

Interview 5 - Dr. Wiesław Kozdrój, Poland

Profile

Name: Wiesław Kozdrój
Age: 56
Education: PhD in Earth Sciences
Activity: Researcher in the Polish Geological Institute – National Research Institute
Lives in Wrocław, Poland
Experience in the thermogeology sector: 5 years
Geographical working area: Poland

Thermogeology in Poland and other countries of Central Europe

We met Mr. Kozdroj in Salzburg during the joint conference between GRETA and GE-OPLASMA, an Interreg project focused on shallow geothermal energy in Central Europe, in which the Polish Geological Institute is a partner.

From your experience in the GEOPLASMA Project, what are the main differences between the Shallow Geothermal Energy development in Central Europe and the Alpine Space?

Geologically, in general, the whole territory of Central Europe is suitable enough for shallow geothermal energy applications. We can find here very diversified rock units (formations, complexes), many of which, like magmatic and metamorphic rocks of the Bohemian massif show very good thermal parameters, especially for installation of geothermal heat pumps of closed loop system. In that sense the Alpine Space is different, as it is characterised by predominant high altitude mountainous areas of the Alpine orogeny with many carbonate rocks occurrences, which are rather not suitable for heat pumps of closed loop system (problems related with karst formations), but instead, sometimes good for open loop system due to rich resources of ground waters. The Alpine region has also vast occurrences of large alluvial aquifers in the Northern foreland basins and in the Po plain, which can be extensively used by water/water geothermal heat pumps, also in big cities like Munich, Vienna or Milan.

In Central Europe the fostering of geothermal applications is often politically and practically hampered by the still wide diffusion of fossil fuels. Coal is more “traditional” while thermogeology is unknown; Are people still skeptical about its use?

Yes, the use of coal for heating is still the most popular energy source in the Central Europe, especially in Poland, where hard coal reserves are the biggest in Europe and are currently being exploited from several mines. There are more than 3 million coal-fired furnaces in single-family houses in Poland, and this is the main cause of severe air pollution. The habit of using coal is widespread and it will be very difficult to change this situation, for many reasons, mainly financial and educational.

A strong barrier existing in both Central Europe and Alpine Space territories is the lacking of harmonisation in laws and regulations. I think that we all really need a sort of “geothermal guideline” at a European level, which can act as a model to be followed by the EU Member States.

Which are the main obstacles faced by thermogeology in Poland?

From a political point of view, unfortunately the government does not foster very much shallow geothermal energy and other renewables, preferring rather to keep the use of coal in future, while it is interesting to note that heat obtained from deep geothermal energy is strongly supported by the State.

We don't have an official census of the existing geothermal heat pump installations. Anyway from draft assumptions based on sales results in the last 10 years, we can assume that there are about 45 000 units, most of them represented by closed loop installations in private, single family houses. However, in recent years we observe an increasing number of installations in public buildings, such as hospitals or schools, created with the financial support of the state and funds from EU programmes.

Legislation is not very tight, for instance there are different rules regarding different depths of boreholes made for vertical heat exchangers. There is a set up maximum depth of boreholes (30 m) above which you do not need to declare the intention to do them to a local (district) geological authority. This is the reason that many such drillings are not registered and not subjected to sufficient environmental control. Another depth of borehole - deeper than 100 m - makes you obliged to provide a special "traffic plan" required for mining areas. This regulation results in that very often drillings are "officially" stopped just few meters above this depth in order to avoid bigger bureaucracy. In general, other geological obstacles for thermogeology like karst or swelling rocks are rather rare and not significant phenomena in Poland.

Does the illegal diffusion of thermogeology lead to environmental problems?

Existence of unregistered drillings for heat pumps is dangerous due to the possibility of incorrect sealing and contamination of groundwater by hazardous solutions from circulating brine in heat exchanger. However, the current recognition of this problem is also weak due to the lack of an environmental monitoring system for geothermal heat pumps in Poland. It remains to be hoped that these illegal practices, i.e. existence of heat pumps outside the official register, will be somehow better than breathing smog emitted from coal-fired ovens....

How would you improve the diffusion of thermogeology in your country?

Present geothermal heat pump market in Poland, with around 5 000 sold units per year, is rather steady and shows considerable potential for growing. For many local communes and cities there are existing plans of exchange of heating systems in housing sector. Hence, there is a real chance that when promotional actions are undertaken and incentive and subsidy programmes are running, people will be convinced to install effective and environmental friendly geothermal heat pumps in their homes. But first of all - to "make our dreams come true" – preventive education by and other promoting campaigns on advantages of geothermal energy are necessary. That is what we are doing in our twin GRETA and GeoPlasma projects.