



Welcome to the "100 good reasons for using geothermal energy in heating and cooling"

organized by the EU COST Action CA18219 Geothermal-DHC

Geothermal offers various concepts to be integrated into heating (and cooling networks) at different temperature and capacity levels. Moreover, the application of Underground Thermal Energy Storage (UTES) supports the integration of geothermal energy into multivalent networks. Although, more than 400 geothermal energy supplied heating and cooling networks exist in Europe, this concept is still hardly visible to a larger audience.

This initiative therefore aims at creating a digital, web map supported permanent tool to exhibit existing and planned geothermal heating and cooling networks across Europe. It covers the full technological spectrum from low temperature, shallow geothermal supplied, local heating and cooling networks (so called "5th or 4th generation networks") towards direct use of deep geothermal energy in conventional district heating networks (so called "2nd to 4th generation networks"). The initiative will collect commercially operating sites as well as projects in planning and/or construction. The information provided will be accessible on a dedicated web portal (www.geothermal-dhc.eu) covering the location of each geothermal heating and cooling network and a digital fact sheet providing main characteristics.

The main target audience of this initiative consists of:

- District heating operators, energy suppliers not using geothermal energy so far;
- Communities interested in shifting heating and cooling supply towards renewables;
- National and European policy makers dealing with the heating and cooling sector;
- Operators of geothermal energy supplied heating and cooling networks interested in a knowledge exchange with other operators on technical solutions how to integrate geothermal energy;
- The interested lay public.

In the framework of the EU COST Action CA18219 Geothermal-DHC (2019 – 2023), a basic infrastructure related to the "100 good reasons initiative" will be build. However, the ambition is to create a permanent web tool, maintained by related international organizations and updated with future case studies.

We invite you to become part of this initiative and support making geothermal energy use in heating (and cooling networks) more visible in Europe!

Note: Your contact data will not be published and will only be used for internal questions and communication purposes regarding the initiative. From autumn 2022 on, a related "Case Study Profile" will be available on www.geothermal-dhc.eu, which will be linked to your contact Email address. You will be able to edit, update or delete your entries on your case study. For that reason, please make sure that the contact details are valid.

Contact of the survey participant (for internal purposes only) *

First name Last Name

Email *

example@example.com

Country *

Phone

Area code phone

About the survey

This electronic survey will collect basic characteristics of your case study regarding the use of geothermal energy in heating (and/or cooling) networks. Please note that case studies, which only supply a single building / consumer or only produce electricity without heating network supply are excluded from this survey.

Eventually sensitive information will only be collected in terms of data ranges and categories for publishing at the web tool and the digital fact sheets. However, you are invited to provide specific facts for internal purposes only. For more information about the survey and the related data policies please also see the stakeholder information on the "100 good reasons initiative".

Answering the online survey will not take more than 20 minutes of your time.

The survey will close on the 31st of July 2022.

You may use the site name used in your national language. If applicable, please use site names also used in other statistics (e.g. EGEN Geothermal Market Report or WGC/EGC Country Reports) to facilitate the identification of your cases study.

Site name

Address *

Street name

Street number

City

Postal code

Status of the case study *

Commercially operating

Pilot / testing plant

Under construction

Planned

Study / theoretical concept

Year of operation start *

Year of last adaption (expansion, refurbishment)

Planned year of operational start

You are invited to add involved companies on a voluntary basis for promotion reasons.

Involved companies

type of involvement

company name

Company 1

Company 2

Company 3

Please add an Email contact address for communication purposes with visitors of the "100 good reason initiative". Please note that this E-Mail address will be publically visible.

E-mail contact to the case study *

example@example.com

Short description of the site (synopsis) *

0/1000

Please share a representative picture of your case study to be published. Please make sure that you are allowed to publish this picture and provide the picture credits.

