



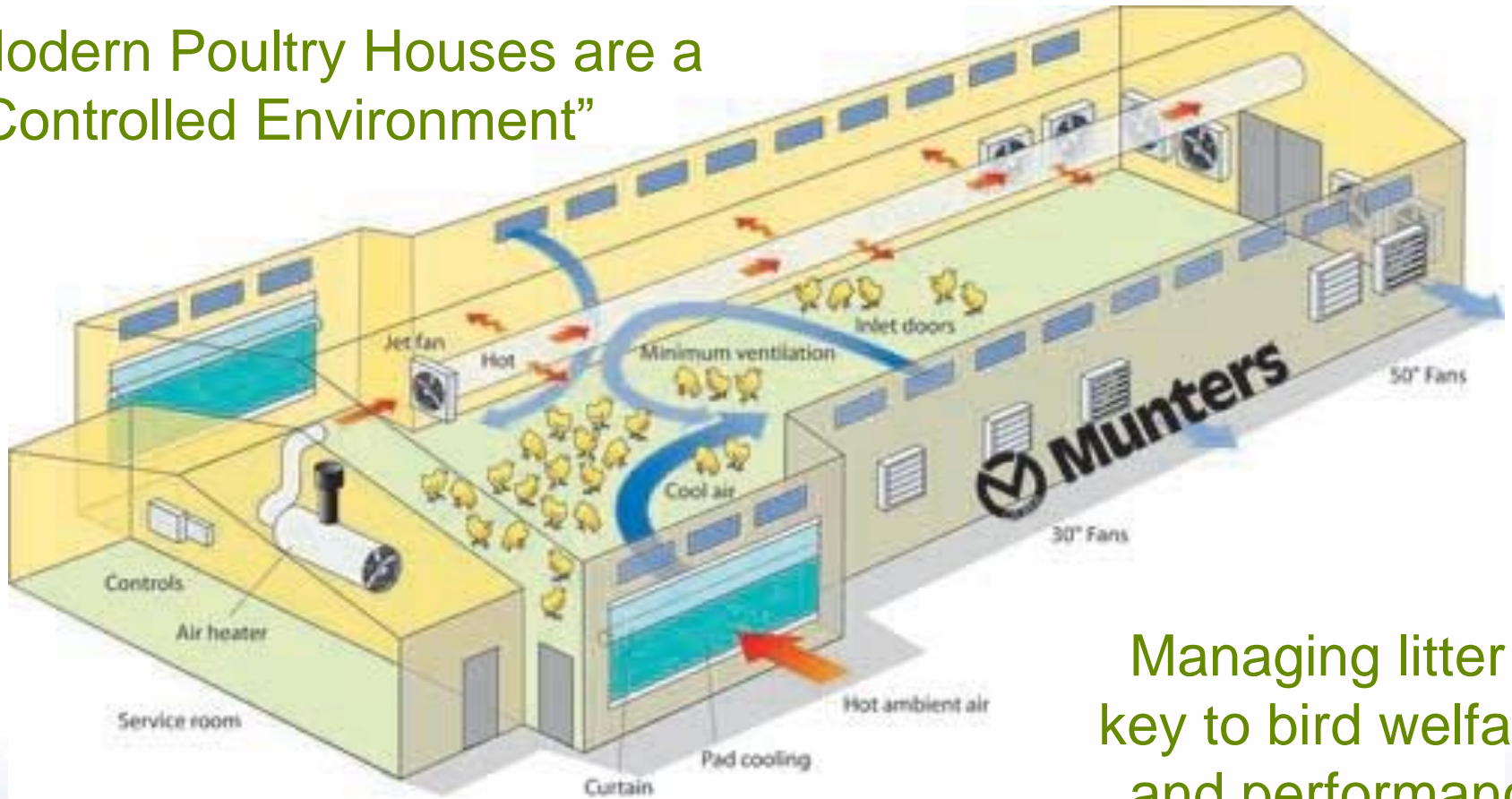
An Integrated Solution for Poultry Litter Disposal and Energy Use

August 2010

- ❖ Challenges to the Industry
- ❖ BHSL Proposition
- ❖ Benefits
- ❖ Project Management
- ❖ Conclusions

Challenges to the Industry

Modern Poultry Houses are a
“Controlled Environment”



