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Cc: Tom McKeown[Tom.McKeown@moypark.com]; Keith Wilson[Keith.Wilson@moypark.com]; Brian Gibson[Brian.Gibson@moypark.com]; Paul Longstaff[Paul.Longstaff@moypark.com]; Simon Oborn[Simon.Oborn@moypark.com]; Barney Kay[Barney.Kay@moypark.com]
From: David Mark
Sent: Tue 5/6/2014 7:46:55 AM
Importance: Normal
Subject: Visit to [redacted] to see the BHSL On Farm Litter Combustion Plant
MAIL_RECEIVED: Tue 5/6/2014 7:46:55 AM

EXECUTIVE SUMMARY

- These are good systems which would work and utilise litter but only in large co located farm units as in GB.
 - In NI due to current legislation on RHI it would in no circumstances be economic
 - Should this change after lobbying etc. we would still have no location were this could be deployed nor any planned.
 - CHP would help the economics but not address any of the above for NI
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Present – John Gilliland, [redacted] & Richard Kennedy Devenish

BHSL – Equipment Suppliers – Jack O'Connor, Sean Fitzpatrick

OPUS – finance partners Tristan Fisher & ANO

Luministy – finance partners – 2 staff

Investigating the Litter Combustion Equipment for heating the poultry houses

The site has 2 farms with the equivalent of 14 (NI Standard new Build) houses per site (800,000 bird placed)

Each farm is stocked opposite each other – e.g. Farm 1 Stocked with Day Olds - Farm 2 Stocked operating with 18+ Day birds – this helps to level the heat demand and utilises the capital equipment.

The heating system has to be common so the 2 boilers at 500kWh are combined into a 999kWh system via one very large buffer tank.

Cost for project £1.8M - estimated breakdown Hot Water Heating £800,000 Heat Distribution £300,000 Boiler & Fuel Handling £700,000

60% of Litter from Farm 1 is used to fuel all heating duties the rest of the litter from Farm 1 and Farm 2 is sold for fertiliser usage at £10K per tonne (the site is within Irrelevant information redacted by the RHI Inquiry but it is not supplied!)

The installation

The engineering is a very innovative concept, well-engineered and expertly commercialised.

Medium to large scale – this site is 1,000kWh (2*500) smallest installation is 1 * 500kWh – this would need 2 farms (to equalise demand) within 100M with 8 houses per site (400,000 birds placed)

The equipment will only be available as part of an Energy Supply Company (ESCO) model - it is not a system you can purchase

The Renewable Heat Incentive (RHI) payments are central to the economic viability and the current NI Model would disadvantage this installation for NI use (NI has different large scale RHI allowances)

The equipment currently only produces heat plans are underway to develop an electricity generation capability turning it into a Combines Heat & Power (CHP) installation. However it will be low pressure steam so electricity generated will be estimated at 20% of total capacity – this will enhance the system and make it more economical but Heat will be the main driver for this equipment.

The fuel cost aspect is significant Personal information redacted by the values litter at £10 per tonne exported – the relative value of litter for external use (combustion, energy or nutrient supply) will have a bearing on the economics.

The overall savings we were shown (they were very open and helpful) indicated a significant saving due to improved bird performance (FCR sub 1.60 consistently – like for like improvement 0.056, 1.25 days and EBEF 17 points) and quality – all related to indirect hot water heating with no fuel cost limitations. These numbers were very impressive and reassuring and reflect some of the savings we are seeing and some of the savings we hope to achieve – however these are **not directly** related to the **litter combustion** process but also apply to Wood Pellet Biomass systems as we are fitting throughout the estate in GB through ESCo and in NI through AHP etc. This saving indicated a £0.02 saving per Kilo live weight produced.

Conclusion

- These are good systems which would work and utilise litter but only in large co located farm units in GB.
- In NI due to current legislation on RHI it would in no circumstances be economic
- Should this change after lobbying etc. we would still have no location were this could be deployed nor any planned.

- CHP would help the economics but not address any of the above for NI

Currently in NI we are pressing ahead with Biomass (Wood Pellet or Chip) on a house by house basis with 99kWh boilers (RHI max size to optimise payback) – this has robust economic justification and sustainability & animal welfare benefits.

Litter utilisation is a key concern – combustion may well be an important solution but currently we are seeing this as industrial centralised opportunities beside heat demand and power consuming industrial outlets.

The system is only licensed for on farm use – however some work is underway in EU to allow “community” projects. This may allow the system to be deployed off farm but a heat/power requirement suitable for the output of 500kWh on a level bases would be required.

If the system was available at sub 200kWh and the NI RHI structure was addressed then this technology may have application for NI – however biosecurity systems would need to be refined and agreed with Technical staff etc.

The cost associated with the high permitted levels of SOX, NOX and Particulates in the emissions are such that small scale deployment which is technically difficult in any case would we estimate be prohibitively expensive for the lower capacity.

REPORT ENDS

Indirect Hot Water Heating with low cost fuel

We are predicting that NI will have 50% of the housing estate with Biomass Boilers (under RHI) coupled with indirect hot water heating by end 2014. If the evidence provided by Personal information redacted by the RHI Inquiry is accurate then we should see a substantial lift in basic production costs by the end of 2014 (c£1M). These savings are separate and distinct to the RHI payments coming directly to growers!

Fuel Cost

How do we get this data across the estate and factor it into the costings for the 2015 review and going forward – it gives certain challenges with growers looking to maximise fuel usage to enhance performance with no restriction on fuel cost due to RHI yield – therefore the traditional fuel usage calculation (formerly gas) will not be appropriate – perhaps a move to calculated heat requirement based on the current kWh in the gas allowance with an efficiency factor for the improvement in Hot Water Heating (15%) averaged across the group with the cost per kWh worked out on Chip cost and Gas Cost pro rata for estate usage.

Quality & Performance Gains

Additionally we need to look at a tracker for Gas Brooded Houses versus Indirect Hot Water Heated Houses looking at FCR and Hock & Podo performance to confirm the concepts and execution.

David Mark