Geothermal resources in Poland

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Polish Geothermal Society
Good regional geothermal recognition of Poland
summary in „Geothermal Atlases” and other works (for over 80% of Polish area)

Scientific and practical aspects

- evaluation of geothermal resources and potential of their use for different purposes
- indicating prospective areas for geothermal water and/or energy utilization
- structural and parametric characteristics of geothermal reservoirs
- hydrogeological conditions of the geothermal waters occurrence
- recognizing of the geothermal potential for binary installations (11)
- recognizing the geothermal potential for Enhanced Geothermal System (10)
Low-temperature geothermal systems

Geological cross-section through Poland
Great share of sedimentary rocks - potential and proven geothermal reservoirs

Domination of sedimentary formations (Mesozoic mostly)
- Large thickness (to 7-12 km)
- Significant share of carbonates and sandstones - main reservoir rocks
- Crystalline rocks – the Precambrian platform (NE-Poland), the Sudetes region (SW-Poland)
Main geothermal parameters

- Depths of exploited aquifers: 1 – 3.5 km
- Water temperatures: 20 – 97°C (locally >100°C waters found)
- Water mineralization (TDS): 0.4 -150 g/dm³
- Water flow rates/well: several m³/h – 550 m³/h
Rich low-enthalpy potential in geothermal provinces

- The largest in area and the most perspective province in Poland
- Two geothermal reservoirs have commercial significance:
  - Lower Cretaceous
  - Lower Jurassic
- In many areas of the Polish Lowlands utilization of geothermal waters with relatively high temperatures (even exceeds 100°C) and high capacities (even 300 m³/h) is real

- Geothermal reservoirs of Miocene and Mesozoic-Paleozoic basement
- The occurrence of thermal water resources and geothermal energy in the Polish part of the Carpathians is associated primarily with the area of Inner Carpathians - the Podhale basin

- The only geothermal province in Poland where the occurrence of geothermal water is associated with crystalline rocks
- Favorable thermal conditions (Cieplice)
- The current use of waters associated with balneotherapy and recreation

- Outther Carpathians due to the complicated geological structure are characterized by diverse of hydrogeothermal conditions – locally use of geothermal waters for recreation and balneotherapy is possible
The most prospective area for geothermal energy utilization in Poland

- Geothermal waters can be used in a wide range for heating purposes (individual and communal) and others purposes: recreation, balneotherapy, agriculture, aquaculture, ecological food production etc.
- Locally – binary electricity generation (CHP)
- Shallow geothermal (heat pumps - a wide range of applications for heating and cooling)

In Poland **low - temperature geothermal resources** occurs.

The geothermal reservoirs are built of:

- sedimentary rocks - mostly Mesozoic sandstones and carbonates
- crystalline rocks – the Precambrian platform (NE-Poland), the Sudetes region (SW-Poland)

The most prospective aquifers:

- Polish Lowland: Lower Jurassic and Lower Cretaceous aquifers
- Podhale: Middle Triassic/Eocene aquifers

Hydrogeothermal resources are associated with waters of different temperatures from 20 to over 100°C.

Petrogeothermal resources - associated with sedimentary, volcanic and crystalline rocks with temperature above 150°C.
**Project GeoPLASMA-CE**

**Shallow Geothermal Energy Planning, Assessment and Mapping Strategies in Central Europe**

Opracowanie zasad planowania, strategii wykorzystania oraz metod oceny i wykonywania map potencjału płytkiej geotermii w Europie Środkowej

**Funding programme:** Interreg CE

**Priority axis:** Cooperating on low-carbon strategies in CENTRAL EUROPE;

**Running time:** 07/2016 – 06/2019;

**Project partners:** 11 (AT, DE, PL, CZ, SK, SI)

6 Geological survey organizations, 1 University (PL), 1 City administration (SI), 1 Interest group (DE), 2 SMEs (DE);

**Total budget:** EUR 2.9 Mio

**Mission and vision of GeoPLASMA-CE:**

Foster the use of shallow geothermal energy use in Central Europe by:

- Transferring and harmonizing knowledge;
- Connecting experts and stakeholders in Central Europe;
- Developing state-of-the-art methods and tools;
- Demonstrating concepts in pilot areas;
- Interacting with stakeholders for the inclusion of SGE.

[www.geoplasma-ce.eu](http://www.geoplasma-ce.eu)
Many thanks for kind attention!

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