Managing litter is key to bird welfare and performance

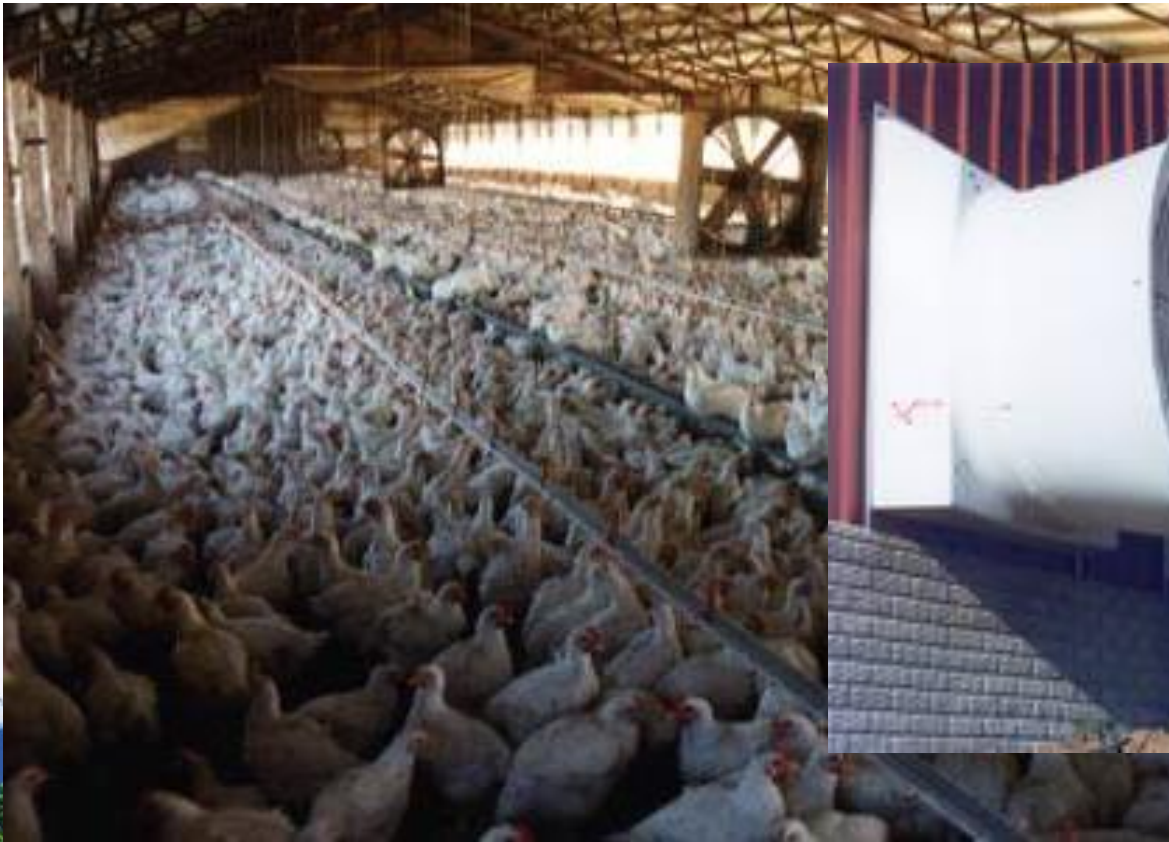
Challenges to the Industry

Heat intensive industry



Challenges to the Industry

Electricity is used to cool older birds



Challenges to the Industry

- Stricter environmental legislation
- Reduced Income/ potential cost for litter disposal
- Consumer demand for “Greener” production
- Greater awareness of Animal Welfare
- Low margin financial models with a high dependence on energy markets due to high heating and cooling requirements

Challenges to the Industry

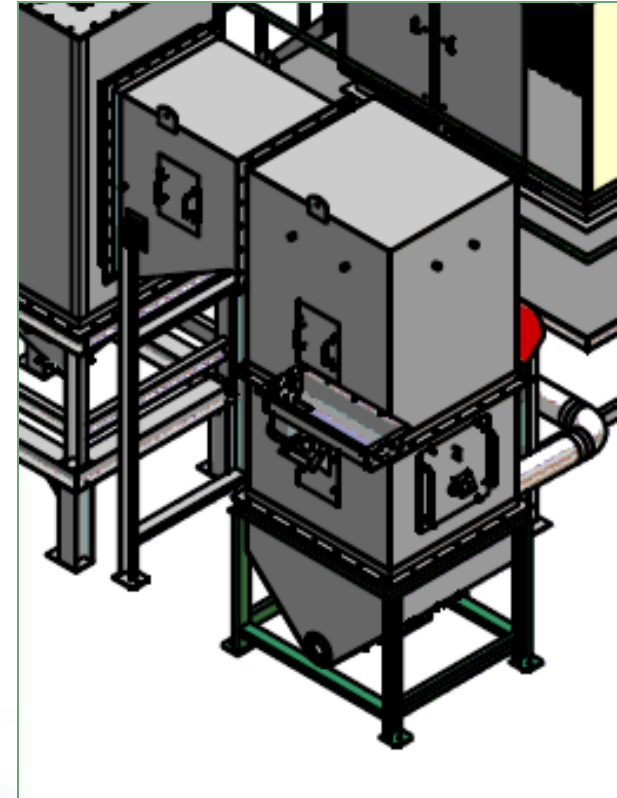
- Increasing energy costs and regulation around residue disposal has forced operators to look at other options.
- Biomass Heating Solutions Limited (BHSL) formed in 2004 after years of research into alternative uses for poultry litter.



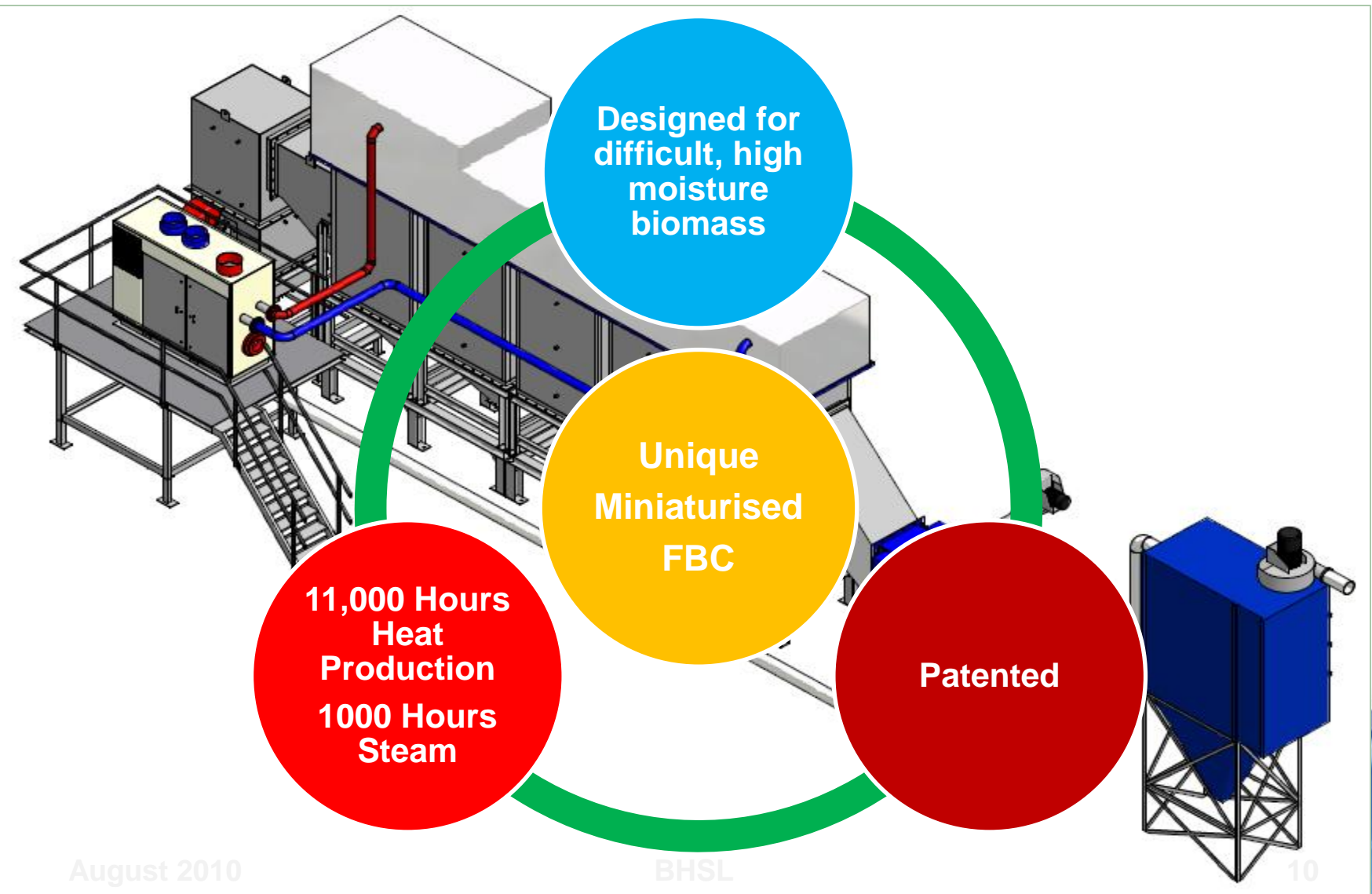
- ❖ Challenges to the Industry
- ❖ **BHSL Proposition**
- ❖ Benefits
- ❖ Project Management
- ❖ Conclusions

BHSL Proposition

- Poultry litter has a calorific value of approximately 6000 Btu/Lb
- With the help of academics, thermal experts and technicians/design engineers, BHSL has successfully adapted the technology used in power stations - Fluidised Bed Combustion (FBC) – to treat poultry litter on the site it is created.



