The Shallow Geothermal Resource Energy Project:

National Database of Installations

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SLR ARUP

Geoscience Initiative

NDP National Development Plan 2007 - 2013

GSI

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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

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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

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Thermomap Partners

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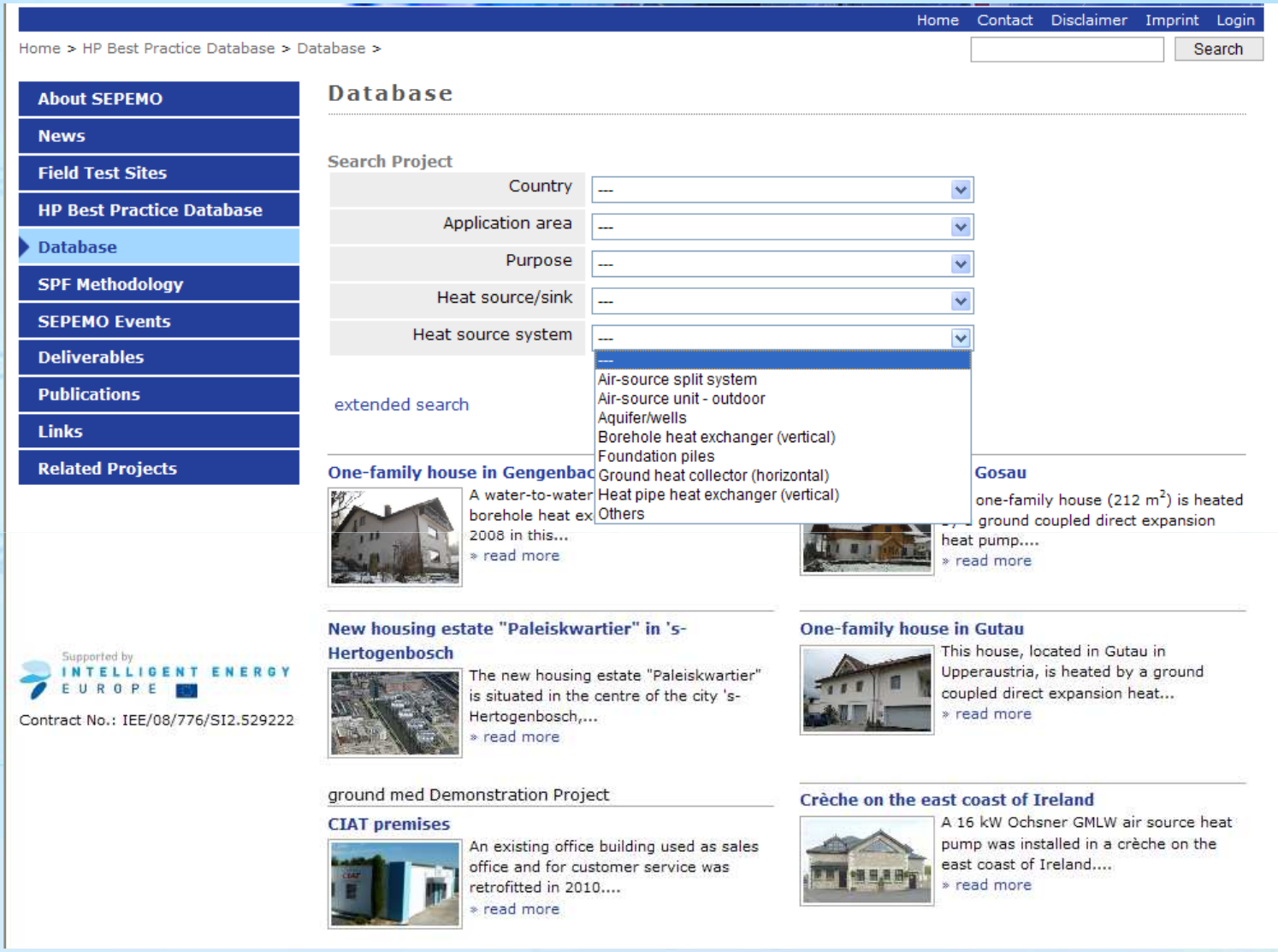
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Application area
Purpose
Heat source/sink
Heat source system
Air-source split system
Air-source unit - outdoor
Aquifer/wells
Borehole heat exchanger (vertical)
Foundation piles
Ground heat collector (horizontal)
Heat pipe heat exchanger (vertical)
Others
extended search
One-family house in Gengenbac
A water-to-water borehole heat ex 2008 in this...
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Gosau
one-family house (212 m²) is heated ground coupled direct expansion heat pump....
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New housing estate "Paleiskwartier" in 's-Hertogenbosch
The new housing estate "Paleiskwartier" is situated in the centre of the city 's-Hertogenbosch,...
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One-family house in Gutau
This house, located in Gutau in Upperaustria, is heated by a ground coupled direct expansion heat...
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CIAT premises
An existing office building used as sales office and for customer service was retrofitted in 2010....
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Crèche on the east coast of Ireland
A 16 kW Ochsner GMLW air source heat pump was installed in a crèche on the east coast of Ireland....
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SEPEMO Input Form

