

BIOMASS HEATING

ESCO Model

**BIOMASS
HEATING**
with no capital
outlay



www.jlphillips.co.uk



J L PHILLIPS
RENEWABLE ENERGY

WHAT IS AN ESCO

and why it will work for you?

J L PHILLIPS RENEWABLE ENERGY LTD are able to offer a biomass installation package through our Energy Supply Company (ESCo) where no capital outlay is required. The ESCo covers the cost of the boiler installation and on-going servicing and maintenance. The boiler provides you with low carbon renewable heat at up to 50% less cost in comparison with electric or fossil fuelled heating.

All you do is provide the fuel and use the heat. We are able to do this for a number of reasons:

- We have service engineers “on the ground” who undertake routine maintenance and troubleshooting quickly and effectively allowing us to offer guaranteed availability.
- We have the financial backing in place enabling us to offer fully financed options through the ESCo (Energy Supply Company) which can provide a no capital outlay option.
- We have strong relationships within the wood fuel supply chain

J L PHILLIPS RENEWABLE ENERGY LTD have a proven track record in supplying heat into large commercial buildings and country estates, we use the very best equipment and current techniques to get heat into properties. You can benefit from our experience of delivering low cost, low carbon heat for no outlay at all, by signing up to an ESCo arranged by J L Phillips Renewable Energy Ltd.

Benefits of the ESCo Energy Supply Contract

The benefits of the Heat Supply and ESCO model to customers are significant:

- Only pay for the heat that you use
- No installation costs
- Minimise risk – if the system does not perform then we will not be paid
- Free up your working capital
- Negotiable ‘buy-back’ option at year 10. Customer will retain the RHI from year 11 to 20
- Heat production system serviced and maintained for 20 years, free of charge
- Increase heating efficiencies by using a district heating system for use on multiple properties
- Focus on your core business and outsource the management, operation and risk associated with the biomass system to the professionals
- Improve your carbon footprint at no additional cost
- Save up to 50% against electric or fossil fuels, by using efficient renewable heat provided by the biomass boiler
- Benefit from low carbon, high efficient heating for multiple properties

Suitable properties and businesses

- Farms and Country Estate buildings / Hospitals / Schools / Nursing Homes / Process Plants / Leisure Centres

NEGOTIABLE
‘BUY-BACK’ option
at year 10. Customer
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ESCO
Energy Supply Contract

Requirement for an ESCO to work

- Two parties – An investor (J L Phillips Renewable Energy Ltd) and an end user (Customer)
- A business, property or properties that have a large heat demand

Suitable Applications for an ESCO

- Constant heat load
- Farms and Country Estate buildings / Hospitals / Schools / Nursing Homes / Process Plants / Leisure Centres

How The
ESCO Model Works

ESCO Owner (Investor)

- Responsible for capex of the biomass plant
- Responsible for running and maintaining the system
- Sells heat to client if the fuel is not sourced internally
- Retains the RHI income

End User (Client)

- Buys heat from the ESCO owner if the fuel is not sourced internally
- Supplies heat demand
- Supplies the fuel (if not purchasing heat)

To consider when signing up for an ESCO

- ESCO Model System Design & Heat Usage
- Sale of Property
- Transfer of ownership
- Investor bankruptcy
- Death or terminal illness

ESCO
Model End User Considerations

Investor Produces System Specifications

- Professional boiler to buffer schematic design
- RHI schematic design with detailed installation lay out
- Fuel store build & design
- Secondary heat exchanger schematics for heating integration layout
- Certified flue design and calculations

Investor Produces System Heat Usage

- Full system heat demand & losses
- Certified EPCs (Energy Performance Certificate) per property
- Heat meter generation requirement & expectancy
- Estimated fuel usage per annum & fuel specification

CONTRACTUAL AGREEMENT T&Cs

Boiler Contract

- The new installed boiler must be operational for the duration of the RHI period of 20 years; this is to ensure the pay pack period is achievable.
- If for any circumstances the system cannot remain operational as per the contract agreement form, then the end user will be required to pay the remainder of the RHI payments (kWh x RHI tariff) at the current RPI rate. The end user will then take ownership of the boiler & system installed.
- We can offer a 'buy-back' option at year 10. The customer will be required to pay the investor for the remaining kWh's from year 11 to 20 at a negotiable rate p/kWh.

