

Biomass Boiler Information Request Form – to accompany a planning application or environmental permit application

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.

In order to assess the requirement for an environmental permit the following information below must be supplied to the local authority.

The operation of a biomass boiler may require regulation under the Clean Air Act 1993, the Environmental Permitting Regulations (EPR) or the Waste Incineration Directive (WID), depending on the type of biomass fuel and the size of the boiler, as detailed in Appendix 1.

You may find the Carbon Trust publication 'Biomass heating: a practical guide for potential users' a useful companion when completing this form. The publication can be downloaded from <http://www.carbontrust.co.uk/publications/publicationdetail?productid=CTG012> (free registration required).

1. Development Details

a) Planning Application Reference	
b) Name of Site	
c) Address where boiler(s) will be located	
d) Person completing form	
e) Contact telephone number	
f) Date	

2. Particulars of the Boiler

This information on the basic design of the system will help us assess the emissions performance. Biomass boilers often produce relatively high emissions when lightly loaded, hence the question regarding an accumulation tank (heat store). The boiler manufacturer and/ or installer should be able to help you provide this information.

g) Describe the proposed biomass boiler including make, model, manufacturer, thermal capacity (kw/MW), efficiency, maximum rate of fuel consumption (kg/hr or m³/hr).

--

h) Describe the boiler combustion system and how combustion will be optimised and controlled.

--

i) Describe the fuel feed system.

--

j) Provide details of the abatement equipment in place for controlling particulate matter (fly ash) emissions.

--

k) How does the biomass boiler deal with variable heat loads - is the boiler linked to an accumulation tank?

--

l) Is the biomass boiler an exempt appliance in accordance with the Clean Air Act 1993? If <u>yes</u> , 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 http://www.uksmokecontrolareas.co.uk/appliances.php)

3. Boiler Operation and Maintenance

System efficiency and emissions performance very much depend upon regular maintenance. Your installer should be able to recommend a suitable maintenance schedule.

m) Describe arrangements for cleaning and de-ashing the boiler.
n) 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.
o) Describe how incidences of boiler or abatement system failure are identified and mitigated.

--

4. Boiler Stack Details

The design of the stack greatly affects how pollutants produced in the boiler disperse over the surrounding area. Where the area is heavily built up, or has existing air quality issues, dispersion becomes more complicated and a computer modelling technique known as dispersion modelling will probably be required. Your installer should be able to provide most of the details and make a calculation on stack height and design. When dispersion modelling is required you or your installer may need to engage a specialist consultant.

p) Identify the height of the boiler exhaust stack above ground. Evidence shall be presented to demonstrate that predicted emission concentrations associated with the calculated stack height do not have a significant impact on the air quality objectives for NO ₂ and PM ₁₀ . It will be necessary to obtain background concentrations of NO ₂ and PM ₁₀ for the proposed location of the biomass boiler. These are available at http://www.airquality.co.uk/laqm/tools.php?tool=background06 . If the location already exceeds the air quality objectives the options for potential increases to pollution emissions need careful assessment. The boiler exhaust stack height should be calculated using dispersion modelling software such as ADMS 4 or Aermod.

q) Identify stack internal diameter (m).

r) Provide maximum particulate matter and nitrogen oxides emission rates (mg/m ³ or g/hr) to standard reference conditions (6% oxygen, 273K, 101.3kPa).

s) Identify the exhaust gas efflux velocity (m/s).
t) Provide the grid reference of boiler exhaust stack.

5. Fuel Details

Emissions from a biomass boiler depend greatly on the type and quality of the fuel used. Reasonable guarantees are therefore needed that the fuel is compatible with the boiler, is of a high quality and that quality will be assured for a reasonable period of time. Your fuel supplier and installer should be able to provide this information.

u) Describe the fuel specification including origin, type of wood (chips, pellet, briquettes), nitrogen, moisture, ash content (%).
v) Does the fuel comply with European or equivalent fuel quality standards such as CEN/TS 335 or ONORM?

w) Describe what fuel quality control procedures will be adopted to guarantee constant fuel quality from your supplier.

x) Provide evidence to demonstrate that the biomass boiler combustion system is applicable to the fuel specification.

y) Identify where and how fuel will be stored on site (e.g. bunker or silo).

z) 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.

aa) Identify the type of fuel delivery vehicle and provide evidence to demonstrate that there is sufficient space for the fuel delivery vehicle to access the site. How frequent will the fuel deliveries be?

bb) Are there noise issues to note related to the fuel store re-filling procedures?
cc) How will any mould or other odours from the fuel store be managed?