Heat Pump Best Practice Database – Test site specification

General Description		
Titel		SEPEMO
Country	Austria	
City		
Client name		
Application area	☐ building sector ☐ district heating/cooling ☐ agriculture, horticulture ☐ industry ☐ others please specify:	**Photos and graphs to be sent as attachment (png or jpg file)**
Building type	☐ one-/two-family house ☐ semidetached 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 ☐ adsorption 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 ☐ Brine/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 ☐ pits ☐ 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 ☐ monoenergetic	
Alternative / complementary heating system	☐ thermal solar ☐ wood pellets boiler ☐ wood stove ☐ oil boiler, existing ☐ oil condensing boiler ☐ gas boiler, existing ☐ gas condensing boiler	

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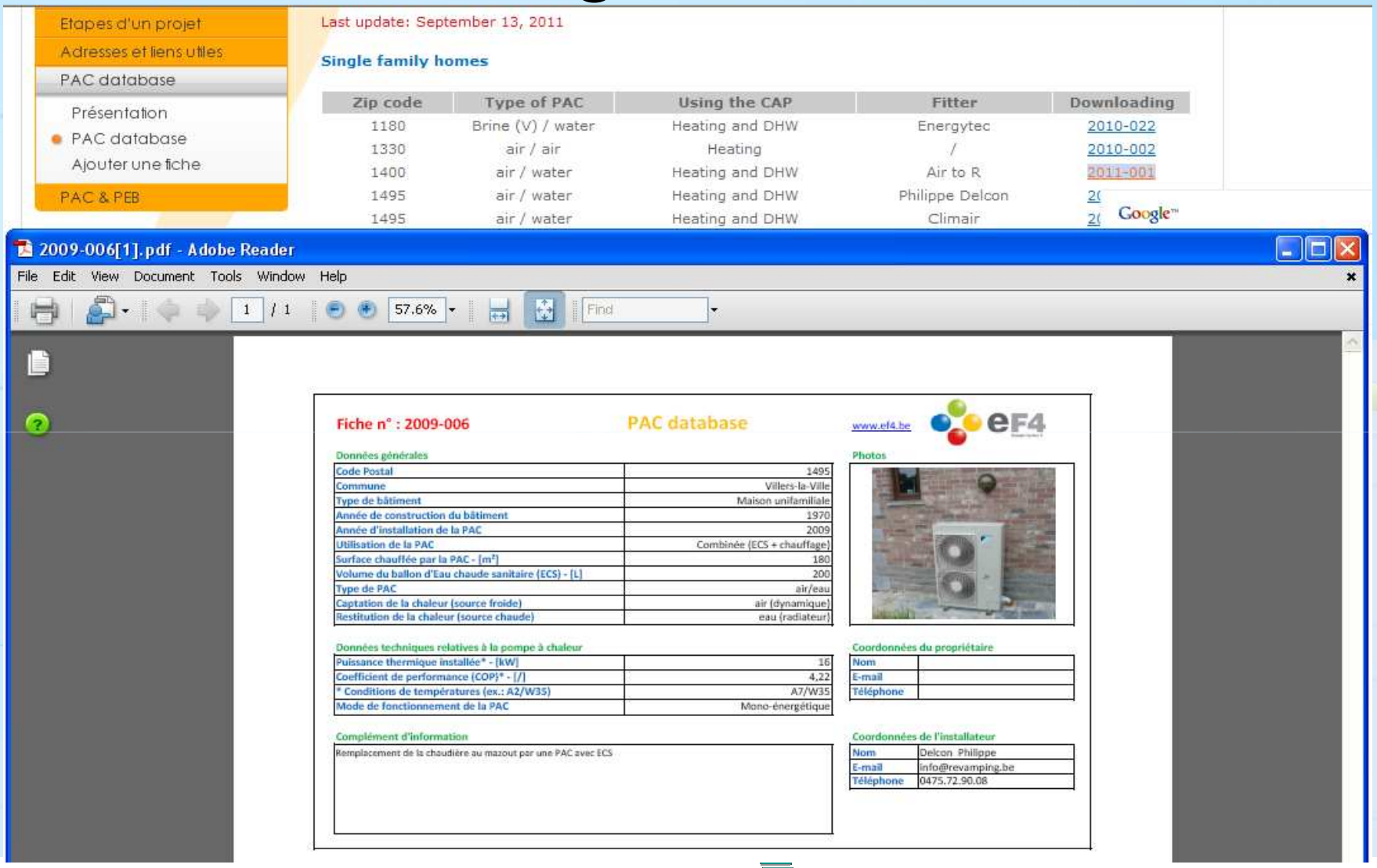
PAC Belgian Database