RHI Tariff & Payments

- The RHI tier 1 payment will remain with J L Phillips Renewable Energy Ltd from commissioning date and the tier rating of the new installed boiler must be achieved in each periodic year by the end user.
- If for any circumstances the agreed tier 1 rate is not achieved, then the end user will be invoiced the remaining amount of kWh's at the end of that periodic year. (See table on page 8 for current RHI tariff payments per kWh)
- The RHI tier 2 rating will remain with J L Phillips Renewable Energy Ltd and no counter charges will apply.

End User Risk Considerations

- If the end user is to sell their property whilst under contract, it is the responsibility of the end user and investor to offer the remainder of the contract to the new property owner. If the contract fails the transfer of ownership, the end user is to pay the remainder of the 20 year contract (kWh x RHI tariff) under negotiation with the investor.
- If the investor becomes bankrupt during the first 10 years from the commencement date of the contract, then the end user will be required to negotiate with Lombard (investors finance provider) for the transfer of ownership. The end user will become eligible for the RHI tariff payments once transfer of ownership is completed.
- If the investor becomes bankrupt after 10 years from commencement date of the contract then the system installed automatically goes to the end user at no further cost. The end user will then be eligible for the RHI tariff payments once transfer of ownership is completed.
- If the end user is to suffer a terminal illness or death during the first 10 years then the end user / next of kin or contract owner will be required to pay the remainder of the RHI payments (kWh x RHI tariff) at the current RPI rate from contract commencement date. The investor will then seek another site location for the system unless negotiations with the next of kin/contract resulted in them taking over the contract and continuing to run the system.

YOU CAN BENEFIT
*from our experience of
delivering low cost, low
carbon heat for no outlay
at all*

CONTRACTUAL AGREEMENT T&Cs

Fuel Supply & Fuel Store

- If the fuel (pellet/woodchip) is to be sourced by J L Phillips Renewable Energy Ltd, the end user will be charged at the current rate of pence per kWh used. The fuel charged to the end user will be invoiced quarterly each time the heat meter periodic data is submitted to Ofgem. This is the same periodic data used in order to receive the RHI tariff payments which runs on a quarterly basis throughout the year. (see table below for fuel price charged per kWh used)
- The end user may wish to source their own fuel; this is acceptable upon agreement and a fuel data sheet must be supplied to J L Phillips Renewable Energy Ltd to ensure the proposed fuel meets the required standard. (see fuel data specification sheet below)
- The fuel store is to be supplied and installed by J L Phillips Renewable Energy Ltd. The fuel store build could become chargeable to the end user if a complex store is to be introduced. This will then be negotiable between the investor and end user.

District Heating

- If any district heating pipe is to be installed which is greater than 70m, the investor & end user will negotiate the remaining cost of the district pipe. J L Phillips Renewable Energy Ltd will then carry out the installation to ensure the required standard is met.
- House heat exchangers (primary system), J L Phillips Renewable Energy Ltd will supply & install the primary heat exchangers at the end of the district runs and connect onto the existing systems (secondary system) to ensure full working order upon commissioning, the end user will not be charged for any installation costs.
- The end user may wish to purchase heat meters to charge any tenants using the biomass system at the end of the district runs. (please use table below to charge tenants the standard rate of fuel price per kWh used).

Service & Maintenance

- The service and maintenance plan starts from date of commissioning and will be carried out by J L Phillips Renewable Energy Ltd certified engineers. The service and maintenance plan will be covered for the duration of the contractual agreement. The end user will not stand any charges for servicing, warranty or replacement parts on the primary installed system.
- The end user will be liable for the secondary elements of the system; this includes everything supplied after the newly installed primary heat exchanger (supplied by J L Phillips Renewable Energy Ltd). The secondary elements of the system usually consists of radiators, hot water cylinders and maybe a back oil boiler.

