

# Heat Pumps with Integrated Immersion Heaters: Applicant Guidance Note 1

**Introduction:** This guidance note is for applicants to the Northern Ireland Renewable Heat Incentive (NIRHI) whose installation is a ground or water source heat pump that includes an integrated immersion heater. For Ofgem E-Serve's administrative purposes the term 'integrated immersion heater' refers to immersion heaters which are incorporated within the heat pump unit itself<sup>1</sup>.

This guidance note explains the additional requirements for NIRHI applicants resulting from the use of heat pumps with integrated immersion heaters. Text in **red** refers to wording which will appear on the 'Renewable Heat Incentive Register'<sup>2</sup>.

**Background:** Heat pumps with integrated immersion heaters are not excluded from the NIRHI. However, the primary legislation which underpins the scheme<sup>3</sup> only allows support for the "renewable generation of heat". Therefore, the NIRHI scheme requires non-renewable heat to be metered for 'complex' installations<sup>4</sup>, while for 'simple' installations the scheme requires that metering excludes heat produced from fossil fuel sources. Class 2<sup>5</sup> accuracy heat meters are required in both cases.

For integrated immersion heat pumps Ofgem E-Serve requires metering to ensure that any heat produced from the immersion heater can be accounted for. This heat will not be eligible for NIRHI payments. Due to the technically challenging nature of measuring this heat by means of a heat meter, alternative means of measuring the heat from the integrated immersion are considered acceptable. These are detailed below.

## How can I measure heat produced by an integrated immersion heater?

The principal two methods by which heat from an integrated immersion heater could be measured are:

**1. Heat Pump Controller:** Where the heat pump control unit has the capability to log the number of hours the immersion heater is used in a given time period, the heat produced can be calculated by recording this 'total hours of immersion use' figure for the quarterly submission period<sup>6</sup> and multiplying by the rating of the immersion in kWe<sup>7</sup> to give the heat produced from the integrated immersion in Kilowatt-hours (kWh).

Where a unit has more than one integrated immersion, with different ratings, the control unit would have to be able to log the number of hours each different immersion heater has been utilised in order to use this approach<sup>8</sup>. If this is not the case and you wish to use this approach please make contact with the NIRHI operational team.

**2. CT Monitoring Coil:** A 'clip on' current transformer (CT) monitoring coil connected to a kWh meter can be applied to the internal wiring for the immersion heater(s). This should be fitted by a qualified electrician or heat pump engineer in order to ensure this is undertaken safely and is located correctly.

The kWh figure measured by either of these methods will be used to represent the heat output from the integrated immersion<sup>9</sup> for the quarterly periodic data submission period. You are welcome to propose an alternative methodology and Ofgem E-Serve will consider these on a case by case basis. If you wish to propose an alternative approach, please make contact with the RHI operational team prior to submitting your application for accreditation.

N.B. Ofgem E-Serve does not require CT monitoring coils of any given standard or advocate the use of any particular brand. Our only requirement is that they must be able to provide a kWh reading for the electrical input to the immersion heater(s).

<sup>1</sup> An immersion heater located within a hot water cylinder, or in-line heater in the central heating circuit / buffer, would not be considered 'integrated' for Ofgem E-Serve's purposes. Heat from such immersion heaters may be required to be metered dependant on the metering classification (simple or complex) of the installation and heating system layout.

<sup>2</sup> The RHI IT system used for making applications to the scheme and submitting periodic data.

<sup>3</sup> The Energy Act 2011 section 113.

<sup>4</sup> Please refer to chapter 7, 'Metering Eligibility Requirements' of 'Renewable Heat Incentive Guidance Volume 1: Eligibility and how to apply.'

<sup>5</sup> Under the Measuring Instruments Directive (2004).

<sup>6</sup> Monthly for installations with a capacity  $\geq 1$  MWth.

<sup>7</sup> Kilowatt-electric.

<sup>8</sup> Otherwise in this situation we may require you to make a conservative assumption that the maximum rated immersion heater was in use at all times.

<sup>9</sup> Since 100% of the electrical energy provided to the immersion is converted to heat energy.

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## What to do at accreditation

When making an application for the NIRHI, via the 'Renewable Heat Incentive Register', for a heat pump installation which has an integrated immersion heater you must:

- Declare at question **HK 120** that the heat pump unit has an integrated immersion heater(s), state the electrical rating (kWe) of this<sup>10</sup> and also state its anticipated use(s) e.g. for periodic legionella sterilisation purposes.
- For any single heat pump unit with a capacity  $\geq 20$ kWth which has an integrated immersion heater, please clearly state (again at **HK 120**) why a unit with an integrated immersion was selected.
- At question **HI 100** '**Please enter the number of relevant hot water meters for the heating system to which your installation delivers heat**'; the number added should be the total number of heat meters present plus one additional 'meter'. This further 'meter' is where you will provide details of how the heat from the integrated immersion heater is measured. For example, for a 'simple' heat pump installation with an integrated immersion and one heat meter in place, "2" would be declared at **HI 100**. You will then be prompted for further information on each meter.

For the final meter (that used for measuring the output from the integrated immersion) provide the:

- Meter manufacturer and model<sup>11</sup>.
- Serial number<sup>12</sup>.
- Description. At this stage describe how you will be measuring the heat produced from the integrated immersion heater.
- Initial meter reading & date it was taken: Provide an initial reading and the date this was taken. This should be taken no earlier than three days prior to the date of the first submission of your application.

Upon accreditation for such an application Ofgem E-Serve will include a condition of accreditation that you measure and record information to allow you to report on the heat from the integrated immersion heater. Compliance with this condition of accreditation will be checked upon provision of periodic data and at audit.

## What to do for periodic data submissions

Each quarter the kWh of heat provided by the integrated immersion heater will need to be calculated, as per the approach outlined in your application, and submitted as part of your periodic data submission. This is made via the 'Renewable Heat Incentive Register'.

In completing this take account of the following instructions:

- The measured figure for heat produced from the integrated immersion heater should be provided within the '**Back-up heaters integral to the heat pump system**' field.
- Subtract this figure from the metered heat from the heat pump installation for the quarterly periodic data submission period.
- Provide the result of this subtraction to the '**Heat generated by the installation**' field<sup>13</sup>. For complex installations where other plant supplying heat to the heating system have been metered, this subtraction should not be reflected in the '**Heat generated by all the plants supplying heat to the heating system**' field.

Upon accreditation any specific requirements regarding the submission of periodic data will be communicated by Ofgem E-Serve within your conditions of accreditation.

## Making contact with Ofgem E-Serve

If you wish to discuss the content of this guidance note further you can contact the NIRHI operational team by telephone or e-mail using the contact details below. Our helpline opening hours are 9am until 5pm Monday to Thursday, and 9am until 4:30pm on Fridays.

<sup>10</sup> If there are multiple immersion heaters with different ratings state the number and rating (kWe) of each.

<sup>11</sup> If utilising the heat pump controller simply state this here.

<sup>12</sup> If using the heat pump controller method simply provide an arbitrary reference here. This could be "HPC" followed by the RHI number for the application (excluding the zeros) e.g. HPC135, or alternatively the heat pump unit serial number. If the CT monitoring coil does not have a reference number, you should also use an arbitrary reference. This could be "CT" followed by the RHI number for the application (excluding the zeros) e.g. CT135.

<sup>13</sup> This applies for simple or complex installations.