer, thermal capacity (kW/MW), efficiency, maximum rate of fuel consumption (kg/hr or m ³ /hr).	Farm 2000 HT80R, Efficiency 80%, 195kw, Fuel max 50kg straw bale per hour
g) Describe the boiler combustion system and how combustion will be optimised and controlled.	This system has an active straw damp which adjusts between secondary and primary air based on a pre programmed movement. The damper system operates to 12 -16 % free oxygen. At this level are certificates meet the required EA requirements for particulates and NO _x .
h) Describe the fuel feed system.	Bales fed into boiler by tractor or telehandler, This is a manually stoked and de-ashed batch boiler
i) Provide details of the abatement equipment in place for controlling particulate matter (fly ash) emissions.	Based on the emissions certificates for a HT80R there is no requirement for additional abatement equipment for particulate matter.
j) How does the biomass boiler deal with variable heat loads – is the boiler linked to an accumulation tank?	The boiler will be linked to an accumulator tank that will be sized according to the recommendations for a

batch burning biomass boiler; 80L per kW output of boiler (195kW).
k) Is the biomass boiler an exempt appliance in accordance with the Clean Air Act 1993? If yes provide evidence to demonstrate the biomass boiler has been tested and certified as an exempt appliance (for example a link to the appliance on the UK Smoke Control Areas website)
No but not in a smokeless zone.

3. Boiler Operation and Maintenance

l) Describe arrangements for cleaning and de-ashing the boiler.
<p>Boiler to be cleaned and de-ashed once a week manually using supplied tools. The heat exchange tubes will be cleaned weekly by brushing them with the wire bush.</p> <p>The boiler will be left to cool down before de-ashing and heat exchange tubes cleaning. Cooled ash will be collected into the steel container.</p> <p>Boiler operative will monitor levels of ash and dust deposits in the boiler while loading the boiler and decides if it needs cleaning more often. Boiler stack will be inspected weekly during the boiler cleaning and swept if necessary.</p>
m) Provide details of the maintenance schedule associated with boiler, abatement equipment and stack. This should include frequency of boiler inspection and servicing by a trained boiler engineer.
<p>Daily inspections by owner/operator including:</p> <ul style="list-style-type: none"> - Check for build-up of ash in the chamber and clearing if necessary - Check the blower bars clear of ash and debris - Check the heat exchange tubes are not blocked - Check if Doors are operating as normal - The pumps for faults - Leaks on the pipework and safety pressure relief valve - Control panel operation and water temperature reading - Burner fan working and free from blockages - Heat meter operational - Area around the boiler is clear of ash and debris <p>Weekly inspections by owner/operator:</p> <ul style="list-style-type: none"> - Clear the ash of the chamber - Remove and check the blower bars - Scrape and brush the heat exchange tubes - Clear the chimney box - Check the flue for blockages and sweep if necessary

<ul style="list-style-type: none"> - Check the burner fan for dust and debris - Check the main pumps - Check the shunt pump and flow switch operation - Grease the door bearings <p>6-month inspections by owner/operator:</p> <ul style="list-style-type: none"> - Clear/Scrape the chamber walls - Check the blower bars manifold for blockages - Thoroughly clean/scrape the chamber - Sweep the chimney - Check for rust, clear and re-paint if necessary - Check electrical connections - Check the pipe lagging - Check the door rope <p>Boiler to be serviced by competent biomass engineer annually. Service includes checking for faults, thoroughly inspecting whole system components, repairing/replacing faulty components, cleaning the boiler, sweeping the flue, removing the rust and repainting surfaces if needed, advising customer about operational faults, etc.</p>
n) Describe how incidences of boiler or abatement system failure are identified & mitigated.
N/A not burning waste

4. Boiler Stack Details

o) Identify the height of the boiler exhaust stack above ground.
Flue height is 7.1m above ground level
p) Identify stack internal diameter (m).
355mm DIAMETER
q) Provide maximum particulate matter and nitrogen oxides emission rates (mg/m ³ or g/hr) to standard reference conditions (6% oxygen, 273K, 101.3kPa).
Refer separate RHI certificates

r) Identify the exhaust gas efflux velocity (m/s).
0.5m/s
s) Provide the grid reference of boiler exhaust stack.
389736E, 863433N approx

5. Fuel Details

t)	Describe the fuel specification including origin, type of wood (chips, pellet, briquettes), nitrogen, moisture, ash content (%).
	Cereal straw bales
u)	Does the fuel comply with European or equivalent fuel quality standards such as CEN/TS 335 or ONORM?
	Boiler will be registered to RHI which requires fuel to be specific moisture content and quality as per RHI emission Certificate.

v)	Describe what fuel quality control procedures will be adopted to guarantee constant fuel quality from your supplier.
	Cereal straw bales are relatively stable in terms of their moisture content
w)	Provide evidence to demonstrate that the biomass boiler combustion system is applicable to the fuel specification.
	The information is on the emissions certificate.
x)	Identify where and how fuel will be stored on site (e.g. bunker or silo).
	Biomass Store
y)	Describe how fuel will be unloaded from the delivery vehicle into the storage facility and what control measures will be in place to reduce particulate matter emissions to atmosphere.
	Fuel Will be unloaded using tractors, HIAB lorries or other loading equipment available on site.

6. Building Details

z)	Record the distance of adjacent buildings from boiler exhaust stack.
	As noted on plans
aa)	Record the height of adjacent buildings from boiler exhaust stack.
	As noted on plans
bb)	Record the dimensions of building to which the boiler exhaust stack is attached.
	n/a
cc)	Indicate the distance from the boiler exhaust stack to the nearest fan assisted intakes and openable windows.
	Over 100m (residential) 34.5m to farm shed

