



POULTRY LITTER COMBUSTION

AN INNOVATIVE EFFICIENT BIOMASS CHP SYSTEM

ENVIRON

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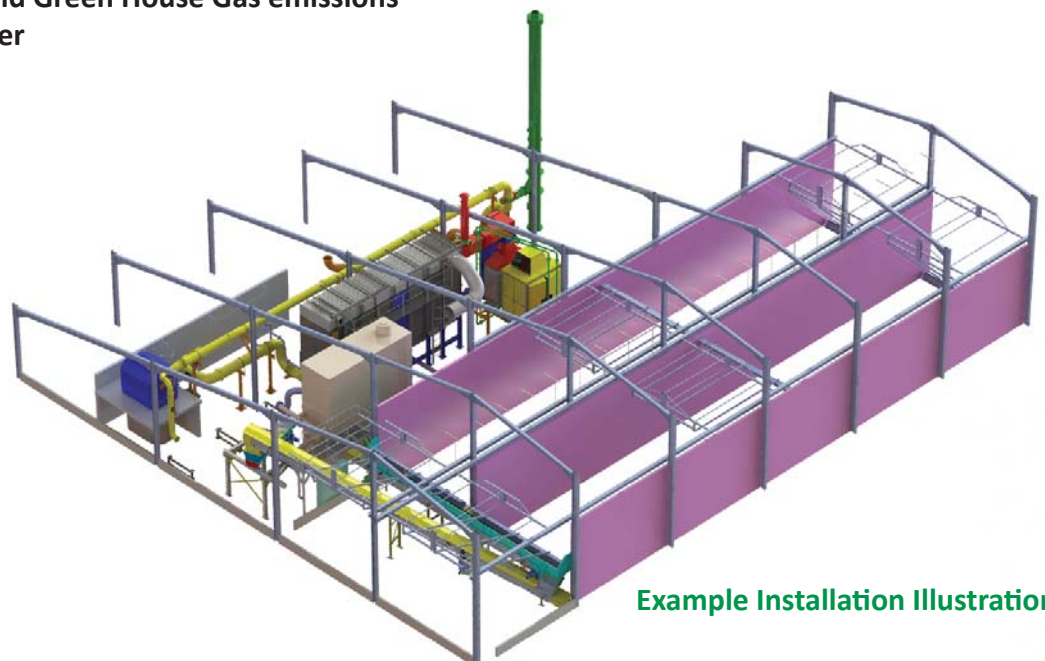
Environ can help you to convert unwanted poultry litter to create heat and electricity to manage your business more efficiently and generate income through the Renewable Heat Incentive (RHI) and by exporting excess electricity to the grid.

Environ offer an Animal and Plant Health Agency (APHA) compliant solution and can guide customers through the APHA application process.



Poultry Litter Combustion Benefits

- Poultry litter is a fuel not a waste
- Heating chicken sheds and site buildings
- Off-set site electrical loads
- Future proof electricity and heating costs
- RHI Income from qualifying heat
- Off-set fuel consumption costs (gas, oil, LPG or woody biomass)
- Reduction in odours
- Avoidance of spreading poultry manure on land
- Enhanced bird health, better ventilation, dryer air and improved biosecurity
- Less humidity in poultry shed (replacing LPG)
- Reduced potential for watercourse pollution
- Fewer vehicle movements on and off site
- Reduced carbon footprint and Green House Gas emissions
- By-product (ash) as a fertiliser
- Fully automated operation



Example Installation Illustration

Carbon Neutral Electricity and Process Heat

Poultry Litter is an abundant fuel that can be combusted in an IED compliant system. Typically, the litter is removed from the chicken sheds at the end of each growing cycle of approximately 7 crops per year.

The litter is delivered to the fuel store where a feed system transports the litter under negative pressure to a conveyor for delivery to the combustor auger feed system.

The auger moves the litter (fuel) into the primary combustion chamber for the complete combustion process to begin. The combustion gas at around 900 deg c is diluted through a series of filters delivering 530 deg c gas to the Organic Rankine Cycle Evaporator.

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Heat extracted from the filtered combustion gas converts the ORC working fluid from a liquid to a gas, this change in state spins a turbine which is linked to an electrical generator.

The working fluid is then cooled and the resultant heat can be used in a downstream heating process such as poultry sheds, dryer, offices and homes.

The working fluid is then pumped back to the heat source and the cycle repeats.

Combustion of Poultry Litter

SYSTEM FEATURES	SYSTEM TECHNOLOGY	BENEFITS
Poultry litter storage facility	<p>APHA Fuel store under negative pressure</p> <p>Fully automated feed system, normally a toploader</p>	<p>Negative pressure fuel store</p> <p>No odour escape</p> <p>Low odours</p> <p>Bio secure</p> <p>Litter is mixed for a more homogenous fuel feed and better combustion</p>
Combustion of poultry litter	<p>Complete combustion of litter</p> <p>Low ash content</p> <p>Emissions compliant (IED)</p> <p>Combustion of poultry Broiler, Layer and Hatchery waste streams</p> <p>Fully automated process</p> <p>High combustion temperatures</p>	<p>Carbon Neutral footprint</p> <p>Ash can be sold as a fertilizer</p> <p>Low Emissions</p> <p>Versatile multi-waste combustor</p> <p>Reduce labour costs</p> <p>Complete destruction of the litter</p>
Organic Rankine Cycle CHP	<p>Efficient conversion to Electricity</p> <p>Unsupervised operation</p> <p>Condensing heat rejection</p>	<p>Off-set site electrical loads</p> <p>Future proof electricity price increases</p> <p>Reduced labour costs</p> <p>Usable heat for RHI</p>
Generation of additional income	<p>Efficient conversion to electrical generation</p> <p>Compliant with IED regulation so can burn other waste streams</p> <p>Potential future disposal cost for poultry litter that cannot be spread on the land</p>	<p>CHP RHI tariff uplift</p> <p>Option to combust other fuels that may attract a gate fee</p> <p>Future proof waste disposal costs</p>

Environ offers the following standard equipment included in all projects

- Project Management
- Complete system design (CAD/SolidWorks)
- APHA application
- Automated Litter feed system
- Litter Combustor
- Auxiliary back up burner
- Flue gas cleaning – Emission Compliant
- Flue gas ducting
- Chimney Stack
- Low temperature hot water distribution
- Control Logic/Remote Monitoring
- Continuous Ash removal system
- Compressed air
- Pipes installation
- Access platform/s
- Insulation
- Electrical installation
- System automation

Optional equipment and services can be supplied

- Mains distribution panels and power factor correction
- Civil works, foundations, pits & building
- Electrical power to equipment plant room
- Heat distribution network
- DNO application
- CEMS - Continuous Emissions Monitoring System
- Periodic Emission Monitoring
- Dispersion modelling
- Thermal Store/Buffer
- Odour abatement
- Dryer for RHI compliant system
- Equipment running load noise analysis