BHL Proposition -Technology



BHSL Proposition

How it works

- Material is pushed/dropped into storage shed
- 'Top Loader' arrangement takes litter to a conveying
- More energy efficient than moving floor technology
- **Hoppers loaded maximum of twice weekly** (depending on customer requirements)



BHSL Proposition

How it works

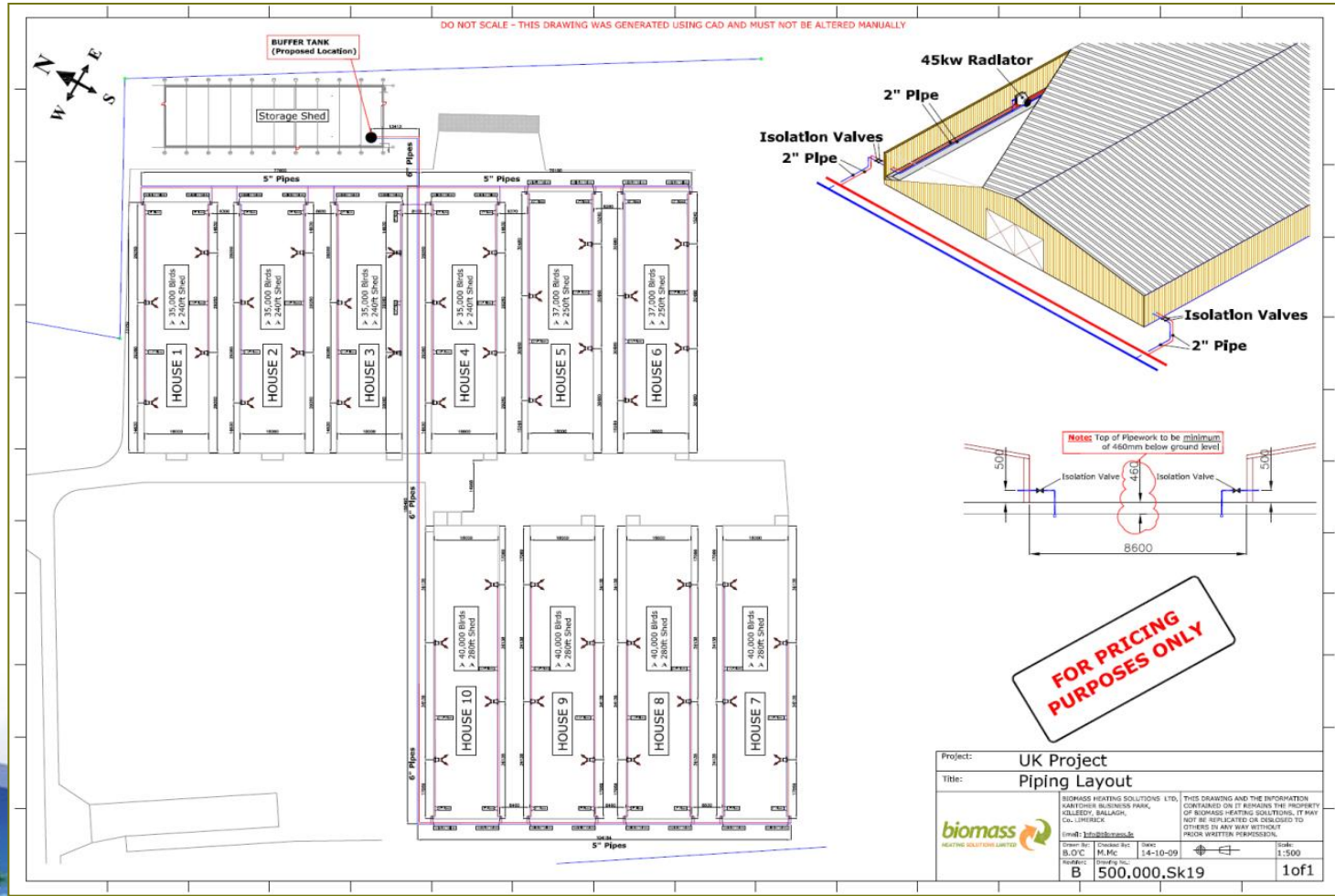
- The material combusts the fuel, producing gases at up to 1800 degrees.
- Compressed hot air turns a micro turbine to generate electricity.
- Remaining heat provides hot water at up to 80 degrees which is piped to the nearby sheds to provide heat through a radiator



