

IEA Geothermal

Research, Development and Deployment Advancing Deep Geothermal Energy Utilisation and Geothermal Technology



IEA Geothermal – Who we are

Technology Collaboration Programme
by IEA

A framework for international collaboration and networking among nations, industries and industry organizations on geothermal energy and resources.

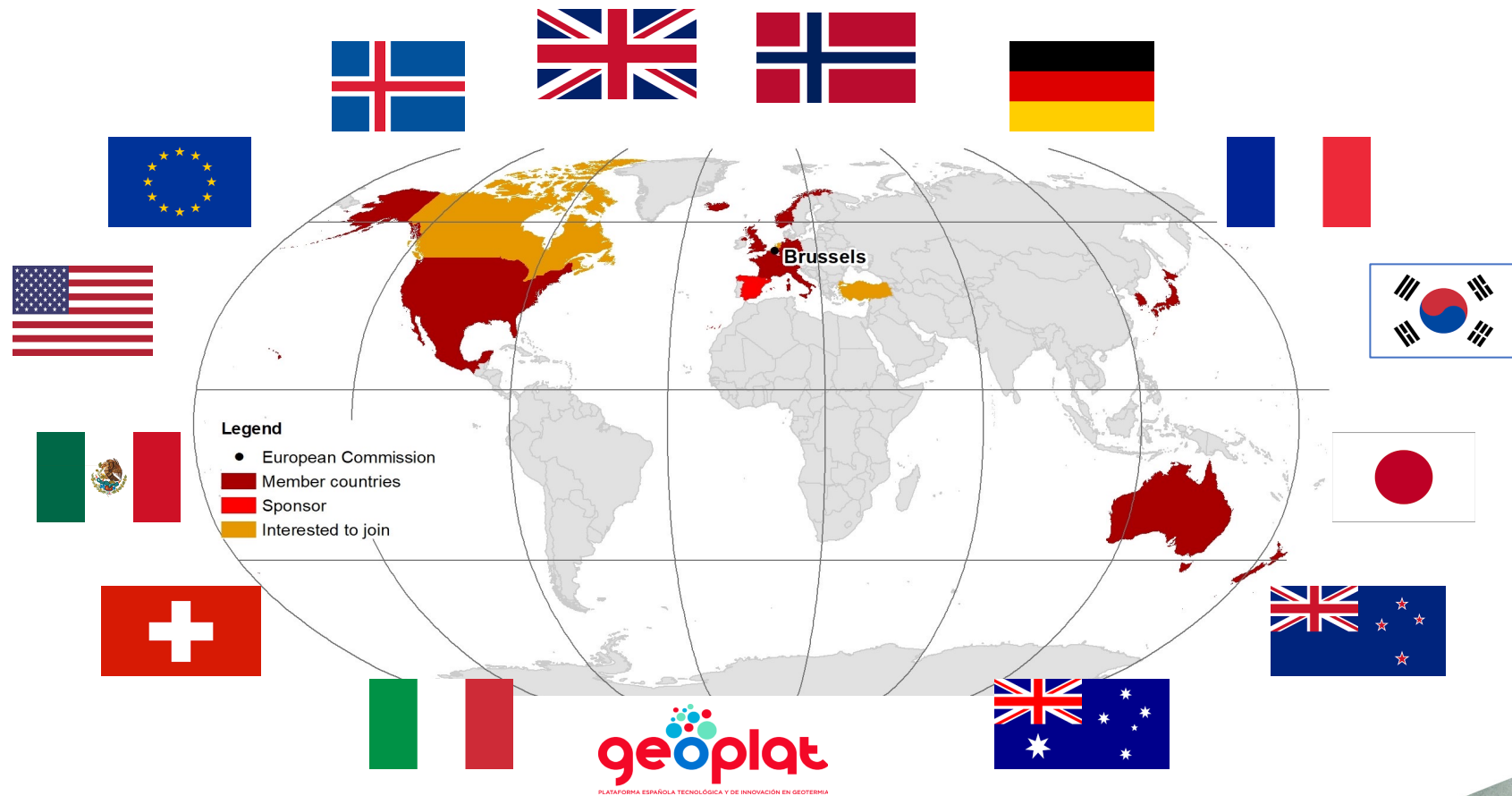
- Mandated under the International Energy Agency Technology Collaboration Programme
- Fostering geothermal for >25 years (since 1997)
- Participation options: Contracting Parties / Sponsors / Limited Sponsors



IEA Geothermal

IEA Geothermal – Who we are

Our Participants



15 Members

- European Commission
- 13 Countries
- 1 Sponsor

Interest to join:



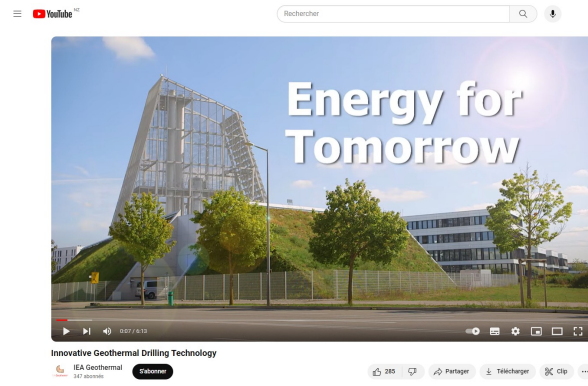
IEA Geothermal – What we do

Five Pillars of Strategic Activity



IEA Geothermal – What we deliver

Some examples



WGC2023

IEA GEOTHERMAL CASE STUDIES OF MINE WATER HEAT SCHEMES IN EUROPE

RESEARCH FACILITY

- UK Geoenery Observatories (UKGEOS): Glasgow Observatory**
 - At Scale Mine Water Research Facility
 - Designed for investigating shallow, low-temperature, mine-water heat energy and heat storage resources.

