



Typical building type:

1920s semi-detached three bedroom family home (98m² over 2 floors)

Renewable heating technology used:

Vaillant's aroTHERM 5kW air to water heat pump Hybrid system with ecoTEC Plus 31kW combi



PROJECT BACKGROUND

- Accessing Renewable Heat Incentive (RHI) funding through the installation of renewable heating technology
- Provides energy and cost savings for the homeowner
- Delivers satisfaction of having saved money and contributed to environmental targets

TYPICAL PROJECTED SAVINGS:

Annual fuel saving
***£255**

Annual fuel saving and calculated RHI payment
****£745.96**

*taken from MIS 3005

**fuel saving + estimate RHI (from EPC)

Helping customers understand how Energy Performance Certification (EPC) and MIS 3005 Heat Loss Calculations influence final Renewable Heat Incentive (RHI) payments.

Many owners of popular homes such as 1920s semi-detached properties are increasingly seeking renewable heating solutions to upscale the heating performance within their houses, as well as considering the financial benefits available from the Government's **Renewable Heat Incentive (RHI)** scheme.

The RHI is available to promote the use of renewable heating system technology to help reduce the UK's carbon emissions. Qualifying for the scheme means property owners can receive regular payment contributions over a seven year period. They can also benefit from guaranteed fuel savings, courtesy of highly efficient renewable heating systems such as Vaillant's aroTHERM hybrid solution. The hybrid heating system operates on an 'intelligent basis' by selecting the most efficient heat source for the property based upon a combination of tariff information, heat required within the property and outside temperature to ensure only the most efficient heating source is utilised. In all hybrid installations as you have a renewable and traditional heat source working together the system must have heat and electric meters fitted so the incentive only pays for the amount of renewable heat the system produces.

Calculations

To help calculate the RHI funding on offer, property owners have to complete three separate assessments: the **Energy Performance Certificate (EPC)** and **Green Deal Assessment (GDA)** carried out by an independent assessor and a **MIS 3005** heat loss calculation carried out by the installer.

In a hybrid system heat and electrical meters must be fitted which will provide the actual performance of the heat pump. This ensures the homeowner only gets the incentive for the amount of renewable heat the heat pump provides and not the heat from the boiler. The maximum amount of funding available is taken from the EPC.

The EPC and GDA assess the suitability of the property in terms of a proposed renewable heating installation. They will also examine the status of other typical energy efficiency areas within the property, such as double glazing and loft and cavity wall installation which could help to reduce the house's overall energy consumption performance. To qualify for the RHI these measures must be carried out where possible.

As part of the renewable heating installation, the installer will carry out an MIS 3005 heat loss calculation. This is a room-by-room heat loss calculation taking into account the size of windows,

Understanding RHI

the floor and ceiling type, how the walls are constructed and the type of doors in the property.

In a typical example (as detailed below) it is important to remember that while the final technology solution, such as a heat pump, must be sized in accordance with the MIS 3005 calculations carried out by the installer, the final RHI payments are based on the EPC submission and the heat and electrical meter readings. There is frequently a discrepancy

between the two figures which installers are well placed to explain to homeowners.

In the case shown (which is based upon a 1920s semi-detached 3 bedroom property), the EPC undervalued the required heat needed for the property, subsequently providing a lower RHI payment. Over the seven year funding period this would amount to a difference of £235.95 per annum and £1,651.65 over the entire RHI funding period.

	EPC (75 out of a possible 87)	MIS 3005	Difference
kW/h run hours for heating	9,695 kW/h 7,740 kW/h (86% covered by the heat pump)	16,552 kW/h total property 14,310 kW/h covered by the heat pump	+ 6,857 kW/h total property + 6,570 kW/h covered by the heat pump
kW/h run hours for hot water	1,642 kW/h	2865 kW/h	+ 1,223 kW/h covered by the boiler

What does that difference really mean?

EPC Renewable Heat Payback - to calculate the estimate RHI payments, take the kW/h and divide it by the calculated CoP from MIS 3005.

EPC running kW/h need to heat the home	Calculated system efficiency	Calculated amount of electric required to run the heat pump	Amount of renewable heat provided by the heat pump in kW/h	Estimated RHI
9695 kW/h	3.15	$9695 / 3.15 = 3,077.77$	$9695 - 3077.77 = 6,617.23$ kW/h	$6,617.23$ kW/h x 0.0742p = £490.99

MIS 3005 running kW/h need to heat the home	Calculated system efficiency	Calculated amount of electric required to run the heat pump	Amount of renewable heat provided by the heat pump in kW/h	Estimated RHI
14,310 kW/h	3.15	$14,310 / 3.15 = 4,542.85$	$14,310 - 4,542.85 = 9,767.15$ kW/h	$9,797.15$ kW/h x 0.0742 = £726.94

That accounts for the difference of £235.95 per year. The amount of incentive available is capped by the running kW/h on the EPC.

Be Clear

Incentives such as the RHI are positive for homeowners. They are designed to improve the energy efficiency of the UK's housing stock and reduce the impact of carbon by lowering the cost of installing renewable heating solutions. However, a clear understanding of how the RHI payment calculation method is undertaken, and how it fits into the whole process, is required to ensure property owners are clear before they apply. Frequently, the EPC calculation is likely to be lower than the MIS 3005 calculation and the property owner should be aware of the roles both sets of figures play in the funding and system sizing journey.

Making A RHI Application

To make a claim for RHI payments based upon the installation of a renewable heating system, such as the Vaillant aroTHERM 5kW hybrid, applicants will be required to provide the following information:

- EPC reference number - located on the top right of the first page of the EPC document
- Green Deal Assessment reference number (found at the top of the front page of your GDA)
- The serial number of the heat meter fitted to the system - located on the calibration report for the heat meter
- The serial number of the electrical meter - located on the meter
- MCS installation certificate number - supplied by the installer

Successful applications take approximately 30 minutes to complete. For more information go to:

<https://domesticrhi.ofgem.gov.uk/apply>