

Biomass Proposal for
Mr Thomas Forgrave

Mobile Personal information redacted by the RHI inquiry

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Introduction

CHP Mechanical Services was established in 2000 and has rapidly developed into one of the leading suppliers and installers of renewable heating systems throughout Northern Ireland. The company has built a reputation for innovation, professionalism and expertise in this sector.

The following is a **design proposal** and associated quotation for the supply of 3 NO 99kw Herz Firematic biomass boiler systems complete with , augers and associated controls.

Now is the perfect time for businesses to consider making the switch to a renewable energy heating source. Not only will it reduce the dependence on depleting fossil fuel resources, but with newly introduced Government incentives on offer, the potential financial benefits can dramatically reduce the payback period. Information regarding the Renewable Heat Incentive can be found on page 6 of this proposal.



Herz 99kW inside a container unit.

System Description

The Herz wood pellet boilers which we supply are manufactured in Austria and are widely recognised within the industry as one of the highest quality pellet boilers available.

The 99 kw Herz Firematic boiler which has a certified efficiency of 93% and the Lambda sensor which comes as standard continuously monitors the flue gases and adjusts the fuel in line with the primary and secondary air supply to ensure the maximum efficiencies are maintained.

The 3,000 ltr buffer tank which we have proposed shall ensure the biomass boiler cycling will be controlled and kept to a minimum to ensure maximum system efficiencies are maintained. The biomass boiler shall monitor the temperature within the buffer tank and ensure the water temperature is kept within a pre-set range at all times therefore ensuring a quick response when the heating is turned on due to the stored energy.

Based on a Delta T of 20°C which would mean the boilers turn on when the tank drops below 70°C and turns off when the tank temperature rises above 90°C, the 3,000 ltr buffer tank shall provide approx. **70 kilowatt hours of stored energy** before the biomass boiler shall start to work.

NI Renewable Heat Incentive

The Northern Ireland Renewable Heat Incentive (RHI) is a Department of Enterprise, Trade and Investment (DETI) scheme that provides financial support to non-domestic renewable heat generators. The RHI aims to provide funding for businesses making the switch from fossil fuel heating sources such as oil and gas to more sustainable fuel source technologies – biomass boilers, heat pumps and solar thermal systems.

The primary objective for the Northern Ireland RHI is to increase the uptake of renewable heat in order to meet the Government targets of 10% from renewable heat sources by 2020. The Government have introduced the RHI to encourage businesses to make the switch from fossil fuels to renewable heating which will assist in achieving the overall target.

Based on a tariff system, businesses will receive payments from OFGEM on a quarterly basis dependent on the amount of heat energy produced by the biomass boiler. The NI RHI will commence in Autumn 2012 and businesses signing up to the scheme will receive RHI support for the lifetime of the installed technology to a maximum of 20 years.

NI RHI Tariff Table

Below is the RHI NI tariff table for Biomass installations. This information is taken from <http://www.detini.gov.uk/deti-energy-index/deti-energy-template-menu-5.htm>

Tariff Name	Eligible Technologies	Size Range (kW)	NI RHI tariff (pence per kWh)	Length of tariff
Biomass boilers	Solid biomass, municipal solid waste (inc CHP)	Less than 20kWth	6.2	20 years
		20kWth to 99kWth	6.1	20 years
		100kWth and above	1.5	20 years

The 99kw boiler we have recommended will be rated in the middle category shown above, which ensures that for every kwh generated by the biomass boilers OFGEM (the scheme administrator) will pay the client company 6.1p.

Renewable Heat Incentive NI Example Calculation

The following table shows an example calculation of the potential RHI savings based on a 99kW Herz biomass boiler Installation

Woodfuel boiler efficiency assumed	93%
Fossil fuel boiler efficiency assumed	70%
	Scenario 1
Boiler Size (kW)	3 x 99
Annual heat requirement (kWh/year)‡	490,000
RHI Size Category (S/M/L)	M
RHI Rate	6.1
Annual RHI Income (£/year)*	£29,890.00
Woodfuel Price (£/t) ^{†§}	£173.00
Woodfuel Moisture content (% _{wb})	10%
Annual Woodfuel Demand (t/year)*	102
Annual Woodfuel Cost (£/year)*	£17,646.00
Net Annual Revenue (RHI-fuel cost in £/year)	£12,244.00
Displaced fossil fuel	Gas
Displaced fossil fuel price (p/kWh)	5.42
Annual fossil fuel cost (£/year)	£26,600.00
Total Annual Savings (£/year)	£38,844.00

RHI Summary Table

A	Annual RHI Income (£/year)	£29,890
B	Existing Gas cost (£/year)	£26,600
C	Wood Pellet cost (£/year)	£17,646
	Total Annual Savings A + B - C (£/year)	£38,844

Quotation

Please find detailed our quotation for the supply and installation of 3no 99kw biomass system for the above mentioned project

System to include:

