

## Case Study Specification – Ground/Water/Air Source Heat pumps

### Section I. Installer

Installer Contact Information
Installer Name:
Business Name:
Business Address:
Business Phone:
Business E-mail:

Installer Qualification
Qualifications:
Training relevant to heat pump installation (please note duration of training course in hours):
Number of installations of heat pumps to date:
Potential capacity for installations per year:

### Section II. Case Study

*Please provide information on a heat pump system that you have personally installed in a residential building in order to illustrate your competence in this area, using the case study template provided below. The heat pump system installed can be an air source, water source or ground source heat pump. Where available, additional reference sites should also be listed. Note that the installation submitted as a case study, and those submitted as additional reference installations, may be selected for sample inspections by SEI.*

Case study installation
Date of installation start-up:
Address of Dwelling including name and telephone number of contact person:
Describe briefly the dwelling (size in sq. ft., date and type of construction, insulation levels):
Number of inhabitants:
Your involvement in the heat pump installation (tick appropriate box): <input type="checkbox"/> Sale <input type="checkbox"/> Design and sizing <input type="checkbox"/> Installation of heat source <input type="checkbox"/> Installation of heat pump unit <input type="checkbox"/> Electrical installation <input type="checkbox"/> Commissioning and customer hand-over <input type="checkbox"/> Maintenance
Did you work on the rest of the heating system? <input type="checkbox"/> Yes <input type="checkbox"/> No.
Explain:
Are inhabitants aware their installation may be selected for inspection?

Case study installation description
<i>Please provide a description with sufficient detail for each numbered section below addressing each of the specific points identified. Where appropriate, you can use photographic material or technical drawings to describe the installation.</i>
1. Sizing and design of the system
Heat demand of the dwelling: annual heating requirement (in kWh per m <sup>2</sup> per year): heat load (max. heat demand, in kW): Please explain how you calculated the heating requirement and the heat load.

Please describe the heat distribution of the building: <input type="checkbox"/> underfloor or wall heating <input type="checkbox"/> radiators <input type="checkbox"/> fan convector <input type="checkbox"/> air heating Flow temperature (°C): Return temperature (°C):
What is the type of heat pump used? Make: Model: Type: <input type="checkbox"/> Brine/water to water <input type="checkbox"/> Direct expansion (refrigerant in collector) <input type="checkbox"/> Air source
What is the heating capacity of the heat pump system: Heat pump unit (in kW): Back-up heating (immersion heater, boiler, etc., in kW):
Is the heat pump system catering for domestic hot water production? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please describe how the hot water is produced:
Is there a buffer tank fitted between the heat pump and the heat distribution system? <input type="checkbox"/> No <input type="checkbox"/> Yes, size: .....(in litres)
<b>2. Installation of the heat source</b>
<b>2.1. HORIZONTAL GROUND COLLECTOR (or CLOSED-LOOP WATER COLLECTOR):</b>
Please describe the nature of the ground (water body) the collector is laid in:
Please describe the layout of the ground (water) collector: total area covered by the collector (m <sup>2</sup> ): total length of the collector pipe (m): space between loop pipes (m): average depth of the collector from the ground (water) surface (m):
Please describe the collector assembly: piping (material, diameter, pressure rating): manifold (material, de-airing, balancing valves, expansion vessel): circulation pump (model and size): brine (antifreeze used and concentration): pressure in the ground loop:
<b>2.2. VERTICAL GROUND COLLECTOR (geothermal borehole):</b>
Please describe the nature of the underground:
Please describe the layout of the geothermal borehole: drilling company (name, contact person, tel number): drilling method: number of boreholes: diameter and depth of the borehole(s): space between the boreholes:
Please describe the borehole assembly: grouting of the borehole: piping (material, diameter, pressure rating): U-bend fitting used: number of loops per borehole: manifold (material, de-airing, balancing valves, expansion vessel): circulation pump (model and size): brine (antifreeze used and concentration): pressure in the ground loop:
<b>2.3 WATER-WELL SOURCE:</b>
Please describe ground formation in which the well has been drilled:
Please describe the construction of the well system: drilling company (name, contact person, tel number): drilling method: depth of the well (m): depth of the water table (m): casing used: screening/gravel pack:

Please describe the pumping station: water flow required (m3 per hour or gallon per minute): head required (pressure): pumping station (model of pump, depth, power): pipe work (pipe material, diameter and nominal pressure): filter used:
Please describe method used for well head sealing and protection against surface contamination:
Was a water analysis performed?
Please describe how the water pumped from the production well is disposed of after heat extraction:
<b>3. Control strategy:</b>
Please describe briefly the control strategy of the heat pump system:
<b>8. Commissioning &amp; Hand-over, Maintenance, Warranties:</b>
Commissioning procedure (check-list?):
Hand-over procedure (users' manual, training, etc.):
Maintenance service offered to the customer?
Have you had to call back following installation completion?
Warranties for equipment and labour:
<b>9. Finance:</b>
Cost of equipment:
Cost of labour:
Financing option given (loan, payment in instalment, etc.):
What is the estimated annual coefficient of performance of the heat pump system:
Estimated annual savings (in energy unit or euro):
<b>10. Further information:</b>
What kind of assistance have you received from the heat pump equipment manufacturer or its Irish agent (training, on-going technical support, installation manuals, etc.)?
Comments:

The information presented above is certified sincere and accurate (please sign):

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Please indicate if you would like to have your case study available on the Residential Renewable Energy Grant Programme installers list  Yes  No, please keep my information confidential

Please return this case study to Sheila Judge  
 Fax: 01 808 2330  
 Email: Sheila.judge@sei.ie  
 Postal address: Sustainable Energy Ireland