**WE COVER
THE COST**
*of the boiler installation
and supply you with
renewable heat at up to
25% less than the cost of
oil or LPG gas*

CURRENT FUEL COSTS kWh PER UNIT

FUEL	PRICE PER UNIT	kWh PER UNIT	PENCE PER kWh
Wood chips (30% MC)	£110 per tonne	3,500 kWh/t	3.1p/kWh
Wood pellets	£210 per tonne	4,800 kWh/t	4.4p/kWh
Natural gas	4.9p/kWh	1	4.9p/kWh
Heating oil	58p per litre	10 kWh/ltr	5.8p/kWh
LPG (bulk)	43p per litre	6.6 kWh/ltr	6.5p/kWh
Electricity	15.0p/kWh	1	15.0p/kWh

Fuel Charges

- Using the table above, J L Phillips Renewable Energy Ltd will charge the end user the current rate pence per kWh on the selected fuel for the installation. The amount to be invoiced on a quarterly basis will be determined by the heat used registered through the heat meter installed on the biomass system.

Fuel Charges From End User To Tenants

- The table above is a guide for the end user to charge any district heating runs they may have on the system installed; the end user may wish to install heat meters at the end of their district runs which will enable them to charge Tenants for any kWhs used.
- J L Phillips Renewable Energy Ltd also recommend that the end user charges their tenants at a level within the price range for wood pellets & heating oil on a quarterly basis starting from the commissioning date to keep matters consistent with their ESCO.

AS A HETAS CERTIFIED

*installation company
J L Phillips Renewable
Energy Ltd are accredited
to provide Flue system
designs and
calculations*



TABLE OF RHI TARIFFS

TARIFF NAME	ELIGIBLE TECHNOLOGY	ELIGIBLE SIZES	TARIFF RATE (PENCE/kWh)	TARIFF DURATION (YEARS)	SUPPORT CALCULATION
Small Biomass	Solid biomass	Less than 200kW	Tier 1: 5.87	20	Metering Tier 1 applies annually up to the Tier Break, Tier 2 above the Tier Break. The Tier Break is installed capacity (kW) x 1,314 peak load hours (i.e.) kW x 1,314
			Tier 2: 1.56		
Medium Biomass		200kW and above; less than 1,000kW	Tier 1: 5.18		
			Tier 2: 2.24		
Large Biomass		1,000kW and above	2.03		Metering

- RHI Tariff Payments
 - › The system will be designed to achieve Tier 1 and minimal of Tier 2. J L Phillips Renewable Energy Ltd will take the RHI tariff payments of Tier 1 & 2. Tier 1 must be achieved by the end user in each periodic year starting from commissioning date for the contract duration.
- Charges for Unused kWhs
 - › The RHI tariff payment table indicates the current rates of pence per kWh available for accreditation; J L Phillips Renewable Energy Ltd will charge the end user the remaining unused kWh's in that periodic year using data recorded by the biomass heat meter.

... we use the
VERY BEST
equipment and current techniques to get heat into properties

EXAMPLE TIER 1 CALCULATION BELOW

Boiler rated output 70kW = 70kW x 1,314 (peak hours) = 91,980kWhs eligible for Tier 1

CALCULATION OF ANNUAL CHARGES FOR UNUSED kWhs

Tier 1 eligible use = 70kW x 1,314 = 91,980kWhs x 0.0587 = **£5,399.23** per year

End user heat used = 70,500kWhs (91,980 – 70,500) = 21,480kWhs x 0.0587 = **£1,260.88**

- *The remaining unused kWh will be invoiced upon the last periodic reading of that year; Tier 1 starts again at the beginning of each periodic year and continues until contract completion.*

WOOD CHIP SPECIFICATION SHEET

The majority of the wood pellet fuel supplied to the heating market within the UK is to either the Austrian ONORM M 7133 or the British Standard EN 14961-4: 2010 Solid biofuels – Fuel specifications and classes Part 4: Wood chips for non-industrial use.