BHSL Proposition



Site Installation – External Plumbing Example

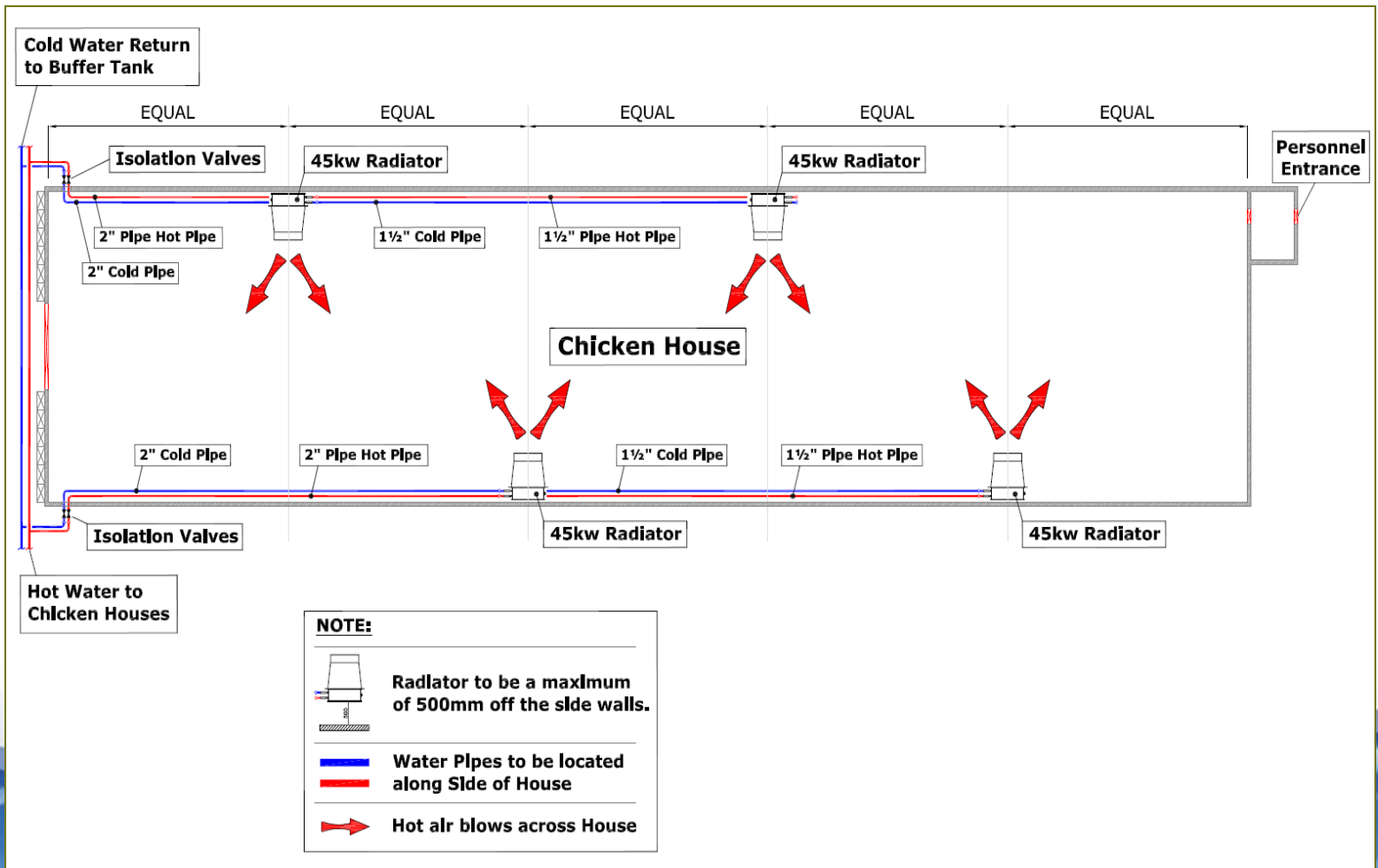


FOR PRICING PURPOSES ONLY

Project:	UK Project
Title:	Piping Layout
<small>BIOMASS HEATING SOLUTIONS LTD, KAITHERS BUSINESS PARK, KILLEEDY, BALLAGH, CO. LIMERICK</small>	
<small>Drawn By: M.P.C</small> <small>Checked By: B.O.C</small> <small>Rev: B</small>	<small>Date: 14-10-09</small> <small>Scale: 1:500</small> <small>Sheet: 1 of 1</small>

BHSL Proposition

Site Installation – House Plumbing Example

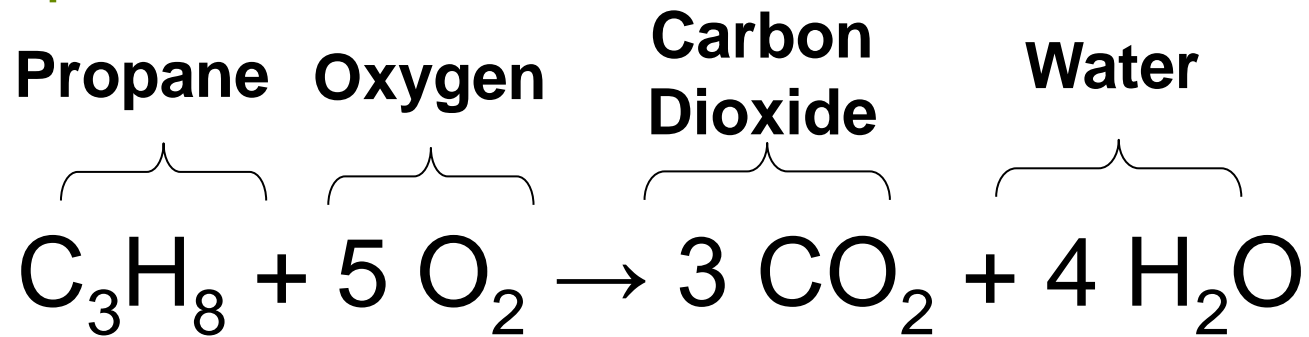


Benefits – House Conditions

- Traditionally “Minimum Ventilation” rates have been a trade off between providing optimum house conditions and the cost required to do so.



- Conventional LPG heating produces water as a by-product.



- Ventilation needs to be increased by a third simply to remove moisture created by the brooder stoves!!

- BHSL technology is a Hydronic (Hot Water) Heating system.



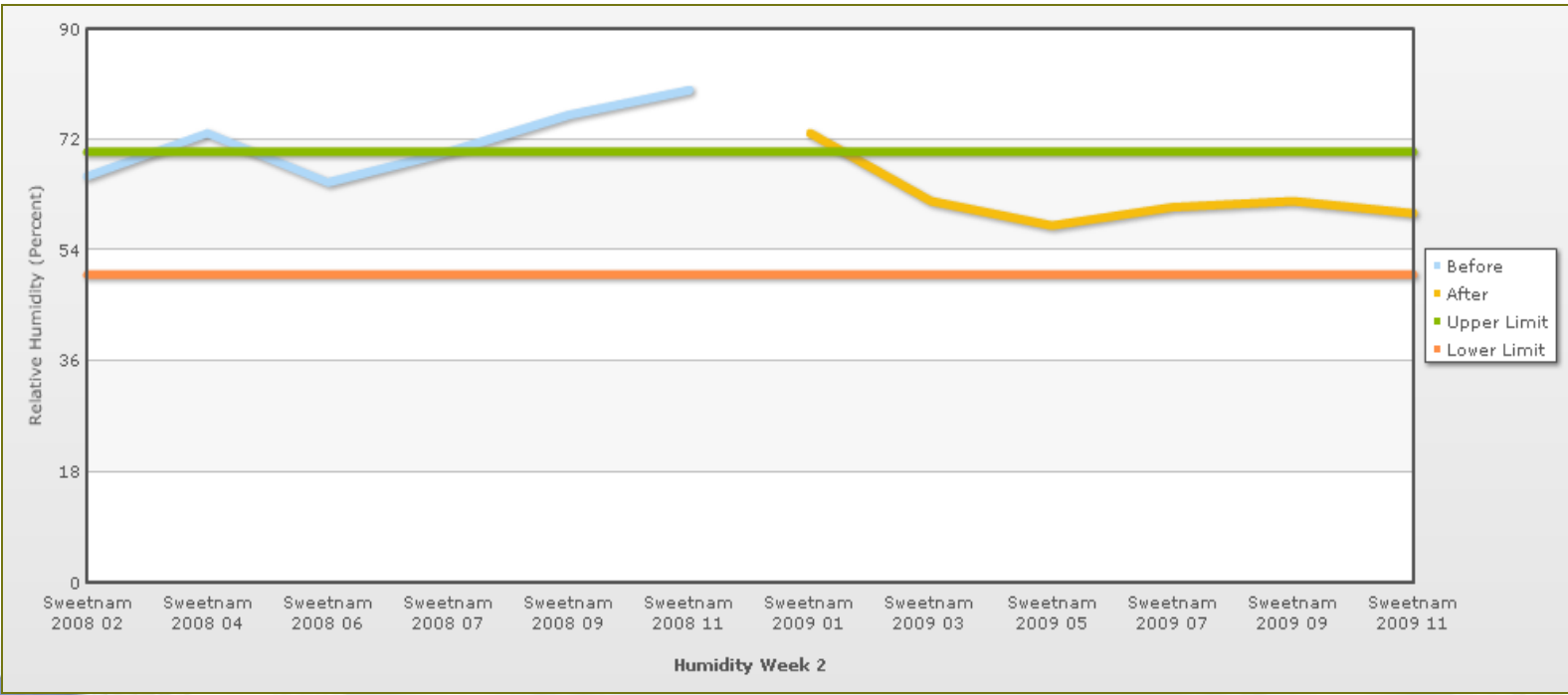
• This does not add additional moisture or exhaust fumes to the house, greatly improving the house environment.

