

Below you will find the suggested principle questions to be answered **for initial** [**Biomass Boiler and Organic Rankine Cycle (ORC) Combined Heat and Power**](http://beehiveenergy.co.uk/WES_Brochures/WES_CHP_Presentation_2016.pdf)[**calculations**](http://beehiveenergy.co.uk/WES_Brochures/3x40ft_200kW_20kWe_WES_CHP_Snapshot.pdf)**, followed by a** [**full proposal**](http://beehiveenergy.co.uk/WES_Brochures/Free_to_Fit_WES_CHP_Cogetherm_Proposal.pdf) **…..** These answers will also help inform comparisons to Gas Combined Heat and Power, Biomass Gasification, Biogas-Combined Heat and Power, **as well as scope for** **LED, Infra-red Radiant heat, Solar Roofs, Wind and/or Battery integration. Please provide estimates as and when you receive them for staged viability investigations.**

ORC-Technology is able to recover and generate electrical energy from either certain ranges of high temperature Biomass Boilers with enough temperature left over for hot water heating in line with legionella regulations or a broad range of thermal heat sources including: steam, exhaust gasses from combustion systems and motors, industrial fluid streams and exothermic process etc.

**A) For us to be able to provide a quotation based on using a new Biomass Boiler to drive the CHP turbine we need the following information:-**

1.     Number of hours the Biomass Boiler will be able to run per year (this can be matched to existing usage)

3.     Each existing heating fuel - rates charged per KWh or liter, total itemized annual bill, total KWh or liters used, annual patterns.

2.     Existing electric - rate charged per KWh and total annual bill itemizing charges or total KWh used (electric heating add above)

4.     Existing heater details, efficiency, KW rating, type of heater - wet system, direct gas or electric? Can it switch to hot water?

5.     Instead, if the project is for a **new Build** please send us the plans along with m² of building (we can measure this from CAD plans) and U-Value heat loss calculations. Please also let us know what type of heating fuel would be used if not Biomass.

6.     In addition to HEATING, please include HOT WATER needs - how many liters will you need to use on a Daily basis and what temperatures do you require (flow and return)?

7.     Is the Biomass CHP (or gas-CHP, biofuel gasification, pelletization/ chipping equipment) system to be located inside or containerized outside?

8.     Is there space for a Pellet Storage system (approx. 2m x 2m) and to be placed next to the Biomass/CHP unit and buffer tanks?

9.     If commercial we will need to know the opening days and hours of the site please and hours of operation if different.

**B) For where a CHP turbine is to run off an existing boiler or steam or other processes, or run on a biomass boiler of gas CHP system to replace existing equipment, please provide current equipment properties (relevant for all):-**

1. Hours the equipment is run for annually, any individual metering spreadsheets, especially half-hourly data?
2. For steam production: amount of steam kg/hr or lbs/hr and pressure in psi or bar, per steam boiler?
3. Incoming temperature of water, steam temperature, any output temperature required?
4. Make, model and kW size of existing equipment? Is any existing equipment able to be replaced with biomass?

**C) For where there is a cooling requirement**

1. Current exact cooling capacity, cooler type, module, anything about this equipment
2. Current chilled water temperature in the building (flow and return)
3. What kind of cooling emitters are being used in the building? Are cooling design plans available showing the current cooling system?
4. Bills (electric)
5. Measurements of the buildings (Google maps can go some way towards this if we are given one dimension to scale from) architectural and cooling plans are best to show the division of space if available.

Answers will aid savings and revenue calculations prior to having engineers visit the site to fill out forms such as the [ORC Heat Recovery Form](http://www.beehiveenergy.co.uk/INN_Brochures/CHP_Assessment_Form.pdf) or similar. We have a number of technologies, including [micro-biomass-CHP](https://www.youtube.com/watch?v=EhlnZQzKELE&feature=youtu.be), [micro-gas-CHP](http://www.endole.co.uk/company-by-postcode/wa4http%3A/beehiveenergy.co.uk/EG_Brochures/Micro-Generation_ENGLISH.pdf), [biomass-CHP](http://www.endole.co.uk/company-by-postcode/wa4http%3A/beehiveenergy.co.uk/INN_Brochures/WES_CHP_Presentation_2016.pdf), [infra-red radiant heaters](http://www.beehiveenergy.co.uk/BIR_Brochures/Bee_Infra-Red.docx), [crop drying enclosures](http://www.beehiveenergy.co.uk/KS_Brochures/Timber_Types_and_RHI_Suitable_for_Crop_Drying.docx), [renewable waste to biogas 60kWth 2kWe modules](http://beehiveenergy.co.uk/E3_Brochures/FREE_BEE_ENTRADE_E3_Figures.pdf), [large scale renewable high efficiency Vortex waste to biogas combustion](http://www.beehiveenergy.co.uk/C6_Brochures/Clean6_Vortex_Requirements.docx), [gas-CHP](http://beehiveenergy.co.uk/BP_Brochures/BasePower_Presentation_for_NextGen_2015-10-06_Beehive.pdf), wind, [LED](http://beehiveenergy.co.uk/LED_Brochures/LED_Lighting_Upgrades.pdf), [solar PV & battery integration](http://beehiveenergy.co.uk/NG_Brochures/FREE_BEE_Moixa-Technology-DECC-Project-summary.pdf).

