

### C.2.1 - FINAL HTPO CONFERENCE – MINUTES

7/12/2021, online Final HTPO Conference organized from MU Brno (via MS Teams)

#### **PARTICIPANTS**

**Geological Survey Austria:** Magdalena Bottig, Doris Rupprecht, Jakob Kulich, Stephan Hoyer

**Masaryk University Brno:** Peter Melichar, Jaromír Leichmann, Martin Kopecký, Vladimír Opletal, Slavomír Nehyba, Petr Špaček, Jana Pazdírková, Tomáš Kuchovský, Bibiána Pasternáková, Kateřina Chroustová, Adam Říčka, Vojtěch Wertich, Dominika Tóthová, Petr Halámek, Tomáš Vylita, Hana Krumlová, Denisa Kosková,

**Zentralanstalt für Meteorologie und Geodynamik:** Fee-Alexandra Rodler, Christa Hammerl, Wolfgang Lenhardt,

**Educational and research organisation:** Juraj Franců, Tomáš Pačes,

**Provider of (public) services and infrastructure:** Jana Hamršmídová, Jakub Dozbaba

**Local/regional/national administrative:** Martina Dominová, Reinhold Russ, Martin Mityska, Filip Jelínek, Peter Pálenský, Stefan Rakaseder, Friedrich Salzer, Thomas Ehrendorfer

**Public:** Přemysl Spěvák (press)

#### **PRESENTATIONS**

Jaromir Leichmann: Overview of the main achievements and results of the HTPO project

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#### Invited lectures

Jana Hamršmídová (MND a.s.): Role of MND a.s. in hydrothermal potential problematics

Tomáš Pačes (Czech Geological Survey): Beginning of research into geothermal resources in Czechoslovakia.

Jakub Dozbaba (HAVEL & PARTNERS, s.r.o.): Legislative aspects and comparison between Czech Republic and Austria

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Peter Melichar: Review and assessment of the HTPO Project

Vladimír Opletal, Slavomír Nehyba, Magdalena Bottig: Geological aspects of thermal water occurrences in the area of Pasohlávky-Laa.

Tomáš Kuchovský, Adam Říčka, Magdalena Bottig: Hydrogeological parameters of thermal water resources in the study area.

Petr Špaček, Christa Hammerl, Fee-Alexandra Rodler: Seismological aspects of the HTPO project

Doris Rupprecht, Dominika Tóthová, Petr Halámek: Legislative framework, economic potential and strategy of the thermal water usage in the study area

#### **MINUTES/PROGRAM**

- **J. Leichmann (MU)** welcome & opening of the final HTPO conference
- **J. Leichmann (MU)** introduction to the HTPO project, overview of its goals, and starting questions/problems. Provide a brief intro to the main achievements and results of the HTPO project.
- Three invited lectures followed after the introduction
- **J. Hamršmídová (MND a.s.)** introduced the MND a.s. company, its history, research, exploration and oil&gas production in the South Moravia. She also described new technologies, projects and strategy related to the

geothermal energy uses. She also described involvement of MND a.s. in the Eden project (Cornwall, UK), where they are drilling more than 4 km deep geothermal borehole.

- **Tomáš Pačes (Czech Geological Survey):** The keynote speaker, professor with decades long experiences in thermal water and geothermal energy research. He introduced history and background of the geothermal energy uses and the research development both in Czechoslovakia and worldwide. He described many case studies from different part of the world related to the uses of the geothermal water and energy.
- **J. Dosbaba (HAVEL & PARTNERS, s.r.o.)** described legislative framework for thermal water usage, he described different uses (industry, healing (spa), heating, energy purposes) and the laws, agreements that are regulating these aspects. He was focused on both countries (Czech Republic, Austria), including comparison of the legal framework between both countries.
- **P. Melichar (MU)** introduced the thought and process behind this project proposal, he also introduced all parties (MU, GBA, ZAMG) involved in the project as well as collaboration with strategic, associated partners from Czech and Austrian government, municipalities, and operators of thermal baths. He also discussed main results and its possible application in industry, tourism or e.g., bathing purposes.
- **Lunch break**
- **V. Opletal (MU) and M. Bottig (GBA)** presented seismic interpretation and complete 3D structural-geological model (T1.1.1) of the study area including visualization of cross-sections and 3D surfaces for individual stratigraphical/lithological units and horizons for whole area of Laa an der Thaya – Pasohlávky.
- **T. Kuchovsky and A. Říčka (both MU)** presented final outcomes from hydrogeological perspectives, they showed maps and surfaces from the 3D models (mainly the top of the Jurassic sediments that are forming the main thermal water aquifers) combining structural-geological model with hydrogeological, hydrochemical and geothermal parameters within the study area. He also informed participants about completion of isotope analyses from MUS-3G and Laa TH N1 boreholes that prove different origin of the thermal water used by thermal bath of Laa and der Thaya and Pasohlávky. This difference was also proven by different salinity where content of saline water at MUS3G was much lower (6%) than in borehole in Laa (Laa TH N1, 36%). Inflow of low mineralized groundwater to the underground aquifers was quantified on 10 L/s and thus allow to describe this source of thermal water as renewable under certain condition (mostly the pumping rate). However, simulated high rate drawn from well Pasohlávky MUS-3G has no impact on hydraulic head at well Laa TH N1.
- **F.-A. Rodler (ZAMG)** started the first part of the presentation about seismological aspects of the HTPO project. She informed about recorded seismic events from time period 2000-2017, presented workflow, data processing and discrimination between natural and induced seismic events. She continued with more recent seismic events recorded during duration of the HTPO project (2018-2021). She described and showed final map outputs visualizing methodology of Frequency-Magnitude-Distribution, magnitude detection threshold and Hazard – Peak Ground Acceleration (PGA) for the study area
- **P. Špaček (MU)** continued with the second part of the Seismological aspects in HTPO where he was focusing on the seismological potential. He emphasized importance of paleoearthquakes studies, research on faults and fault systems in the area. He described study of main fault in the research area (Diendorf-Boskovice Fault – NNE-SSW direction) that provide evidence of faulting in Quaternary, study results showed rather low probability of seismic activity of the Diendorf fault. He also described and showed model of natural seismicity rate in the Laa-Pasohlávky area, that also pointed out rather very low probability of potential seismic event in the area.
- **D. Rupprecht (GBA)** informed participants about individual tasks of the work package T2: Proposals for future measures for cross - border use and management of thermal waters. She introduced other participants working on these tasks (both from GBA and MU), she continued with informative talk about possible use of hydrothermal waters for medical, bathing, and geothermal energy generation. Then she summed up possible

deep geothermal energy uses in Austria including theoretical market and industrial use for HTPO study area based on geothermal gradient and thermal water temperature of investigated aquifers (from T1).

- **D. Tóthová and P. Halámek (both MU)** followed up the presentation of D. Rupprecht and presented the socioeconomic analysis of the study area including land use and geothermal energy use in both Czech and Austria part of the study area. They also described economic situation of spas using thermal water in the Czech Republic and showed economical scenarios for theoretical new uses of thermal water in the study area.
- **J. Kulich (GBA)** closed this topic about economic potential by showing several maps that visualize the study area based on the depth of the Altenmarkt Formation reservoir or e.g., LCOH (levelized cost of heat) composed with use of the Geophires software.
- Discussion and Summary of the conference + thanks to the participants, closing of the conference.