Toward Zero Carbon

Competitive, Sustainable Energy
Introduction to TZC

- We are one of Ireland’s leading energy consultants - we work with the food processing sector delivering real and sustainable savings to our clients.
- We are established EXEED experts
- We have engaged with the poultry producing sector and SEAI in forming the guidelines for the SSRH
- We have identified partners who we are prepared to recommend to the sector.
- We have developed a unique supply chain for BIOMASS which may present a business opportunity for interested poultry producers.
Practical  -  Biomass

- Site & Building Layout
- Inside the plantroom & System Design
- Boiler selection
- Maintaining & Running the Boiler
- The importance of fuel
Site layout & Building Design
Building Design - Best in class

Plant room

Fuel Store

150 Cu Meters
Where on the site?

Make sure there is easy access for walking floor delivery of wood fuels.

Even on sites with minimal space.
Where on the site?

Make sure there is easy access for walking floor delivery of wood fuels.

Even on sites with minimal space.
Inside the plant room

The buffer tank topic
The buffer tank - Bigger is not necessarily better

Four poultry houses - Combined hourly demand 36000 litres per hour flow at 80 Degrees

1. To run for one hour the tank would need to be 72000 litres (50% hot & 50% cold

2. 10,000 litres - less than 10 minutes. This is sized to allow the boiler time to modulate

Best Practice

1. Size the buffer tank to suit the system

Example:-

A Biomass Boiler with boilers as the secondary source back up needs less capacity than using blowers as a secondary heat source.
Monitor entire system - not just the boiler

Almost all boilers are accessible and controllable online which is only about 1/3rd of the equipment in the plantroom.

Best practice advises us to monitor pump performance and motor performance.

Remotely monitoring current ratings through motors highlights potential issues before critical failure.

Monitoring flow rates and temperatures through the system ensures constant performance and highlights if the system becomes unbalanced or pump issues over time before critical failure.
Boiler Selection
Your partner for 20 years
Choosing the right boiler

No one manufacturer offers a boiler to suit all applications.

Some manufacture large heavy industrial boilers for long operating hour and for critical applications.

Others manufacture physically smaller boilers for shorter operating hours and for less critical applications.

What you should look out for:

- Heat Exchanger Design
- Combustion Chamber
- Weight of the boiler
- Water volume of the boiler
How to tell the difference?
Looking after you Boiler

A stich in time!!!!!!!!!
System Security

Feeder → Boiler → Tank → Ring Main Circulation Pump → House Circulation Pump

- Monitor motor & Reverse
- Twin head or loop
- Igniter - keep spare and know how to install
- Ensure that circulation pump can take up duty
Maintenance - Requirements

The entire system must be guaranteed by the Installer for a period of 5 years. (Parts & Labour)

The guarantee to include: -

Design
Product
System
The importance of fuel

If you want heat - you need the right fuel!!!!!!!!!!!!!!
It is imperative that you agree the following key parameters with your fuel supplier and boiler provider:

- Moisture % (+/- 2%)
- Maximum Chip Size
- % Fines

The benefit of this approach is that of assuring the boiler performs to specification and the manufacturers guarantee is maintained.
10.5.6 - Applicants must produce heat with lifecycle GHG emissions of less than or equal to 24 gCO2eq/MJ of heat generated in order to be eligible under the Scheme. This equates to a minimum 70% GHG saving compared to a fossil fuel comparator for heating of 80 gCO2eq/MJ.

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Guidance on Sustainability Analysis of Irish Bioenergy Pathways using Life Cycle Assessment Methods
Example Pathway Using BioGrace II

- Transport distance 1-500km (used 300km)
- Thermal efficiency 90%
- Useful heat supply 80o
- C Moisture content 50% (wet basis)

- 5.3 gCO2eq/MJ of forest residue chips
- 5.9 gCO2eq/MJ heat generated
- □ 93% reduction in GHG versus the fossil fuel comparator (80 gCO2eq/MJ heat)