As the EN 14961-4 standard is soon to be adopted in the UK, with other national standards being phased out, then J L Phillips Renewable Energy Ltd recommend this be used when purchasing wood chip fuel.

Each boiler product is approved for use on particular classifications within the EN standard according to the table below which must be adhered to.

BOILER TYPE	PROPERTY CLASS	PARTICLE SIZE (P)*(1)	WATER CONTENT (M) *(2)	ASH CONTENT (A)	WOOD BULK DENSITY (BD)*(3)
Boiler 20–60 kW	A1, A2	P16B P31.5 P45A	15–35%	A1 (<1%) A2 (<1.5%)	> 150kg/m ³
Boiler 80–301 kW	A1, A2, B1				
Boiler 500 kW	A1, A2			A1 (<1%) A2 (<1.5%) B1 (<3%)	
Boiler 1,000 kW	A1, A2, B1				

*(1) Also allowed is G30 or G50 according to ONRM 7133

*(2) If fuel water content is higher than 25% then the boiler may not reach nominal (rated) power.

*(3) If calorific value is lower than 3.1 kWh/kg then boiler may not reach nominal (rated) power

Please note that using recycled wood which has been shredded instead of chipped (using a fuel wood chipper) will require authorisation by the local authority and may cause the following issues:

- The full nominal boiler power may not be achievable due to reduced flow characteristics
- It may not be possible to obtain good combustion parameters. Incorrect combustion can reduce equipment life and would invalidate the boiler warranty.
- There may be problems with "bridging" over the auger in the wood chip store
- There may be chemical contaminants that cannot be seen in the fuel; the fuel may require chemical analysis testing to ensure it is clean.
- *If recycled wood is planned then J L Phillips Renewable Energy Ltd would require a fuel sample before approving its use.*

**EACH
BOILER PRODUCT**
*is approved for
use on particular
classifications within
the EN standard*

WOOD PELLET SPECIFICATION SHEET

The majority of the wood pellet fuel supplied to the heating market within the UK is to either the Austrian ONORM M 7135 or the British Standard EN 14961-2: 2010 Solid biofuels – Fuel specifications and classes Part 2: Wood pellets for non-industrial use or the ENplus standard which is based on EN 14961-2.

As the EN 14961-2 standard is soon to be adopted in the UK, with other national standards being phased out, then J L Phillips Renewable Energy Ltd recommend either the EN 14961-2 or ENplus standards are used when purchasing wood pellet fuel.

Each boiler product is approved for use on particular classifications within the EN standard according to the table below which must be adhered to.

It is important to note that the limit on ash melting behaviour below is mandatory to retain the boiler warranty although they are only voluntary in EN 14961-2.

BOILER TYPE	PELLET DIAMETER MM	EN 14961-2 CLASSIFICATION		EN+ CLASSIFICATION
		ACCEPTABLE CLASS	MINIMUM ASH MELTING DT (DEFORMATION TEMPERATURE)*	ACCEPTABLE CLASS
PELLET BOILERS				
Boiler 20-60 kW	6	A1	1,200°C	A1
Boiler 80-301 kW	6	A1, A2	1,200°C	A1, A2
Boiler 20-60 kW	6, 8	A1	1,200°C	A1
Boiler 80-301 kW	6, 8, 10	A1, A2	1,200°C	A1, A2
Boiler 500 kW	6, 8, 10	A1, A2	1,200°C	A1, A2
Boiler 1,000 kW	6, 8, 10	A1, A2	1,200°C	A1, A2

*Actual Ash deformation temperature of the pellets needs to be above this value

**BIOMASS
INSTALLATION**

*No capital
outlay*

CONTRACTUAL AGREEMENT FORM

Address of installation:	End User Address:	End User Name:
		Job Number:
		Date:

