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PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON- BIOLOGICAL) RENEWABLES SUCH AS SOLAR THERMAL, PHOTOVOLTAIC, GEOTHERMAL, WIND AND WATER POWER

CORRESPONDING MODULE 3



Introduction

Geothermal energy

The greatest advantage of geothermal energy is that it is renewable and inexhaustible. Moreover, it is widely available (depending on the location, it can be used to a greater or lesser extent). As a natural energy source, the use of geothermal energy is not harmful to the environment.



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Description

General description of the CASE STUDY with information related to the questions already mentioned in section 3 of this document.

Background, types, basic information

Best practices

Geothermal heat plants in Poland include:

- the largest geothermal heat plant - **Geotermia Podhalańska** - is located on the edge of the Podhale Basin, one of the most important geothermal areas in Poland; it is in this area that an important reservoir of thermal waters is located, which is a fragment of the Central Carpathian Paleogene Basin. The zone feeding the Podhale reservoir is the massif of the Tatra Mountains; the total installed capacity of the Podhalańska Geotermia is 80.8 MW, of which the power from geothermal is 40.7 MW;
- **Pyrzyce** (maximum temperature 61°C, total capacity 48 MW, geothermal capacity 14.8 MW);
- **Mszczonów** (maximum temperature 41°C, total capacity 10.2 MW, geothermal capacity 2.7 MW);
- **Stargard** (maximum temperature 78°C, total capacity 10, geothermal capacity 10 MW).
- **Geotermia Poddebice** is a municipal company, the youngest in Poland, involved in the extraction and development of geothermal water.

Main objective of the institution implementing the case study and main achievements.

Good to remember information, practical information, links to other



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CSs.....



Fig. Geothermia Poddębice

Source: <https://poddebice.naszemiasto.pl/15-mln-zl-wsparcia-na-rozwoj-geotermii-poddebice-pryznane/ga/c1-8339510/zd/63053510>

Advantages and challenges

Geothermal energy Poddębice

In January 2010, the **Poddębice GT-2** borehole made geothermal water available from a depth of around 2,100m from Lower Cretaceous sandstones. It has an outflow temperature of about 68°C with a flow rate of 252 m³/h. It represents the bicarbonate-sodium-calcium type with a total mineralisation of 442 mg/dm³.

Geothermal water in Poddębice is used for:

- heating: since 2014, quite a few buildings in the city have been heated with geothermal heat,
- balneotherapeutic: The local hospital in Poddębice has a department providing rehabilitation and treatments using geothermal water,
- recreational activities: since 2011, three open pools have been fed with geothermal water,
- drinking: in 2014, the Pump Room for Thermal Waters was opened inside the renovated former 19th-century



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Evangelical-Augsburg church.



Main data

Budget, main dates (investment, start of production, period of raise funding, etc.), location, module name and number, contact data when possible, institution

Geotermia Poddębice Sp. z o.o

- is a municipal company, the youngest in Poland, for the extraction and development of geothermal water,
- is extracting thermal water through the Poddębice GT-2 borehole from a depth of 2101m. ,
- hyperthermal water with a temperature of 72°C in the bed, with total mineralisation of less than 0.5 g/l,
- has been a mining company since 2012. ,
- Borehole capacity: up to 100 m³/h (self-flow), 100 to 252 m³/h (pumping),
- produces and distributes heat to institutional and individual customers in the city of Poddębice thanks to the high temperature of the thermal water; it is zero-emission heat; the thermal power ordered is 6.8 MW,
- Between 2011 and 2018, a seasonal complex of three thermal pools was made available to residents and tourists, providing bathing and recreation in excellent water quality amidst greenery.

There are plans to expand the use of geothermal energy in Poddębice and its vicinity. The multidirectional use of water and geothermal heat provided by Geotermia Poddębice Sp. z o.o. has brought many benefits for the residents, the town and the environment.

Geotermia Poddębice has received nearly PLN 15 million from the National Fund for Environmental Protection and Water Management for the expansion of its heating plant. Thanks to this investment, the municipal company will produce electricity and additional heat and treat thermal water for drinking

Further Information

..... to be completed with links when possible

<https://www.geotermia.pl/>

<https://energia-geotermalna.org.pl/czlonkowie-wspierajacy/pec-geotermia-podhalanska-s-a/>

<https://energia-geotermalna.org.pl/czlonkowie-wspierajacy/geotermia-poddebice-sp-z-o-o/>

<https://geotermia.poddebice.pl/>

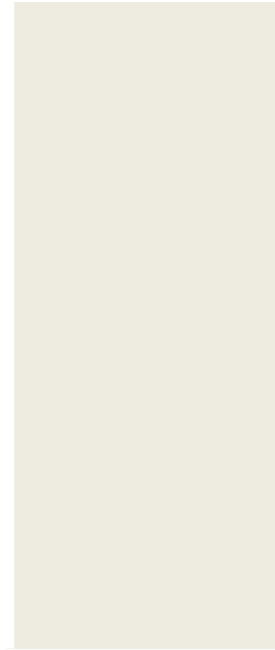
<https://poddebice.naszemiasto.pl/15-mln-zl-wsparcia-na-rozwoj-geotermii-poddebice-przyznane/ar/c1-8339510>



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purposes.

The expansion of the district heating plant enables the company to plan further activities. Neighbourhood distribution networks with connections and compact district heating substations are being planned. When the heat source is expanded, further housing estates in the city can be connected, resulting in a reduction in the so-called low-emission effect and cleaner air.





ANNEX - STRUCTURE OF MODULE CONTENT TO PREPARE SLIDES

Module Name: The name of the partner: Country:

The name of the module	
Target group involved	
Current information about the topic	
Principles of the specific module	
Basic terms/measures of the module/topic	
Training materials (tasks, case studies, exercises)	
Short description of the materials	
Link of the online resources (film or video resources)	
Specific images (to support the purpose of the resources)	
Duration	
Materials	
No of Learners/Representatives	
Individual or group work	
Step by step guide	