6. Building Details

The height and distance of neighbouring buildings will determine their exposure to emissions from the biomass boiler, and therefore the height of the stack needed. Your architect should be able to provide this information.

dd) Record the distance of adjacent buildings from boiler exhaust stack.
ee) Record the height of adjacent buildings from boiler exhaust stack.
ff) Record the dimensions of building to which the boiler exhaust stack is attached.

gg) Indicate the distance from the boiler exhaust stack to the nearest fan assisted intakes and openable windows.
hh) Has there been a noise assessment for any motor driven fuel feed mechanism, with both internal and external noise propagation in mind?

7. Plans

Please attach the following to this form:

- A site plan showing the location of the boiler room, fuel storage area and the access and exit route for fuel delivery vehicles, and
- A site plan showing the position of the boiler exhaust stack, fan assisted intake air vents and nearest openable windows.

8. Return this form to:

Managed Growth and Communities
Solihull MBC
Council House
Manor Square
Solihull
B91 3QB email planning@solihull.gov.uk

The operation of a biomass boiler may require regulation under the Clean Air Act 1993, the Environmental Permitting Regulations (EPR) or the Waste Incineration Directive (WID), depending on the type of biomass fuel and the size of the boiler, as detailed in Table 1.

A formal application for a permit must be made to SMBC or the Environment Agency, in order to operate a biomass boiler that falls under the EPR or WID.

Table 1 Regulation of biomass plant

Fuel Scenario	Plant Size	Pollution Regulation applicable	Regulator
1. Biomass fuels e.g. coppice willow, and fuel residues of a similar nature arising from the manufacture of these fuels	<20 MWth	Clean Air Act (see note d below)	Local Authority
	20-50 MWth	LA-PPC (Part B PPC)	Local Authority
	>50 MWth	EPR (Part A1)	Environment Agency
2. Waste or waste derived biomass exempted from WID, and fuel residues of a similar nature arising from their manufacture	<0.4 MWth and < 45.4 kg/hr	Clean Air Act	Local Authority
	0.4 - 3 MWth and 45.4 -1000 kg/hr	LA-PPC (Part B PPC)	Local Authority
	> 3 MWth and/or 1000 kg/hr	EPR (Part A1)	Environment Agency
	> 50 MWth	EPR (Part A1)	Environment Agency
3. Waste or waste derived biomass to which WID applies	< 3 MWth	WID applies. LA-PPC (Part A2)	Local Authority
	> 3 MWth	WID applies. PPC (Part A).	Environment Agency

Table Source: reproduced from EPUK, 2009. Biomass and Air Quality Guidance for Local Authorities (England and Wales) Guidance Document 2009. Available at http://www.environmental-protection.org.uk/assets/library/documents/Biomass_and_Air_Quality_Guidance.pdf

Form Source: form based on template from EPUK, 2009. www.environmental-protection.org.uk/assets/library/documents/Biomass_Boiler_Information_Request_Template.doc

Notes:

- a) The above is true for stand-alone combustion plant and incinerators. However, if the combustion is associated with an activity that is subject to Local Authority control, then the waste burning plant will remain under Local Authority control provided it is below 50 MW.
- b) All plant rating is thermal capacity.
- c) Biomass fuels generally fall into three categories, depending on whether the fuel is classified as waste, and whether it falls under the WID:
 - 1) Virgin' fuels – e.g. fuels derived from fresh timber
 - 2) Waste or waste derived fuels, exempt from WID – e.g. agriculture residues
 - 3) Waste or waste derived fuels, covered by WID – e.g. treated wood waste.
- d) Emission limits for 'grit and dust' are applied to larger appliances (about >240 kW output) irrespective of whether they are located in a smoke control area. Assessment of emissions from appliances about >44kW for CAA exemption is generally by interpolation between the BS PD 6434 limits and the grit and dust emission limits.