Benefits – House conditions

- The ability to control moisture levels in the house directly effects litter conditions and the production of Ammonia.
- Ammonia is a leading contributor to disease, poor welfare and bird performance in the Industry

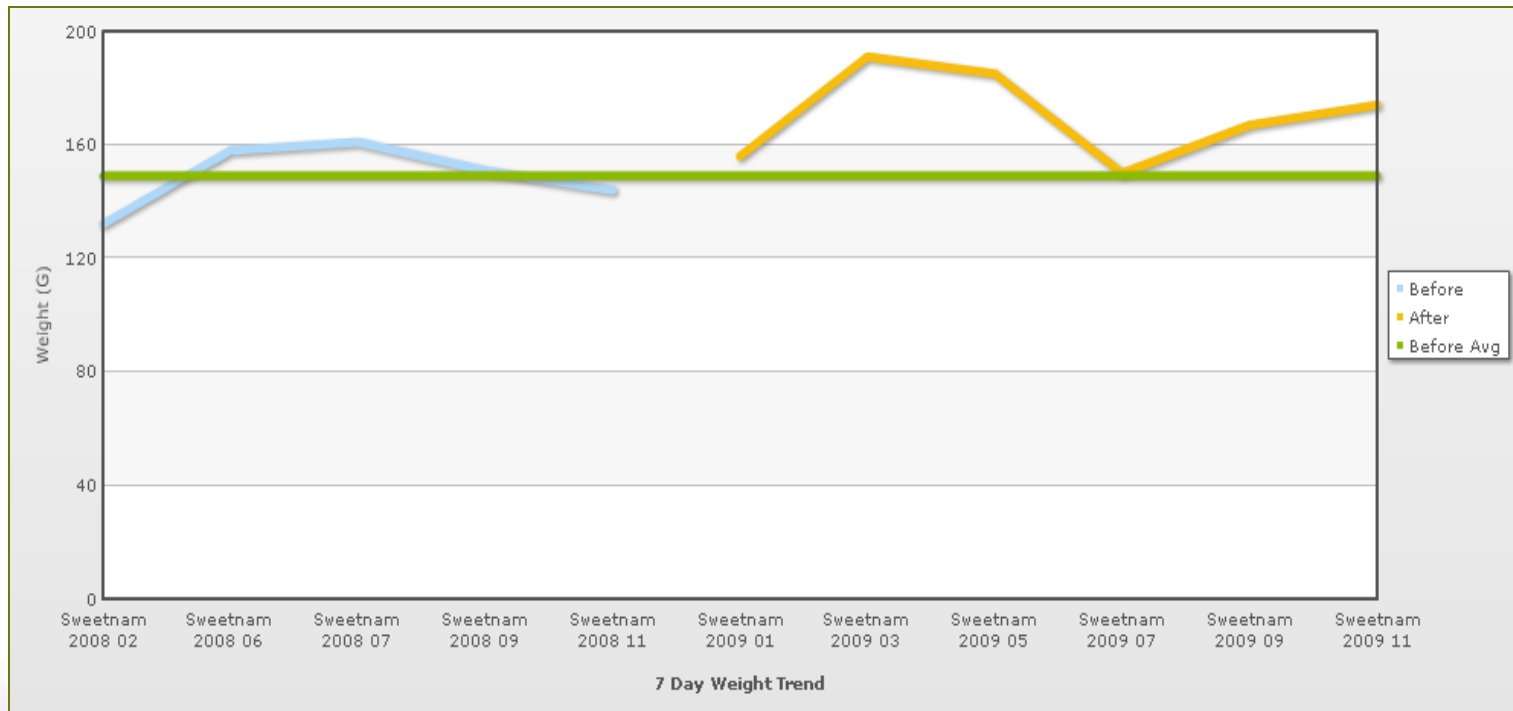
Benefits - Performance

- Improved Humidity from using indirect heat rather than propane

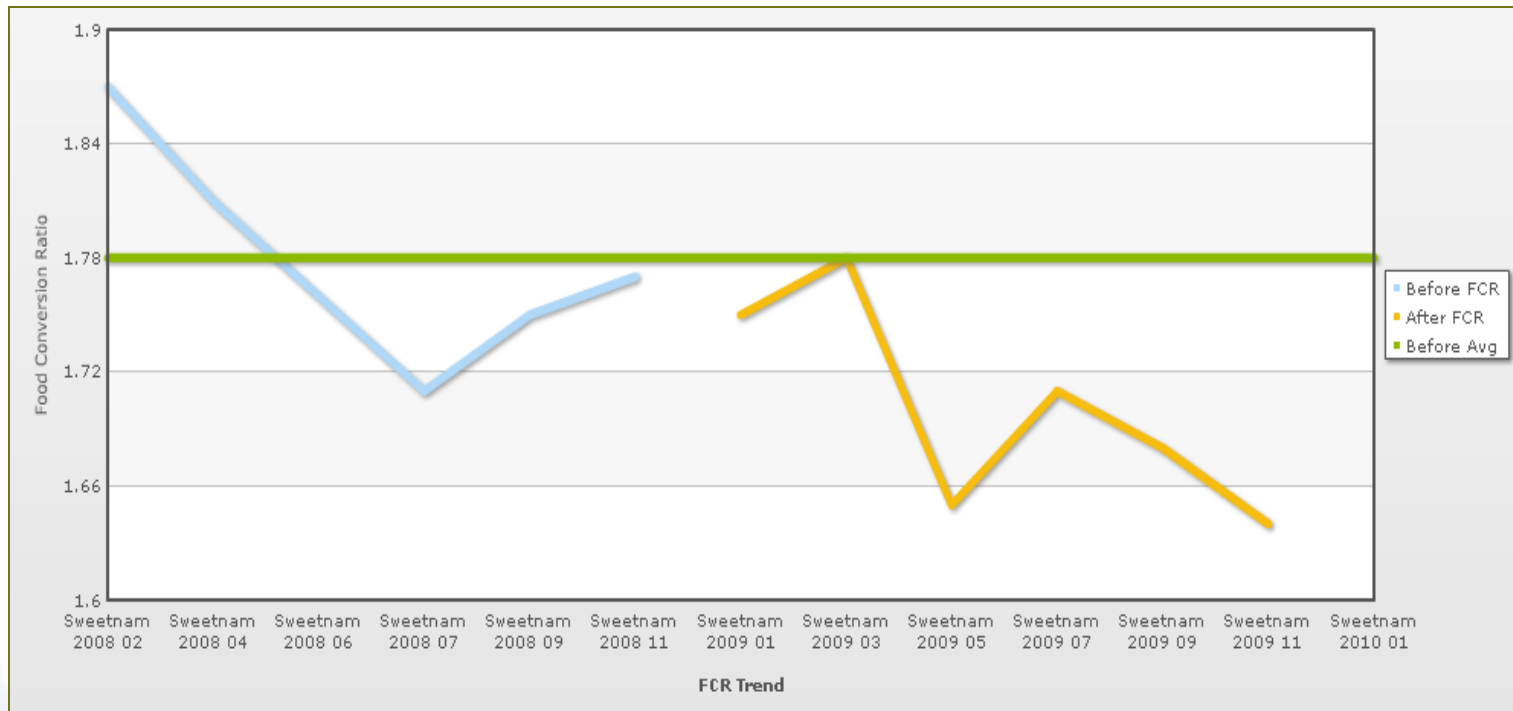


Benefits - Performance