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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)

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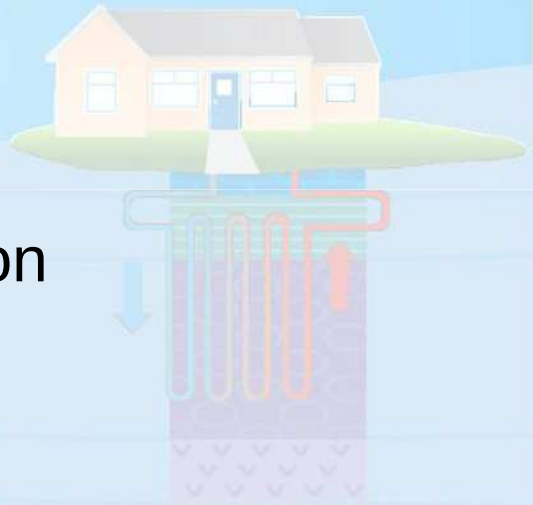
Data collection

- 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.



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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.

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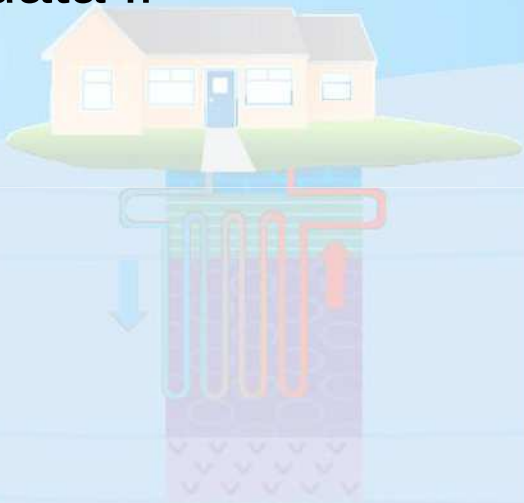
Data collection

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



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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

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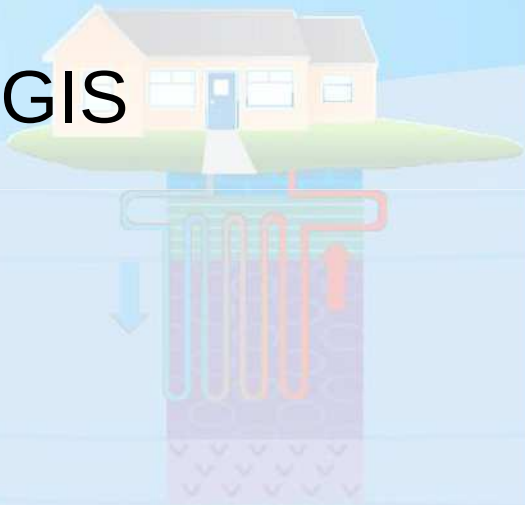
Proposed format

- 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

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