

# RISK MANAGEMENT PROGRAMME FOR THE USE OF BIOMASS BOILERS UP TO 300KW OUTPUT

In accordance with Government Policy to find alternate fuel sources there has been a steady increase in the use of biomass machinery to generate sources of heat and hot water for own use.

Biomass boilers are designed to operate unattended 24 hours a day with weekly, monthly and annual maintenance programmes on-going. Bulk fuel containers or hoppers can reduce the requirement to refill on a daily basis thus enabling the plant to operate unattended for longer periods of time.

This guidance document is limited to the medium sized boilers with an output of up to 300KW using woodchip or pellets only and supplied from a bulk silo or store.

The following information is provided for guidance purposes only

## 1) BUILDING/PLANT DESIGN REQUIREMENTS

- a) Where possible the biomass boiler and associated fuel store to be located in an external building of non-combustible construction or purpose built structure separate from the main property by at least 10 metres or as far as is practical
- b) Installations to be designed and installed in accordance with Building Regulations Combustion Appliances and Fuel Storage Systems - Approved Document J and by an approved installer
- c) Plant to be designed in accordance with BS EN 303-5:19995
- d) Fuel to be transported via a screw feed (auger) within the feed chamber to the combustion chamber. Auger to be fitted with a fire lock to provide a barrier between the combustion chamber and the hopper or fuel store to prevent burn back
- e) Services or ducting passing through openings within the plant room to be fire stopped or fitted with fire dampers to provide at least 60 minute fire resistance in accordance with Building Regulations
- f) Only fuels recommended by the manufacturer to be used in the boiler and to be within the required specification for moisture content
- g) All primary isolation valves, temperature thermostats and/or safety critical control devices connected to the plant to be fitted with an independent back up isolation facility (such as solenoid valves, sensor/angel valves, fusible link) to ensure shut down of the plant in the event of fault or failure
- h) Manual override of safety valves or equipment or bypassing of safety devices to cause the plant immediately to shut down (fans to continue to operate until all hot gases from the boiler have been removed and the boiler has cooled to safe levels)
  - i) Restart following shut down not to be possible unless the initial start-up and safety check procedures are followed
  - j) The ignition of fuels within the boiler to be by automatic means or in accordance with the manufacturer's instructions.

## 2) AUTOMATIC FIRE ALARM SYSTEMS

An automatic fire alarm with smoke/heat detectors to be incorporated within the boiler room, preferably directly above the boiler and designed in accordance with BS5839-1:2013. Activation of the alarm to generate a local audible warning device. It is recommended that automatic fire alarm be configured to generate a remote off site signal in the event of activation as well as shutting down the plant.

## 3) AUTOMATIC FIRE SUPPRESSION SYSTEMS

- a) Fuel transport auger to be directly linked to a static water tank (having minimum capacity of 25 litres) thus ensuring that in the event of fire or excess heat building up within the fuel transport auger the whole chamber is automatically drenched



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- b) Where possible the water tank to be fed directly from the mains water supply via a ball control valve. Frost protection to be provided to the static tank if required
- c) Activation of the water suppression system to be by means of temperature thermostat sited within the auger chamber. Operation of the suppression system to automatically isolate the plant
- d) Portable Fire Extinguishing Appliances (FEA) to be provided and maintained within the generator area in accordance with BS5306.

#### 4) FIRE RISK ASSESSMENT

Where the boilers are located in a building occupied for either commercial use or residential occupancy with sleeping, a simple fire risk assessment must be undertaken and plan established with regards to a safe means of evacuating the building in the event of fire in the boiler room.

#### 5) ELECTRICAL INSTALLATIONS

Electrical installations present a potential inception risk and so strict requirements are necessary and to include the following:

- a) electrical installations designed for their specific purpose and conditions of use. Fire resistance cabling is provided within areas of high temperatures
- b) for commercial premises, general fixed wiring inspection of the system and premises with IET Certification every 5 years in accordance with the recommendations of The Electricity at Work Regulations.

#### 6) HOUSEKEEPING

- a) Any spilled pellets or chips or overfill in the boiler compartment to be cleared promptly and inspected at least weekly

- b) The correct storage arrangements for pellets or woodchip is essential to prevent moisture absorption. They will absorb moisture from damp floors or walls which can lead to either spontaneous combustion in extreme cases or can also damage the boiler
- c) All waste ash to be collected and retained within a proprietary metal lidded receptacle (preferably located externally and fed by screw mechanism) incorporating fire dampers to any wall openings
- d) Waste to be removed in accordance with the manufacturer's recommendations and doused with/in water before final disposal
- e) Where possible a clear space of at least 3 metres to be maintained around the plant and associated equipment
- f) There is a risk that pellets in enclosed stores can produce carbon monoxide under certain conditions. Storage areas should be treated as confined spaces and appropriate ventilation and gas checks to be undertaken before entering enclosed stores or hoppers.

#### 7) MAINTENANCE

- a) All plant and equipment to be inspected, serviced and maintained in accordance with the manufacture's recommendations by an approved and qualified engineer or suitably trained and qualified person
- b) Flues to be cleaned in accordance with the manufacturers recommendations or otherwise on an annual basis by a competent person.

#### IMPORTANT NOTE

The information contained herein is designed for guidance only and NFU Mutual cannot accept responsibility for any errors or omissions arising from its use.



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