INDUSTRIAL BUILDINGS

- Lanchester Wines, Gateshead, UK**
 - Mine water heating warehouses
 - Benefit for: Heating energy

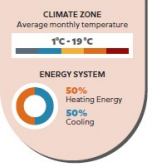
HEAT NETWORKS

- Mine Water Geothermal**
 - Heerlen District Energy Scheme
 - World leading creative thinking

MINE THERMAL ENERGY STORAGE (MTES)

- Underground Heat Storage**
 - Mine water energy storage
 - Benefit for: Heating energy

UK Geoenery Observatories (UKGEOS): Glasgow Observatory



At Scale Mine Water Research Facility

The Glasgow Observatory is an at-scale research facility designed for investigating shallow, low-temperature, mine-water heat energy and heat storage resources. It is located in an urban area on the eastern side of the city in a geological and environmental setting typical of former coalfields. There is no one dedicated heat user; boreholes can be used in flexible combinations to test and trial techniques and products. The boreholes are screened across a variety of types of flooded mine workings from pillar and stall, mine waste and open voids.

"designed for investigating shallow, low-temperature, mine-water heat energy and heat storage resources."

In Brief

Facilities
Mine water heating, cooling and storage research infrastructure.

Location
Glasgow, Scotland, UK

Years In Operation
Boreholes from 2020, geothermal sealed open loop infrastructure from late 2022.

General Setting
Urban Glasgow: made ground, glacial and post-glacial superficial deposits, Carboniferous Coal Measures.

Infrastructure
Twelve boreholes, four fenced surface compounds and a flexible geothermal sealed open loop.

Flow Rate
Mine workings for abstraction and re-injection of 1-2 L/s, tested at up to 25 L/s.

Water Temperature
Around 12°C

Ambient Temperature Ranges
Maximum July average 19°C, minimum January average 1°C (Met Office, Springburn).

Heat Infrastructure
Flexible system with 4 mine water boreholes, 3 types of heat exchanger, heat pump/cylinders, downhole submersible pumps.

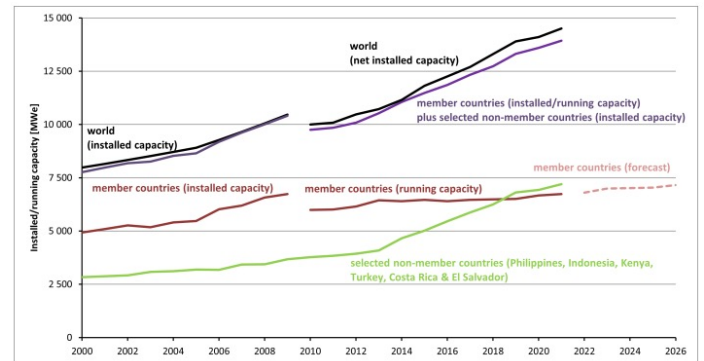
Heat Pumps Capacity
c. 200 kW and can operate at 25/50 /75 /100% of capacity.

Total Cost
£9 million including sensing/monitoring systems, IT for open data etc. – not indicative of a commercial scheme.

Funding
UK Government, through UK Research and Innovation.

Most of the boreholes are located within Cuningher Loop park in Burgherglen, South Lanarkshire. © British Geological Survey.

Borehole locations.
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IEA Geothermal **GEOTHERMICA**

Free International Symposium on
Underground Thermal Energy Storage (UTES)

Storage is key!

28.02.2024, Messe Offenburg, Germany
GeoTHERM side event

IEA Geothermal – What we do

Working Groups

- Environmental Impacts
- Data Collection and Information
- Deep Roots of Volcanic Geothermal Systems
- Emerging Geothermal Technologies
- Geothermal Heating and Cooling



<http://iea-gia.org/areas-of-activity/>

IEA Geothermal Next Upcoming Event

Mine Water Geothermal Energy Symposium 2024

- 24th and 25th April, Edinburgh, Scotland
- 26th Field Trip to Glasgow
- Collaborative event organised by:
 - The British Geological Survey,
 - the UK Coal Authority,
 - IEA Geothermal, and
 - the UK Department for Energy Security and Net Zero
- More details of the programme available shortly
- Registration opening soon



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More about us tomorrow in Session 1

GeoTHERM Dr. Jeanette Hagan
expo & congress

Abstract

14.20 Uhr

Kongress 1 - Tiefe Geothermie / Baden-Arena - Congress 1 - Deep geothermal energy / Baden-Arena

Thema: Research, Development and Deployment Advancing Deep Geothermal Energy Utilisation and Geothermal Technology, an Update from the International Energy Agency Geothermal Technology Collaboration Programme / *Forschung, Entwicklung und Einsatz Förderung der Nutzung der Tiefengeothermie und der geothermischen Technologie, ein aktueller Bericht des Geothermal Technology Collaboration Programme der Internationalen Energieagentur* 

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