Figures stack up differently for the different equipment. It would be worth considering all options unless your business particularly has technologies in mind. *Thank you very much for your assistance.*

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# Other Energy Saving and Renewable Energy Generating Technologies

Infra-Red Heating Requirements

|  |  |
| --- | --- |
|  | What power are your existing heaters please?  |
|  | How long are they on each day through the week/ year? |
|  | How much does your current heating system cost to run? |
|  | And how much are you paying for your electricity rates please? If you have a bill to hand that you wouldn't mind scanning across, that would be best. |

If new build –

|  |  |
| --- | --- |
|  | Plans would be best. Or else: |
|  | Type of insulation: solid wall (bricks show long and short sides)/ cavity (bricks show all long lengths)/ cavity with insulation/ breeze block/ concrete/ timber frame other? - please state |
|  | Are the floor and roof insulated to modern standards? Roof with 100mm insulation? |
|  | Window insulation: single/ double/ triple and is there a kite mark on the glass? |
|  | Window sizes: what space do they occupy on the wall? |
|  | How many rooms are there? |
|  | What dimensions are the spaces? |
|  | If insulation is minimal, what are the dimensions of the external walls? |
|  | How high are they? |
|  | How many storeys? |

Watts and No. of Lights that may benefit from an LED Upgrade? Survey provides more details.

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| --- | --- |
|  | Fluorescent.T12-38mm Standard Ballast 20-40W B ER |
|  | Fluorescent. T8-26mm High Frequ. Bal. 18-70W A/B ER |
|  | Fluorescent. T5-16mm High Frequ. Bal. 4-54W A/B ER |
|  | Fluorescent. T4-12mm High Frequency Bal. 6-20W A ER |
|  | Halogen Flood lights |
|  | Halogen Bulbs Mains |
|  | Halogen Bulbs Low Voltage |
|  | Standard Tungsten Lamps |
|  | Tungsten Reflector Lamps |
|  | Energy Saving Lamps |
|  | Mercury Vapour Lamps |
|  | Sodium Vapour Lamps |
|  | Metal Halide Lamps |
|  | Neon Lamps |
|  | Ultra-Violet Lamps |
|  | Infra-red Lamps |
|  | LED Lamps and Bulbs |
|  | LED Strips |
|  | Street Lamps |

Kiln Drying using RHI Compliant Biomass

|  |  |
| --- | --- |
|  | The species of wood/ type of crop to be dried. |
|  | The initial and required moisture content. |
|  | Thickness of boards to be dried. |
|  | The maximum board or pack length. |
|  | The preferred batch drying size. |
|  | The required heating system. |



Waste-to-Power and Gas-CHP

|  |  |
| --- | --- |
|  | [large scale renewable high efficiency Vortex waste to biogas combustion](http://www.beehiveenergy.co.uk/C6_Brochures/Clean6_Vortex_Requirements.docx), DETAILED FORM for Clean6 technology |
|  | The above form is relevant to the smaller scale [renewable waste to biogas 60kWth 2kWe modules](http://beehiveenergy.co.uk/E3_Brochures/FREE_BEE_ENTRADE_E3_Figures.pdf) also. |
|  | Detailed spreadsheets, preferable half hourlies |
|  | Data split into sub-metering where possible |
|  | Equipment is sized on base load, so please give details of heating and electrical demands that run all of the time. |
|  | Patterns of base load and other peak KW requirements |
|  | The existing/ required heating system. |
|  | What kind of heating/ cooling equipment is being used |
|  | Equipment design plans if possible |
|  | Bills showing rates paid for fuels and electric |
|  | Measurement of the building areas to be heated, plans |
|  | Steam Requirement kg/hr, psi, modularization, peak/ base |
|  | Litres of hot water, times heated/ day, hrs to heat, KW, temperature required (flow and return) |

These questions are meant to be helpful suggestions. We appreciate our clients are busy and such technologies may not be your core business. We are here to help overcome barriers for businesses. Please send across anything you do have as soon as you are able, so that a line of enquiry can be started as a priority.

In this way, the highest rates of …

* **Renewable Heat Incentives (RHI)**
* **Renewable Obligation Certificates (ROCs)**
* **Feed-in Tariff and (FITs)**
* **Carbon Credits (CC) back from the CRC and Energy Efficiency Scheme and ESOS fees avoided**

… can be secured by installing RHI eligible equipment sooner rather than later before more scheduled degressions.

**Please email or call with details:**

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 **01225 920 199/ 07886 034 019
Our consultants are happy to go through questions with you and can arrange a visit at your convenience.**

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