Type of geothermal Heating / Cooling network (multiple selection possible) *

Heating network

Heating and cooling network

Cooling network

Combined heat and power

Type of geothermal technologies involved *

Shallow / Ambient Geothermal

Medium Depth Geothermal

Deep geothermal

Underground thermal energy storage

Does your site use heat pumps for the supply of your heating and cooling network / clients *

no

yes - heat pumps to supply the network

yes - located at the clients

Heating and Cooling network generation (see graphic below)

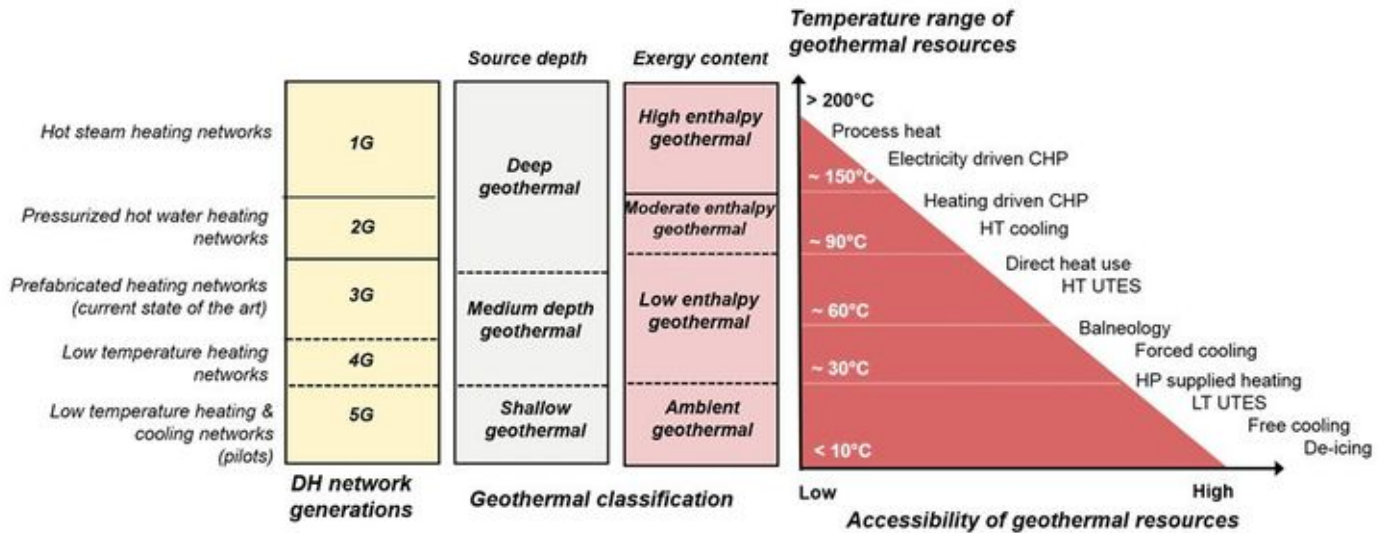
2G

3G

4G

5G

Sole cooling network



General scheme of combining the use of geothermal energy with different generations of heating and/or cooling networks (source: CA18219 Geothermal-DHC). Please refer to this scheme for the classification of your case study.

General scheme of combining the use of geothermal energy with different generations of heating and/or cooling networks (source: CA18219 Geothermal-DHC). Please refer to this scheme for the classification of your case study.

Number of clients supplied by your installation

- < 10
- 10 - 100
- 100 - 1000
- 1000 - 10000
- > 10000

Voluntary input for internal use only - we will not publish specific values provided by you! For more information on the use of data provided by survey participants, please read the stakeholder summary document or contact CA18219@geologie.ac.at.

Detailed number of clients

Geothermal resource characterization

In this section, we kindly ask you to provide basic information of the geothermal source(s) and related technology/ies integrated in your heating and/or cooling network. You may add multiple sources and technologies, if applicable.

Which types of geothermal heat sources are used?

Source	Depth range	Temperature range	Purpose
Geothermal heat source 1			
Geothermal heat source 2			
Geothermal heat source 3			
Geothermal heat source 4			

Voluntary input for internal use only - we will not publish specific values provided by you! For more information on the use of data provided by survey participants, please read the stakeholder summary document or contact CA18219@geologie.ac.at.