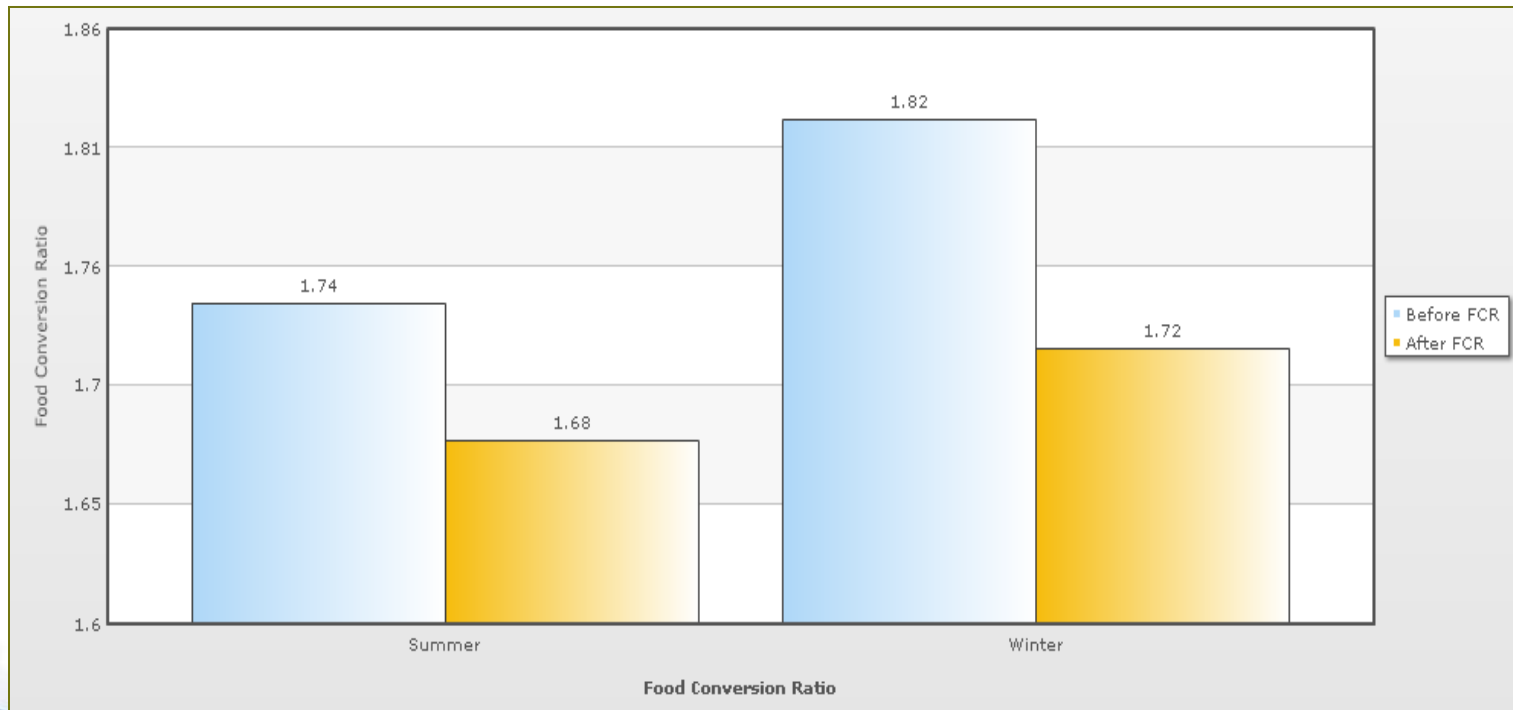
- Improved 7 Day Weight



- Improved FCR (Trend)



- Improved FCR (Summer & Winter)



Benefits - Environmental

- Provides alternative to Land Application of Litter
- Farmer not dependant on others for disposal
- Provides regulatory compliance on the disposal of residues
- Improved Bio-Security from removal of litter transportation
- Reduced ammonia production as a result of dryer litter



Particularly in Europe...

