

BIOMASS PLANT – information sheet

Lloyds Animal Feeds (Western) Ltd
Dunster Road
Wrexham Industrial Estate
Wrexham
LL13 3PS

Grid reference SJ 38374 49666

PROPOSED BOILER

Hydraulic moving grate saturated steam boiler with economizer - 999kW - 90% efficiency - 307 kg/hour @ 25%MC

BOILER COMBUSTION SYSTEM

Kara boilers are controlled with a PLC via a touch screen for the complete plant. It has flame temperature control, oxygen control, combustion chamber pressure control and flue gas recirculation for low Nox control.

FUEL FEED SYSTEM

Delivery trucks will tip fuel onto a walking floor which is controlled by the KARA controller to move fuel onto a scraper chain conveyor which delivers fuel into the boiler house and onto the boilers feed system which loads the combustion chamber.

CONTROLLING OF PARTICULATE MATTER

The plant will be fitted with either a multi cyclone fly ash removal system (which centrifugally removes larger particulates from the flue gasses) and a back filter to remove any remaining smaller particulates or an Electrostatic filter to remove particulates.

VARIABLE HEAT LOAD CONTROLS

The boiler is able to modulate down to 30% capacity under several PID controls within the PLC relating to fuel feed & primary air, secondary air, pressure control and flue gas recirculation control.

No buffer tank is required because there is a guaranteed minimum run time because of process heating demands

CLEAN AIR ACT 1993

The Clean air act is only applicable to systems up to 400kW so is not applicable in this instance. The boiler has TUV certification and it will be operated under an IPPC certification. Please see document attached - Department for Environment Food & Rural Affairs – Process Guidance Notes 1-12

CLEANING AND DEASHING THE BOILER

Heat exchanger cleaning and de-ashing is completely automatic with pneumatic tube cleaning and ash screws from the combustion chamber. There will be annual boiler cleaning when the plant is turned off.

MAINTENANCE AND SYSTEM FAILURE PRECEEDURE

There will be yearly service and cleaning by manufacturer trained personnel.

Any failure of the system is monitored by the boiler's PLC. The Boiler and plant is shut down if anything is not functioning correctly within design parameters.

All incidents are logged by the PLC.

BOILER EXHAUST STACK

A D1 flue calculation will be undertaken to ensure Water Vapour and the cleaned products of combustion are properly dispersed.

Internal Dimension of top section to be confirmed by flue calculation (approx 400mm).

PARTICULATE MATTER AND NITROGEN OXIDES EMISSION RATES

Dust: <30 g/GJ wood input (the same)

< 45 mg/Nm³ (11%volO₂) is the same as 68 mg/Nm³ (6%)

CO < 100 mg/Nm³ (11%) is the same as 150 (6%)

TOC < 20 mg/Nm³ (11%) is the same as 30 mg(6%)

Nox < 150 g/GJ wood input (the same)

< 230 mg/Nm³ (11%) 345 mg (6%)

Exhaust gas efflux velocity – 15m/sec

FUEL DETAILS

Wood Chip supplied by a BSL certified supplier (approved Biomass suppliers certificate). The material will go through a sorting system and agitated prior to loading reducing the dust content. Moisture content up to 55% (Wet scale)

Kara Energy Systems have been established for 100 years and are a worldwide provider of tailor made wood/solid biomass combustion systems.

The Boiler will be tailor made for the fuel available within Lloyd group.

BUILDING DETAILS

A steel frame building will be provided to house the boiler, this has a footprint of 16.5m x 16.5m externally. Eaves height 8m, ridge height 9.55m.

It will be covered with insulated profile cladding colour : Plastisol Mushroom BS10B19.

There are several large steel frame buildings on the site, the exhaust stack will be connected to the existing silos. There will be a connection walkway to the existing buildings from the Biomass Plant. See drg no. 14/785/03 and 4 for further detail.

There are no fan assisted intake units or openable windows in close vicinity to the exhaust stack, the D1 flue calculation will ensure the flue is designed to disperse products of combustion safely.

Dawn Minshall
dated 27/02/2015

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