Mechanical Fit-out to include:

- Associated mechanical piping between biomass boiler and buffer tank
- 3 No 99kw Herz firematic boilers & 3000 litre buffer tanks (£72000)
- Associated pumps and isolating valves
- Associated expansion vessels
- Supply and installation of 5 no class 2 heat meters suitable for RHI payment
- Foil back insulation to boiler houses only
- Associated temperature and pressure gauges
- Flow and return connections left to L/L to connect to district heating pipe work
- Galvanised piping to 12 no heaters in 6 no units
- Mixing valves on delivery pipe-work
- Balancing valves at each heater
- Associated flue systems based on terminating flues 5m above ground level
- Delivery to site
- RHI Applications
- CAD design drawings
- Commissioning
- Client training on equipment
- PC Sum for underground piping (£2500)

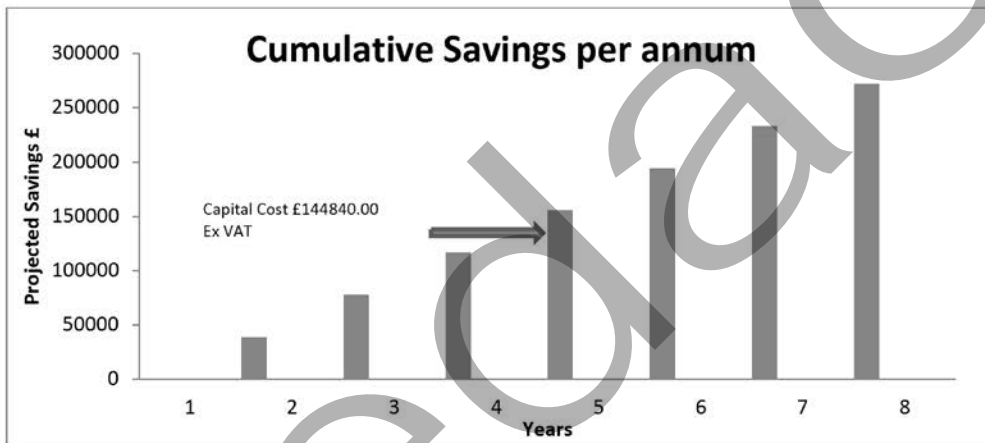
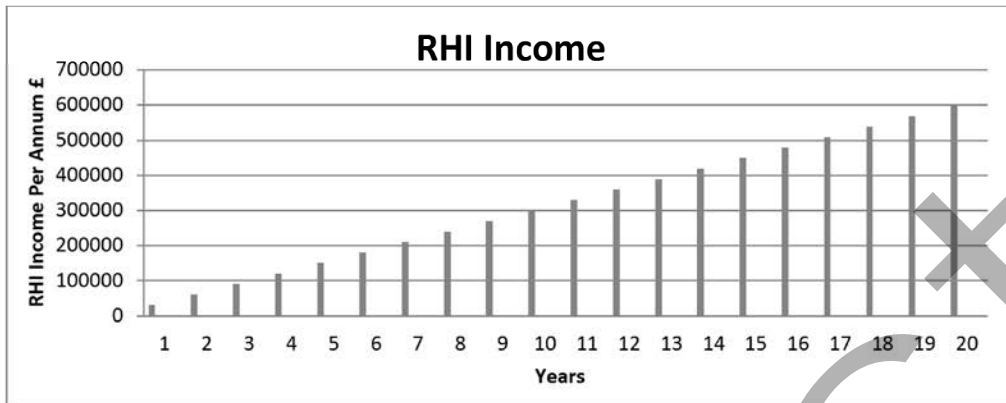
Price Excludes:

1. Any civil works associated with the contract
2. Electrical Connections
3. Eco-flex twin 63mm @ £68.00 per metre & £58.00 per coupling
4. Fuel for commissioning
5. Fuel stores & auger boot adaptor for stores
6. Rubber flexible hoses for heaters to be supplied by manufacturer
7. Client to provide water supply in boiler house

Total (exc. VAT)	Sensitive commercial information redacted
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Conclusion

The graph below shows the predicted income that will generated by the RHI. Providing the amount of energy produced by the biomass boiler remains the same, the RHI will stay a constant over the 20 year period for which the client will receive a contract.



The graph above shows the savings which can be achieved, this is a combination of the annual RHI Payment and fuel-savings. The cost of oil and wood pellets over the 20 year period is unpredictable, although pellets have been trending around 36% cheaper than heating oil.

With the savings achieved the capital outlay of the system will have paid for itself within 5-6 years.

If you have any queries relating to this quotation or need more information please do not hesitate to contact me.

Regards,

John Smyth

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Quotations are subject to the Terms & Conditions of CHP Mechanical Services. – available upon request

A 50% deposit with order is required followed by 40% upon equipment delivery. The final 10% is required upon commissioning.

The RHI application and paper-work cannot be completed until full payment has been made.