- Consumer spending is increasingly sensitive to the carbon footprint of production
- Retail Multiples are demanding suppliers be carbon neutral
- Tesco have committed to

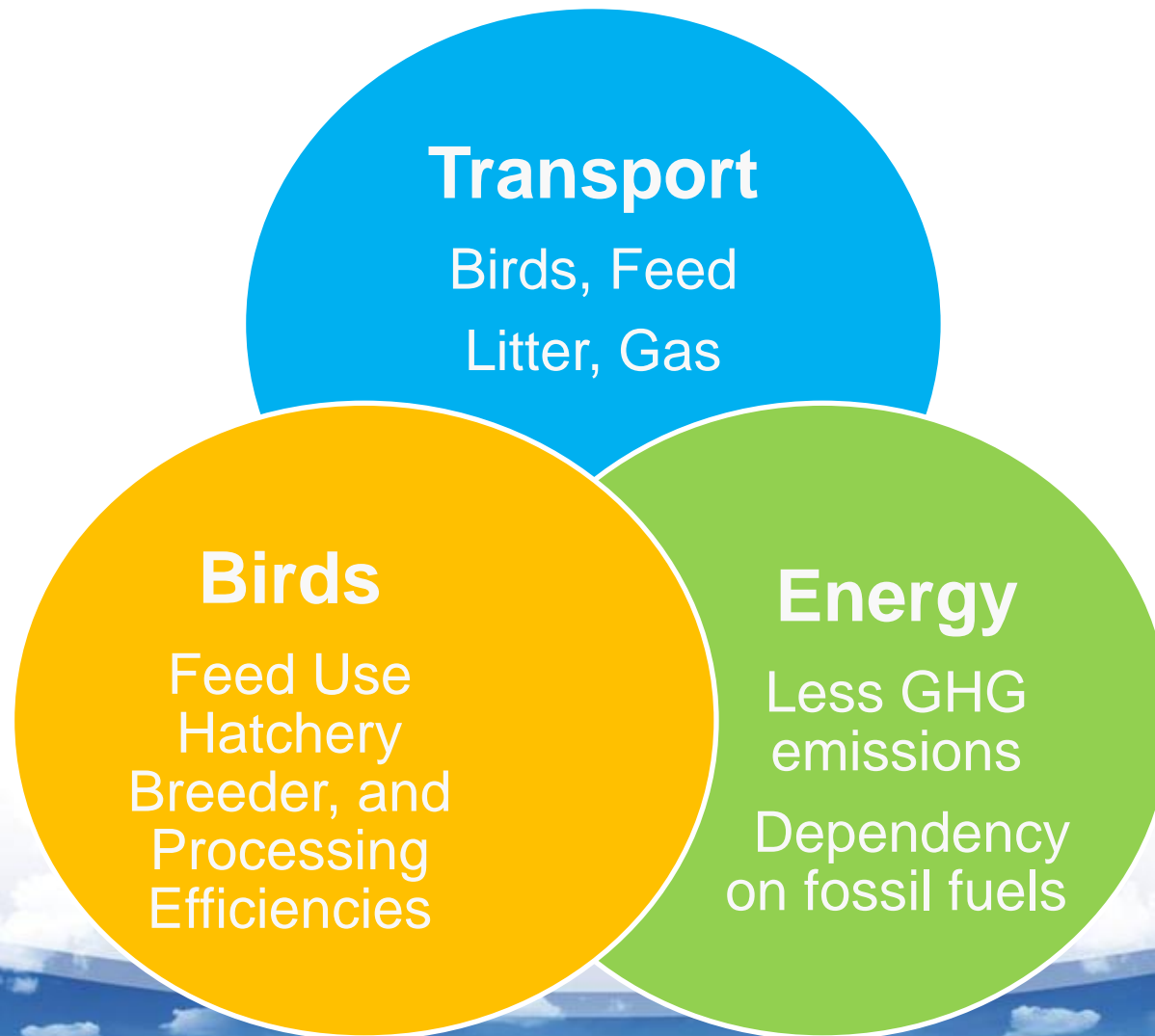
“... help stimulate the development of low-carbon technology, and work with our suppliers and others to deliver significant CO2 reductions throughout our supply chain end to end”.

- The ash contains useful elements including phosphate it can be pelleted and may be used on farm or collected for distribution
- BHSL are examining the potential for processing the farm mortality in order to further improve bio security. (regulatory issue)
- Dryer litter results in more standardised birds, improved bird welfare and reduced use of medicines.

Summary – Direct Benefits

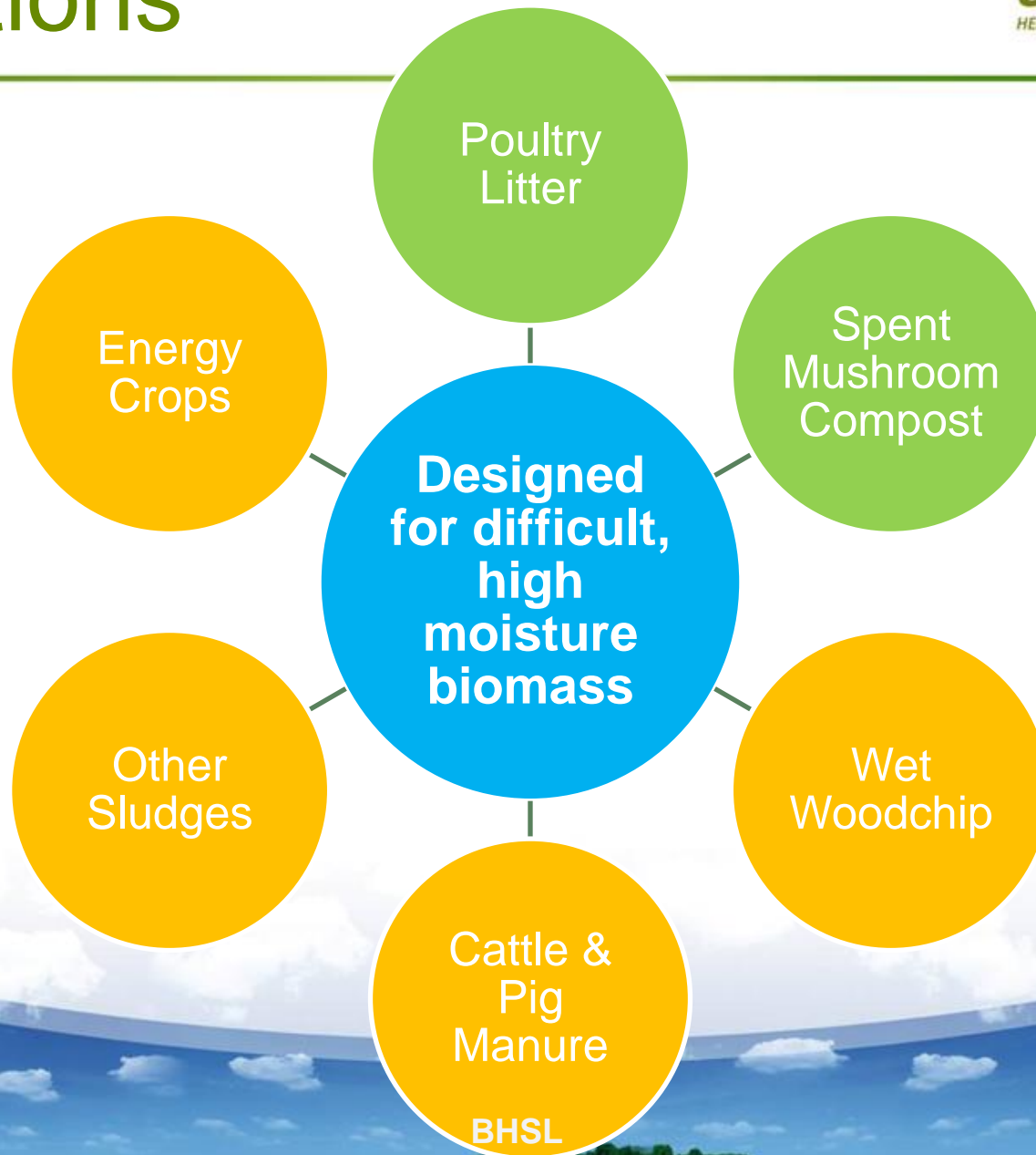
- Marketing Benefits
- Propane Reduction
- Green Electricity
- Green Heat
- Valuable Ash by-product
- Improved Bird Performance
- No Litter Removal Costs
- Biosecurity Advantages
- Bird Welfare Advantages
- Reduced Medication Cost/Dependence