Depth range (specific values)

Temperature range (specific values)

System design of the heating / colling network

In this section, we kindly ask you to characterize the operation design of integrating geothermal energy into your heating (and/or cooling) network. For inputs regarding annual heating and cooling production and the related share of geothermal energy, you may refer to a characteristic year or a multiannual average.

Heat sources included in the network *

Monovalent - geothermal energy is the only heat source

Bivalent - geothermal is combined with other another heat source (e.g. peak load supply)

Multivalent networks - geothermal is combined with more than one other heat source / sink

Maximum heating capacity of your network supplied by geothermal energy

< 1MW

1MW - 5MW

5 MW - 10 MW

10 MW - 20 MW

20 MW - 50 MW

> 50 MW

Maximum heating capacity of your network supplied by geothermal energy

Specific values

Share of geothermal energy of maximum heating capacity *

< 50%

50% - 60%

60% - 70%

70% - 80%

80% - 90%

> 90%

not applicable

Share of geothermal energy of maximum heating capacity

Specific values

Maximum cooling capacity of your network supplied by geothermal energy

- < 0.2 MW
- 0.2 MW - 1.0 MW
- 1.0 MW - 2.5 MW
- 2.5 MW - 5.0 MW
- > 5.0 MW

Maximum cooling capacity of your network supplied by geothermal energy

Specific values

Share of geothermal energy of maximum cooling capacity

- < 50%
- 50% - 60%
- 60% - 70%
- 70% - 80%
- 80% - 90%
- > 90%

Share of geothermal energy of maximum cooling capacity

Specific values

Average annual operation hours of geothermal installations for heating

- < 2000 hours
- 2000 hours - 4000 hours
- 4000 hours - 7000 hours
- > 7000 hours
- not applicable

Average annual operation hours of geothermal installations for heating

Specific values

Average annual operation hours of geothermal installations for cooling

- < 500 hours
- 500 hours - 1500 hours

1500 hours - 2500 hours
2500 hours - 5000 hours
> 5000 hours
not applicable

Average annual operation hours of geothermal installations for cooling

Specific values

Average annual heat production of the network

< 1 GWh
1 GWh - 5 GWh
5 GWh - 20 GWh
20 GWh - 50 GWh
> 50 GWh
not applicable

Average annual heat production of the network

Specific values

Share of geothermal energy in annual heat production

< 50%
50% - 60%
60% - 70%
70% - 80%
80% - 90%
> 90%
not applicable

Share of geothermal energy in annual heat production

Specific values

Average annual cooling production of the network

< 1 GWh
1 GWh - 5 GWh
5 GWh - 20 GWh
20 GWh - 50 GWh

> 50 GWh
not applicable

Average annual cooling production of the network

Specific values

Share of geothermal energy in annual cooling production

< 50%
50% - 60%
60% - 70%
70% - 80%
80% - 90%
> 90%
not applicable

Share of geothermal energy in annual cooling production

Specific values

Energy conversion factor linked to the use of geothermal energy

< 5
5 - 10
10 - 20
> 20

Which heat source do you apply for peak load supply?

Geothermal
Fossil fuels
Biomass
Electricity

Does your installation include a backup system?

Yes

No

I don't know

Please specify your backup solution

Same as peak load supply

Fossil fuels

Biomass

Electricity

Others

Share of fossil fuels for annual gross heat production

0 %

< 10 %

10 % - 50 %

> 50 %

I don't know

Lessons learned at your case study

In this section, we kindly ask you to share your lessons learned so far in operating / constructing / planning your case study on geothermal energy use in heating (and/or cooling) networks. Any lessons learned are valuable to learn from your experiences for future activities!

The highlight of your geothermal energy supplied heating and cooling network

What worked surprisingly well at your site or what makes it special?0/1500

The biggest challenges / obstacles related to implementing or operating your heating and cooling network

0/1500

Picture credits

Picture owner and short caption0/150

I declare that I am allowed to upload and share the picture on the Geothermal-DHC web portal *

Yes

