Presentation outline

• Why is it needed?
• International examples
• Data collection
• Potential data requirements
• Proposed format
• Request for data
Why is it needed?

• Provide examples of best practice installations
• Publicise/learn from successful installations, particularly those with high energy savings
• Allow data to be interrogated spatially:
  – E.g. determine areas where different installation types have been most successful / unsuccessful
International examples

• ThermoMap project:
  – European initiative to combine and analyse data from existing geothermal installations
• Infoterre database in France by BRGM and the ADEME (French Environment and Energy Management Agency) will be consulted.

• SEPEMO Project (SEasonal PErformance factor and MOnitoring)
• Belgium (PAC database)
• If possible, both the information contained in these and the database structures will be reviewed
Thermomap Partners
Database

Search Project

- Country
- Application area
- Purpose
- Heat source/sink
- Heat source system

extended search

- Air-source split system
- Air-source unit - outdoor
- Aquifer/wells
- Borehole collector (horizontal)
- Foundation piles
- Ground heat exchanger (vertical)
- Others

One-family house in Gengenbach

- A water-to-water heat pump system is in use....

One-family house in Gutau

- This house, located in Gutau in Upper Austria, is heated by a ground coupled direct expansion heat pump....

New housing estate "Paleiskwartier" in 's-Hertogenbosch

- The new housing estate "Paleiskwartier" is situated in the centre of the city 's-Hertogenbosch....

One-family house in Gutau

- This house, located in Gutau in Upper Austria, is heated by a ground coupled direct expansion heat pump....

Crèche on the east coast of Ireland

- A 16 kW Ochener GMLW air source heat pump was installed in a crèche on the west coast of Ireland....
## SEPEMO Input Form

### General Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>Austria</td>
</tr>
<tr>
<td>City</td>
<td></td>
</tr>
<tr>
<td>Client name</td>
<td></td>
</tr>
</tbody>
</table>

### Application area

- building sector
- district heating/cooling
- agriculture, horticulture
- industry
- others
- please specify: _______

### Building type

- one-two-family house
- semi-detached house
- terraced house
- multifamily residence
- office building
- public building
- commercial building, tertiary sector
- others
- please specify: _______

### Year of construction

- _______

### Heated/cooled building area (m²)

- _______

### Specific heat load (W/m²)

- _______

### Specific cooling load (W/m²)

- _______

### Building Energy Category/Label

- Low Energy House
- Passive House
- Effizienzhaus
- LEED
- DGNB
- others
- please specify: _______

### Heat pump type

- electric heat pump
- combustion engine driven heat pump
- absorption heat pump
- adaption heat pump
- others
- please specify: _______

### Purpose

- heating and cooling
- heating and cooling and hot water
- hot water only

### Heat source/sink

- air/air
- air/water
- Reine water
- water/water
- DX-water
- DX-direct condensation
- others
- please specify: _______

### Heat source system

- borehole heat exchanger (vertical)
- ground heat collector (horizontal)
- heat pipe heat exchanger (vertical)
- trench collector
- spiral collector
- foundation piles
- aquifer/wells
- pool
- tunnel drainage
- air-source unit - outdoor
- air-source unit - indoor
- air-source split system
- others
- please specify: _______

### Distribution system

- floor
- wall
- ceiling
- radiators
- fan coil units
- others
- please specify: _______

### Design supply/return temperature [°C]

- Heating
- Cooling

### Operation mode

- monovalent
- bivalent
- monoen ergic

### Alternative/complementary heating system

- thermal solar
- wood pellet boiler
- wood stove
- oil boiler, existing
- oil condensing boiler
- gas boiler, existing
- air condenser boiler
Data collection

• Data will be collected in a manner to allow incorporation into European datasets
• Collate new and existing data. These can be categorised in three areas:
  – Existing geological & hydrogeological data (data source GSI)
  – System design and configuration data (Industry stakeholders)
  – Formation and collector thermal properties (Industry and Third Level Institutions research)
Data collection

• Existing geological & hydrogeological data:
  – SEAI Geothermal Atlas Temperature Data
  – Met Éireann mean Soil Temperature
  – EPA/Teagasc – Soil/Subsoil Data
  – GSI Bedrock Geology
  – GSI Groundwater Aquifer Classification
  – GSI Interim Vulnerability Data
  – County Groundwater Well Data
  – Source Protection Areas
  – Karst Data.
Data collection

• System design and configuration data:
  – Collected from industry stakeholders
  – Include specific details of each system via project data acquisition sheets
  – Collect both subsurface ground condition data and installation construction details
  – Project team to develop a mechanism for data to be submitted.
Data collection

• Formation and collector thermal properties:
  – Liaise with industry stakeholders and universities
  – Potential to collect thermal response data if available
Potential data requirements

- key data will include:
  - Collector_ID
  - Collector Location (Easting, Northing, Townland, County)
  - County
  - Type of Construction
  - Development Type
  - Year of Construction
  - Floor Area
  - Collector Type (Open Loop, Closed Loop Vertical, Closed Loop Horizontal, Slinky, Trench etc)
  - Heat Pump Manufacturer
  - Collector Length
  - Estimated kW size (Heating and Cooling Values)
  - Commercial-Domestic
  - Collector Fluid
  - Collector Spacing

- Number of boreholes
- TRT Test Data Available (Y/N)
- Thermal Conductivity
- Borehole Thermal Resistance
- Borehole_ID (to link in with existing GSI Groundwater data nomenclature)
- Open Loop Collector Flow Rate
- Source Aquifer (from GSI Groundwater Dataset)
- Discharge Type (Re-injection or direct discharge)
- Pump Test Data availability (Y/N)
- Soil & bedrock geology (EPA/GSI)
- Borehole Logs
- Groundwater Information
Proposed format

• Data will be collected from stakeholders in a common format where possible
• Initially inputted to Excel
• Final database will be produced in GIS
Request for data

• Timely supply of data will aid the production of the database
• Data should also be submitted in the future to allow the database to be continually updated
Thank you for your time

Please direct all queries to shallowgeothermal@gsi.ie

Or phone 01 6782824