Summary – Indirect Benefits

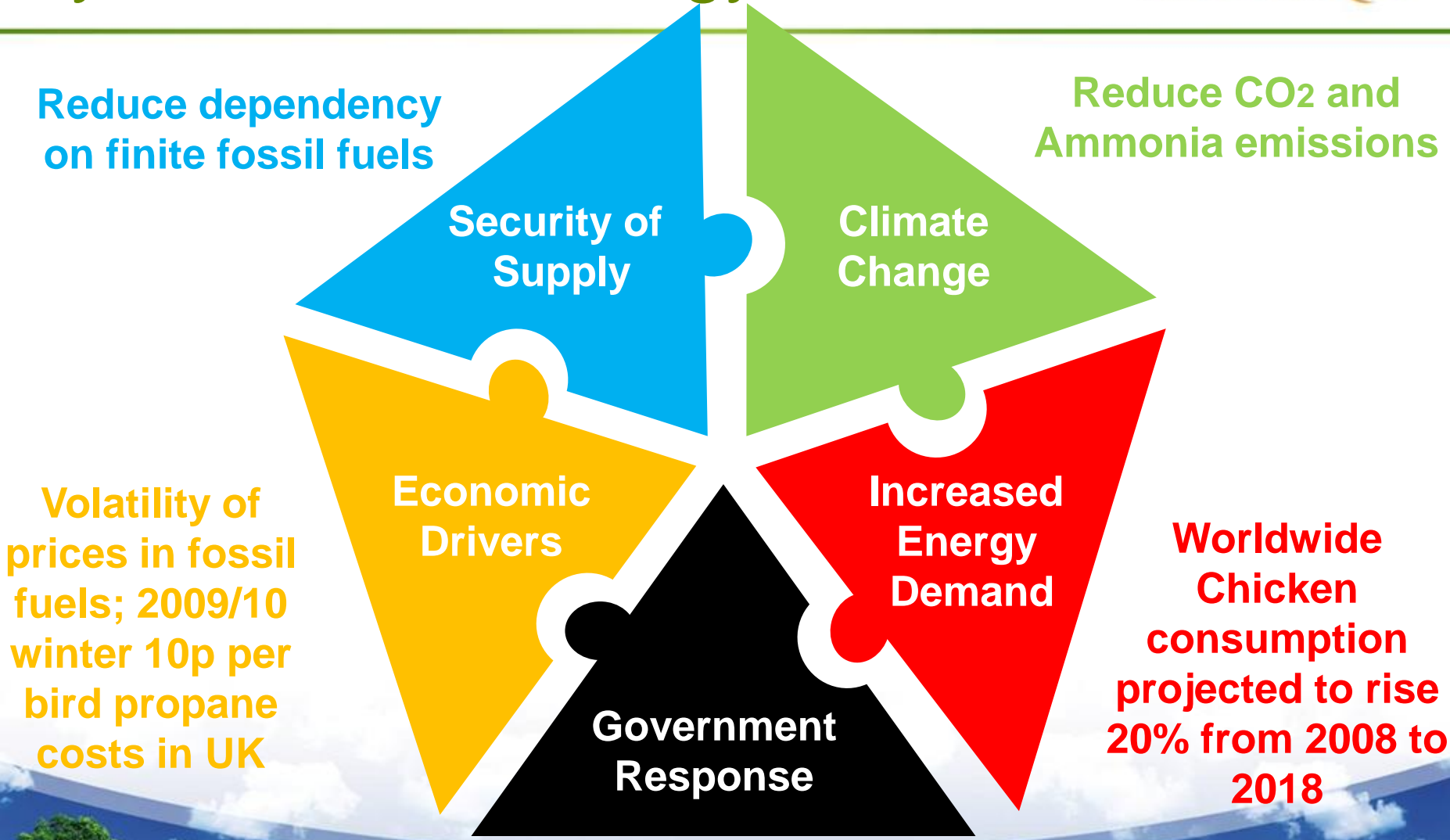


- ❖ Challenges to the Industry
- ❖ BHSL Proposition
- ❖ Benefits
- ❖ **Project Management**
- ❖ Conclusions

Applications



Key Renewable Energy Drivers



Government support and policy interventions with over €415bn of stimulus pledged globally

Regulatory Requirements seems to be a moving target....

- Identification of Non-Hazardous Materials That Are Solid Waste: Proposed Rule
- National Emission Standards for Industrial, Commercial and Institutional Boilers and Process Heaters, and Commercial/ Industrial Solid Waste Incinerators (CISWI) units.
- Major and Area Source Rules

- Not a Level Playing Field
 - Ultimately, system self financing but....subsidies and incentives to develop technology currently differ depending on type, e.g. solar, biogas, incineration.
- Connecting Electricity to the Grid
- Disparity between States
- Cost of Permitting Regulations



Is this what we really want?



Kinsale, Ireland



A

- ❖ Poultry History
- ❖ Challenges to the Industry
- ❖ BHSL Proposition
- ❖ Benefits
- ❖ **Conclusions**

- The Poultry Industry will continue to grow.
- Increased pressure on finite resources and increasing concern for environmental issues require new solutions to waste management and energy production.
- The BHSL proposition has the potential to change an industry concerned with food production to one concerned with both food and energy production.

Any Questions?