Minimum Annual kWh Usage:	197,100	kWhs
Maximum Annual kWh Usage:	450,000	kWhs
10 year Contractual kWh Usage:	1,971,000	kWhs
20 year Contractual kWh Usage:	3,942,000	kWhs
Unused kWhs tariff charge; RPI index linked:	£0.0587	p/kWh
Land Lease Agreement; RPI index linked:	£	per Year
Contract Duration on Agreement*: <i>Full Term Contract</i> *Negotiable 'Buy-Back' at year 10	20 years	

Fuel Type:	Woodchip		
Fuel Supply Agreement: <i>J L Phillips Renewable Energy Ltd to act as fuel supplier</i>	No		
Annual Fuel Supply fixed rate: <i>12 month fixed</i>	£	N/A	p/kWh

Additional Extras: <i>None required</i>	N/A		
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Investor Name: J L Phillips Renewable Energy Ltd	Investor Signature:
End User Name:	End User Signature:

Director: J Phillips Company No. 07367985 Company UTR No: 1129715268
 J L Phillips Renewable Energy LTD
 Registered Office: 6 Evans Business Centre, Jessop Close, Newark, Notts, NG24 2TT

J L Phillips Renewable Energy Ltd are a friendly team of experienced engineers, installers, project managers, sales & office staff. We have a 100% RHI Application Success Rate and have installed hundreds of successful individually tailored biomass systems throughout the UK.

PARTNERS

J L Phillips are preferred installers for the Herz and ETA biomass boiler. Our engineers are qualified to install, commission and service these boiler types.



Founded in 1896, Herz has been continuously active in the market for more than 110 years. With six sites within Austria, another three in Europe and more than 1,500 employees at home and abroad, HERZ is the only Austrian manufacturer that produces equipment for the entire heating and installation industry and is one of the most important internationally. HERZ Feuerungstechnik in Sebersdorf/Styria was founded in 1983. Today more than 100 people work in production and sales. Over the years HERZ Feuerungstechnik has established itself as a specialist for biomass heating. The main focus for this is placed upon modern, cost efficient and environmentally friendly heating systems with highest levels of comfort and convenience as well as being user-friendly. A heart for the environment, all HERZ boiler exceed the strictest emission regulations. This is proven by various environmental seals of approval. HERZ quality Herz design engineers are in regular contact with acknowledged research institutions in order to further improve the very high standards.

The beginning of the ETA Company can be traced back to the year 1998 and is marked and developed by individuals. Individuals, for whom benefits are not the most important thing, but who also emphasise conviction. The conviction: that the production of boilers which use renewable energies are an important contribution to the protection of the environment and the containment of the greenhouse effect. ETA Heiztechnik was founded in December 1998 and since then, has dedicated itself to the production of heating boilers for renewable energies. ETA has specialized in heating boilers for wood. Fifteen employees (from a total of 165 employees) are dedicated to develop the technology for wood, including the electronics and control components. Emphasis is on safety and user comfort. As in the automobile manufacturing process, selected suppliers produce all our components according to our construction plans. As a result, ETA can deploy the most adequate material for every part of the boiler. The assembly of the boiler is done in-house, therefore all parts can be checked before being assembled. All ETA heating boilers have Lambda controlling. The result is high quality in the upper section of today's technology.

ACCREDITATIONS

We are accredited by all relevant bodies for the design, installation and service of biomass heating systems.

- > MCS Accredited Installer Biomass Systems (NIC 3554)
- > HETAS trained flue design & installation specialists
- > NICEIC Governing Body – Biomass
- > RECC – Renewable Energy Consumer Code
- > Approved HERZ – ETA Installation & Commissioning specialists



AWARDS

"Geberit Best Commercial Installer 2014" award for our quality and standard of work.

6 Evans Business Centre, Jessop Close, Newark, Notts, NG24 2TT
T 01636 642790 E info@jlphillips.co.uk W www.jlphillips.co.uk

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